

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



**BUDGET
ESTIMATES
FISCAL YEAR 2014**

CONGRESSIONAL SUBMISSION

PRIVILEGED

**The information contained herein must not be disclosed
outside the Agency until made public by the President or by
the Congress.**

**Budget Estimates, Fiscal Year 2014
Congressional Justification**

Table of Contents

<u>Exhibit No.</u>		<u>Page No.</u>
Summary Materials:		
1	Table of Contents	i
2	Organization Chart	vi
3	Executive Summary	vii
10	Program and Performance: Direct Obligations NOAA Control Table	Exhibit 10 - 1 Control Table - 1
Appropriation: Operations, Research and Facilities		
5	Summary of Resource Requirements: Direct Obligations	ORF – 1
6	Summary of Resource Requirements: Reimbursable Obligations	ORF – 5
7	Summary of Financing	ORF – 7
9	Justification of Adjustments to Base	ORF - 9
16	Summary of Resource Requirements by Object Class	ORF – 15
18	Program/Sub-Program Change Crosswalk	ORF - 18
19	Activity/Subactivity Change Crosswalk	ORF - 21
32	Justification of Proposed Language Changes	ORF – 32
33	Appropriation Language and Code Citations	ORF - 26
34	Consulting and Related Services	ORF - 47
35	Periodicals, Pamphlets, and Audiovisual Products	ORF - 48
36	Average Grade and Salary	ORF - 49
Appropriation: Procurement, Acquisition and Construction		
5	Summary of Resource Requirements: Direct Obligations	PAC - 1
7	Summary of Financing	PAC - 5
9	Justification of Adjustments to Base	PAC - 6
16	Summary of Requirements by Object Class	PAC - 7
National Ocean Service:		
	NOS Operations, Research and Facilities Overview	NOS - 1
12-15	IT Reductions	NOS - 7
12-15	Navigation, Observations and Positioning Justification of Program and Changes	NOS – 11 NOS – 23
12-15	Coastal Science and Assessment Justification of Program and Changes	NOS - 53 NOS - 61
12-15	Ocean and Coastal Management and Services Justification of Program and Changes	NOS - 81 NOS - 93

NOS Procurement, Acquisition and Construction

12-15	Procurement, Acquisition and Construction Justification of Program and Changes	NOS - 115 NOS - 117
12	Damage Assessment and Restoration Revolving Fund	NOS - 125
5	Summary of Resource Requirements: Direct Obligations	NOS - 127
16	Summary of Requirements by Object Class	NOS - 129
12	Sanctuaries Enforcement Asset Forfeiture Fund	NOS - 131
5	Summary of Resource Requirements: Direct Obligations	NOS - 133
16	Summary of Requirements by Object Class	NOS - 135

National Marine Fisheries Service:

	NMFS Operations, Research and Facilities Overview	NMFS - 1
12-15	Protected Species Research and Management Justification of Program and Changes	NMFS - 7 NMFS - 14
12-15	Fisheries Research and Management Services Justification of Program and Changes	NMFS - 48 NMFS - 63
12-15	Enforcement and Observers/Training Justification of Program and Changes	NMFS - 105 NMFS - 113
12-15	Habitat Conservation and Restoration Justification of Program and Changes	NMFS - 119 NMFS - 125
12-15	Other Activities Supporting Fisheries Justification of Program and Changes	NMFS - 131 NMFS - 145
12-15	Pacific Coastal Salmon Recovery Account Justification of Program and Changes	NMFS - 175 NMFS - 179
5	Summary of Resource Requirements: Direct Obligations	NMFS - 183
16	Summary of Requirements by Object Class	NMFS - 185
12	Fishermen's Contingency Fund	NMFS - 187
5	Summary of Resource Requirements: Direct Obligations	NMFS - 189
16	Summary of Requirements by Object Class	NMFS - 191
12	Foreign Fishing Observer Fund	NMFS - 193
5	Summary of Resource Requirements: Direct Obligations	NMFS - 195
16	Summary of Requirements by Object Class	NMFS - 197
12	Fisheries Finance Program Account	NMFS - 199
5	Summary of Resource Requirements: Direct Obligations	NMFS - 201
16	Summary of Requirements by Object Class	NMFS - 203

12	Promote and Develop Fishery Products	MFS – 205
5	Summary of Resource Requirements: Direct Obligations	NMFS – 207
16	Summary of Requirements by Object Class	NMFS - 209
12	Federal Ship Financing Fund	NMFS - 211
5	Summary of Resource Requirements: Direct Obligations	NMFS - 213
16	Summary of Requirements by Object Class	NMFS - 215
12	Environmental Improvement and Restoration Fund	NMFS – 217
5	Summary of Resource Requirements: Direct Obligations	NMFS – 219
16	Summary of Requirements by Object Class	NMFS - 221
12	Limited Access System Administration Fund	NMFS – 223
5	Summary of Resource Requirements: Direct Obligations	NMFS – 225
16	Summary of Requirements by Object Class	NMFS – 227
12	Marine Mammal Unusual Mortality Event Fund	NMFS – 229
5	Summary of Resource Requirements: Direct Obligations	NMFS – 231
16	Summary of Requirements by Object Class	NMFS – 233
12	Western Pacific Sustainable Fisheries Fund	NMFS – 235
5	Summary of Resource Requirements: Direct Obligations	NMFS – 237
16	Summary of Requirements by Object Class	NMFS – 239
12	Fisheries Enforcement Asset Forfeiture Fund	NMFS – 241
5	Summary of Resource Requirements: Direct Obligations	NMFS – 243
16	Summary of Requirements by Object Class	NMFS - 245
12	North Pacific Observer Fund	NMFS – 247
5	Summary of Resource Requirements: Direct Obligations	NMFS – 249
16	Summary of Requirements by Object Class	NMFS - 251

Oceanic and Atmospheric Research:

	OAR Operations, Research and Facilities Overview	OAR - 1
	Adjustments due to Reprogramming of FY 2012 Spend Plan	OAR - 11
12-15	IT Reductions	OAR - 13
12-15	Climate Research Justification of Program and Changes	OAR – 17 OAR - 39
12-15	Weather and Air Chemistry Research Justification of Program and Changes	OAR – 89 OAR – 107
12-15	Ocean, Coastal, and Great Lakes Research Justification of Program and Changes	OAR – 129 OAR – 155
12-15	Innovative Research and Technology Justification of Program and Changes	OAR – 201 OAR - 205

OAR Procurement, Acquisition and Construction

12-15 **Systems Acquisition** OAR – 209
Justification of Program and Changes OAR - 211

National Weather Service:

NWS Operations, Research and Facilities Overview NWS - 1

Adjustments due to Reprogramming of FY 2012 Spend Plan NWS - 7

12-15 **Operations and Research** NWS - 11
Justification of Program and Changes NWS - 29

12-15 **Systems Operation and Maintenance** NWS - 65
Justification of Program and Changes NWS - 76

NWS Procurement, Acquisition and Construction

12-15 **Systems Acquisition** NWS - 77
Justification of Program and Changes NWS - 87

12-15 **Construction** NWS - 111
Justification of Program and Changes NWS - 113

National Environmental Satellite, Data, and Information Service:

NESDIS Operations, Research and Facilities Overview NESDIS - 1

Adjustments due to Reprogramming of FY 2012 Spend Plan NESDIS - 5

12-15 **Environmental Satellite Observing Systems** NESDIS - 7
Justification of Program and Changes NESDIS - 19

12-15 **Data Centers and Information Services** NESDIS - 27
Justification of Program and Changes NESDIS - 35

NESDIS Procurement, Acquisition and Construction

12-15 **Systems Acquisition** NESDIS - 63
Justification of Program and Changes NESDIS - 77

12-15 **Construction** NESDIS - 115
Justification of Program and Changes NESDIS - 117

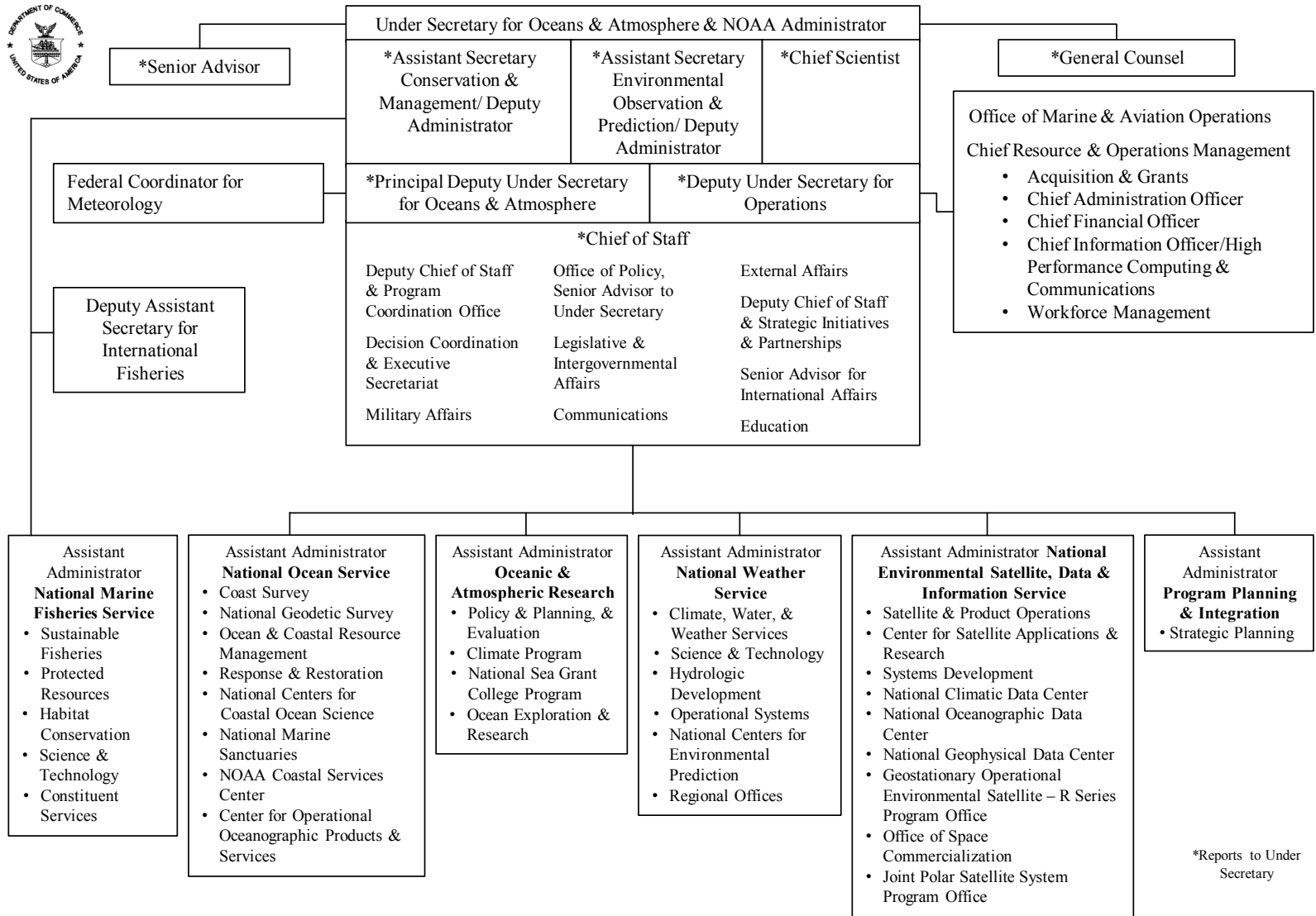
Program Support

	PS Operations, Research and Facilities Overview	PS - 1
12-15	NOAA Wide Corporate Services & Agency Management Justification of Program and Changes	PS - 5 PS - 17
12-15	NOAA Education Program Justification of Program and Changes	PS - 37 PS - 43
12-15	NOAA Facilities Program Justification of Program and Changes	PS - 57 PS - 59

Office of Marine & Aviation Operation

	OMAO Operations, Research and Facilities Overview	OMAO - 1
12-15	Marine Operations & Maintenance Justification of Program and Changes	OMAO - 7 OMAO - 13
12-15	Aviation Operations Justification of Program and Changes	OMAO - 27 OMAO - 31
	OMAO Procurement, Acquisition and Construction	
12-15	Fleet Replacement Program Justification of Program and Changes	OMAO - 37 OMAO - 39
12 5	NOAA CORPS Retirement Pay Summary of Resource Requirements: Direct Obligations	OMAO - 47 OMAO - 49
12 5 16	Medicare Eligible Retiree Health Fund Contribution – NOAA Corps Summary of Resource Requirements: Direct Obligations Summary of Requirements by Object Class	OMAO - 51 OMAO - 53 OMAO - 55

National Oceanic & Atmospheric Administration



Section 3: Priorities and Management Challenges

EXECUTIVE SUMMARY

Introduction

For Fiscal Year (FY) 2014, the National Oceanic and Atmospheric Administration (NOAA) proposes a budget of \$5,447.7 million, an increase of \$541 million or 11 percent above the FY 2012 Enacted. This year's budget provides strong support for weather satellites and NOAA coastal, oceans and fisheries programs, making targeted investments that leverage against one another to bring better balance to NOAA's portfolio and strengthen our capacity to support communities across America. Achieving the right level of investment enables NOAA to provide accurate and timely weather forecasts, to promote human health and safety, to serve as stewards of the Nation's oceans and coasts and their resources, and to provide the scientific knowledge that underpins our mission. The President's budget proposal moves toward equilibrium between short-term and long-term investments by making a down payment toward balancing NOAA's:

- Wet side and dry side activities;
- Internally and externally conducted science and programs;
- Research and development (R&D) and operations; and
- Short-term and long-term investments.

This request builds upon and begins to institutionalize many of the Administration's and NOAA's priorities. It enables us to work with other Federal agencies in a collaborative approach through coastal habitat protection and restoration, support for marine debris detection and removal, and continued work using a science-based ecosystem approach to address Arctic issues and Gulf Coast restoration. The FY 2014 budget request also supports climate services and adaptation, and coastal mapping and data tools, and enhances land- and seascape-level ecosystem-wide conservation strategies. It funds the Weather-Ready Nation goals to deliver trustworthy forecasts and warnings to the public and commerce, while maximizing investments in critical observing systems and advancing research to improve our warning and predictive capabilities. In addition, the request supports our ability to continue to sustain efforts to improve the status of fish stocks nationwide. It enables investment in next-generation observation platforms, which support both the daily operations of the Agency as well as important research and development for future decisions and innovations. Finally, this budget provides continued support for the coastal programs that support local economies and provide tourism opportunities.

The FY 2014 budget acknowledges feedback received from Congress and our stakeholders during the FY 2013 rollout and restores a number of programs proposed for termination in the FY 2013 President's Budget. It reduces waste by reducing travel and finding technological replacements to travel, and by improving efficiencies in Information Technology through reductions and reinvestments. In FY 2014, NOAA looks to begin building a NOAA-wide Information Technology enterprise, through a new Working Capital Fund, to reduce redundant systems and streamline activities.

Total requested inflationary Adjustments to Base (ATBs) in the FY 2014 proposal are \$48.3 million. These adjustments focus on maintaining and investing funds in our workforce and supporting NOAA's most important resource – our people. NOAA leverages this most valuable asset by applying our people's knowledge, experience, ingenuity, and dedication to the challenges of the 21st

century. With this increase, the FY 2014 base level will fund the estimated FY 2014 Federal civilian pay raise of 1.0 percent; it will also provide inflationary increases for non-labor activities, including service contracts, utilities, lease payments, fuel, and rent charges from the General Services Administration.

Technical Adjustments to Base will restore programs affected by the reprogramming of the FY 2012 Spend Plan. These funds were reprogrammed to sustain the warning and forecast capabilities of the National Weather Service and, where necessary, delay future improvements to services. The restoration of these funds in FY 2014 will provide a basis for fully justifying our labor and operations needs in the National Weather Service.

Program Increase Highlights by Goal/Strategic Priority Area

Resilient Coastal Communities and Economies

One of NOAA's key goals is to organize our resources and capabilities to promote the environmental and economic sustainability of vibrant coastal communities. The negative impacts associated with increased population and economic activities of our Nation's coastlines are growing. NOAA is on the front lines of understanding, predicting and responding to these challenges. NOAA's FY 2014 request restores the NOAA Office of Coast Survey's Navigation Response Teams (NRT) program that provides 24/7 emergency hydrographic survey support to the U.S. Coast Guard, port officials, and other first responders in the wake of accidents and natural events that create navigation hazards. The request invests in navigation, observations and positioning with increases in integrated Federal LIDAR data collection efforts (\$8.0 million), the National Water Level Observation Network (\$4.0 million), and GRAV-D vertical data (\$3.2 million). The request supports a \$5.9 million increase in competitive research within coastal science and assessments. In addition, NOAA's request includes an increase of \$1.4 million to improve NOAA's capacity to: respond to marine debris resulting from natural disasters; increase marine debris research such as understanding impacts, trajectories, and improving removal; and expand outreach initiatives that serve to help prevent debris from entering the marine environment.

Healthy Oceans

The conservation and protection of living marine resources and the habitats they rely on is vital to reaching the goal of healthy oceans. In FY 2014, NOAA proposes to balance habitat conservation and protected species recovery efforts in this fiscally constrained environment. Broad benefits will be accomplished through this proposal, including support for abundant fish and wildlife, commercial and recreational opportunities, and resilient coastal communities that can withstand hurricanes, floods, and other threats. NOAA proposes an increase of \$15.0 million for Species Recovery Grants and \$4.1 million for habitat management and restoration – two national-scale programs. It supports the Pacific Coastal Salmon Recovery Fund (PCSRF) at \$50.0 million. NOAA's intent is to ensure funding is available for a broader range of threatened and endangered species under NOAA's jurisdiction and a more strategic approach to species recovery and management nationwide. Additionally, NOAA proposes a \$4.9 million increase to expand annual stock assessments and \$2.5 million to restore funding for Interjurisdictional Fisheries Grants.

Strengthening Science and Core Research

NOAA research helps to ensure that complex policy choices are informed by the best available science. As such, data generation and use is the core function of the agency as a whole. Through research and development, NOAA examines cutting-edge issues that will guide our approach to resource management for years to come. NOAA's weather data informs millions of people each day,

and our resource assessments guide legislative and policy decisions that affect peoples' lives and livelihoods. NOAA's FY 2014 request includes \$1.7 million to restore funding for the Great Lakes Environmental Research Laboratory. The request includes an increase of more than \$20 million targeting ocean exploration through increases to the Ocean Exploration Program and the new Ocean Grand Challenge. Climate research is a critical priority with increases in climate laboratories and cooperative institutes (\$5.3 million), the Global Change Research Program (\$9 million), the climate portal (\$0.5 million), model data archives (\$1.6 million), and the National Integrated Drought Information System (\$1.5 million). To improve our understanding of climate processes NOAA will invest in research grant opportunities focused on deep ocean Argo float observations that monitor ocean acidity and carbon dioxide content in the ocean, the Carbon Tracker system to understand trends in the uptake and release of carbon dioxide at the Earth's surface, and drought research and predictions. NOAA's budget proposes \$10 million to understand the impacts of climate on northeast groundfish stocks. Additional research investments will modernize our understanding of severe weather events through technological advancements in weather modeling and observations, including increases of \$4.9 million in next generation weather observing platforms and \$2.9 million in wind boundary research.

Weather-Ready Nation

Concern for public safety drives NOAA to continue to improve the timeliness and accuracy of warnings for all weather-related hazards. In addition, more and more sectors of the Nation's economy recognize the impacts of weather and water on their activities, and are becoming more sophisticated at using weather and water information to improve commerce. NOAA is committed to enhancing timely and accurate weather, hydrological, and climate forecasts through better observations, improved data assimilation, and collaboration with the research community. Therefore, the FY 2014 Budget requests an additional \$22.9 million to meet NWS labor and operational requirements required to issue warnings and forecasts to protect life and property. NOAA requests an increase of \$3.8 million to fund tsunami education and awareness programs and continue critical maintenance of the Deep-ocean Assessment and Reporting of Tsunamis (DART) buoy network. With a request of \$5.5 million, NOAA proposes to leverage existing investments in weather observations through the establishment of a National Mesonet Program. Also requested is \$15 million to support the critical modernization of the NWS Telecommunications Gateway, the backbone of the Weather Service's information delivery system. An additional \$15.4 million is requested for ground system readiness to ensure that the NWS will be prepared to use the substantial increase in data coming from NOAA's investment in new weather satellites, radar, and models. A request of \$5.5 million provides for relocation of Weather Forecast Offices (WFO) and River Forecast Centers (RFC) with unacceptable conditions at leased facilities that will impact operations. Finally, complimentary requests for \$14.8 million for weather research and development and \$13.8 million for operational weather supercomputing will ensure the NWS continues to advance critical modeling efforts.

Maintain Satellite Continuity to support NOAA and the Nation's observing needs

One of the greatest challenges facing NOAA today is ensuring continuity of satellite operations to provide unbroken coverage of weather forecasts and environmental measurements into the future. The GOES-R satellite acquisition program has been a successful partnership effort between NOAA and NASA to replace and update the existing GOES series of satellites. The first satellite in this program, GOES-R, is expected to launch in the first quarter of FY 2016. The new satellites in this series will carry improved environmental instrument suites providing more timely and accurate weather forecasts and improved observation of meteorological events that directly affect public safety, protection of property and, ultimately, economic health and development. In order to have new satellites ready when needed, NOAA requests a total of \$954.8 million for the GOES-R program. In addition, a total of \$824.0 million is requested for the Joint Polar Satellite System to deliver polar

satellite weather observations. A total of \$37 million is also requested to continue progress on Jason-3 in partnership with NOAA's European and French partners to continue precise measurements of sea surface heights.

Education

NOAA's education mission is to advance environmental literacy and promote a diverse workforce in ocean, coastal, Great Lakes, weather, and climate sciences, encouraging stewardship and increasing informed decision making for the Nation. In FY 2014, NOAA requests a total of \$16.3 million to fund NOAA's Office of Education, which includes an increase of \$1.7 million for Educational Partnership Program/Minority Service Institutions (EPP/MSI).

Office of Marine and Aviation Operations

The FY 2014 budget will enable NOAA to ensure the safe and efficient operation and maintenance of the NOAA Fleet in support of the full range of NOAA's environmental and scientific missions. NOAA's fleet, which includes an array of specialized aircraft and ships, is crucial to providing key observations and maintaining observing systems. The NOAA fleet also provides immediate response capabilities for unpredictable events following major natural and environmental disasters. This budget requests an investment of \$11.7 million for a progressive fleet lifecycle maintenance program to improve material conditions of the NOAA ship fleet by stabilizing capital investment. This will enable NOAA to maintain the fleet at a higher state of readiness, extend ship service life, and avoid mechanical, structural, and mission equipment obsolescence. The budget proposes an increase of \$21.0 million to Marine Operations and Maintenance to support additional days at sea. This will enable NOAA to more fully utilize the ship fleet at a 94 percent utilization rate, increasing the use of these Federal capital assets in meeting the agency's mission.

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
NATIONAL OCEAN SERVICE (NOS)											
Navigation, Observations and Positioning											
Navigation, Observations and Positioning	Pos/BA	594	177,171	605	178,423	605	180,138	608	207,318	3	27,180
	FTE/OBL	566	175,584	575	180,482	575	180,138	577	207,318	2	27,180
Total: Navigation, Observations and Positioning	Pos/BA	594	177,171	605	178,423	605	180,138	608	207,318	3	27,180
	FTE/OBL	566	175,584	575	180,482	575	180,138	577	207,318	2	27,180
Coastal Science and Assessment											
Coastal Science and Assessment	Pos/BA	295	71,425	332	71,931	331	72,282	338	81,685	7	9,403
	FTE/OBL	281	71,100	313	72,591	312	72,282	317	81,685	5	9,403
Total: Coastal Science and Assessment	Pos/BA	295	71,425	332	71,931	331	72,282	338	81,685	7	9,403
	FTE/OBL	281	71,100	313	72,591	312	72,282	317	81,685	5	9,403
Ocean and Coastal Management and Services											
Ocean and Coastal Management and Services	Pos/BA	382	210,318	352	211,807	352	212,876	352	207,506	0	(5,370)
	FTE/OBL	365	221,336	337	212,960	337	212,876	337	207,506	0	(5,370)
Total: Ocean & Coastal Management and Services	Pos/BA	382	210,318	352	211,807	352	212,876	352	207,506	0	(5,370)
	FTE/OBL	365	221,336	337	212,960	337	212,876	337	207,506	0	(5,370)

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
TOTAL NOS - ORF	Pos/BA	1,271	458,914	1,289	462,161	1,288	465,296	1,298	496,509	10	31,213
	FTE/OBL	1,212	468,020	1,225	466,033	1,224	465,296	1,231	496,509	7	31,213
TOTAL NOS - PAC	Pos/BA	11	7,992	1	8,042	1	8,042	1	6,700	0	(1,342)
	FTE/OBL	11	8,593	1	9,398	1	8,042	1	6,700	0	(1,342)
Damage Assessment and Restoration Revolving Fund	Pos/BA	62	7,279	16	8,000	16	8,000	16	8,000	0	0
	FTE/OBL	62	170,651	16	123,173	16	25,000	16	25,000	0	0
Sanctuaries Asset Forfeiture Fund	Pos/BA	0	491	0	1,000	0	1,000	0	1,000	0	0
	FTE/OBL	0	3	0	1,488	0	1,000	0	1,000	0	0
TOTAL NOS	Pos/BA	1,344	474,676	1,306	479,203	1,305	482,338	1,315	512,209	10	29,871
	FTE/OBL	1,285	647,267	1,242	600,092	1,241	499,338	1,248	529,209	7	29,871

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Marine Fisheries Service (NMFS)											
Protected Species Research and Management											
Protected Species	Pos/BA	870	173,985	851	175,216	851	178,527	830	185,969	(21)	7,442
	FTE/OBL	829	173,211	812	176,524	812	178,527	791	185,969	(21)	7,442
Total: Protected Species Research	Pos/BA	870	173,985	851	175,216	851	178,527	830	185,969	(21)	7,442
& Management	FTE/OBL	829	173,211	812	176,524	812	178,527	791	185,969	(21)	7,442
Fisheries Research and Management											
Fisheries Research	Pos/BA	1,477	425,759	1,469	428,067	1,469	434,314	1,464	437,701	(5)	3,387
and Management	FTE/OBL	1,409	425,362	1,384	431,168	1,384	434,314	1,379	437,701	(5)	3,387
Total: Fisheries Research and	Pos/BA	1,477	425,759	1,469	428,067	1,469	434,314	1,464	437,701	(5)	3,387
Management	FTE/OBL	1,409	425,362	1,384	431,168	1,384	434,314	1,379	437,701	(5)	3,387

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
Enforcement and Observers/Training											
Enforcement	Pos/BA	222	65,552	259	66,015	259	66,716	259	67,764	0	1,048
	FTE/OBL	211	59,573	248	72,029	248	66,716	248	67,764	0	1,048
Observers & Training	Pos/BA	144	39,704	141	39,985	141	40,476	141	43,571	0	3,095
	FTE/OBL	137	39,473	137	40,310	137	40,476	137	43,571	0	3,095
Total: Enforcement and Observers/Training	Pos/BA	366	105,256	400	106,000	400	107,192	400	111,335	0	4,143
	FTE/OBL	348	99,046	385	112,339	385	107,192	385	111,335	0	4,143
Habitat Conservation & Restoration											
Habitat Management & Restoration	Pos/BA	141	41,615	158	41,910	159	42,910	159	47,031	0	4,121
	FTE/OBL	134	41,416	149	42,295	150	42,910	150	47,031	0	4,121
Total: Habitat Conservation & Restoration	Pos/BA	141	41,615	158	41,910	159	42,910	159	47,031	0	4,121
	FTE/OBL	134	41,416	149	42,295	150	42,910	150	47,031	0	4,121
Other Activities Supporting Fisheries											
Other Activities Supporting Fisheries	Pos/BA	198	57,408	144	57,749	144	58,631	140	64,462	(4)	5,831
	FTE/OBL	190	57,368	134	58,305	134	58,631	130	64,462	(4)	5,831
Total: Other Activities Supporting Fisheries	Pos/BA	198	57,408	144	57,749	144	58,631	140	64,462	(4)	5,831
	FTE/OBL	190	57,368	134	58,305	134	58,631	130	64,462	(4)	5,831

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel Amount	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
TOTAL NMFS - ORF	Pos/BA	3,052	804,023	3,022	808,942	3,023	821,574	2,993	846,498	(30)	24,924
	FTE/OBL	2,910	796,403	2,864	820,631	2,865	821,574	2,835	846,498	(30)	24,924
TOTAL NMFS - PAC	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	31	0	91	0	0	0	0	0	0
Pacific Coastal Salmon Recovery Fund	Pos/BA	0	64,935	0	65,398	0	65,398	0	50,000	0	(15,398)
	FTE/OBL	0	64,933	0	65,400	0	65,398	0	50,000	0	(15,398)
Fishermen's Contingency Fund	Pos/BA	0	350	1	352	1	352	1	350	0	(2)
	FTE/OBL	0	346	1	366	1	352	1	350	0	(2)
Foreign Fishing Observer Fund	Pos/BA	0	(350)	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account	Pos/BA	0	5,788	0	9,800	0	0	0	0	0	0
	FTE/OBL	0	6,022	0	9,827	0	0	0	0	0	0
Promote and Develop Fishery Products	Pos/BA	0	0	0	22,274	0	8,208	0	8,208	0	0
	FTE/OBL	0	0	0	22,693	0	8,208	0	8,208	0	0
Federal Ship Financing	Pos/BA	0	(257)	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Environmental Improvement and Restoration Fund	Pos/BA	0	9,737	0	1,414	0	1,802	0	1,802	0	0
	FTE/OBL	0	9,900	0	9,752	0	1,414	0	1,414	0	0
Limited Access System Administration Fund	Pos/BA	40	9,992	0	14,591	0	9,164	0	9,164	0	0
	FTE/OBL	40	9,947	0	9,390	0	12,072	0	12,072	0	0
Marine Mammal Unusual Mortality Event Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	111	0	112	0	0	0	0	0	0
Western Pacific Sustainable Fisheries Fund	Pos/BA	0	1,145	0	1,000	0	1,000	0	1,000	0	0
	FTE/OBL	0	1,029	0	2,146	0	1,000	0	1,000	0	0
Fisheries Enforcement Asset Forfeiture Fund	Pos/BA	0	14,164	0	5,000	0	5,000	0	5,000	0	0
	FTE/OBL	0	3,641	0	4,263	0	5,000	0	5,000	0	0
North Pacific Observer Fund	Pos/BA	0	0	0	0	0	4,800	0	4,800	0	0
	FTE/OBL	0	0	0	0	0	4,800	0	4,800	0	0
TOTAL NMFS	Pos/BA	3,092	909,527	3,023	928,771	3,024	917,298	2,994	926,822	(30)	9,524
	FTE/OBL	2,950	892,363	2,865	944,671	2,866	919,818	2,836	929,342	(30)	9,524
OCEANIC AND ATMOSPHERIC RESEARCH (OAR)											
Climate Research											
Laboratories & Cooperative Institutes	Pos/BA	229	51,993	261	52,361	254	51,569	257	65,098	3	13,529
	FTE/OBL	218	51,482	249	52,995	242	51,569	244	65,098	2	13,529

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate			
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Regional Climate Data & Information	Pos/BA	31	39,898	13	40,415	13	41,720	17	50,007	4	8,287
	FTE/OBL	30	39,913	13	40,474	13	41,720	16	50,007	3	8,287
Climate Competitive Research,	Pos/BA	77	47,559	67	47,704	67	50,214	82	73,735	15	23,521
	FTE/OBL	73	47,733	62	48,067	62	50,214	73	73,735	11	23,521
Climate Operations	Pos/BA	0	907	0	914	0	0	0	0	0	0
	FTE/OBL	0	522	0	1,300	0	0	0	0	0	0
Total: Climate Research	Pos/BA	337	140,357	341	141,394	334	143,503	356	188,840	22	45,337
	FTE/OBL	301	139,650	324	142,836	317	143,503	333	188,840	16	45,337
Weather & Air Chemistry Research											
Laboratories & Cooperative Institutes	Pos/BA	223	53,539	198	53,918	217	55,317	217	64,359	0	9,042
	FTE/OBL	212	53,463	189	54,517	208	55,317	208	64,359	0	9,042
Weather & Air Chemistry Research Programs	Pos/BA	5	14,172	22	14,273	10	14,408	10	17,265	0	2,857
	FTE/OBL	5	14,182	21	14,310	9	14,408	9	17,265	0	2,857

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate			
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Total: Weather & Air Chemistry	Pos/BA	228	67,711	220	68,191	227	69,725	227	81,624	0	11,899
Research	FTE/OBL	217	67,645	210	68,827	217	69,725	217	81,624	0	11,899
Ocean, Coastal, and Great Lakes Research											
Laboratories & Cooperative	Pos/BA	111	22,776	126	22,937	126	22,926	126	24,442	0	1,516
Institutes	FTE/OBL	106	21,431	119	24,283	119	22,926	119	24,442	0	1,516
National Sea Grant College	Pos/BA	15	62,107	28	62,546	28	63,037	27	72,748	(1)	9,711
Program	FTE/OBL	14	61,776	27	62,940	27	63,037	25	72,748	(2)	9,711
Ocean Exploration and	Pos/BA	24	23,522	18	23,688	18	23,915	18	29,100	0	5,185
Research	FTE/OBL	23	20,800	17	25,432	17	23,915	15	29,100	(2)	5,185
Other Ecosystem Programs	Pos/BA	8	6,200	4	6,244	4	6,310	6	8,411	2	2,101
	FTE/OBL	8	6,182	3	6,261	3	6,310	4	8,411	1	2,101
Sustained Ocean Observations	Pos/BA	44	40,504	44	40,750	44	41,103	45	45,105	1	4,002
and Monitoring	FTE/OBL	42	40,504	42	40,750	42	41,103	43	45,105	1	4,002
Total: Ocean, Coastal, and	Pos/BA	202	155,109	220	156,165	220	157,291	222	179,806	2	22,515
Great Lakes Research	FTE/OBL	193	150,693	208	159,666	208	157,291	206	179,806	(2)	22,515

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Innovative Research & Technology											
Innovative Research & Technology	Pos/BA	0	8,937	14	9,000	14	9,092	14	11,786	0	2,694
	FTE/OBL	10	9,024	13	9,200	13	9,092	13	11,786	0	2,694
Total: Innovative Research & Technology	Pos/BA	0	8,937	14	9,000	14	9,092	14	11,786	0	2,694
	FTE/OBL	10	9,024	13	9,200	13	9,092	13	11,786	0	2,694
TOTAL OAR - ORF	Pos/BA	767	372,114	795	374,750	795	379,611	819	462,056	24	82,445
	FTE/OBL	741	367,012	755	380,529	755	379,611	769	462,056	14	82,445
TOTAL OAR - PAC	Pos/BA	0	10,286	0	10,350	0	10,350	0	10,379	0	29
	FTE/OBL	0	10,282	0	10,354	0	10,350	0	10,379	0	29
TOTAL OAR	Pos/BA	767	382,400	795	385,100	795	389,961	819	472,435	24	82,474
	FTE/OBL	741	377,294	755	390,883	755	389,961	769	472,435	14	82,474
NATIONAL WEATHER SERVICE (NWS)											
Operations and Research											
Local Warnings and Forecasts	Pos/BA	4,346	729,397	4,330	734,548	4,335	733,909	4,234	736,289	(101)	2,380
	FTE/OBL	4,140	725,734	4,123	745,627	4,128	733,909	4,027	736,289	(101)	2,380
Central Forecast Guidance	Pos/BA	317	77,461	323	78,011	323	79,933	323	94,740	0	14,807
	FTE/OBL	302	76,483	307	78,784	307	79,933	307	94,740	0	14,807

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Total: Operations and Research	Pos/BA	4,663	806,858	4,653	812,559	4,658	813,842	4,557	831,029	(101)	17,187
	FTE/OBL	4,442	802,217	4,430	824,411	4,435	813,842	4,334	831,029	(101)	17,187
Systems Operation & Maintenance (O&M)											
Systems Operation & Maintenance	Pos/BA	217	97,568	197	98,261	197	102,477	197	101,757	0	(720)
	FTE/OBL	206	95,765	188	99,820	188	102,477	188	101,757	0	(720)
Total: Systems Operation & Maintenance	Pos/BA	217	97,568	197	98,261	197	102,477	197	101,757	0	(720)
	FTE/OBL	206	95,765	188	99,820	188	102,477	188	101,757	0	(720)
TOTAL NWS - ORF	Pos/BA	4,880	904,426	4,850	910,820	4,855	916,319	4,754	932,786	(101)	16,467
	FTE/OBL	4,648	897,982	4,618	924,231	4,623	916,319	4,522	932,786	(101)	16,467
TOTAL NWS - PAC	Pos/BA	32	90,600	32	91,174	27	91,592	25	117,315	(2)	25,723
	FTE/OBL	31	90,877	31	95,677	26	91,592	24	117,315	(2)	25,723
TOTAL NWS	Pos/BA	4,912	995,026	4,882	1,001,994	4,882	1,007,911	4,779	1,050,101	(103)	42,190
	FTE/OBL	4,679	988,859	4,649	1,019,908	4,649	1,007,911	4,546	1,050,101	(103)	42,190
NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE (NESDIS)											
Environmental Satellite Observing Systems											
Office of Satellite and Product Operations	Pos/BA	255	82,970	312	83,558	312	84,869	312	92,252	0	7,383
	FTE/OBL	242	83,193	297	83,929	297	84,869	297	92,252	0	7,383

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel Amount	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Product Development, Readiness & Application	Pos/BA	87	26,641	107	26,828	107	26,649	107	27,021	0	372
	FTE/OBL	83	26,497	102	27,092	102	26,649	102	27,021	0	372
Commercial Remote Sensing	Pos/BA	5	1,103	5	1,111	5	1,129	5	1,129	0	0
Licensing & Enforcement	FTE/OBL	5	1,116	5	1,286	5	1,129	5	1,129	0	0
Office of Space	Pos/BA	2	650	5	655	5	669	5	669	0	0
Commercialization	FTE/OBL	2	636	5	678	5	669	5	669	0	0
Group on Earth Observations (GEO)	Pos/BA	0	502	0	506	0	506	0	506	0	0
	FTE/OBL	0	502	0	506	0	506	0	506	0	0
Total: Environmental Satellite Observing Systems	Pos/BA	349	111,866	429	112,658	429	113,822	429	121,577	0	7,755
	FTE/OBL	332	111,944	409	113,491	409	113,822	409	121,577	0	7,755
NOAA's Data Centers & Information Services											
Archive, Access & Assessment	Pos/BA	197	47,304	243	47,641	243	49,379	242	66,482	(1)	17,103
	FTE/OBL	188	47,380	230	47,860	230	49,379	228	66,482	(2)	17,103
Coastal Data Development	Pos/BA	13	4,495	16	4,527	16	4,567	16	4,038	0	(529)
	FTE/OBL	12	4,508	16	4,542	16	4,567	16	4,038	0	(529)

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
Regional Climate Services	Pos/BA	9	6,793	0	6,841	0	6,841	0	5,752	0	(1,089)
	FTE/OBL	9	6,771	0	6,863	0	6,841	0	5,752	0	(1,089)
Environmental Data Systems Modernization	Pos/BA	51	8,903	24	8,966	24	8,966	24	9,712	0	746
	FTE/OBL	49	8,888	23	9,011	23	8,966	23	9,712	0	746
Total: NOAA's Data Centers & Information Services	Pos/BA	270	67,495	283	67,975	283	69,753	282	85,984	(1)	16,231
	FTE/OBL	258	67,547	269	68,276	269	69,753	267	85,984	(2)	16,231
TOTAL NESDIS - ORF	Pos/BA	619	179,361	712	180,633	712	183,575	711	207,561	(1)	23,986
	FTE/OBL	590	179,491	678	181,767	678	183,575	676	207,561	(2)	23,986
TOTAL NESDIS - PAC	Pos/BA	160	1,694,957	158	1,705,678	158	1,705,678	158	1,978,449	0	272,771
	FTE/OBL	152	1,673,149	149	1,722,666	149	1,705,678	149	1,978,449	0	272,771
TOTAL NESDIS	Pos/BA	779	1,874,318	870	1,886,311	870	1,889,253	869	2,186,010	(1)	296,757
	FTE/OBL	742	1,852,640	827	1,904,433	827	1,889,253	825	2,186,010	(2)	296,757

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
PROGRAM SUPPORT (PS)											
Corporate Services											
Under Secretary and	Pos/BA	148	27,393	177	27,586	177	27,586	175	27,166	(2)	(420)
Associate Offices	FTE/OBL	141	27,469	154	28,058	154	27,586	152	27,166	(2)	(420)
NOAA Wide Corporate Services	Pos/BA	682	165,193	836	166,361	781	179,858	781	176,962	0	(2,896)
& Agency Management	FTE/OBL	650	162,015	795	171,586	740	179,858	740	176,962	0	(2,896)
Office of Chief Information	Pos/BA	0	9,246	0	9,311	0	9,311	0	8,321	0	(990)
Officer (CIO)	FTE/OBL	0	7,393	0	11,467	0	9,311	0	8,321	0	(990)
Total: Corporate Services	Pos/BA	830	201,832	1,013	203,258	958	216,755	956	212,449	(2)	(4,306)
	FTE/OBL	791	196,877	949	211,111	894	216,755	892	212,449	(2)	(4,306)
NOAA Education Program											
NOAA Education Program	Pos/BA	33	29,968	22	25,242	22	25,402	19	16,271	(3)	(9,131)
	FTE/OBL	32	29,848	21	25,546	21	25,402	18	16,271	(3)	(9,131)
Total: NOAA Education Program	Pos/BA	33	29,968	22	25,242	22	25,402	19	16,271	(3)	(9,131)
	FTE/OBL	32	29,848	21	25,546	21	25,402	18	16,271	(3)	(9,131)
Facilities											
NOAA Facilities Management	Pos/BA	54	24,398	45	24,570	45	24,879	45	24,847	0	(32)
Construction and Maintenance	FTE/OBL	51	23,888	45	25,381	45	24,879	45	24,847	0	(32)

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
Total: Facilities	Pos/BA	54	24,398	45	24,570	45	24,879	45	24,847	0	(32)
	FTE/OBL	51	23,888	45	25,381	45	24,879	45	24,847	0	(32)
TOTAL PROGRAM SUPPORT ORF											
without OMAO	Pos/BA	917	256,198	1,080	253,070	1,025	267,036	1,020	253,567	(5)	(13,469)
	FTE/OBL	874	250,613	1,015	262,038	960	267,036	955	253,567	(5)	(13,469)
TOTAL PROGRAM SUPPORT PAC											
without OMAO	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	224	0	924	0	0	0	0	0	0
TOTAL PROGRAM SUPPORT											
without OMAO	Pos/BA	917	256,198	1,080	253,070	1,025	267,036	1,020	253,567	(5)	(13,469)
	FTE/OBL	874	250,837	1,015	262,962	960	267,036	955	253,567	(5)	(13,469)
OFFICE OF MARINE AND AVIATION OPERATIONS (OMAO)											
Marine Operations & Maintenance											
Marine Operations	Pos/BA	873	128,199	950	129,106	953	155,244	953	176,558	0	21,314
& Maintenance	FTE/OBL	831	126,618	923	130,079	926	155,244	926	176,558	0	21,314
Fleet Planning and	Pos/BA	3	26,922	3	27,113	0	0	0	0	0	0
Maintenance	FTE/OBL	3	26,849	3	27,376	0	0	0	0	0	0
Total: Marine Operations & Maintenance	Pos/BA	876	155,121	953	156,219	953	155,244	953	176,558	0	21,314
	FTE/OBL	834	153,467	926	157,455	926	155,244	926	176,558	0	21,314

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
Aviation Operations											
Aviation Operations	Pos/BA	132	27,106	109	27,299	109	28,594	109	31,462	0	2,868
	FTE/OBL	126	27,688	104	27,380	104	28,594	104	31,462	0	2,868
Total: Aviation Operations	Pos/BA	132	27,106	109	27,299	109	28,594	109	31,462	0	2,868
	FTE/OBL	126	27,688	104	27,380	104	28,594	104	31,462	0	2,868
TOTAL OMAO - ORF	Pos/BA	1,008	182,227	1,062	183,518	1,062	183,838	1,062	208,020	0	24,182
	FTE/OBL	960	181,155	1,030	184,835	1,030	183,838	1,030	208,020	0	24,182
TOTAL OMAO - PAC	Pos/BA	2	2,390	5	3,902	5	3,902	0	11,712	(5)	7,810
	FTE/OBL	2	2,398	5	4,334	5	3,902	0	11,712	(5)	7,810
Medical Eligible Retiree	Pos/BA	0	1,802	0	1,948	0	1,948	0	1,936	0	(12)
Health Care Fund	FTE/OBL	0	1,802	0	1,948	0	1,948	0	1,936	0	(12)
NOAA Corp Commissioned	Pos/BA	0	28,269	0	28,269	0	28,269	0	28,269	0	0
Officers Retirement	FTE/OBL	0	24,683	0	28,269	0	28,269	0	28,269	0	0
TOTAL OMAO	Pos/BA	1,010	214,688	1,067	217,637	1,067	217,957	1,062	249,937	(5)	31,980
	FTE/OBL	962	210,038	1,035	219,386	1,035	217,957	1,030	249,937	(5)	31,980
NOAA ORF	Pos/BA	12,514	3,157,263	12,810	3,173,894	12,760	3,211,249	12,657	3,400,997	(103)	189,748
	FTE/OBL	11,935	3,140,676	12,185	3,220,064	12,135	3,217,249	12,018	3,406,997	(117)	189,748

Exhibit 10
Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actuals		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
NOAA PAC	Pos/BA	205	1,806,225	196	1,819,146	191	1,812,564	184	2,117,555	(7)	304,991
	FTE/OBL	196	1,785,554	186	1,843,444	181	1,819,564	174	2,124,555	(7)	304,991
NOAA OTHER	Pos/BA	102	143,345	17	159,046	17	134,941	17	119,529	0	(15,412)
	FTE/OBL	102	293,068	17	278,827	17	154,461	17	139,049	0	(15,412)

NATIONAL OCEAN SERVICE
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN (FY2014 Proposed Restructure)	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
Navigation, Observations and Positioning																	
Navigation, Observations and Positioning	589	560	128,304	0	0	0	2,033	(338)	589	560	129,999	3	2	15,853	592	562	145,852
Hydrographic Survey Priorities/Contracts	11	10	27,024	0	0	0	20	0	11	10	27,044	0	0	(98)	11	10	26,946
IOOS Regional Observations	5	5	23,095	0	0	0	0	0	5	5	23,095	0	0	11,425	5	5	34,520
Total, Navigation, Observations and Positioning	605	575	178,423	0	0	0	2,053	(338)	605	575	180,138	3	2	27,180	608	577	207,318
Coastal Science and Assessment																	
Coastal Science, Assessment, Response and Restoration Competitive Resarch	332	313	62,844	0	(1)	(1)	1,060	(709)	331	312	63,195	7	5	3,490	338	317	66,685
	0	0	9,087	0	0	0	0	0	0	0	9,087	0	0	5,913	0	0	15,000
Total, Coastal Science and Assessment	332	313	71,931	0	(1)	(1)	1,060	(709)	331	312	72,282	7	5	9,403	338	317	81,685
Ocean and Coastal Management and Services																	
Coastal Zone Management and Services	147	141	44,087	0	0	0	576	(83)	147	141	44,580	0	0	(3,392)	147	141	41,188
Coastal Management Grants Coral Reef	1	1	69,846	0	0	0	0	0	1	1	69,846	0	0	1,300	1	1	71,146
Program National Estuarine Research Reserve	4	4	26,690	0	0	0	0	0	4	4	26,690	0	0	85	4	4	26,775
System Sanctuaries and Marine Protected Areas	0	0	21,844	0	0	0	0	0	0	0	21,844	0	0	135	0	0	21,979
	200	191	49,340	0	0	0	661	(85)	200	191	49,916	0	0	(3,498)	200	191	46,418
Total, Ocean and Coastal Management and Services	352	337	211,807	0	0	0	1,237	(168)	352	337	212,876	0	0	(5,370)	352	337	207,506
Total, National Ocean Service - ORF	1,289	1,225	462,161	0	(1)	(1)	4,350	(1,215)	1,288	1,224	465,296	10	7	31,213	1,298	1,231	496,509
Other National Ocean Service Accounts																	
Total, National Ocean Service - PAC	1	1	8,042	0	0	0	0	0	1	1	8,042	0	0	(1,342)	1	1	6,700
Total, National Ocean Service - Other	16	16	26,000	0	0	0	0	0	16	16	26,000	0	0	0	16	16	26,000
GRAND TOTAL NOS	1,306	1,242	496,203	0	(1)	(1)	4,350	(1,215)	1,305	1,241	499,338	10	7	29,871	1,315	1,248	529,209

NATIONAL MARINE FISHERIES SERVICE
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
Protected Species Research and Management Protected Species																	
Research and Management Programs Base Species Recovery	183	174	39,589	0	0	0	821	(128)	183	174	40,282	(17)	(17)	(687)	166	157	39,595
Grants	1	1	2,805	0	0	0	5	0	1	1	2,810	0	0	15,003	1	1	17,813
Marine Mammals Marine Turtles Other Protected Species	170	163	49,451	0	0	0	736	0	170	163	50,187	(2)	(2)	(5,148)	168	161	45,039
(Marine Fish, Plants, and Invertebrates) Atlantic Salmon	59	55	12,462	0	0	0	191	0	59	55	12,653	0	0	(1,869)	59	55	10,784
Pacific Salmon (for Salmon Management Activities, see FRM)	35	33	6,578	0	0	0	118	0	35	33	6,696	0	0	568	35	33	7,264
	29	27	5,597	0	0	0	80	0	29	27	5,677	0	0	406	29	27	6,083
	374	359	58,734	0	0	0	1,488	0	374	359	60,222	(2)	(2)	(831)	372	357	59,391
Total, Protected Species Research and Management	851	812	175,216	0	0	0	3,439	(128)	851	812	178,527	(21)	(21)	7,442	830	791	185,969
Fisheries Research and Management Fisheries Research and																	
Management Programs National Catch Share Program	871	825	179,418	0	0	0	3,182	(104)	871	825	182,496	(5)	(5)	(2,573)	866	820	179,923
Expand Annual Stock Assessments - Improve Data Collection	22	17	28,080	0	0	0	272	0	22	17	28,352	0	0	(106)	22	17	28,246
Economics & Social Sciences Research Salmon Management	154	145	63,581	0	0	0	775	0	154	145	64,356	0	0	4,903	154	145	69,259
Activities Regional Councils and Fisheries Commissions	24	24	7,679	0	0	0	125	0	24	24	7,804	0	0	86	24	24	7,890
Fisheries Statistics	14	13	33,543	0	0	0	80	0	14	13	33,623	0	0	(6,641)	14	13	26,982
Fish Information Networks Survey	6	6	31,947	0	0	0	792	0	6	6	32,739	0	0	(731)	6	6	32,008
and Monitoring Projects Fisheries	116	108	23,291	0	0	0	390	(27)	116	108	23,654	0	0	206	116	108	23,860
Oceanography American Fisheries	14	13	22,130	0	0	0	42	(78)	14	13	22,094	0	0	20	14	13	22,114
Act Interjurisdictional Fisheries	137	128	21,710	0	0	0	464	0	137	128	22,174	0	0	2,580	137	128	24,754
Grants National Standard 8	4	4	2,153	0	0	0	26	0	4	4	2,179	0	0	(19)	4	4	2,160
Reducing Bycatch	37	35	3,900	0	0	0	103	0	37	35	4,003	0	0	1,739	37	35	5,742
Product Quality and Safety	0	0	0	0	0	0	0	0	0	0	0	0	0	2,500	0	0	2,500
	5	5	1,003	0	0	0	17	0	5	5	1,020	0	0	11	5	5	1,031
	10	9	3,402	0	0	0	14	0	10	9	3,416	0	0	1,053	10	9	4,469
	55	52	6,230	0	0	0	174	0	55	52	6,404	0	0	359	55	52	6,763
Total, Fisheries Research and Management	1,469	1,384	428,067	0	0	0	6,456	(209)	1,469	1,384	434,314	(5)	(5)	3,387	1,464	1,379	437,701
Enforcement & Observers/Training																	
Enforcement	259	248	66,015	0	0	0	1,035	(334)	259	248	66,716	0	0	1,048	259	248	67,764
Observers/Training	141	137	39,985	0	0	0	491	0	141	137	40,476	0	0	3,095	141	137	43,571
Total, Enforcement & Observers/Training	400	385	106,000	0	0	0	1,526	(334)	400	385	107,192	0	0	4,143	400	385	111,335
Habitat Conservation & Restoration																	
Habitat Management & Restoration	100	95	21,019	0	59	55	627	21,264	159	150	42,910	0	0	4,121	159	150	47,031
Fisheries Habitat Restoration	58	54	20,891	0	(58)	(54)		(20,891)	0	0	0	0	0	0	0	0	0
Subtotal, Habitat Conservation & Restoration	158	149	41,910	0	1	1	627	373	159	150	42,910	0	0	4,121	159	150	47,031

NATIONAL MARINE FISHERIES SERVICE
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
Other Activities Supporting Fisheries																	
Antarctic Research	10	9	1,650	0	0	0	42	0	10	9	1,692	0	0	1,423	10	9	3,115
Aquaculture	16	15	5,609	0	0	0	78	0	16	15	5,687	0	0	1,061	16	15	6,748
Climate Regimes & Ecosystem Productivity Computer Hardware and Software - FY 2004 Omnibus Funded in PAC Cooperative Research	14	14	1,752	0	0	0	44	0	14	14	1,796	0	0	2,052	14	14	3,848
Information Analyses & Dissemination Marine Resources Monitoring, Assessment & Prediction Program (MarMap) National Environmental Policy Act (NEPA)	0	0	1,801	0	0	0	9	(38)	0	0	1,772	0	0	40	0	0	1,812
NMFS Facilities Maintenance	19	17	10,965	0	0	0	43	0	19	17	11,008	0	0	1,029	19	17	12,037
Regional Studies	67	63	15,421	0	0	0	491	0	67	63	15,912	(3)	(3)	647	64	60	16,559
	0	0	505	0	0	0	0	0	0	0	505	0	0	337	0	0	842
	0	0	6,485	0	0	0	116	0	0	0	6,601	0	0	72	0	0	6,673
	0	0	3,303	0	0	0	0	0	0	0	3,303	0	0	88	0	0	3,391
	18	16	10,258	0	0	0	97	0	18	16	10,355	(1)	(1)	(918)	17	15	9,437
Total, Other Activities Supporting Fisheries	144	134	57,749	0	0	0	920	(38)	144	134	58,631	(4)	(4)	5,831	140	130	64,462
Total, National Marine Fisheries Service - ORF	3,022	2,864	808,942	0	1	1	12,968	(336)	3,023	2,865	821,574	(30)	(30)	24,924	2,993	2,835	846,498
Other National Marine Fisheries Service Accounts																	
National Marine Fisheries Service - PAC Total,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
National Marine Fisheries Service - Other	1	1	122,256	0	0	0	0	(28,812)	1	1	98,244	0	0	(15,400)	1	1	82,844
GRAND TOTAL NMFS	3,023	2,865	931,198	0	1	1	12,968	(29,148)	3,024	2,866	919,818	(30)	(30)	9,524	2,994	2,836	929,342

OFFICE of OCEANIC AND ATMOSPHERIC RESEARCH
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN																	
	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
Climate Research																	
Laboratories & Cooperative Institutes																	
Laboratories & Cooperative Institutes	261	249	52,361	0	(7)	(7)	510	(1,302)	254	242	51,569	3	2	13,529	257	244	65,098
Subtotal, Laboratories & Cooperative Institutions	261	249	52,361	0	(7)	(7)	510	(1,302)	254	242	51,569	3	2	13,529	257	244	65,098
Regional Climate Data & Information																	
Regional Climate Data & Information	13	13	40,415	0	0	0	391	914	13	13	41,720	4	3	8,287	17	16	50,007
Subtotal, Regional Climate Data & Information	13	13	40,415	0	0	0	391	914	13	13	41,720	4	3	8,287	17	16	50,007
Climate Competitive Research																	
Climate Competitive Research	67	62	47,704	1,934	0	0	576	0	67	62	50,214	15	11	23,521	82	73	73,735
Subtotal, Climate Competitive Research, Sustained Obs and Regional Info	67	62	47,704	1,934	0	0	576	0	67	62	50,214	15	11	23,521	82	73	73,735
Climate Operations																	
Climate Operations	0	0	914	0	0	0	0	(914)	0	0	0	0	0	0	0	0	0
Subtotal, Climate Operations	0	0	914	0	0	0	0	(914)	0	0	0	0	0	0	0	0	0
Total, Climate Research	341	324	141,394	1,934	(7)	(7)	1,477	(1,302)	334	317	143,503	22	16	45,337	356	333	188,840
Weather & Air Chemistry Research																	
Laboratories & Cooperative Institutes																	
Laboratories & Cooperative Institutes	198	189	53,918	0	19	19	504	895	217	208	55,317	0	0	9,042	217	208	64,359
Subtotal, Laboratories & Cooperative Institutes	198	189	53,918	0	19	19	504	895	217	208	55,317	0	0	9,042	217	208	64,359
Weather & Air Chemistry Research Programs U.S.																	
Weather Research Program (USWRP) Tornado Severe	18	17	4,236	0	(12)	(12)	68	0	6	5	4,304	0	0	(63)	6	5	4,241
Storm Research / Phased Array Radar	4	4	10,037	0			67	0	4	4	10,104	0	0	2,920	4	4	13,024
Subtotal, Weather & Air Chemistry Research Programs	22	21	14,273	0	(12)	(12)	135	0	10	9	14,408	0	0	2,857	10	9	17,265
Total, Weather & Air Chemistry Research	220	210	68,191	0	7	7	639	895	227	217	69,725	0	0	11,899	227	217	81,624
Ocean, Coastal, and Great Lakes Research																	
Laboratories & Cooperative Institutes																	
Laboratories & Cooperative Institutes	126	119	22,937	0	0	0	192	(203)	126	119	22,926	0	0	1,516	126	119	24,442
Subtotal, Laboratories & Cooperative Institutes	126	119	22,937	0	0	0	192	(203)	126	119	22,926	0	0	1,516	126	119	24,442

OFFICE of OCEANIC AND ATMOSPHERIC RESEARCH
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN			FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan			Calculated ATBs	Technical ATBs			FY 2014 Base			Program Changes			FY 2014 Estimate
	POS	FTE			POS	FTE			POS	FTE		POS	FTE				
National Sea Grant College Program																	
National Sea Grant College Program Base	24	23	57,206	0	0	0	491	0	24	23	57,697	2	1	10,495	26	24	68,192
Aquatic Invasive Species Program Marine	3	3	1,005	0	0	0	0	0	3	3	1,005	(3)	(3)	(1,005)	0	0	0
Aquaculture Program	1	1	4,335	0	0	0	0	0	1	1	4,335	0	0	221	1	1	4,556
Subtotal, National Sea Grant College Program	28	27	62,546	0	0	0	491	0	28	27	63,037	(1)	(2)	9,711	27	25	72,748
Ocean Exploration and Research																	
Ocean Exploration and Research (NURP moved in FY08)	18	17	23,688	0	0	0	227	0	18	17	23,915	0	(2)	5,185	18	15	29,100
Subtotal, Ocean Exploration and Research	18	17	23,688	0	0	0	227	0	18	17	23,915	0	(2)	5,185	18	15	29,100
Other Ecosystems Programs																	
Integrated Ocean Acidification	4	3	6,244	0	0	0	66	0	4	3	6,310	2	1	2,101	6	4	8,411
Subtotal, Other Ecosystems Programs	4	3	6,244	0	0	0	66	0	4	3	6,310	2	1	2,101	6	4	8,411
Sustained Ocean Observations and Monitoring																	
Hydrographic Survey Priorities/Contracts	44	42	40,750	0	0	0	353	0	44	42	41,103	1	1	4,002	45	43	45,105
Subtotal, Sustained Ocean Observations and Monitoring	44	42	40,750	0	0	0	353	0	44	42	41,103	1	1	4,002	45	43	45,105
Total, Ocean, Coastal, & Great Lakes Research	220	208	156,165	0	0	0	1,329	(203)	220	208	157,291	2	(2)	22,515	222	206	179,806
Innovative Research & Technology																	
High Performance Computing Initiatives	14	13	9,000	0	0	0	92	0	14	13	9,092	0	0	2,694	14	13	11,786
Total, Innovative Research & Technology	14	13	9,000	0	0	0	92	0	14	13	9,092	0	0	2,694	14	13	11,786
Total, Office of Oceanic and Atmospheric Research - ORF	795	755	374,750	1,934	0	0	3,537	(610)	795	755	379,611	24	14	82,445	819	769	462,056
Other Office of Oceanic and Atmospheric Research Accounts																	
Total, Office of Ocean and Atmospheric Research - PAC	0	0	10,350	0	0	0	0	0	0	0	10,350	0	0	29	0	0	10,379
Total, Office of Oceanic and Atmospheric Research - Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRAND TOTAL OAR	795	755	385,100	1,934	0	0	3,537	(610)	795	755	389,961	24	14	82,474	819	769	472,435

NATIONAL WEATHER SERVICE
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
Operations and Research Local Warnings and Forecasts																	
Forecasts Base Air Quality Forecasting	4,293	4,088	659,812	(24,660)	5	5	10,236	(644)	4,298	4,093	644,744	(98)	(98)	13,487	4,200	3,995	658,231
Alaska Data Buoys Sustain Cooperative	0	0	1,715	2,282	0	0	0	0	0	0	3,997	0	0	(3,132)	0	0	865
Observer Network NOAA Profiler Network	0	0	1,688	0	0	0	0	0	0	0	1,688	0	0	(5)	0	0	1,683
Strengthen U.S. Tsunami Warning Network	0	0	1,071	800	0	0	0	0	0	0	1,871	0	0	(873)	0	0	998
Pacific Island Compact	7	7	4,254	0	0	0	0	0	7	7	4,254	(3)	(3)	(2,443)	4	4	1,811
National Mesonet Network	20	19	23,608	0	0	0	0	(532)	20	19	23,076	0	0	3,804	20	19	26,880
	0	0	3,725	0	0	0	0	0	0	0	3,725	0	0	50	0	0	3,775
	0	0	11,032	0	0	0	0	0	0	0	11,032	0	0	(5,532)	0	0	5,500
Subtotal, Local Warnings and Forecasts	4,320	4,114	706,905	(21,578)	5	5	10,236	(1,176)	4,325	4,119	694,387	(101)	(101)	5,356	4,224	4,018	699,743
Advanced Hydrological Prediction Services	0	0	8,223	0	0	0	0	0	0	0	8,223	0	0	(2,014)	0	0	6,209
Aviation Weather	10	9	11,768	9,773	0	0	0	0	10	9	21,541	0	0	(89)	10	9	21,452
WFO Maintenance	0	0	5,449	2,006	0	0	0	0	0	0	7,455	0	0	(867)	0	0	6,588
Weather Radio Transmitters																	
Weather Radio Transmitters Base	0	0	2,203	100	0	0	0	0	0	0	2,303	0	0	(6)	0	0	2,297
Subtotal, Weather Radio Transmitters	0	0	2,203	100	0	0	0	0	0	0	2,303	0	0	(6)	0	0	2,297
Subtotal, Local Warnings and Forecasts	4,330	4,123	734,548	(9,699)	5	5	10,236	(1,176)	4,335	4,128	733,909	(101)	(101)	2,380	4,234	4,027	736,289
Central Forecast Guidance																	
Central Forecast Guidance	323	307	78,011	1,305	0	0	624	(7)	323	307	79,933	0	0	14,807	323	307	94,740
Subtotal, Central Forecast Guidance	323	307	78,011	1,305	0	0	624	(7)	323	307	79,933	0	0	14,807	323	307	94,740
Total, Operations and Research	4,653	4,430	812,559	(8,394)	5	5	10,860	(1,183)	4,658	4,435	813,842	(101)	(101)	17,187	4,557	4,334	831,029
Systems Operation & Maintenance (O&M)																	
NEXRAD	108	103	45,781	347	0	0	208	0	108	103	46,336	0	0	119	108	103	46,455
ASOS	46	44	10,340	988	0	0	90	0	46	44	11,418	0	0	24	46	44	11,442
AWIPS	43	41	36,843	2,500	0	0	83	0	43	41	39,426	0	0	(848)	43	41	38,578
NWSTG Backup - CIP	0	0	5,297	0	0	0	0	0	0	0	5,297	0	0	(15)	0	0	5,282
Total, Systems Operation & Maintenance (O&M)	197	188	98,261	3,835	0	0	381	0	197	188	102,477	0	0	(720)	197	188	101,757
Total, National Weather Service - ORF	4,850	4,618	910,820	(4,559)	5	5	11,241	(1,183)	4,855	4,623	916,319	(101)	(101)	16,467	4,754	4,522	932,786
Other National Weather Service Accounts																	
Total, National Weather Service - PAC	32	31	91,174	418	(5)	(5)	0	0	27	26	91,592	(2)	(2)	25,723	25	24	117,315
Total, National Weather Service - Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRAND TOTAL NWS	4,882	4,649	1,001,994	(4,141)	0	0	11,241	(1,183)	4,882	4,649	1,007,911	(103)	(103)	42,190	4,779	4,546	1,050,101

NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN																	
	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
Environmental Satellite Observing Systems Office of Satellite and Product Operations (OSPO) Satellite																	
Command and Control	183	174	39,949	0	0	0	659	0	183	174	40,608	0	0	(1,002)	183	174	39,606
NSOF Operations	0	0	7,967	0	0	0	0	0	0	0	7,967	0	0	42	0	0	8,009
Product, Processing and Distribution	129	123	35,642	500	0	0	311	(159)	129	123	36,294	0	0	8,343	129	123	44,637
Subtotal, Office of Satellite and Product Operations	312	297	83,558	500	0	0	970	(159)	312	297	84,869	0	0	7,383	312	297	92,252
Product Development, Readiness & Application																	
Product Development, Readiness & Application	107	102	19,427	0	0	0	31	(210)	107	102	19,248	0	0	331	107	102	19,579
Product Development, Readiness & Application (Ocean Remote Sensing) Joint Center for Satellite Data Assimilation	0	0	4,034	0	0	0	0	0	0	0	4,034	0	0	24	0	0	4,058
	0	0	3,367	0	0	0	0	0	0	0	3,367	0	0	17	0	0	3,384
Subtotal, Product Development, Readiness & Application	107	102	26,828	0	0	0	31	(210)	107	102	26,649	0	0	372	107	102	27,021
Commercial Remote Sensing Regulatory Affairs	5	5	1,111	0	0	0	18	0	5	5	1,129	0	0	0	5	5	1,129
Office of Space Commercialization Group on Earth Observations (GEO)	5	5	655	0	0	0	14	0	5	5	669	0	0	0	5	5	669
	0	0	506	0	0	0	0	0	0	0	506	0	0	0	0	0	506
Total, Environmental Satellite Observing Systems	429	409	112,658	500	0	0	1,033	(369)	429	409	113,822	0	0	7,755	429	409	121,577
Data Centers & Information Services																	
Archive, Access & Assessment	243	230	47,641	1,157	0	0	617	(36)	243	230	49,379	(1)	(2)	17,103	242	228	66,482
Subtotal, Archive, Access & Assessment	243	230	47,641	1,157	0	0	617	(36)	243	230	49,379	(1)	(2)	17,103	242	228	66,482
Coastal Data Development Regional Climate Services Environmental Data Systems Modernization	16	16	4,527	0	0	0	40	0	16	16	4,567	0	0	(529)	16	16	4,038
	0	0	6,841	0	0	0	0	0	0	0	6,841	0	0	(1,089)	0	0	5,752
	24	23	8,966	0	0	0	0	0	24	23	8,966	0	0	746	24	23	9,712
Total, Data Centers & Information Services	283	269	67,975	1,157	0	0	657	(36)	283	269	69,753	(1)	(2)	16,231	282	267	85,984
Total, NESDIS - ORF	712	678	180,633	1,657	0	0	1,690	(405)	712	678	183,575	(1)	(2)	23,986	711	676	207,561
Other NESDIS Accounts																	
Total, NESDIS - PAC	158	149	1,705,678	0	0	0	0	0	158	149	1,705,678	0	0	272,771	158	149	1,978,449
Total, NESDIS - Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRAND TOTAL NESDIS	870	827	1,886,311	1,657	0	0	1,690	(405)	870	827	1,889,253	(1)	(2)	296,757	869	825	2,186,010

PROGRAM SUPPORT
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN			FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan			Calculated ATBs	Technical ATBs			FY 2014 Base			Program Changes			FY 2014 Estimate
	POS	FTE			POS	FTE			POS	FTE		POS	FTE				
Corporate Services																	
Under Secretary and Associate Offices																	
Under Secretary and Associate Offices Base	177	154	27,586	0	0	0	0	0	177	154	27,586	(2)	(2)	(420)	175	152	27,166
Subtotal, Under Secretary and Associate Offices	177	154	27,586	0	0	0	0	0	177	154	27,586	(2)	(2)	(420)	175	152	27,166
NOAA Wide Corporate Services & Agency Management																	
NOAA Wide Corporate Services & Agency Management Base	797	756	115,642	0	(55)	(55)	2,455	(719)	742	701	117,378	0	0	(3,406)	742	701	113,972
DOC Accounting System	39	39	10,230	0	0	0	215	0	39	39	10,445	0	0	510	39	39	10,955
Payment to the DOC Working Capital Fund	0	0	40,489	0	0	0	11,546	0	0	0	52,035	0	0	0	0	0	52,035
Subtotal, NOAA Wide Corporate Services & Agency Mgmt	836	795	166,361	0	(55)	(55)	14,216	(719)	781	740	179,858	0	0	(2,896)	781	740	176,962
Office of Chief Information Officer																	
IT Security	0	0	9,311	0	0	0	0	0	0	0	9,311	0	0	(990)	0	0	8,321
Subtotal, Office of Chief Information Officer	0	0	9,311	0	0	0	0	0	0	0	9,311	0	0	(990)	0	0	8,321
Total, Corporate Services	1,013	949	203,258	0	(55)	(55)	14,216	(719)	958	894	216,755	(2)	(2)	(4,306)	956	892	212,449
NOAA Education Program																	
BWET Regional Programs	0	0	5,533	0	0	0	0	0	0	0	5,533	0	0	(5,533)	0	0	0
Education Partnership Program/Minority Serving Institutions (EPP/MSI)	0	0	12,637	0	0	0	0	(12,637)	0	0	0	0	0	0	0	0	0
Office of Education (formerly Competitive Educational Grants) Ocean	22	21	5,060	0	0	0	160	12,637	22	21	17,857	(3)	(3)	(1,586)	19	18	16,271
Education Partnerships	0	0	1,006	0	0	0	0	0	0	0	1,006	0	0	(1,006)	0	0	0
Geographic Literacy	0	0	1,006	0	0	0	0	0	0	0	1,006	0	0	(1,006)	0	0	0
Total, NOAA Education Program	22	21	25,242	0	0	0	160	0	22	21	25,402	(3)	(3)	(9,131)	19	18	16,271
Facilities																	
NOAA Facilities Management & Construction and Safety	45	45	24,570	0	0	0	309	0	45	45	24,879	0	0	(32)	45	45	24,847
Subtotal, NOAA Facilities Management, Construction & Maintenance	45	45	24,570	0	0	0	309	0	45	45	24,879	0	0	(32)	45	45	24,847
Total, Facilities	45	45	24,570	0	0	0	309	0	45	45	24,879	0	0	(32)	45	45	24,847
Total, Program Support - ORF	1,080	1,015	253,070	0	(55)	(55)	14,685	(719)	1,025	960	267,036	(5)	(5)	(13,469)	1,020	955	253,567
Total, Program Support - PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Program Support - ORF and PAC	1,080	1,015	253,070	0	(55)	(55)	14,685	(719)	1,025	960	267,036	(5)	(5)	(13,469)	1,020	955	253,567

PROGRAM SUPPORT
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
Marine Operations & Maintenance																	
Marine Operations & Maintenance	950	923	129,106	0	3	3	(943)	27,081	953	926	155,244	0	0	21,314	953	926	176,558
Subtotal, Marine Operations & Maintenance	950	923	129,106	0	3	3	(943)	27,081	953	926	155,244	0	0	21,314	953	926	176,558
Fleet Planning and Maintenance																	
Fleet Planning and Maintenance	3	3	27,113	0	(3)	(3)		(27,113)	0	0	0	0	0	0	0	0	0
Subtotal, Fleet Planning and Maintenance	3	3	27,113	0	(3)	(3)	0	(27,113)	0	0	0	0	0	0	0	0	0
Total, Marine Operations & Maintenance	953	926	156,219	0	0	0	(943)	(32)	953	926	155,244	0	0	21,314	953	926	176,558
Aviation Operations																	
Aircraft Services	109	104	27,299	550	0	0	745		109	104	28,594	0	0	2,868	109	104	31,462
Subtotal, Aviation Operations	109	104	27,299	550	0	0	745	0	109	104	28,594	0	0	2,868	109	104	31,462
Total, OMAO - ORF	1,062	1,030	183,518	550	0	0	(198)	(32)	1,062	1,030	183,838	0	0	24,182	1,062	1,030	208,020
Total, OMAO - PAC	5	5	3,902	0	0	0	0	0	5	5	3,902	(5)	(5)	7,810	0	0	11,712
Total, OMAO - Other	0	0	30,217	0	0	0	0	0	0	0	30,217	0	0	(12)	0	0	30,205
Total OMAO - ORF, PAC and Other	1,067	1,035	217,637	550	0	0	(198)	(32)	1,067	1,035	217,957	(5)	(5)	31,980	1,062	1,030	249,937
Total, Program Support and OMAO - ORF	2,142	2,045	436,588	550	(55)	(55)	14,487	(751)	2,087	1,990	450,874	(5)	(5)	10,713	2,082	1,985	461,587
Other Program Support and OMAO Accounts																	
Total, Program Support - PAC Total, Program Support - Other	5	5	3,902	0	0	0	0	0	5	5	3,902	(5)	(5)	7,810	0	0	11,712
Support - Other	0	0	30,217	0	0	0	0	0	0	0	30,217	0	0	(12)	0	0	30,205
GRAND TOTAL PS	2,147	2,050	470,707	550	(55)	(55)	14,487	(751)	2,092	1,995	484,993	(10)	(10)	18,511	2,082	1,985	503,504

ORF SUMMARY LINE OFFICE
DIRECT OBLIGATIONS (\$ in
Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
National Ocean Service National Marine Fisheries Service Office	1,289	1,225	462,161	0	(1)	(1)	4,350	(1,215)	1,288	1,224	465,296	10	7	31,213	1,298	1,231	496,509
of Oceanic and Atmospheric Research National Weather Service	3,022	2,864	808,942	0	1	1	12,968	(336)	3,023	2,865	821,574	(30)	(30)	24,924	2,993	2,835	846,498
National Environmental Satellite, Data and Information Service	795	755	374,750	1,934	0	0	3,537	(610)	795	755	379,611	24	14	82,445	819	769	462,056
Program Support	4,850	4,618	910,820	(4,559)	5	5	11,241	(1,183)	4,855	4,623	916,319	(101)	(101)	16,467	4,754	4,522	932,786
	712	678	180,633	1,657	0	0	1,690	(405)	712	678	183,575	(1)	(2)	23,986	711	676	207,561
	2,142	2,045	436,588	550	(55)	(55)	14,487	(751)	2,087	1,990	450,874	(5)	(5)	10,713	2,082	1,985	461,587
SUBTOTAL LO DIRECT OBLIGATIONS	12,810	12,185	3,173,894	(418)	(50)	(50)	48,273	(4,500)	12,760	12,135	3,217,249	(103)	(117)	189,748	12,657	12,018	3,406,997

ORF ADJUSTMENTS
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
SUBTOTAL LO DIRECT OBLIGATIONS	12,810	12,185	3,173,894	(418)	(50)	(50)	48,273	(4,500)	12,760	12,135	3,217,249	(103)	(117)	189,748	12,657	12,018	3,406,997
FINANCING Cash Refunds/Prior Year																	
Recoveries De-Obligations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unobligated Balance, EOY	0	0	(8,000)	0	0	0	0	2,000	0	0	(6,000)	0	0	0	0	0	(6,000)
Unobligated Balance, Expiring	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unobligated Balance Adj SOY (start of year)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total ORF Financing	0	0	(8,000)	0	0	0	0	2,000	0	0	(6,000)	0	0	0	0	0	(6,000)
SUBTOTAL BUDGET AUTHORITY	12,810	12,185	3,165,894	(418)	(50)	(50)	48,273	(2,500)	12,760	12,135	3,211,249	(103)	(117)	189,748	12,657	12,018	3,400,997
TRANSFERS																	
Transfer from PAC to ORF	0	0	(16,069)	0	0	0	0	16,069	0	0	0	0	0	0	0	0	0
Transfer from P&D to ORF	0	0	(109,098)	0	0	0	0	(14,066)	0	0	(123,164)	0	0	0	0	0	(123,164)
Total ORF Transfers	0	0	(125,167)	0	0	0	0	2,003	0	0	(123,164)	0	0	0	0	0	(123,164)
SUBTOTAL APPROPRIATION	12,810	12,185	3,040,727	(418)	(50)	(50)	48,273	(497)	12,760	12,135	3,088,085	(103)	(117)	189,748	12,657	12,018	3,277,833

PROCUREMENT, ACQUISITION, and CONSTRUCTION
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN			FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan			Calculated ATBs	Technical ATBs			FY 2014 Base			Program Changes			FY 2014 Estimate
	POS	FTE			POS	FTE			POS	FTE		POS	FTE				
NOS CELCP																	
Acquisition																	
Coastal and Estuarine Land Conservation Program	1	1	3,016	0	0	0	0	0	1	1	3,016	0	0	(16)	1	1	3,000
Subtotal, NOS Acquisition	1	1	3,016	0	0	0	0	0	1	1	3,016	0	0	(16)	1	1	3,000
NERRS Construction:																	
National Estuarine Rsrch Reserve Construction (NERRS)	0	0	1,005	0	0	0	0	0	0	0	1,005	0	0	695	0	0	1,700
Subtotal, NERRS Construction	0	0	1,005	0	0	0	0	0	0	0	1,005	0	0	695	0	0	1,700
Marine Sanctuaries Construction:																	
Marine Sanctuaries Base (Nancy Foster Scholarship 1% of base)	0	0	4,021	0	0	0	0	0	0	0	4,021	0	0	(2,021)	0	0	2,000
Subtotal, Marine Sanctuary Construction	0	0	4,021	0	0	0	0	0	0	0	4,021	0	0	(2,021)	0	0	2,000
Subtotal, NOS Construction	0	0	5,026	0	0	0	0	0	0	0	5,026	0	0	(1,326)	0	0	3,700
Total, NOS - PAC	1	1	8,042	0	0	0	0	0	1	1	8,042	0	0	(1,342)	1	1	6,700
Total, NMFS - PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OAR Systems Acquisition Research																	
Supercomputing/ CCRI	0	0	10,350	0	0	0	0	0	0	0	10,350	0	0	29	0	0	10,379
Subtotal, OAR Systems Acquisition	0	0	10,350	0	0	0	0	0	0	0	10,350	0	0	29	0	0	10,379
Total, OAR - PAC	0	0	10,350	0	0	0	0	0	0	0	10,350	0	0	29	0	0	10,379
NWS Systems																	
Acquisition ASOS																	
AWIPS	9	9	1,644	0	0	0	0	0	9	9	1,644	0	0	(9)	9	9	1,635
NEXRAD	16	15	18,287	5,944	0	0	0	0	16	15	24,231	0	0	(2,639)	16	15	21,592
NWSTG Legacy Replacement Radiosonde Network	5	5	15,300	(9,400)	(5)	(5)	0	0	0	0	5,900	0	0	(5,900)	0	0	0
Replacement Weather and Climate Supercomputing	0	0	1,201	0	0	0	0	0	0	0	1,201	0	0	15,014	0	0	16,215
Cooperative Observer Network Modernization (NERON)	0	0	4,035	0	0	0	0	0	0	0	4,035	0	0	(21)	0	0	4,014
Complete and Sustain NOAA Weather Radio NOAA	0	0	40,282	100	0	0	0	0	0	0	40,382	0	0	3,787	0	0	44,169
Profiler Conversion	2	2	1,534	2,174	0	0	0	0	2	2	3,708	(2)	(2)	(3,708)	0	0	0
Ground Readiness Project	0	0	5,523	100	0	0	0	0	0	0	5,623	0	0	(29)	0	0	5,594
	0	0	1,709	0	0	0	0	0	0	0	1,709	0	0	(1,709)	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	15,446	0	0	15,446
Subtotal, NWS Systems Acquisition	32	31	89,515	(1,082)	(5)	(5)	0	0	27	26	88,433	(2)	(2)	20,232	25	24	108,665

PROCUREMENT, ACQUISITION, and CONSTRUCTION
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN			FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan			Calculated ATBs	Technical ATBs			FY 2014 Base			Program Changes			FY 2014 Estimate
	POS	FTE			POS	FTE			POS	FTE		POS	FTE				
Construction																	
WFO Construction	0	0	1,659	1,500	0	0	0	0	0	0	3,159	0	0	5,491	0	0	8,650
Subtotal, NWS Construction	0	0	1,659	1,500	0	0	0	0	0	0	3,159	0	0	5,491	0	0	8,650
Total, NWS - PAC	32	31	91,174	418	(5)	(5)	0	0	27	26	91,592	(2)	(2)	25,723	25	24	117,315
NESDIS Hydrographic Survey																	
Priorities/Contracts NOAA Satellite and Climate Sensors Geostationary Systems - N																	
Geostationary Systems - R	22	20	32,640	0	0	0	0	0	22	20	32,640	0	0	(6,319)	22	20	26,321
Polar Orbiting Systems - POES	48	46	618,899	0	0	0	0	0	48	46	618,899	0	0	335,862	48	46	954,761
Jason-3	24	22	32,413	0	0	0	0	0	24	22	32,413	0	0	(3,625)	24	22	28,788
Joint Polar Satellite System (JPSS)	0	0	19,805	0	0	0	0	0	0	0	19,805	0	0	17,195	0	0	37,000
Polar Free Flyer	64	61	928,933	0	0	0	0	(35,982)	64	61	892,951	0	0	(68,951)	64	61	824,000
DSCOV R	0	0	0	0	0	0	0	62,000	0	0	62,000	0	0	0	0	0	62,000
COSMIC 2	0	0	29,959	0	0	0	0	0	0	0	29,959	0	0	(6,284)	0	0	23,675
EOS & Advanced Polar Data Processing, Distribution & Archiving Systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CIP - single point of failure	0	0	995	0	0	0	0	0	0	0	995	0	0	(5)	0	0	990
Comprehensive Large Array Data Stewardship Sys (CLASS)	0	0	2,787	0	0	0	0	0	0	0	2,787	0	0	(15)	0	0	2,772
NPOESS Preparatory Data Exploitation Restoration of Climate Sensors	0	0	6,510	0	0	0	0	0	0	0	6,510	0	0	(34)	0	0	6,476
Enterprise Ground System	0	0	4,479	0	0	0	0	0	0	0	4,479	0	0	(1,024)	0	0	3,455
	0	0	26,018	0	0	0	0	(26,018)	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	5,983	0	0	5,983
Subtotal, NESDIS Systems Acquisition	158	149	1,703,438	0	0	0	0	0	158	149	1,703,438	0	0	272,783	158	149	1,976,221
Construction																	
Satellite CDA Facility	0	0	2,240	0	0	0	0	0	0	0	2,240	0	0	(12)	0	0	2,228
Subtotal, NESDIS Construction	0	0	2,240	0	0	0	0	0	0	0	2,240	0	0	(12)	0	0	2,228
Total, NESDIS - PAC	158	149	1,705,678	0	0	0	0	0	158	149	1,705,678	0	0	272,771	158	149	1,978,449
Total, Program Support - PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PROCUREMENT, ACQUISITION, and CONSTRUCTION
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
OMAO																	
OMAO - Fleet Replacement Fleet Capital Improvements & Tech Infusion (Vessel Equip & Tech Refresh) New Vessel Construction	0	0	1,005	0	0	0	0	0	0	0	1,005	0	0	10,707	0	0	11,712
	5	5	2,897	0	0	0	0	0	0	5	2,897	(5)	(5)	(2,897)	0	0	0
Subtotal, OMAO Fleet Replacement	5	5	3,902	0	0	0	0	0	0	5	3,902	(5)	(5)	7,810	0	0	11,712
Total, OMAO - PAC	5	5	3,902	0	0	0	0	0	5	5	3,902	(5)	(5)	7,810	0	0	11,712
GRAND TOTAL PAC	196	186	1,819,146	418	(5)	(5)	0	0	191	181	1,819,564	(7)	(7)	304,991	184	174	2,124,555

PAC ADJUSTMENTS
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
SUBTOTAL DIRECT OBLIGATIONS	196	186	1,819,146	418	(5)	(5)	0	0	191	181	1,819,564	(7)	(7)	304,991	184	174	2,124,555
FINANCING																	
Cash Refunds/Recoveries from Prior Year			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
De-Obligations Unobligated balance, Expiring end of year Unobligated Balance Adj. SOY (start of year) Unobligated Balance End of Year			(8,000)	0	0	0	0	1,000	0	0	(7,000)	0	0	0	0	0	(7,000)
Total PAC Financing	0	0	(8,000)	0	0	0	0	1,000	0	0	(7,000)	0	0	0	0	0	(7,000)
SUBTOTAL BUDGET AUTHORITY	196	186	1,811,146	418	(5)	(5)	0	1,000	191	181	1,812,564	(7)	(7)	304,991	184	174	2,117,555
TRANSFERS/RESCISSIONS																	
Transfer from PAC to ORF	0	0	16,069	0	0	0	0	(16,069)	0	0	0	0	0	0	0	0	0
Transfer to OIG	0	0	1,000	0	0	0	0	(1,000)	0	0	0	0	0	0	0	0	0
Total PAC Transfers/Rescissions	0	0	17,069	0	0	0	0	(17,069)	0	0	0	0	0	0	0	0	0
SUBTOTAL APPROPRIATION	196	186	1,828,215	418	(5)	(5)	0	(16,069)	191	181	1,812,564	(7)	(7)	304,991	184	174	2,117,555

GRAND TOTAL SUMMARY
Discretionary Appropriations

(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN			FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan			Calculated ATBs	Technical ATBs			FY 2014 Base			Program Changes			FY 2014 Estimate
	POS	FTE			POS	FTE			POS	FTE		POS	FTE				
Operations, Research and Facilities	12,810	12,185	3,040,727	(418)	(50)	(50)	48,273	(497)	12,760	12,135	3,088,085	(103)	(117)	189,748	12,657	12,018	3,277,833
Procurement, Acquisition and Construction	196	186	1,828,215	418	(5)	(5)	0	(16,069)	191	181	1,812,564	(7)	(7)	304,991	184	174	2,117,555
Coastal Zone Management Fund	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fisherman's Contingency Fund	1	1	352	0	0	0	0	0	1	1	352	0	0	(2)	1	1	350
Foreign Fishing Observer Fund Fisheries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Financing Program Account Pacific Coastal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Salmon Fund Marine Mammal Unusual	0	0	65,398	0	0	0	0	0	0	0	65,398	0	0	(15,398)	0	0	50,000
Mortality Event Fund Medicare Eligible Retiree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Health Care Fund	0	0	1,948	0	0	0	0	0	0	0	1,948	0	0	(12)	0	0	1,936
GRAND TOTAL DISCRETIONARY APPROPRIATION	13,007	12,372	4,936,640	0	(55)	(55)	48,273	(16,566)	12,952	12,317	4,968,347	(110)	(124)	479,327	12,842	12,193	5,447,674

OTHER ACCOUNTS (DISCRETIONARY)
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN																	
	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
NMFS																	
Fishermen's Contingency Fund Obligations	1	1	352	0	0	0	0	0	1	1	352	0	0	(2)	1	1	350
Fishermen's Contingency Fund Budget Authority	1	1	352	0	0	0	0	0	1	1	352	0	0	(2)	1	1	350
Fishermen's Contingency Fund Appropriations	1	1	352	0	0	0	0	0	1	1	352	0	0	(2)	1	1	350
Foreign Fishing Observer Fund Obligations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Foreign Fishing Observer Fund Budget Authority	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Foreign Fishing Observer Fund Appropriation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Obligations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Budget Authority	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Appropriation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Promote and Develop Fisheries Obligations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Promote and Develop Fisheries Budget Authority	0	0	(109,098)	0	0	0	0	(14,066)	0	0	(123,164)	0	0	0	0	0	(123,164)
Promote and Develop Fisheries Appropriation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pacific Coastal Salmon Fund Obligations Pacific	0	0	65,398	0	0	0	0	0	0	0	65,398	0	0	(15,398)	0	0	50,000
Coastal Salmon Fund Budget Authority Pacific	0	0	65,398	0	0	0	0	0	0	0	65,398	0	0	(15,398)	0	0	50,000
Coastal Salmon Fund Appropriation	0	0	65,398	0	0	0	0	0	0	0	65,398	0	0	(15,398)	0	0	50,000
Marine Mammal Unusual Mortality Event Fund Obligations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marine Mammal Unusual Mortality Event Fund Budget Authority	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marine Mammal Unusual Mortality Event Fund Appropriations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, NMFS Other Discretionary Direct Obligation	1	1	65,750	0	0	0	0	0	1	1	65,750	0	0	(15,400)	1	1	50,350
Subtotal, NMFS Other Discretionary Budget Authority	1	1	(43,348)	0	0	0	0	(14,066)	1	1	(57,414)	0	0	(15,400)	1	1	(72,814)
Subtotal, NMFS Other Discretionary Appropriation	1	1	65,750	0	0	0	0	0	1	1	65,750	0	0	(15,400)	1	1	50,350

OTHER ACCOUNTS (DISCRETIONARY)
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
OMAO Medicare Eligible Retiree Healthcare Fund Acct																	
Obligations Medicare Eligible Retiree Healthcare Fund Acct	0	0	1,948	0	0	0	0	0	0	0	1,948	0	0	(12)	0	0	1,936
Budget Authority Medicare Eligible Retiree Healthcare Fund Acct	0	0	1,948	0	0	0	0	0	0	0	1,948	0	0	(12)	0	0	1,936
Appropriations	0	0	1,948	0	0	0	0	0	0	0	1,948	0	0	(12)	0	0	1,936
Subtotal, OMAO Other Discretionary Direct Obligations	0	0	1,948	0	0	0	0	0	0	0	1,948	0	0	(12)	0	0	1,936
Subtotal, OMAO Other Discretionary Budget Authority	0	0	1,948	0	0	0	0	0	0	0	1,948	0	0	(12)	0	0	1,936
Subtotal, OMAO Other Discretionary Appropriation	0	0	1,948	0	0	0	0	0	0	0	1,948	0	0	(12)	0	0	1,936
TOTAL, OTHER DISCRETIONARY DIRECT OBLIGATIONS	1	1	67,698	0	0	0	0	0	1	1	67,698	0	0	(15,412)	1	1	52,286
TOTAL, OTHER DISCRETIONARY BUDGET AUTHORITY	1	1	(41,400)	0	0	0	0	(14,066)	1	1	(55,466)	0	0	(15,412)	1	1	(70,878)
TOTAL, OTHER DISCRETIONARY APPROPRIATION	1	1	67,698	0	0	0	0	0	1	1	67,698	0	0	(15,412)	1	1	52,286

SUMMARY OF DISCRETIONARY RESOURCES
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
Discretionary Direct Obligations																	
ORF Direct Obligations PAC	12,810	12,185	3,173,894	(418)	(50)	(50)	48,273	(4,500)	12,760	12,135	3,217,249	(103)	(117)	189,748	12,657	12,018	3,406,997
Direct Obligations OTHER	196	186	1,819,146	418	(5)	(5)	0	0	191	181	1,819,564	(7)	(7)	304,991	184	174	2,124,555
Direct Obligations	1	1	67,698	0	0	0	0	0	1	1	67,698	0	0	(15,412)	1	1	52,286
TOTAL Discretionary Direct Obligations	13,007	12,372	5,060,738	0	(55)	(55)	48,273	(4,500)	12,952	12,317	5,104,511	(110)	(124)	479,327	12,842	12,193	5,583,838
Discretionary Budget Authority																	
ORF Budget Authority PAC	12,810	12,185	3,165,894	(418)	(50)	(50)	48,273	(2,500)	12,760	12,135	3,211,249	(103)	(117)	189,748	12,657	12,018	3,400,997
Budget Authority OTHER	196	186	1,811,146	418	(5)	(5)	0	1,000	191	181	1,812,564	(7)	(7)	304,991	184	174	2,117,555
Budget Authority	1	1	(41,400)	0	0	0	0	(14,066)	1	1	(55,466)	0	0	(15,412)	1	1	(70,878)
TOTAL Discretionary Budget Authority	13,007	12,372	4,935,640	0	(55)	(55)	48,273	(15,566)	12,952	12,317	4,968,347	(110)	(124)	479,327	12,842	12,193	5,447,674
Discretionary Appropriations																	
ORF Appropriations PAC	12,810	12,185	3,040,727	(418)	(50)	(50)	48,273	(497)	12,760	12,135	3,088,085	(103)	(117)	189,748	12,657	12,018	3,277,833
Appropriations OTHER	196	186	1,828,215	418	(5)	(5)	0	(16,069)	191	181	1,812,564	(7)	(7)	304,991	184	174	2,117,555
Appropriations	1	1	67,698	0	0	0	0	0	1	1	67,698	0	0	(15,412)	1	1	52,286
TOTAL Discretionary Appropriation	13,007	12,372	4,936,640	0	(55)	(55)	48,273	(16,566)	12,952	12,317	4,968,347	(110)	(124)	479,327	12,842	12,193	5,447,674

OTHER ACCOUNTS (MANDATORY)
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
NOS Damage Assessment & Restoration Revolving Fund Obligations																	
Damage Assessment & Restoration Revolving Fund Budget Authority	16	16	25,000	0	0	0	0	0	16	16	25,000	0	0	0	16	16	25,000
Damage Assessment & Restoration Revolving Fund Appropriation	16	16	8,000	0	0	0	0	0	16	16	8,000	0	0	0	16	16	8,000
	16	16	0	0	0	0	0	0	16	16	0	0	0	0	16	16	0
Sanctuaries Enforcement Asset Forfeiture Fund Obligations																	
Sanctuaries Enforcement Asset Forfeiture Fund Budget Authority	0	0	1,000	0	0	0	0	0	0	0	1,000	0	0	0	0	0	1,000
Sanctuaries Enforcement Asset Forfeiture Fund Appropriations	0	0	1,000	0	0	0	0	0	0	0	1,000	0	0	0	0	0	1,000
	0	0	1,000	0	0	0	0	0	0	0	1,000	0	0	0	0	0	1,000
Subtotal, NOS Other Mandatory Direct Obligations	16	16	26,000	0	0	0	0	0	16	16	26,000	0	0	0	16	16	26,000
Subtotal, NOS Other Mandatory Budget Authority	16	16	9,000	0	0	0	0	0	16	16	9,000	0	0	0	16	16	9,000
Subtotal, NOS Other Mandatory Appropriation	16	16	1,000	0	0	0	0	0	16	16	1,000	0	0	0	16	16	1,000
NMFS Promote and Develop Fisheries Obligations																	
Promote and Develop Fisheries Budget Authority	0	0	22,274	0	0	0	0	(14,066)	0	0	8,208	0	0	0	0	0	8,208
Promote and Develop Fisheries Appropriation	0	0	131,372	0	0	0	0	0	0	0	131,372	0	0	0	0	0	131,372
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Obligations																	
Fisheries Finance Program Account Budget Authority	0	0	9,827	0	0	0	0	(9,827)	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Appropriation	0	0	9,800	0	0	0	0	(9,800)	0	0	0	0	0	0	0	0	0
	0	0	9,800	0	0	0	0	(9,800)	0	0	0	0	0	0	0	0	0
Federal Ship Financing Obligations																	
Federal Ship Financing Budget Authority	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Federal Ship Financing Appropriation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Improve & Restoration Fund Obligations																	
Environmental Improve & Restoration Fund Budget Authority	0	0	9,752	0	0	0	0	(8,338)	0	0	1,414	0	0	0	0	0	1,414
Environmental Improve & Restoration Fund Appropriation	0	0	1,414	0	0	0	0	388	0	0	1,802	0	0	0	0	0	1,802
	0	0	1,414	0	0	0	0	388	0	0	1,802	0	0	0	0	0	1,802
Limited Access System Administration Fund Obligations																	
Limited Access System Administration Fund Budget Authority	0	0	9,390	0	0	0	0	2,682	0	0	12,072	0	0	0	0	0	12,072
Limited Access System Administration Fund Appropriation	0	0	14,591	0	0	0	0	(5,427)	0	0	9,164	0	0	0	0	0	9,164
	0	0	14,591	0	0	0	0	(5,427)	0	0	9,164	0	0	0	0	0	9,164

OTHER ACCOUNTS (MANDATORY)
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN			FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan			Calculated ATBs	Technical ATBs			FY 2014 Base			Program Changes			FY 2014 Estimate
	POS	FTE			POS	FTE			POS	FTE		POS	FTE				
Western Pacific Sustainable Fisheries Fund Obligations	0	0	1,000	0	0	0	0	0	0	0	1,000	0	0	0	0	0	1,000
Western Pacific Sustainable Fisheries Fund Budget Authority	0	0	1,000	0	0	0	0	0	0	0	1,000	0	0	0	0	0	1,000
Western Pacific Sustainable Fisheries Fund Appropriation	0	0	1,000	0	0	0	0	0	0	0	1,000	0	0	0	0	0	1,000
Fisheries Enforcement Asset Forfeiture Fund Obligations	0	0	4,263	0	0	0	0	737	0	0	5,000	0	0	0	0	0	5,000
Fisheries Enforcement Asset Forfeiture Fund Budget Authority	0	0	5,000	0	0	0	0	0	0	0	5,000	0	0	0	0	0	5,000
Fisheries Enforcement Asset Forfeiture Fund Appropriation	0	0	5,000	0	0	0	0	0	0	0	5,000	0	0	0	0	0	5,000
North Pacific Observer Fund Obligations North	0	0	0	0	0	0	0	0	0	0	4,800	0	0	0	0	0	4,800
Pacific Observer Fund Budget Authority North	0	0	0	0	0	0	0	0	0	0	4,800	0	0	0	0	0	4,800
Pacific Observer Fund Appropriation	0	0	0	0	0	0	0	0	0	0	4,800	0	0	0	0	0	4,800
Subtotal, NMFS Other Mandatory Direct Obligations	0	0	56,506	0	0	0	0	(28,812)	0	0	32,494	0	0	0	0	0	32,494
Subtotal, NMFS Other Mandatory Budget Authority	0	0	163,177	0	0	0	0	(14,839)	0	0	153,138	0	0	0	0	0	153,138
Subtotal, NMFS Other Mandatory Appropriation	0	0	31,805	0	0	0	0	(14,839)	0	0	21,766	0	0	0	0	0	21,766
OMAO NOAA Corp Commissioned Officers Retirement Obligations																	
NOAA Corp Commissioned Officers Retirement Budget Authority	0	0	28,269	0	0	0	0	0	0	0	28,269	0	0	0	0	0	28,269
NOAA Corp Commissioned Officers Retirement Budget Appropriation	0	0	28,269	0	0	0	0	0	0	0	28,269	0	0	0	0	0	28,269
	0	0	28,269	0	0	0	0	0	0	0	28,269	0	0	0	0	0	28,269
Subtotal, OMAO Other Mandatory Direct Obligations	0	0	28,269	0	0	0	0	0	0	0	28,269	0	0	0	0	0	28,269
Subtotal, OMAO Other Mandatory Budget Authority	0	0	28,269	0	0	0	0	0	0	0	28,269	0	0	0	0	0	28,269
Subtotal, OMAO Other Mandatory Appropriation	0	0	28,269	0	0	0	0	0	0	0	28,269	0	0	0	0	0	28,269
TOTAL, OTHER MANDATORY DIRECT OBLIGATIONS	16	16	110,775	0	0	0	0	(28,812)	16	16	86,763	0	0	0	16	16	86,763
TOTAL, OTHER MANDATORY BUDGET AUTHORITY	16	16	200,446	0	0	0	0	(14,839)	16	16	190,407	0	0	0	16	16	190,407
TOTAL, OTHER MANDATORY APPROPRIATION	16	16	61,074	0	0	0	0	(14,839)	16	16	51,035	0	0	0	16	16	51,035

NOAA SUMMARY
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
TOTAL Direct Obligations (Discretionary & Mandatory)	13,023	12,388	5,171,513	0	(55)	(55)	48,273	(33,312)	12,968	12,333	5,191,274	(110)	(124)	479,327	12,858	12,209	5,670,601
TOTAL Budget Authority (Discretionary & Mandatory)	13,023	12,388	5,136,086	0	(55)	(55)	48,273	(30,405)	12,968	12,333	5,158,754	(110)	(124)	479,327	12,858	12,209	5,638,081
TOTAL Appropriation (Discretionary & Mandatory)	13,023	12,388	4,997,714	0	(55)	(55)	48,273	(31,405)	12,968	12,333	5,019,382	(110)	(124)	479,327	12,858	12,209	5,498,709
Reimbursable Financing	706	706	242,000	0	0	0	0	0	706	706	242,000	0	0	0	706	706	242,000
TOTAL OBLIGATIONS (Direct & Reimbursable)	13,729	13,094	5,413,513	0			48,273	(33,312)			5,433,274			479,327			5,912,601
Offsetting Receipts	0	0	(3,521)	0	0	0	0	0	0	0	(6,277)	0	0	0	0	0	(6,277)
TOTAL OBLIGATIONS (Direct, Reimbursable & Offsetting Receipts)	13,729	13,094	5,409,992	0	0	0	48,273	(33,312)	0	0	5,426,997	0	0	479,327	0	0	5,906,324

LINE OFFICE SUMMARY
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
National Ocean Service																	
ORF	1,289	1,225	462,161	0	(1)	(1)	4,350	(1,215)	1,288	1,224	465,296	10	7	31,213	1,298	1,231	496,509
PAC	1	1	8,042	0	0	0	0	0	1	1	8,042	0	0	(1,342)	1	1	6,700
OTHER	16	16	26,000	0	0	0	0	0	16	16	26,000	0	0	0	16	16	26,000
TOTAL, NOS	1,306	1,242	496,203	0	(1)	(1)	4,350	(1,215)	1,305	1,241	499,338	10	7	29,871	1,315	1,248	529,209
National Marine Fisheries Service																	
ORF	3,022	2,864	808,942	0	1	1	12,968	(336)	3,023	2,865	821,574	(30)	(30)	24,924	2,993	2,835	846,498
PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	1	1	122,256	0	0	0	0	(28,812)	1	1	98,244	0	0	(15,400)	1	1	82,844
TOTAL, NMFS	3,023	2,865	931,198	0	1	1	12,968	(29,148)	3,024	2,866	919,818	(30)	(30)	9,524	2,994	2,836	929,342
Oceanic and Atmospheric Research																	
ORF	795	755	374,750	1,934	0	0	3,537	(610)	795	755	379,611	24	14	82,445	819	769	462,056
PAC	0	0	10,350	0	0	0	0	0	0	0	10,350	0	0	29	0	0	10,379
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL, OAR	795	755	385,100	1,934	0	0	3,537	(610)	795	755	389,961	24	14	82,474	819	769	472,435
National Weather Service																	
ORF	4,850	4,618	910,820	(4,559)	5	5	11,241	(1,183)	4,855	4,623	916,319	(101)	(101)	16,467	4,754	4,522	932,786
PAC	32	31	91,174	418	(5)	(5)	0	0	27	26	91,592	(2)	(2)	25,723	25	24	117,315
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL, NWS	4,882	4,649	1,001,994	(4,141)	0	0	11,241	(1,183)	4,882	4,649	1,007,911	(103)	(103)	42,190	4,779	4,546	1,050,101
National Environmental Satellite, Data and Information Service																	
ORF	712	678	180,633	1,657	0	0	1,690	(405)	712	678	183,575	(1)	(2)	23,986	711	676	207,561
PAC	158	149	1,705,678	0	0	0	0	0	158	149	1,705,678	0	0	272,771	158	149	1,978,449
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL, NESDIS	870	827	1,886,311	1,657	0	0	1,690	(405)	870	827	1,889,253	(1)	(2)	296,757	869	825	2,186,010
Program Support / Corporate Services																	
ORF	1,013	949	203,258	0	(55)	(55)	14,216	(719)	958	894	216,755	(2)	(2)	(4,306)	956	892	212,449
PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL, PS / Corporate Services	1,013	949	203,258	0	(55)	(55)	14,216	(719)	958	894	216,755	(2)	(2)	(4,306)	956	892	212,449
Program Support / NOAA Education Program																	
ORF	22	21	25,242	0	0	0	160	0	22	21	25,402	(3)	(3)	(9,131)	19	18	16,271
PAC	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL, PS / NOAA Education Program	22	21	25,242	0	0	0	160	5	22	21	25,402	(3)	(3)	(9,131)	19	18	16,271

LINE OFFICE SUMMARY
(\$ in Thousands)

FY 2014 PROPOSED OPERATING PLAN	POS	FTE	FY 2013 Annualized CR	Adj due to Reprogram of FY 2012 Spend Plan	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2014 Base	POS	FTE	Program Changes	POS	FTE	FY 2014 Estimate
Program Support / Facilities																	
ORF	45	45	24,570	0	0	0	309	0	45	45	24,879	0	0	(32)	45	45	24,847
PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL, PS / Facilities	45	45	24,570	0	0	0	309	0	45	45	24,879	0	0	(32)	45	45	24,847
Program Support / Corp Srv, Edu, Fac																	
ORF	1,080	1,015	253,070	0	(55)	(55)	14,685	(719)	1,025	960	267,036	(5)	(5)	(13,469)	1,020	955	253,567
PAC	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL, PS / Corp Srv, Edu, Fac	1,080	1,015	253,070	0	(55)	(55)	14,685	(714)	1,025	960	267,036	(5)	(5)	(13,469)	1,020	955	253,567
Program Support / Office of Marine and Aviation Operations																	
ORF	1,062	1,030	183,518	550	0	0	(198)	(32)	1,062	1,030	183,838	0	0	24,182	1,062	1,030	208,020
PAC	5	5	3,902	0	0	0	0	0	5	5	3,902	(5)	(5)	7,810	0	0	11,712
OTHER	0	0	30,217	0	0	0	0	0	0	0	30,217	0	0	(12)	0	0	30,205
TOTAL, PS / OMAO	1,067	1,035	217,637	550	0	0	(198)	(32)	1,067	1,035	217,957	(5)	(5)	31,980	1,062	1,030	249,937
Total PS ORF	2,142	2,045	436,588	550	(55)	(55)	14,487	(751)	2,087	1,990	450,874	(5)	(5)	10,713	2,082	1,985	461,587
Total PS PAC	5	5	3,902	0	0	0	0	5	5	5	3,902	(5)	(5)	7,810	0	0	11,712
Total PS Other	0	0	30,217	0	0	0	0	0	0	0	30,217	0	0	(12)	0	0	30,205
TOTAL, PS	2,147	2,050	470,707	550	(55)	(55)	14,487	(746)	2,092	1,995	484,993	(10)	(10)	18,511	2,082	1,985	503,504
DIRECT OBLIGATIONS																	
ORF	12,810	12,185	3,173,894	(418)	(50)	(50)	48,273	(4,500)	12,760	12,135	3,217,249	(103)	(117)	189,748	12,657	12,018	3,406,997
PAC	196	186	1,819,146	418	(5)	(5)	0	5	191	181	1,819,564	(7)	(7)	304,991	184	174	2,124,555
OTHER	17	17	178,473	0	0	0	0	(28,812)	17	17	154,461	0	0	(15,412)	17	17	139,049
TOTAL, DIRECT OBLIGATIONS	13,023	12,388	5,171,513	0	(55)	(55)	48,273	(33,307)	12,968	12,333	5,191,274	(110)	(124)	479,327	12,858	12,209	5,670,601
ORF Adjustments (Deobligations / Rescissions)	0	0	(8,000)	0	0	0	0	2,000	0	0	(6,000)	0	0	0	0	0	(6,000)
ORF Transfers PAC Adjustments (Deobligations / Rescissions) PAC Transfers OTHER	0	0	(125,167)	0	0	0	0	2,003	0	0	(123,164)	0	0	0	0	0	(123,164)
Discretionary Adjustments Mandatory Accounts	0	0	(8,000)	0	0	0	0	1,000	0	0	(7,000)	0	0	0	0	0	(7,000)
Excluded Discretionary Reimbursable Accounts	0	0	17,069	0	0	0	0	(17,069)	0	0	0	0	0	0	0	0	0
Excluded	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	(16)	(16)	(110,775)	0	0	0	0	28,812	(16)	(16)	(86,763)	0	0	0	(16)	(16)	(86,763)
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL, DISCRETIONARY APPROPRIATIONS	13,007	12,372	4,936,640	0	(55)	(55)	48,273	(16,561)	12,952	12,317	4,968,347	(110)	(124)	479,327	12,842	12,193	5,447,674

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities **SUMMARY**
OF RESOURCE REQUIREMENTS (Dollar
Amounts in Thousands)

	Positions	FTE	Approp.	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution	12,810	12,185	3,180,727	3,305,894	3,360,064
less: Carryover	0	0		0	(46,170)
less: Disaster Relief Appropriations Act	0	0	(140,000)	(140,000)	(140,000)
plus: 2014 Other Adjustments to Base	(50)	(50)	47,358	45,355	43,355
FY 2014 Base	12,760	12,135	3,088,085	3,211,249	3,217,249
Admin Savings: [Amount Reinvested]			[4,176]	[4,176]	[4,176]
plus (or less): 2014 Program Changes	(103)	(117)	189,748	189,748	189,748
FY 2014 Estimate	12,657	12,018	3,277,833	3,400,997	3,406,997

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities **SUMMARY**
OF RESOURCE REQUIREMENTS (Dollar
Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actual		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Ocean Service	Pos/BA	1,271	458,914	1,289	462,161	1,288	465,296	1,298	496,509	10	31,213
	FTE/OBL	1,212	468,020	1,225	466,033	1,224	465,296	1,231	496,509	7	31,213
National Marine Fisheries Service	Pos/BA	3,052	804,023	3,022	808,942	3,023	821,574	2,993	846,498	(30)	24,924
	FTE/OBL	2,910	796,403	2,864	820,631	2,865	821,574	2,835	846,498	(30)	24,924
Oceanic and Atmospheric Research	Pos/BA	767	372,114	795	374,750	795	379,611	819	462,056	24	82,445
	FTE/OBL	741	367,012	755	380,529	755	379,611	769	462,056	14	82,445
National Weather Service	Pos/BA	4,880	904,426	4,850	910,820	4,855	916,319	4,754	932,786	(101)	16,467
	FTE/OBL	4,648	897,982	4,618	924,231	4,623	916,319	4,522	932,786	(101)	16,467
National Environmental Satellite, Data, & Info Service	Pos/BA	619	179,361	712	180,633	712	183,575	711	207,561	(1)	23,986
	FTE/OBL	590	179,491	678	181,767	678	183,575	676	207,561	(2)	23,986
Program Support	Pos/BA	917	256,198	1,080	253,070	1,025	267,036	1,020	253,567	(5)	(13,469)
	FTE/OBL	874	250,613	1,015	262,038	960	267,036	955	253,567	(5)	(13,469)
Office of Marine Aviation & Operations	Pos/BA	1,008	182,227	1,062	183,518	1,062	183,838	1,062	208,020	0	24,182
	FTE/OBL	960	181,155	1,030	184,835	1,030	183,838	1,030	208,020	0	24,182
Disaster Relief Appropriations Act	Pos/BA	0	0	0	140,000	0	0	0	0	0	0
	FTE/OBL	0	0	0	140,000	0	0	0	0	0	0
Less Deobligations/Other	Pos/BA	0	(8,000)	0	(8,000)	0	(6,000)	0	(6,000)	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Total	Pos/BA	12,514	3,149,263	12,810	3,305,894	12,760	3,211,249	12,657	3,400,997	(103)	189,748
	FTE/OBL	11,935	3,140,676	12,185	3,360,064	12,135	3,217,249	12,018	3,406,997	(117)	189,748

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities **SUMMARY**
OF RESOURCE REQUIREMENTS (Dollar
Amounts in Thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	11,935	3,140,676	12,185	3,360,064	12,135	3,217,249	12,018	3,406,997	(117)	189,748
Total Obligations	11,935	3,140,676	12,185	3,360,064	12,135	3,217,249	12,018	3,406,997	(117)	189,748
Adjustments to Obligations:										
Cash Refunds/Prior Year Recoveries	0	(922)	0	0	0	0	0	0	0	0
Deobligations	0	(7,156)	0	(8,000)	0	(6,000)	0	(6,000)	0	0
Unobligated Balance, EOY	0	46,170	0	0	0	0	0	0	0	0
Unobligated Balance Expired	0	2,706	0	0	0	0	0	0	0	0
Unobligated Balance Adj SOY	0	(45,211)	0	(46,170)	0	0	0	0	0	0
Unobligated Balance, Not Apportioned	0	13,000	0	0	0	0	0	0	0	0
Total Budget Authority	11,935	3,149,263	12,185	3,305,894	12,135	3,211,249	12,018	3,400,997	(117)	189,748
Financing from Transfers and Other:										
Transfer from ORF to PAC	0	0	0	0	0	0	0	0	0	0
Transfer from PAC to ORF	0	(17,869)	0	(16,069)	0	0	0	0	0	0
Transfer from FFFPA	0	0	0	0	0	0	0	0	0	0
Transfer from P&D to ORF	0	(109,098)	0	(109,098)	0	(123,164)	0	(123,164)	0	0
Transfer from CZMF to ORF	0	0	0	0	0	0	0	0	0	0
Transfer from PCSRF to ORF	0	(65)	0	0	0	0	0	0	0	0
Transfer from USAID	0	0	0	0	0	0	0	0	0	0
less: Disaster Relief Appropriations Act		0	0	(140,000)	0	0	0	0	0	0
Net Appropriation	11,935	3,022,231	12,185	3,040,727	12,135	3,088,085	12,018	3,277,833	(117)	189,748

THIS PAGE LEFT INTENTIONALLY BLANK

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
REIMBURSABLE OBLIGATIONS
(Dollar Amounts in Thousands)

	Positions	FTE	Approp.	Budget Authority	Obligations
FY 2013 Annualized CR	706	706	0	242,000	242,000
less: obligations from prior year balances	0	0	0	0	0
FY 2014 Base	706	706	0	242,000	242,000
less: 2014 Program Changes	0	0	0	0	0
FY 2014 Estimate	706	706	0	242,000	242,000

Comparison by activity/subactivity		FY 2012 Actual Amount		FY 2013 Annualized CR Amount		FY 2014 Base Program Amount		FY 2014 Estimate Amount		Increase/Decrease Personnel Amount	
National Ocean Service	Pos/BA	85	29,000	85	29,000	85	29,000	85	29,000	0	0
	FTE/OBL	51	24,634	85	29,000	85	29,000	85	29,000	0	0
National Marine Fisheries Service	Pos/BA	311	69,000	311	69,000	311	69,000	311	69,000	0	0
	FTE/OBL	327	60,658	311	69,000	311	69,000	311	69,000	0	0
Oceanic and Atmospheric Research	Pos/BA	53	31,000	53	31,000	53	31,000	53	31,000	0	0
	FTE/OBL	58	49,066	53	31,000	53	31,000	53	31,000	0	0
Climate Service	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
National Weather Service	Pos/BA	174	75,000	174	75,000	174	75,000	174	75,000	0	0
	FTE/OBL	160	56,338	174	75,000	174	75,000	174	75,000	0	0
National Environmental Satellite Service	Pos/BA	45	23,000	45	23,000	45	23,000	45	23,000	0	0
	FTE/OBL	44	25,515	45	23,000	45	23,000	45	23,000	0	0
Program Support	Pos/BA	38	15,000	38	15,000	38	15,000	38	15,000	0	0
	FTE/OBL	35	12,537	38	15,000	38	15,000	38	15,000	0	0
Total	Pos/BA	706	242,000	706	242,000	706	242,000	706	242,000	0	0
	FTE/OBL	675	228,748	706	242,000	706	242,000	706	242,000	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
REIMBURSABLE OBLIGATIONS
(Dollar Amounts in Thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Reimbursable Obligations	676	228,748	706	242,000	706	242,000	706	242,000	0	0
Total Obligations	676	228,748	706	242,000	706	242,000	706	242,000	0	0
Adjustments to Obligations:										
Deobligations	0	0	0	0	0	0	0	0	0	0
Unobligated balance, SOY Reimbursable	0	(90,578)	0	(3,000)	0	(3,000)	0	(3,000)	0	0
Unobligated balance, EOY Reimbursable	0	192,147	0	3,000	0	3,000	0	3,000	0	0
Unobligated balance, Expiring	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	676	330,317	706	242,000	706	242,000	706	242,000	0	0
Financing from Transfers and Other:										
Transfer of unobligated balance to Asset Forfeiture Fund	0	0	0	0	0	0	0	0	0	0
Net Budget Authority	676	330,317	706	242,000	706	242,000	706	242,000	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
SUMMARY OF FINANCING (Dollar
Amount in Thousands)

	FY 2012	FY 2013	FY 2014	FY 2014	Increase/ (Decrease)
	Actuals	Annualized CR	Base Program	Estimate	over FY 2014 Base
Direct Discretionary Obligation	3,140,676	3,360,064	3,217,249	3,406,997	189,748
Direct Mandatory Obligation	24,683	28,269	28,269	28,269	0
Reimbursable Obligation	228,748	242,000	242,000	242,000	0
Total Obligations	3,394,107	3,630,333	3,487,518	3,677,266	189,748
Adjustments and Obligations:					
Federal funds	(205,734)	(186,000)	(186,000)	(186,000)	0
Non-Federal Sources	(113,060)	(56,000)	(56,000)	(56,000)	0
Cash Refund	(922)	0	0	0	0
Recoveries	0	0	0	0	0
Uncollected Cust Payments from Fed. Sources	(50,177)				0
Enacted Rescissions	0	0	0	0	0
Deobligations, direct	(7,156)	(8,000)	(6,000)	(6,000)	0
Deobligations, reimbursable	0	0	0	0	0
Transfer of Unobligated P&D Balance	0	0	0	0	0
Cancellations of expired and no-year accounts	17,188	0	0	0	0
Unobligated balance, adj. SOY	(45,211)	(46,170)	0	0	0
Unobligated balance, not apportioned	13,000	0	0	0	0
Unobligated balance, transferred to other accounts	4,154	0	0	0	0
Unobligated balance, EOY	46,170	0	0	0	0
Unobligated balance, SOY Reimbursable	(90,578)	0	0	0	0
Unobligated balance, EOY Reimbursable	192,147	0	0	0	0
Unobligated balance, Expiring Discretionary	2,706	0	0	0	0
Unobligated balance, Expiring Mandatory	0	0	0	0	0
Unobligated balance, Expired Reimbursable	17,312	0	0	0	0
Total Budget Authority	3,173,946	3,334,163	3,239,518	3,429,266	189,748

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
SUMMARY OF FINANCING (Dollar
Amount in Thousands)

	FY 2012 Actuals	FY 2013 Annualized CR	FY 2014 Base Program	FY 2014 Estimate	Increase/ (Decrease) over FY 2014 Base
Financing from Transfers and Other:					
Transfer from P&D	(109,098)	(109,098)	(123,164)	(123,164)	0
Transfer from CZMF	0	0	0	0	0
Transfer from USDA	0	0	0	0	0
Transfer from PCSRF to ORF	(65)	0	0	0	0
Transfer to other accounts	0	0	0	0	0
Transfer to FFPA	0	0	0	0	0
Transfer to/from Dept of Interior	0	0	0	0	0
NOAA Corps Retirement Pay (Mandatory)	(24,683)	(28,269)	(28,269)	(28,269)	0
Transfer from ORF to Pacific Salmon	0	0	0	0	0
Transfer to PAC	0	0	0	0	0
Transfer from PAC	(17,869)	(16,069)	0	0	0
Transfer - CCSP (USDA Farm Bill)	0	0	0	0	0
Net Appropriation	3,022,231	3,180,727	3,088,085	3,277,833	189,748

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
JUSTIFICATION OF CHANGES TO BASE
(Dollar Amounts in Thousands)

			FTE	Amount
<u>Adjustments:</u>			(55)	19,151
Restoration of FY 2013 deobligations	0	8,000,000		
Adjustment due to FY 2012 transfer of PAC to ORF	0	16,069,000		
IT Savings	0	(4,500,000)		
Adjustment due to reprogramming of the FY 2012 Spend Plan	0	(418,000)		
Adjustment for NOAA Working Capital Fund	(55)	0		
	(55)	19,151,000		
 <u>Financing:</u>				
In 2014, NOAA expects to realize recoveries of prior year obligations of \$6,000,000. This amount will be used to offset the budget authority in 2014.			0	(6,000)
 <u>Pay Raises</u>			0	12,191
Full-year cost of 2013 pay increase and related costs: The 2013 President's Budget assumes a civilian pay raise of 0.5% and NOAA Corp pay raise of 1.7% to be effective April 1, 2013.				
Total cost of 2013 pay raise		7,059,787		
Less amount funded in 2013		(5,294,840)		
Adjustment for FY 2014 of 2013 pay increase		1,764,947		
 2014 pay increase and related costs: A general civilian pay raise of 1.0% and NOAA Corp pay raise of 1.0% is assumed to be effective January 1, 2014.				
Total cost in 2014 of pay increase		13,719,046		
Less amount not funded in 2014		(3,429,762)		

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
JUSTIFICATION OF CHANGES TO BASE
 (Dollar Amounts in Thousands)

Total cost of January 2014 pay increase		10,289,284	
Payment to Working Capital Fund		137,000	
Total, adjustment for 2014 pay increase		10,426,284	

Civil Service Retirement System (CSRS) 0 (1,528)

The number of employees covered by the Civil Service Retirement System (CSRS) continues to drop as positions become vacant and are filled by employees who are covered by Federal Employees Retirement System (FERS). The estimated percentage covered by CSRS will drop from 11.4% in 2013 to 9.3% in 2014 for regular employees and remain at 0% in 2013 for law enforcement employees. Contribution rates will remain the same.

Regular:

2014 \$1,039,769,000 x 0.093 x .07		6,768,896	
2013 \$1,039,769,000 x 0.114 x .07		8,297,357	
Subtotal		(1,528,461)	

Law Enforcement:

2014 \$6,089,000 x .000 x .075		0	
2013 \$6,089,000 x .000 x .075		0	
Subtotal		-	

Total adjustment to base		(1,528,461)	
--------------------------	--	-------------	--

Federal Employees Retirement System (FERS) 0 4,477

The number of employees covered by the FERS continues to rise as employees covered by CSRS leave and are replaced by employees covered by FERS. The estimated percentage of payroll for regular employees covered by FERS will rise from 87.7% in 2013 to 90.7% in 2014 for regular employees. The estimated percentage of payroll for law enforcement employees covered by FERS will remain at 100% in 2014. The contribution rates will remain the same.

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
JUSTIFICATION OF CHANGES TO BASE
 (Dollar Amounts in Thousands)

Regular:	
2014 \$1,039,769,000 x 0.907 x 0.119	112,225,387
2013 \$1,039,769,000 x 0.886 x 0.117	107,784,534
Subtotal	4,440,853
Law Enforcement:	
2014 \$6,089,000 x 1.00 x 0.257	1,601,407
2013 \$6,089,000 x 1.00 x 0.257	1,564,873
Subtotal	36,534
Total adjustment to base	4,477,387

Thrift Savings Plan

0 437

The cost of agency contributions to the Thrift Savings Plan will also rise as FERS participation increases. The contribution rate is expected to remain at 2%.

Regular:	
2014 \$1,039,769,000 x 0.907 x 0.02	18,861,410
2013 \$1,039,769,000 x 0.886 x 0.02	18,424,707
Subtotal	436,703
Law Enforcement:	
2013 \$6,089,000 x 1.00 x 0.02	121,780
2012 \$6,089,000 x 1.00 x 0.02	121,780
Subtotal	- Total
adjustment to base	436,703

Federal Insurance Contribution Act (FICA)

0 2,374

As the percentage of payroll covered by FERS rises, the cost of OASDI contributions will increase. In addition, the maximum salary subject to OASDI tax will decrease from \$110,100 in 2013 to \$116,850 in 2014. The OASDI tax rate will remain at 6.2% in 2014.

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
JUSTIFICATION OF CHANGES TO BASE
 (Dollar Amounts in Thousands)

Regular:	
2014 \$1,039,769,000 x .907 x .961 x .062	56,190,026
2013 \$1,039,769,000 x .877 x .947 x .062	54,089,411
Subtotal	2,100,615
Law Enforcement:	
2014 \$6,089,000 x 1.0 x .961 x .062	362,795
2013 \$6,089,000 x 1.0 x .947 x .062	357,510
Subtotal	5,285
Other	
2014 \$132,588,000 x .907 x .961 x .062	7,165,171
2013 \$132,588,000 x .877 x .947 x .062	6,897,308
Subtotal	267,863
Total adjustment to base	2,373,763

<u>Health insurance premiums</u>	0	3,457
Effective January 2014, NOAA's contribution to Federal employees' health insurance premiums increased by 4.1%. Applied against the 2013 estimate of \$84,324,000, the additional amount required is \$3,457,284.		
<u>Mileage rate increase</u>	0	242
Effective April 2012, the General Services Administration increased the mileage rate from 51 cents to 55 cents per mile, a 7.8% rate increase. This percentage was applied to the 2013 estimate of \$3,106,000 to arrive at an increase of \$242,268.		
<u>Per diem increase</u>	0	0
The General Services Administration per diem rates are remaining static. There is no increase projected.		
<u>Rental payments to GSA</u>	0	1,275

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
JUSTIFICATION OF CHANGES TO BASE
(Dollar Amounts in Thousands)

GSA rates are projected to increase 1.6% in 2014. This percentage was applied to the 2013 estimate of \$79,718,000 to arrive at an increase of \$1,275,488.

<u>Postage</u>	0	3
Effective January 22, 2012, the Governors of the Postal Service implemented a rate increase for shipping. The percentage increase of 4.6% will be applied to the 2013 estimate of \$69,000 arrive at an increase of \$3,174.		
<u>GPO Printing</u>	0	86
GPO has provided an estimated rate of 1.7%. This percentage was applied to the 2013 estimate of \$5,087,000 to arrive at an increase of \$86,479.		
<u>PEPCO Electricity</u>	0	(80)
An decrease of \$80,000 is requested for PEPCO Electricity.		
<u>Water</u>	0	19
An increase of \$19,000 is requested for GSA Steam and Water (DCWASA).		
<u>NARA Storage & maintenance costs</u>	0	29
The estimated cost of NARA storage and maintenance for 2014 is projected to increase by \$28,790.		
<u>Employee Compensation Fund</u>		(189)
NOAA requests a decrease of \$189,000 for the Employee Compensation Fund.		
<u>Working Capital Fund</u>	0	12,133
An increase of \$12,113,000 is requested for the Working Capital Fund.		
Personal Identity Verification (PIV)		711

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
JUSTIFICATION OF CHANGES TO BASE
(Dollar Amounts in Thousands)

A \$711,000 increase is required to fund accelerated planning, implementation, training and oversight of the Department-wide efforts to meet 75 percent PIV compliance by the end of FY 2014. This effort will be executed via the Departmental Management's Advances and Reimbursements Fund.

<u>CBS</u>	0	215
NOAA requests an increase of \$215,000 for Commerce Business System.		
<u>General Pricing Level Adjustment</u>	0	15,607
This request applies OMB economic assumptions for FY 2014 to object classes where the prices the government pays are established through the market system. Factors are applied to transportation of things (\$249,254); rental payment payments to others (\$530,978); communications, utilities and miscellaneous charges (excluding postage) (\$1,114,282); other contractual services (\$11,171,550); supplies and materials (\$2,114,753) and equipment (\$425,833).		
<u>Grants</u>	0	1,080
Grants are projected to increase 3.3% in 2014. This percentage was applied to the 2013 estimate of \$32,723,688 to arrive at an increase of \$1,079,882.		
<u>Ship and Aircraft Fuel Costs</u>	0	(2,713)
Subtotal, Other Changes	0	49,826
Other Adjustments	0	(14,066)
Less: Absorption	0	(1,553)
Total Adjustments to Base	(55)	47,358

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities **SUMMARY OF**
REQUIREMENTS BY OBJECT CLASS (Dollar Amounts
in Thousands)

Object Class	FY 2012 Actual	FY 2013 Currently Available	FY 2014 Base	FY 2014 Estimate	Increase / (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	1,039,989	1,067,250	1,064,272	1,072,149	7,877
11.3 Other than full-time permanent	10,875	11,160	11,001	11,001	0
11.5 Other personnel compensation	55,949	57,416	56,600	61,758	5,158
11.6 Military personnel basic allowance for housing	(8,846)	(9,078)	(8,948)	(8,948)	0
11.7 Military personnel	76,475	78,480	77,365	77,365	0
11.8 Special personnel services payments	875	898	885	885	0
11.9 Total Personnel Compensation	1,175,318	1,206,126	1,201,174	1,214,209	13,035
12 Civilian personnel benefits	348,332	357,463	361,410	364,141	2,731
13 Benefits for former personnel	23,298	23,908	23,569	23,569	0
21 Travel and transportation of persons	38,730	39,745	39,422	39,076	(346)
22 Transportation of things	14,487	14,866	14,904	15,034	130
23.1 Rental payments to GSA	78,766	80,831	80,957	79,647	(1,310)
23.2 Rental payments to others	30,862	31,671	32,865	32,645	(220)
23.3 Communications, utilities and miscellaneous charges	75,067	77,034	87,534	89,519	1,985
24 Printing and reproduction	5,027	5,158	5,171	5,074	(97)
25.1 Advisory and assistance services	153,735	157,764	155,522	170,759	15,237
25.2 Other services from non-Federal sources	409,591	420,328	420,607	460,187	39,580
25.3 Other goods and services from Federal sources	120,804	123,970	122,208	121,034	(1,174)
25.4 Operation and maintenance of facilities	0	0	0	822	822
25.5 Research and development contracts	12,632	12,964	12,779	30,653	17,874
25.8 Subsistence and support of persons	0	0	0	(114)	(114)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities **SUMMARY OF**
REQUIREMENTS BY OBJECT CLASS (Dollar Amounts
in Thousands)

Object Class	FY 2012 Actual	FY 2013 Full Year CR	FY 2014 Base	FY 2014 Estimate	Increase / (Decrease)
26 Supplies and materials	94,668	97,150	95,053	108,980	13,927
31 Equipment	24,750	25,398	25,463	25,068	(395)
32 Lands and structures	3,441	3,531	3,481	3,481	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies, and contributions	555,745	570,313	563,287	651,370	88,083
42 Insurance claims and indemnities	23	24	24	24	0
43 Interest and dividends	85	87	86	86	0
44 Refunds	0	0	0	0	0
99 Total Obligations	3,165,359	3,248,333	3,245,518	3,435,266	189,748

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities **SUMMARY OF**
REQUIREMENTS BY OBJECT CLASS (Dollar Amounts
in Thousands)

	FY 2012 Actual	FY 2013 Full Year CR	FY 2014 Base	FY 2014 Estimate	Increase / (Decrease)
Unobligated Balance Lapse					
Cash Refund	(922)				
De-obligations	(7,156)	(8,000)	(6,000)	(6,000)	
Prior Year Recoveries					
Unobligated Balance, Start of Year	(45,211)	(46,170)			
Transfer of Unobligated P&D Balance					
Unobligated Balance, End of Year	46,170				
Unobligated Balance, Expiring	2,706				
Unobligated Balance, not apportioned	13,000				
Subtotal Budget Authority	3,173,946	3,194,163	3,239,518	3,429,266	189,748
Less: NOAA Corps	(24,683)	(28,269)	(28,269)	(28,269)	
Total Discretionary ORF Budget Authority	3,149,263	3,165,894	3,211,249	3,400,997	189,748
Positions	12,514	12,810	12,815	12,657	(103)
FTE	11,935	12,185	12,190	12,018	(117)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research and Facilities **PROGRAM/SUB-**
PROGRAM CHANGE CROSSWALK Part 1 2013
Structure

(Dollar amounts in thousands)

Program/Sub-program/Program Activity	2014 Direct Obligations	Proposed Changes (Sub-program/Program Activity)
National Ocean Services		
Navigation Services		
Mapping and Charting		
Mapping and Charting Base	52,112	Move to Navigation, Observations and Positioning/Navigation, Observations and Positioning
Hydrographic Research & Technology Development	6,964	Move to Navigation, Observations and Positioning/Navigations, Observations and Positioning
Electronic Navigational Charts	5,780	Move to Navigation, Observations and Positioning/Navigations, Observations and Positioning
Shoreline Mapping	10,272	Move to Navigation, Observations and Positioning/Navigation, Observations and Positioning
Address Survey Backlog/Contracts	26,946	Move to Navigation, Observations and Positioning/Hydrographic Survey Priorities/Contracts
Geodesy		
Geodesy Base	29,922	Move to Navigation, Observations and Positioning/Navigation, Observations and Positioning
National Height Modernization	2,406	Move to Navigation, Observations and Positioning/Navigation, Observations and Positioning
Tide & Current Data		
Tide & Current Data Base	31,803	Move to Navigation, Observations and Positioning/Navigation, Observations and Positioning
Ocean Resources Conservation and Assessment		
Ocean Assessment Program		
IOOS Regional Observations	34,520	Move to Navigation, Observations and Positioning/IOOS Regional Observations
NOAA IOOS	6,593	Move to Navigation, Observations and Positioning/Navigation, Observations and Positioning
Coastal Storms	2,774	Move to Ocean and Coastal Management and Services/Coastal Zone Management and Services
Coastal Services Center (CSC)	31,319	Move to Ocean and Coastal Management and Services/Coastal Zone Management and Services

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research and Facilities **PROGRAM/SUB-**
PROGRAM CHANGE CROSSWALK Part 1 2013
Structure

(Dollar amounts in thousands)

Program/Sub-program/Program Activity	2014 Direct Obligations	Proposed Changes (Sub-program/Program Activity)
Coral Reef Program	26,775	Move to Ocean and Coastal Management and Services/Coral Reef Program
Response and Restoration		
Response and Restoration Base	24,439	Move to Coastal Science and Assessment/Coastal Science, Assessment, Response and Restoration
Estuary Restoration Program	501	Move to Coastal Science and Assessment/Coastal Science, Assessment, Response and Restoration and transfer to NMFS Habitat Management & Restoration
Marine Debris	6,000	Move to Coastal Science and Assessment/Coastal Science, Assessment, Response and Restoration
National Centers for Coastal Ocean Science (NCCOS)		
National Centers for Coastal Ocean Science (NCCOS)	36,246	Move to Coastal Science and Assessment/Coastal Science, Assessment, Response and Restoration
Competitive Research	15,000	Move to Coastal Science and Assessment/Competitive Research
Ocean and Coastal Management		
Coastal Management		
CZM Grants	66,146	Move to Ocean and Coastal Management and Services/Coastal Management Grants
CZM and Stewardship	7,095	Move to Ocean and Coastal Management and Services/Coastal Zone Management and Services
Regional Ocean Partnership Grants	5,000	Move to Ocean and Coastal Management and Services/Coastal Management Grants
National Estuarine Research Reserve System	21,979	Move to Ocean and Coastal Management and Services/National Estuarine Research Reserve System (NERRS)
Marine Protected Areas	0	Move to Ocean and Coastal Management and Services/Sanctuaries and Marine Protected Areas and transfer to Marine Sanctuary Program

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations, Research and Facilities **PROGRAM/SUB-**
PROGRAM CHANGE CROSSWALK Part 1 2013
Structure

(Dollar amounts in thousands)

Program/Sub-program/Program Activity	2014 Direct Obligations	Proposed Changes (Sub-program/Activity)
Marine Sanctuary Program		
Marine Sanctuary Program Base	46,418	Move to Ocean and Coastal Management and Services/Sanctuaries and Marine Protected Areas
Office of Oceanic and Atmospheric Research		
Climate Research		
Climate Data & Information	13,023	Rename Climate Research/Regional Climate Data & Information
Climate Competitive Research, Sustained Observations and Regional Information	155,824	Retain \$73,735 in renamed Climate Research/Climate Competitive Research, move \$36,984 to Climate Research/Regional Climate Data & Information, move \$45,105 to Ocean, Coastal, and Great Lakes Research/Sustained Oceans Observations and Monitoring

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations, Research and Facilities
ACTIVITY/SUBACTIVITY CHANGE CROWALK
Part 2 2014 Structure
 (Dollar amounts in thousands)

Program/Sub-program/Program Activity	FY 2010 Enacted	FY 2011 Spend Plan	FY 2012 Spend Plan	FY 2013 Annualized CR	FY 2014 Estimate
National Ocean Service					
Navigation Services					
Mapping and Charting	97,236	91,617	91,712	0	0
Geodesy	37,258	33,142	28,803	0	0
Tide & Current Data	33,678	29,441	27,443	0	0
Subtotal Navigation Services	168,172	154,200	147,958	0	0
Ocean Resources Conservation and Assessment					
Ocean Assessment Program	112,998	89,202	91,763	0	0
Response and Restoration	28,134	24,521	26,579	0	0
National Centers for Coastal Ocean Science	54,800	55,218	44,918	0	0
Subtotal Ocean Resources Conservation and Assessment	195,932	168,941	163,260	0	0
Ocean and Coastal Management					
Coastal Management	105,046	106,911	101,094	0	0
Ocean Management	53,070	45,424	47,060	0	0
Subtotal Ocean and Coastal Management	158,116	152,335	148,154	0	0
Navigation, Observations and Positioning					
Navigation, Observations and Positioning	0	0	0	128,304	145,852
Hydrographic Survey Priorities/Contracts	0	0	0	27,024	26,946
IOOS Regional Observations	0	0	0	23,095	34,520
Subtotal Navigation, Observations and Po itioning	0	0	0	178,423	207,318

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations, Research and Facilities
ACTIVITY/SUBACTIVITY CHANGE CROWALK
Part 2 2014 Structure
 (Dollar amounts in thousands)

Program/Sub-program/Program Activity	FY 2010 Enacted	FY 2011 Spend Plan	FY 2012 Spend Plan	FY 2013 Annualized CR	FY 2014 Estimate
Coastal Science and Assessment					
Coastal Science, Assessment, Response and Restoration	0	0	0	62,844	66,685
Competitive Research	0	0	0	9,087	15,000
Subtotal Coastal Science and Assessment	0	0	0	71,931	81,685
Ocean and Coastal Management and Services					
Coastal Zone Management Services	0	0	0	44,087	41,188
Coastal Management Grants	0	0	0	69,846	71,146
Coral Reef Program	0	0	0	26,690	26,775
National Estuarine Research Reserve System	0	0	0	21,844	21,979
Sanctuaries and Marine Protected Areas	0	0	0	49,340	46,418
Subtotal, Ocean and Coastal Management and Services	0	0	0	211,807	207,506
Total, National Ocean Service	522,220	475,476	459,372	462,161	496,509
Office of Oceanic and Atmospheric Research					
Climate Research					
Laboratories & Cooperative Institutes	54,848	53,483	52,045	52,361	65,098
Regional Climate Data & Information ⁱ	12,080	13,049	10,406	40,415	50,007
Climate Competitive Research ⁱⁱ	153,199	151,491	117,685	47,704	73,735
Climate Operations	913	911	908	914	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations, Research and Facilities
ACTIVITY/SUBACTIVITY CHANGE CROWALK
Part 2 2014 Structure
 (Dollar amounts in thousands)

Program/Sub-program/Program Activity	FY 2010 Enacted	FY 2011 Spend Plan	FY 2012 Spend Plan	FY 2013 Annualized CR	FY 2014 Estimate
Other Partnership Programs	4,095	0	0	0	0
Subtotal, Climate Research	225,135	218,934	181,044	141,394	188,840
Ocean, Coastal and Great Lakes Research					
Laboratories & Cooperative Institutes	21,840	21,956	22,799	22,937	24,442
National Sea Grant College Program	63,000	61,356	62,169	62,546	72,748
Ocean Exploration and Research	30,716	25,592	23,545	23,688	29,100
Other Ecosystem Programs	0	6,358	6,206	6,244	8,411
Sustained Ocean Observations and Monitoring	0	0	0	40,750	45,105
Other Partnership Programs	15,050	0	0	0	0
Subtotal, Ocean, Coastal and Great Lakes Research	130,606	115,262	114,719	156,165	179,806

ⁱ Formerly Climate Data & Information

ⁱⁱ Formerly Climate Competitive Research, Sustained Observations and Regional Information

DEPARTMENT OF COMMERCE National
Oceanic and Atmospheric Administration
Operations Research and Facilities
JUSTIFICATION OF PROPOSED LANGUAGE CHANGES

JUSTIFICATION OF PROPOSED LANGUAGE CHANGES

1. NOAA Reimbursables

In order to provide support for environmental and biological studies, surveys, and investigations related to the orderly exploration and development of Outer Continental Shelf and renewable energy resources as authorized by law, and notwithstanding 31 U.S.C. 1301(a), 1532, and 3302(b), and 18 U.S.C. 209, the Department of Commerce's National Oceanic and Atmospheric Administration is authorized: to enter into grants, contracts or other forms of financial assistance with; to use on a non-reimbursable basis land, buildings, and equipment made available by; and to receive and expend funds made available by any Federal agency, State or subdivision thereof, local government, Tribal government, Territory or possession or any subdivision thereof.

Justification

NOAA proposes language to clarify the entities from which NOAA can accept reimbursable funds for scientific activities. Such funds will support science needed to make sound management decisions, and not for the management process. All of NOAA's scientific activities are guided by NOAA's Administrative Order on Scientific Integrity.

2. NOAA Working Capital Fund

SEC. 110. There is hereby established in the National Oceanic and Atmospheric Administration a Working Capital Fund, which shall be available without fiscal year limitation, for expenses and equipment necessary for the performance of such services and projects that the Administrator of the National Oceanic and Atmospheric Administration determines may be performed more advantageously when centralized: Provided, That such central services shall, to the fullest extent practicable, be used to make unnecessary the maintenance of separate like services in the divisions and offices of the National Oceanic and Atmospheric Administration and the Department of Commerce: Provided further, That a separate schedule of expenditures and reimbursements, and a statement of the current assets and liabilities of the Working Capital Fund as of the close of the last completed fiscal year, shall be prepared each year: Provided further, That notwithstanding 31. U.S.C. 3302, the Working Capital Fund may be credited with advances and reimbursements from applicable appropriations of the divisions and offices for whom the services are provided: Provided further, That any inventories, equipment, and other assets pertaining to the services to be provided by such funds, either on hand or on order, less the related liabilities or unpaid obligations, and any appropriations made hereafter for the purpose of providing capital, shall be used to capitalize the Working Capital Fund: Provided further, That the Working Capital Fund shall provide for centralized services at rates which will return in full all expenses of operation, including depreciation or replacement of fund plant, equipment, and automated data processing software and hardware systems, and an

DEPARTMENT OF COMMERCE National
Oceanic and Atmospheric Administration
Operations Research and Facilities
JUSTIFICATION OF PROPOSED LANGUAGE CHANGES

amount necessary to maintain a reasonable operating reserve as determined by the Administrator of the National Oceanic Atmospheric Administration and the Secretary of Commerce.

Justification

NOAA proposes to establish a NOAA Working Capital Fund, which will finance, on a reimbursable basis, NOAA-wide information technology functions that are more efficiently and economically performed on a centralized basis.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

1. For necessary expenses of activities authorized by law for the National Oceanic and Atmospheric Administration,

5 USC 5348	15 USC 1511 b-e	16 USC 4101 et seq.	33 USC 2801 et seq.	PL 111-11, Sec 12202
5 USC 4703	15 USC 1514	16 USC 4701 et seq.	33 USC 3001 et seq.	PL 111-11, Sec 12304
7 USC 1622	15 USC 1517	16 USC 5001 et seq.	33 USC 3044 et seq.	PL 111-11, Sec 12404
10 USC 1072	15 USC 1537-40	31 USC 1105	33 USC 3045	PL 111-11, Sec 12502
10 USC 1111-1115	16 USC 661 et seq.	33 USC 706 et seq.	33 USC 3046	PL 111-348
10 USC 2311	16 USC 757a et seq.	33 USC 883 a-i et seq.	PL 111-281, Sec 708	PL 111-358, Sec 301-303
12 USC 1715m	16 USC 1361	33 USC 891 et seq.	42 USC 8902-05	
15 USC 313	16 USC 1431 et seq.	33 USC 893 a-b	42 USC 9601 et seq.	
15 USC 313a	16 USC 1447a et seq.	33 USC 1121-1131	43 USC 1347e	
15 USC 313b	16 USC 1451 et seq.	33 USC 1251	44 USC 1307	
15 USC 313nt	16 USC 1456a	33 USC 1321	49 USC 44720	
15 USC 325	16 USC 1531 et seq.	33 USC 1441-44	97 Stat. 1409	
15 USC 330b	16 USC 1801 et seq.	33 USC 2706	PL 111-11, Sec 12002	
15 USC 330e	16 USC 3645		PL 111-11, Sec 12102	

Organizations and Employees

5 USC 5348 - Crews of Vessels.

“...the pay of officers and members of crews of vessels excepted from chapter 51 of this title by section 5102(c)(8) of this title shall be fixed and adjusted from time to time as nearly as is consistent with the public interest in accordance with prevailing rates and practices in the maritime industry.”

5 USC 4703- Demonstration Projects

“...the Office of Personnel Management may, directly or through agreement or contract with one or more agencies and other public and private organizations, conduct and evaluate demonstration projects.”

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

Agriculture

7 USC 1622 - Distribution and Marketing of Agricultural Products

“The Secretary ... is directed and authorized: ...

- (a) to determine the needs and develop or assist in the development of plans for the proper assembly, processing, transportation, storage, distribution, and handling of agricultural (fish) products.
- (f) to conduct and cooperate in consumer education for the more effective utilization and greater consumption of agricultural products (fish)...
- (g) to collect and disseminate marketing information... for the purpose of ... bringing about a balance between production and utilization of agricultural (fish) products.
- (h) to inspect, certify, and identify the class, quality, quantity and condition of agricultural (fish) products ...
- (m) to conduct ... research ... to determine the most efficient ... processes for the handling, storing, preserving, protecting...of agricultural (fish) commodities ...”

(h) - Duties of Secretary relating to agricultural products; penalties

“Whoever knowingly shall falsely make, issue, alter, forge, or counterfeit any official certificate, memorandum, or other identification, with respect to inspection, class, grade, quality, size, quantity, or condition, issued or authorized under this section or knowingly cause or procure, or aid, assist in, or be a party to, such false making, issuing, altering, forging, or counterfeiting, or whoever knowingly shall possess, without promptly notifying the Secretary (of Commerce) or his representative, utter, published, or used as true, any such falsely made, altered forged, or counterfeited official certificate, memorandum, mark, identification, or device, or whoever knowingly represents that an agricultural product has been officially inspected or graded...when in fact such commodity has not been so graded or inspected shall be fined not more than \$1,000 or imprisoned not more than one year, or both.”

Armed Forces

10 USC 1072 Medical and Dental Care

“...The term “uniformed services” means the armed forces and the Commissioned Corps of the National Oceanic and Atmospheric Administration and of the Public Health Service.”

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

10 USC 1111-1115 Determinations of Contributions to the Fund

PL 108-375, Sec. 725 Revised funding methodology for military retiree health care benefits states: "At the beginning of each fiscal year after September 30, 2005, the Secretary of the Treasury shall promptly pay into the Fund from the General Fund of the Treasury--(1) the amount certified to the Secretary by the Secretary of Defense under subsection (c), which shall be the contribution to the Fund for that fiscal year required by section 1115; and (2) the amount determined by each administering Secretary under section 1111(c) as the contribution to the Fund on behalf of the members of the uniformed services under the jurisdiction of that Secretary."

10 USC 2311 Assignment and Delegation of Procurement Functions and Responsibilities

(a) In General.--Except to the extent expressly prohibited by another provision of law, the head of an agency may delegate, subject to his direction, to any other officer or official of that agency, any power under this chapter.

(b) Procurements For or With Other Agencies.--Subject to subsection (a), to facilitate the procurement of property and services covered by this chapter by each agency named in section 2303 of this title for any other agency, and to facilitate joint procurement by those agencies--

(1) the head of an agency may delegate functions and assign responsibilities relating to procurement to any officer or employee within such agency;

(2) the heads of two or more agencies may by agreement delegate procurement functions and assign procurement responsibilities from one agency to another of those agencies or to an officer or civilian employee of another of those agencies; and

(3) the heads of two or more agencies may create joint or combined offices to exercise procurement functions and responsibilities.

Banks and Banking

12 USC 1715m - Mortgage Insurance for Servicemen [NOAA Corps].

This section authorizes payment of Federal Housing Administration (FHA) home mortgage insurance premiums to NOAA Corps Officers.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

Commerce and Trade

15 USC 313 - Duties of Secretary of Commerce [National Weather Service].

“The Secretary of Commerce...shall have charge of the forecasting of weather,...issue of storm warnings,...weather and flood signals,... gauging and reporting of rivers,...collection and transmission of marine intelligence...,...reporting of temperature and rainfall conditions..., the display of frost and cold-wave signals, the distribution of meteorological information..., and the taking of such meteorological observations as may be necessary to establish and record the climatic conditions of the United States, or as are essential for the proper execution of the foregoing duties.”

15 USC 313a - Establishment of Meteorological Observation Stations in the Arctic Region.

“... The Secretary of Commerce shall ... take such actions as may be necessary in the development of an international basic meteorological reporting network in the Arctic region of the Western Hemisphere...”

15 USC 313b - Institute for Aviation Weather Prediction

“The Administrator of the National Oceanic and Atmospheric Administration shall establish an Institute for Aviation Weather Prediction. The Institute shall provide forecasts, weather warnings, and other weather services to the United States aviation community....”

15 USC 313 note - Weather Service Modernization Act

“(a) As part of the budget justification documents submitted to Congress in support of the annual budget request for the department of Commerce, the Secretary shall include a National Implementation Plan for modernization of the National Weather Service for each fiscal year following fiscal year 1993 until such modernization is complete. The Plan shall set forth the actions, during the 2-year period beginning with the fiscal year for which the budget request is made, that will be necessary to accomplish the objectives described in the Strategic Plan.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

15 USC 325 - Spending Authority for the National Weather Service

“...Appropriations now or hereafter provided for the National Weather Service shall be available for: (a) furnishing food and shelter...to employees of the Government assigned to Arctic stations; (b) equipment and maintenance of meteorological offices and stations, and maintenance and operation of meteorological facilities outside the United States... (c) repairing, altering, and improving of buildings occupied by the National Weather Service, and care and preservation of grounds...(d) arranging for communication services... and (e) purchasing tabulating cards and continuous form tabulating paper .

15 USC 330b - Duties of Secretary relating to Weather Modification Activities or Attempts - Reporting Requirement.

- (a) “The Secretary shall maintain a record of weather modification activities, including attempts, which take place in the United States and shall publish summaries thereof from time to time as he determines.”
- (b) “All reports, documents, and other information received by the Secretary under the provisions of this chapter shall be made available to the public to the fullest practicable extent.”

15 USC 330e - Authorization of Appropriations relating to Weather Modification Activities or Attempts - Reporting Requirement.

This section provides funding authority to support the reporting requirements specified in this chapter.

15 USC 1511b - United States Fishery Trade Officers

“For purposes of carrying out export promotion and other fishery development responsibilities, the Secretary of Commerce...shall appoint not fewer than six officers who shall serve abroad to promote United States fishing interests. These officers shall be knowledgeable about the United States fishing industry, preferably with experience derived from the harvesting, processing, or marketing sectors of the industry or from the administration of fisheries programs. Such officers, who shall be employees of the Department of Commerce, shall have the designation of fishery trade officers.”

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

15 USC 1511c - NOAA Estuarine Programs Office.

“... The Estuarine Programs Office shall develop, coordinate, and implement the estuarine activities of the administration with the activities of other Federal and State agencies. There are authorized to be appropriated to the Administration not to exceed \$560,000 for fiscal year 1989, and \$600,000 for fiscal year 1990.”

15 USC 1511d - Chesapeake Bay Office

The Secretary of Commerce shall establish, within the National Oceanic and Atmospheric Administration, an office to be known as the Chesapeake Bay Office...which shall provide technical assistance on processes impacting the Chesapeake Bay system, its restoration and habitat protection; develop a strategy to meet the commitments of the Chesapeake Bay Agreement; and coordinate programs and activities impacting the Chesapeake Bay, including research and grants.

15 USC 1511e - Office of Space Commercialization

“There is established with the Department of Commerce an Office of Space Commercialization” which shall “promote commercial provider investment in space activities...assist United States commercial providers in [their efforts to] conduct business with the United States Government, [act] as an industry advocate within the executive branch..., ensure that the United States Government does not compete with United States commercial providers..., [promote] the export of space-related goods and services, [represent] the Department of Commerce in the development of United States policies...and [seek] the removal of legal, policy, and institutional impediments to space commerce.”

15 USC 1514 - Basic Authority for Performance of Certain Functions and Activities of Department.

“Appropriations are authorized for the following activities of the Department of Commerce:

- (a) furnishing to employees...and their dependents, in Alaska and other points outside the continental United States, free emergency medical services...and supplies;
- (b) purchasing, transporting, storing, and distributing food and other subsistence supplies for resale to employees...and their dependents, in Alaska and other points outside the continental United States at a reasonable value...; the proceeds from such resales to be credited to the appropriation from which the expenditure was made;
- (c) ...establishment, maintenance, and operation of messing facilities, by contract or otherwise, in Alaska and other points outside the continental United States..., such service to be furnished to employees...and their dependents,...

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

- (d) reimbursement...of officers or employees in or under the Department...for food, clothing, medicines, and other supplies furnished by them in emergencies for the temporary relief of dislocated persons in remote localities;
- (e) providing motion-picture equipment and film for recreation of crews of vessels..., for recreation for employees in remote localities..., and for training purposes;
- (f) erecting, altering, repairing, equipping, furnishing, and maintaining...such living and working quarters and facilities as may be necessary to carry out its authorized work at remote localities not on foreign soil where such living and working accommodations are not otherwise available.”

15 USC 1517 - Transfer of Statistical or Scientific Work.

“The President is authorized, by order in writing, to transfer at any time the whole or any part of any office, bureau, division, or other branch of the public service engaged in statistical or scientific work, from the Department of State, the Department of the Treasury, the Department of Defense, the Department of Justice, the United States Postal Service, or the Department of the Interior, to the Department of Commerce; and in every such case the duties and authority performed by and conferred by law upon such office, bureau, division, or other branch of the public service, or the part thereof so transferred, shall be thereby transferred with such office, bureau, division, or other branch of the public service, or the part thereof which is so transferred. All power and authority conferred by law, both supervisory and appellate, upon the department from which such transfer is made, or the Secretary thereof, in relation to the said office, bureau, division, or other branch of the public service, or the part thereof so transferred, shall immediately, when such transfer is so ordered by the President, be fully conferred upon and vested in the Department of Commerce, or the Secretary thereof, as the case may be, as to the whole or part of such office, bureau, division, or other branch of the public service so transferred.”

15 USC 1537 - 1539 Needs Assessment for Data Management.

“Not later than 12 months after October 29, 1992, and at least biennially thereafter, the Secretary of Commerce shall complete an assessment of the adequacy of the environmental data and information systems of NOAA.”

15 USC 1540 – Cooperative Agreements

“The Secretary of Commerce, acting through the Under Secretary of Commerce for Oceans and Atmosphere, may enter into cooperative agreements and other financial agreements with any nonprofit organization to (1) aid and promote scientific and educational activities to foster public understanding of the National Oceanic and Atmospheric Administration or its programs; and (2) solicit private donations for the support of such activities.”

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

Conservation

16 USC 661 et seq.- Declaration of Purpose; Cooperation of Agencies; Surveys and Investigations; Donations.

“...the Secretary of the Interior is authorized (1) to provide assistance to, and cooperate with, Federal, State, and public or private agencies and organizations in the development, protection, rearing, and stocking of all species of wildlife, resources thereof, and their habitat, in controlling losses of the same from disease or other causes, in minimizing damages from overabundant species, in providing public shooting and fishing areas, including easements across public lands for access thereto, and in carrying out other measures necessary to effectuate the purposes of said sections; (2) to make surveys and investigations of the wildlife of the public domain, including lands and waters or interests therein acquired or controlled by any agency of the United States; and (3) to accept donations of land and contributions of funds in furtherance of the purposes of said sections.”

16 USC 757a et seq.- Anadromous, Great Lakes, and Lake Champlain Fisheries

The Act authorizes cooperative agreements with States “that are concerned with the development, conservation, and enhancement of [anadromous] fish” (section 757a(a)).

16 USC 1361 - Congressional Findings.

“The Congress finds that - (1) certain species and population stocks of marine mammals are, or may be, in danger of extinction or depletion as a result of man's activities;”

“The Secretary is authorized to make grants, or to provide financial assistance in such other form as he deems appropriate, to any Federal or State agency, public or private institution, or other person for the purpose of assisting such agency, institution, or person to undertake research in subjects which are relevant to the protection and conservation of marine mammals, and shall provide financial assistance for, research into new methods of locating and catching yellow-fin tuna without the incidental taking of marine mammals.”

16 USC 1431 et seq. - Findings, Purposes, and Policies [The National Marine Sanctuaries Act, as amended].

(b) Purposes and Policies

“The purposes and policies of this title are -

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

- (1) to identify and designate as national marine sanctuaries areas of the marine environment which are of special national significance;
- (2) to provide authority for ... conservation and management of these marine areas ...
- (3) to support, promote, and coordinate scientific research on, and monitoring of, the resources of these marine areas...
- (4) to enhance public awareness, understanding, appreciation, and wise use of the marine environment;
- (5) to facilitate to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities;
- (6) to develop and implement coordinated plans for the protection and management of these areas...;
- (7) to create models of, and incentives for, ways to conserve and manage these areas..."
- (8) to cooperate with global programs ...; and
- (9) to maintain, restore, and enhance living resources ..."

16 USC 1447a et seq. - Regional Marine Research Programs

Authorizes NOAA/EPA and Governors of certain states to appoint members to a number of regional marine research boards. Each board is to develop a comprehensive four year marine research plan and "the Administrator of the National Oceanic and Atmospheric Administration shall administer a grant program to support the administrative functions of each Board."

Authorization for the Boards expires on October 1, 1999. The authorization for appropriations expired at the end of fiscal year 1996.

16 USC 1451 et seq. - Findings, Purposes, and Policies [Coastal Zone Management Act]

Establishes a voluntary partnership between the Federal Government and coastal States. It also establishes the National Estuarine Reserve Research program, in which the Secretary of Commerce may designate an estuarine area as a national estuarine research reserve in consultation with governor of affected state.

16 USC 1456a – Coastal Zone Management Fund

"(b) (1) The Secretary shall establish and maintain a fund, to be known as the 'Coastal Zone Management Fund', which shall consist of amounts retained and deposited into the Fund under subsection (a) of this section and fees deposited into the Fund under section 1456 (i) (3) of this title"

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

16 USC 1531 et seq. – Congressional Findings and Declaration of Purposes and Policy

The purposes of the Act are “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in [the statute]” (section 1531(b)).

16 USC 1801 et seq. - Magnuson-Stevens Fishery Conservation and Management Act.

The primary purpose of the Act is “to take immediate action to conserve and manage the fishery resources found off the coasts of the United States (section 1801(b)(1)).

16 USC 3645 - Pacific Coastal Salmon Recovery

“(A) For salmon habitat restoration, salmon stock enhancement, and salmon research, including the construction of salmon research and related facilities, there is authorized to be appropriated for each of fiscal years 2000, 2001, 2002, and 2003, \$90,000,000 to the States of Alaska, Washington, Oregon, and California. Amounts appropriated pursuant to this subparagraph shall be made available as direct payments. The State of Alaska may allocate a portion of any funds it receives under this subsection to eligible activities outside Alaska.”

Amended in PL109-479 Section 302(d) as follows: Section 16(d)(2)(A) of the Pacific Salmon Treaty, as transferred by paragraph (1), is amended—

- (1) by inserting “sustainable salmon fisheries,” after “enhancement,”;
- (2) by inserting “2005, 2006, 2007, 2008, and 2009,” after “2003”; and
- (3) by inserting “Idaho,” after “Oregon,”.

16 USC 4101 et seq. – Interjurisdictional Fisheries

“The purposes of this chapter are - (1) to promote and encourage State activities in support of the management of interjurisdictional fishery resources, and (2) to promote and encourage management of interjurisdictional fishery resources through their range” (section 4101).

16 USC 4701 et seq. - Aquatic Nuisance Prevention and Control

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

Establishes an interagency Aquatic Nuisance species Task Force, of which the Administrator of NOAA is a co-chair. The task force's responsibilities include developing and implementing "a program for waters of the United States to prevent introduction and dispersal of aquatic nuisance species; to monitor, control and study such species; and to disseminate related information."

16 USC 5001 et seq. - Purpose of Convention

"It is the purpose ... to implement the Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean, signed in Moscow, February 11, 1992."

Money and Finance

31 USC 1105 - Budget Contents and Submission to Congress

(a) On or after the first Monday in January but not later than the first Monday in February of each year, the President shall submit a budget of the United States Government for the following fiscal year. Each budget shall include a budget message and summary and supporting information.

Amended in PL108-447 (FY 2005 Omnibus Appropriations Act) as follows: "*Provided further*, That beginning in fiscal year 2006 and for each fiscal year thereafter, the Secretary of Commerce shall include in the budget justification materials that the Secretary submits to Congress in support of the Department of Commerce budget (as submitted with the budget of the President under section 1105(a) of title 31, 10 United States Code) an estimate for each National Oceanic and Atmospheric Administration procurement, acquisition and construction program having a total multiyear program cost of more than \$5,000,000 and simultaneously the budget justification materials shall include an estimate of the budgetary requirements for each such program for each of the 5 subsequent fiscal years."

Navigation and Navigable Waters

33 USC 706 et seq. - Department of Commerce; Current Precipitation Information; Appropriation.

"There is authorized an expenditure as required,..., for the establishment, operation, and maintenance by the Secretary of Commerce of a network of recording and non-recording precipitation stations, known as the Hydroclimatic Network, whenever...such service is advisable..."

33 USC 883a et seq. - Surveys and Other Activities.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

“...the Secretary...is authorized to conduct the following activities:

- (1) Hydrographic and topographic surveys;
- (2) Tide and current observations;
- (3) Geodetic-control surveys;
- (4) Field surveys for aeronautical charts;
- (5) Geomagnetic, seismological, gravity, and related geophysical measurements and investigations, and observations ...”

33 USC 883b - Dissemination of Data; Further Activities.

“...the Secretary is authorized to conduct the following activities:

- (1) Analysis and prediction of tide and current data;
- (2) Processing and publication of data...;
- (3) Compilation and printing of nautical charts...;
- (4) Distribution of nautical charts...”

33 USC 883c - Geomagnetic Data; Collection; Correlation, and Dissemination.

“To provide for the orderly collection of geomagnetic data...the Secretary ... is authorized to collect, correlate, and disseminate such data.”

33 USC 883d - Improvement of Methods, Instruments, and Equipments; Investigations and Research.

“...the Secretary ... is authorized to conduct developmental work for the improvement of surveying and cartographic methods, instruments, and equipments; and to conduct investigations and research in geophysical sciences...”

33 USC 883e - Cooperative Agreements for Surveys and Investigations; Contribution of Costs Incurred by National Oceanic and Atmospheric Administration.

“(1) The Secretary of Commerce is authorized to enter into cooperative agreements with, and to receive and expend funds made available by... for surveys or investigations... or for performing related surveying and mapping activities... and for the preparation and publication of the results thereof.”

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

“(2) The Secretary of Commerce is authorized to establish the terms of any cooperative agreement entered into ... including the amount of funds to be received ... which the Secretary determines represents the amount of benefits derived ... from the cooperative agreement.”

33 USC 883f - Contracts with Qualified Organizations.

“The Secretary is authorized to contract with qualified organizations for the performance of any part of the authorized functions of the National Ocean Survey...”

33 USC 883h - Employment of Public Vessels.

“The President is authorized to cause to be employed such of the public vessels as he deems it expedient to employ, and to give such instructions for regulating their conduct as he deems proper in order to carry out the provisions of this subchapter.”

33 USC 883i - Authorization of Appropriations.

“There are hereby authorized to be appropriated such funds as may be necessary to acquire, construct, maintain, and operate ships, stations, equipment, and facilities and for such other expenditures, including personal services at the seat of government and elsewhere and including the erection of temporary observatory buildings and lease of sites therefore as may be necessary...”

33 USC 891 et seq. - Fleet Replacement and Modernization Program

“The Secretary is authorized to implement... a 15-year program to replace and modernize the NOAA fleet.”

33 USC 893et seq. - Research, Development, and Education

“The Administrator...shall establish a coordinated program of ocean, coastal, Great Lakes, and atmospheric research and development...that shall focus on the development of advanced technologies and analytical methods that will promote United States leadership in ocean and atmospheric science and competitiveness in the applied uses of such knowledge.”

33 USC 1121-1124, 1126-1129, 1131 - National Sea Grant College Program Act.

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations, Research, and Facilities
 APPROPRIATION LANGUAGE AND CODE CITATIONS

The Sea Grant Act authorizes the awarding of grants and contracts to initiate and support programs at Sea Grant colleges and other institutions for research, education, and advisory services in any field related to the conservation and development of marine resources.

In 2008, PL 110-394 (National Sea Grant College Program Amendments Act of 2008) amended 33 USC 1124 as follows –

(1) by striking “204(c)(4)(F).” in subsection (a) and inserting “204(c)(4)(F) or that are appropriated under section 208(b).”; and (2) by striking the matter following paragraph (3) in subsection (b) and inserting the following -

“The total amount that may be provided for grants under this subsection during any fiscal year shall not exceed an amount equal to 5 percent of the total funds appropriated for such year under section 212.”.

PL 110-394 amended 33 USC 1127 as follows –

(1) by striking “Not later than 1 year after the date of the enactment of the National Sea Grant College Program Act Amendments of 2002, and every 2 years thereafter,” in subsection (a) and inserting “Every 2 years,”; and (2) by adding at the end the following:

“(c) Restriction on Use of Funds.--Amounts available for fellowships under this section, including amounts accepted under section 204(c)(4)(F) or appropriated under section 212 to implement this section, shall be used only for award of such fellowships and administrative costs of implementing this section.”

PL 110-394 amended 33 USC 1131 as follows –

(1) by striking subsection (a)(1) and inserting the following: “(1) In general.--There are authorized to be appropriated to the Secretary to carry out this title—

“(A) \$72,000,000 for fiscal year 2009;

“(B) \$75,600,000 for fiscal year 2010;

“(C) \$79,380,000 for fiscal year 2011;

“(D) \$83,350,000 for fiscal year 2012;

“(E) \$87,520,000 for fiscal year 2013; and

“(F) \$91,900,000 for fiscal year 2014.”.

(2) in subsection (a)(2)—

(A) by striking “fiscal years 2003 through 2008—” and inserting “fiscal years 2009 through 2014—”;

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

(B) by striking “biology and control of zebra mussels and other important aquatic” in subparagraph (A) and inserting “biology, prevention, and control of aquatic”; and (C) by striking “blooms, including *Pfiesteria piscicida*; and” in subparagraph (C) and inserting “blooms; and”;

(3) in subsection (c)(1) by striking “rating under section 204(d)(3)(A)” and inserting “performance assessments”; and (4) by striking subsection (c)(2) and inserting the following: “(2) regional or national strategic investments authorized under section 204(b)(4);”.

33 USC 1251- Water Pollution Prevention and Control

Through the National Shellfish Indicator Program, authorizes the Secretary of Commerce, in cooperation with the Secretary of Health and Human Services and the Administrator of EPA, to establish and administer a 5-year national shellfish research program for the purpose of improving existing classification systems for shellfish growing waters using the latest technological advancements in microbiology and epidemiological methods.

33 USC 1321 - Oil and Hazardous Substances [Clean Water Act]

Authorizes the recovery of damages to natural resources in the event of an oil spill in waters of the United States. This authority has been delegated to several Federal agencies, including the Department, pursuant to an Executive Order.

33 USC 1441 - Monitoring and Research Program [Marine Protection, Research and Sanctuaries Act]

Authorizes the Secretary of Commerce, in coordination with other agencies, to initiate a comprehensive and continuing program of monitoring and research regarding the effects of the dumping of material into ocean waters or other coastal waters where the tide ebbs and flows or into the Great Lakes or their connecting waters.

33 USC 1442 - Research Program Respecting Possible Long-range Effects of Pollution, Overfishing, and Man-induced Changes of Ocean Ecosystems

Authorizes the Secretary of Commerce, in consultation with other agencies, to ... “initiate a comprehensive and continuing program of research with respect to the possible long-range effects of pollution, overfishing, and man-induced changes of ocean ecosystems.”

33 USC 1443 - Regional Management Plans for Waste Disposal in Coastal Areas.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

Authorizes the Secretary of Commerce to assist the Environmental Protection Agency in assessing “the feasibility in coastal areas of regional management plans for the disposal of waste materials.”

33 USC 1444 - Annual Report

Requires the Secretary of Commerce to provide Congress with an annual report on the Department’s activities to monitor ocean dumping and research the long-range effects of pollution on ocean ecosystems.

33 USC 2706 - Natural Resources [NOAA Oil and Hazardous Substance Spill Cost Reimbursement].

“...the National Oceanic and Atmospheric Administration acts as trustee of said marine environment and/or resources, shall be deposited in the Damage Assessment and Restoration Revolving Fund ... for purposes of obligation and expenditure in fiscal year 1991 and thereafter, sums available in the Damage Assessment and Restoration Revolving Fund may be transferred, upon the approval of the Secretary ..., to the Operations, Research, and Facilities appropriation of the National Oceanic and Atmospheric Administration.”

33 USC 2801 et seq. - National Coastal Monitoring Act.

“The purposes of this chapter are to -

- (1) establish a comprehensive national program for consistent monitoring of the Nation's coastal ecosystems;
- (2) establish long-term water quality assessment and monitoring programs for high priority coastal waters that will enhance the ability of Federal, State, and local authorities to develop and implement effective remedial programs for those waters;
- (3) establish a system for reviewing and evaluating the scientific, analytical, and technological means that are available for monitoring the environmental quality of coastal ecosystems;
- (4) establish methods for identifying uniform indicators of coastal ecosystem quality;
- (5) provide for periodic, comprehensive reports to Congress concerning the quality of the Nation's coastal ecosystems;
- (6) establish a coastal environment information program to distribute coastal monitoring information;
- (7) provide state programs authorized under the Coastal Zone Management Act of 1972 (16 U.S.C. 1451 et seq.) with information necessary to design land use plans and coastal zone regulations that will contribute to the protection of coastal ecosystems; and
- (8) provide certain water pollution control programs authorized under the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.) with information necessary to design and implement effective coastal water pollution controls.”

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

33 USC 3001 et seq.- NOAA Corps Officers

PL 108-219 states: "All action in the line of duty by, and all Federal agency actions in relation to (including with respect to pay, benefits, and retirement) a de facto officer of the commissioned corps of the National Oceanic and Atmospheric Administration who was appointed or promoted to that office without Presidential action, and without the advice and consent of the Senate, during such time as the officer was not properly appointed in or promoted to that office, are hereby ratified and approved if otherwise in accord with the law, and the President alone may, without regard to any other law relating to appointments or promotions in such corps, appoint or promote such a de facto officer temporarily, without change in the grade currently occupied in a de facto capacity, as an officer in such corps for a period ending not later than 180 days from the date of enactment of this Act."

33 USC 3044 et seq. -Retirement for Length of Service

PL 107-372 states: "An officer who has completed 20 years of service, of which at least 10 years was service as a commissioned officer, may at any time thereafter, upon application by such officer and in the discretion of the President, be placed on the retired list.

33 USC 3045 - Computation of Retired Pay

PL 107-372 states: " (a) Officers first becoming members before September 8, 1980: Each officer on the retired list who first became a member of a uniformed service before September 8, 1980, shall receive retired pay at the rate determined by multiplying (1) the retired pay base determined under section 1406(g) of title 10; by (2) 2 1/2 percent of the number of years of service that may be credited to the officer under section 1405 of such title as if the officer's service were service as a member of the Armed Forces. The retired pay so computed may not exceed 75 percent of the retired pay base. (b) Officers first becoming members on or after September 8, 1980. Each officer on the retired list who first became a member of a uniformed service on or after September 8, 1980, shall receive retired pay at the rate determined by multiplying (1) the retired pay base determined under section 1407 of title 10; by (2) the retired pay multiplier determined under section 1409 of such title for the number of years of service that may be credited to the officer under section 1405 of such title as if the officer's service were service as a member of the Armed Forces. (c) Treatment of full and fractional parts of months in computing years of service (1) In general, in computing the number of years of service of an officer for the purposes of subsection (a) of this section - (A) each full month of service that is in addition to the number of full years of service creditable to the officer shall be credited as 1/12 of a year; and (B) any remaining fractional part of a month shall be disregarded. (2) Rounding Retired pay computed under this section, if not a multiple of \$1, shall be rounded to the next lower multiple of \$1."

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

33 USC 3046 - Retired Grade and Retired Pay

PL 107-372 states: "Each officer retired pursuant to law shall be placed on the retired list with the highest grade satisfactorily held by that officer while on active duty including active duty pursuant to recall, under permanent or temporary appointment, and shall receive retired pay based on such highest grade, if - (1) the officer's performance of duty in such highest grade has been satisfactory, as determined by the Secretary of the department or departments under whose jurisdiction the officer served; and (2) unless retired for disability, the officer's length of service in such highest grade is no less than that required by the Secretary of officers retiring under permanent appointment in that grade.

Use of Oil Spill Liability Trust Fund

PL 111-281, Sec. 708 amends Section 1012(a)(5) of the Oil Spill Liability Trust Fund Act by: "(2) by inserting after subparagraph (A) the following:“(B) not more than \$15,000,000 in each fiscal year shall be available to the Under Secretary of Commerce for Oceans and Atmosphere for expenses incurred by, and activities related to, response and damage assessment capabilities of the National Oceanic and Atmospheric Administration.”

The Public Health and Welfare

42 USC 8902-8905 - Acid Precipitation Program

Authorized the Administrator of NOAA to serve as co-chair of a task force to prepare a comprehensive research plan for a program to study the causes and effects of acid precipitation. Also authorizes the Administrator of NOAA to serve as the director of a related research program.

42 USC 9601 et seq. (CERCLA)

Through associated regulations and delegations, authorizes the Administrator to provide technical assistance to the Administrator, EPA, for hazardous waste response under CERCLA and the National Contingency Plan and authorizes the Administrator to act as a natural resource trustee with authority to bring a cause of action for damages resulting from an injury to, destruction of or loss of resources under NOAA's jurisdiction.

Public Lands

43 USC 1347e - Safety and Health Regulations

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

Authorizes the Secretary of Commerce in cooperation with other Federal entities, to conduct studies of underwater diving techniques and equipment “suitable for protection of human safety and improvement of diver performance....”

Public Printing and Documents

44 USC 1307 - Sale and Distribution of NOAA Nautical and Aeronautical Products.

“All nautical and aeronautical products created or published ... shall be sold at ... prices ... the Secretary of Commerce shall establish annually ... so as to recover all costs attributable to data base management, compilation, printing, and distribution of such products.”

Transportation

49 USC 44720 - Meteorological services

The Administrator of the Federal Aviation Administration shall make recommendations to the Secretary of Commerce on providing meteorological services necessary for the safe and efficient movement of aircraft in air commerce. In providing the services, the Secretary shall cooperate with the Administrator and give complete consideration to those recommendations.

“To promote safety and efficiency in air navigation to the highest possible degree, the Secretary shall -(1)observe, measure, investigate, and study atmospheric phenomena, and maintain meteorological stations and offices...(2) provide reports to the Administrator (3)cooperate with persons engaged in air commerce in meteorological services...(4)maintain and coordinate international exchanges of meteorological information... (5) participate in developing an international basic meteorological reporting network...(6)coordinate meteorological requirements in the United States to maintain standard observations...;(7)promote and develop meteorological science....

Interjurisdictional Fisheries Act

97 Stat. 1409

This Act authorizes NMFS fisheries programs not otherwise authorized by law, including research to reduce entanglement of marine mammals in fishing gear, development of habitat restoration techniques, restoration of Chesapeake Bay, and conservation of Antarctic living marine resources.

Omnibus Public Land Management Act of 2009

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

PL 111-11, Sec 12002

Establishes a national ocean exploration program within the National Oceanic and Atmospheric Administration (NOAA) that promotes collaboration with other federal ocean and undersea research and exploration programs. Requires convening an ocean exploration and undersea research technology and infrastructure task force. Establishes the Ocean Exploration Advisory Board. Authorizes appropriations.

PL 111-11, Sec 12202

Ocean and Coastal Mapping Integration Act - Directs the President to establish a coordinated federal program to develop an ocean and coastal mapping plan for the Great Lakes and coastal state waters, the territorial sea, the exclusive economic zone, and the continental shelf of the United States that enhances ecosystem approaches in decision-making for conservation and management of marine resources and habitats, establishes research and mapping priorities, supports the siting of research and other platforms, and advances ocean and coastal science. Requires a plan for an integrated ocean and coastal mapping initiative within NOAA. Authorizes appropriations.

PL 111-11, Sec 12304

Integrated Coastal and Ocean Observation System Act of 2009 - Directs the President to establish a National Integrated Coastal and Ocean Observation System that is designed to address regional and national needs for ocean information, to gather specific data on key coastal, ocean, and Great Lakes variables, and to ensure timely and sustained dissemination and availability of such data. Requires an advisory committee. Authorizes appropriations.

PL 111-11, Sec 12404

Federal Ocean Acidification Research And Monitoring Act of 2009 or the FOARAM Act - Directs the Joint Subcommittee on Ocean Science and Technology of the National Science and Technology Council to: (1) coordinate federal activities on ocean acidification and establish an interagency working group; and (2) develop a strategic plan for federal research and monitoring on ocean acidification. Requires specified ocean acidification programs in NOAA, the National Science Foundation (NSF), and the National Aeronautics and Space Administration (NASA). Authorizes appropriations.

PL 111-11, Sec 12502

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
APPROPRIATION LANGUAGE AND CODE CITATIONS

Coastal and Estuarine Land Conservation Program Act - (Sec. 12502) Amends the Coastal Zone Management Act of 1972 to authorize the Secretary of Commerce to conduct a Coastal and Estuarine Land Conservation Program to protect important coastal and estuarine areas. Requires related property acquisition grants to coastal states with approved coastal zone management plans or National Estuarine Research Reserve units. Authorizes appropriations.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
CONSULTING AND RELATED SERVICES
(Dollars in Thousands)

	2012 <u>Actual</u>	2013 <u>Estimate</u>	2014 <u>Estimate</u>
Management and Professional Support Services	\$59,957	\$61,528	\$66,596
Studies, Analysis and Evaluations	\$24,598	\$25,242	\$27,321
Engineering and Technical Services	\$69,181	\$70,994	\$76,841
Total	\$153,735	\$157,764	\$170,759

Consulting Services are those services of a pure nature relating to the governmental functions of agency administration and management and agency problem management. These services are normally provided by persons or organizations generally considered to have knowledge and special abilities that are not usually available within the agency. Such services can be obtained through personnel appointments, procurement contracts, or advisory committees.

Management and professional services deal with management data collection, policy review or development, program development, review or evaluation, systems engineering and other management support services. Special studies and analyses deal with the highly specialized areas of agency activity, e.g., air quality, chemical, environmental, geophysical, oceanographic, technological, and etc. Management and support services for research and development are procurement actions that meet the description of management and professional services or special studies and analyses but are funded under research and development.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
PERIODICAL, PAMPHLETS, AND AUDIOVISUAL PRODUCTS
(Dollars in Thousands)

	2012 <u>Actual</u>	2013 <u>Estimate</u>	2014 <u>Estimate</u>
Periodicals	\$2,439	\$2,503	\$2,463
Pamphlets	\$1,756	\$1,802	\$1,773
Audiovisuals	<u>\$832</u>	<u>\$853</u>	<u>\$839</u>
Total	\$5,027	\$5,158	\$5,074

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
AVERAGE GRADE AND SALARY
(Dollars in Thousands)

	2012 <u>Actual</u>	2013 <u>Estimate</u>	2014 <u>Estimate</u>
Average executive and SES level pay plans	\$165,889	\$166,718	\$167,548
Average GS/GM grade	12	12	12
Average GS/GM salary	\$91,502	\$91,959	\$92,417
Average Pay Band salary	\$97,837	\$98,326	\$98,816
Average Commissioned Officers salary	\$102,664	\$104,409	\$103,691
Average salary for other positions (FWS/Wage Marine)	\$52,702	\$52,966	\$53,495

Average salaries provided here reflect Federal Civilian and Military pay raises for 2012 and 2013, respectively.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 Procurement, Acquisition, and Construction
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar Amounts in Thousands)

	Positions	FTE	Appropriation	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution	196	186	2,014,215	1,997,146	2,029,444
less: Carryover	0	0	0	0	(24,298)
less: Disaster Relief Appropriations Act	0	0	(186,000)	(186,000)	(186,000)
plus: 2014 Other Adjustments to Base	(5)	(5)	(15,651)	1,418	418
FY 2014 Base	191	181	1,812,564	1,812,564	1,819,564
Admin Savings: Actual reductions					
plus (or less): 2014 Program Changes	(7)	(7)	304,991	304,991	304,991
FY 2014 Estimate	184	174	2,117,555	2,117,555	2,124,555

Department of Commerce
 National Oceanic and Atmospheric Administration
 Procurement, Acquisition, and Construction
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actual		Annualized CR		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Ocean Service	Pos/BA	11	7,992	1	8,042	1	8,042	1	6,700	0	(1,342)
	FTE/OBL	11	8,593	1	9,398	1	8,042	1	6,700	0	(1,342)
National Marine Fisheries Service	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	31	0	91	0	0	0	0	0	0
Oceanic and Atmospheric Research	Pos/BA	0	10,286	0	10,350	0	10,350	0	10,379	0	29
	FTE/OBL	0	10,282	0	10,354	0	10,350	0	10,379	0	29
National Weather Service	Pos/BA	32	90,600	32	91,174	27	91,592	25	117,315	(2)	25,723
	FTE/OBL	31	90,877	31	95,677	26	91,592	24	117,315	(2)	25,723
National Environmental Satellite, Data, & Info Service	Pos/BA	160	1,694,957	158	1,705,678	158	1,705,678	158	1,978,449	0	272,771
	FTE/OBL	152	1,673,149	149	1,722,666	149	1,705,678	149	1,978,449	0	272,771
Program Support	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	224	0	924	0	0	0	0	0	0
Office of Marine Aviation & Operations	Pos/BA	2	2,390	5	3,902	5	3,902	0	11,712	(5)	7,810
	FTE/OBL	2	2,398	5	4,334	5	3,902	0	11,712	(5)	7,810
Disaster Relief Appropriations Act	Pos/BA	0	0	0	186,000	0	0	0	0	0	0
	FTE/OBL	0	0	0	186,000	0	0	0	0	0	0
Less Deobligations/Other	Pos/BA	0	(8,000)	0	(8,000)	0	(7,000)	0	(7,000)	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Total	Pos/BA	205	1,798,225	196	1,997,146	191	1,812,564	184	2,117,555	(7)	304,991
	FTE/OBL	196	1,785,554	186	2,029,444	181	1,819,564	174	2,124,555	(7)	304,991

Department of Commerce
 National Oceanic and Atmospheric Administration
 Procurement, Acquisition, and Construction
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar Amounts in Thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
	FTE	Actual Amount	FTE	Annualized CR Amount	FTE	Base Program Amount	FTE	Estimate Amount	FTE	Amount
Direct Discretionary Obligation	196	1,785,554	186	2,029,444	181	1,819,564	174	2,124,555	(7)	304,991
Total Obligations	196	1,785,554	186	2,029,444	181	1,819,564	174	2,124,555	(7)	304,991
Adjustments to Obligations:										
Cash Refunds/Prior Year Recoveries	0	(2,222)	0	0	0	0	0	0	0	0
Deobligations	0	(2,999)	0	(8,000)	0	(7,000)	0	(7,000)	0	0
Unobligated Balance, EOY	0	24,298	0	(24,298)	0	0	0	0	0	0
Unobligated Balance Expired	0	2,990	0	0	0	0	0	0	0	0
Unobligated Balance Adj SOY	0	(9,396)	0	0	0	0	0	0	0	0
Unobligated Balance, Not Apportioned	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	196	1,798,225	186	1,997,146	181	1,812,564	174	2,117,555	(7)	304,991
Financing from Transfers and Other:										
Transfer from ORF to PAC	0	0	0	0	0	0	0	0	0	0
Transfer from PAC to ORF	0	17,869	0	16,069	0	0	0	0	0	0
Transfer from FFPA	0	0	0	0	0	0	0	0	0	0
Transfer from P&D to ORF	0	0	0	0	0	0	0	0	0	0
Transfer from CZMF to ORF	0	0	0	0	0	0	0	0	0	0
Transfer from PCSRF to ORF	0	0	0	0	0	0	0	0	0	0
Transfer from USAID	0	0	0	0	0	0	0	0	0	0
Transfer to OIG	0	1,000	0	1,000	0	0	0	0	0	0
less: Disaster Relief Appropriations Act		0	0	(186,000)	0	0	0	0	0	0
Net Appropriation	196	1,817,094	186	1,828,215	181	1,812,564	174	2,117,555	(7)	304,991

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
SUMMARY OF FINANCING
(Dollar Amounts in Thousands)

	FY 2012 Actuals	FY 2013 Annualized CR	FY 2014 Base Program	FY 2014 Estimate	Increase/(Decrease) over FY 2014 Base
Direct Discretionary Obligation	1,785,554	2,029,444	1,819,564	2,124,555	304,991
Total Obligations	1,785,554	2,029,444	1,819,564	2,124,555	304,991
Adjustments and Obligations:					
Cash Refund	(2,222)	0	0	0	0
Recoveries	0	0	0	0	0
Deobligations	(2,999)	(8,000)	(7,000)	(7,000)	0
Unobligated balance, adj. SOY	(9,396)	0	0	0	0
Unobligated balance, EOY	24,298	(24,298)	0	0	0
Unobligated balance, expiring EOY	2,990	0	0	0	0
Unobligated Balance, rescission	0	0	0	0	0
Total Budget Authority	1,798,225	1,997,146	1,812,564	2,117,555	304,991
Financing from Transfers and Other:					
Transfer to ORF	17,869	16,069	0	0	0
Transfer from GSA	0	0	0	0	0
Transfer from ORF	0	0	0	0	0
Transfer to OIG	1,000	1,000	0	0	0
Transfer from Census to PAC	0	0	0	0	0
Unobligated Balance, Rescission	0	0	0	0	0
Net Appropriation	1,817,094	2,014,215	1,812,564	2,117,555	304,991

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition and Construction
ADJUSTMENTS TO CHANGES TO BASE
(Dollar Amounts in Thousands)

	FTE	Amount
<u>Adjustments:</u>		
Restoration of FY 2013 deobligations	0	8,000
FY 2013 Transfer to OIG		(1,000)
Restoration of FY 2013 Transfer to ORF		(16,069)
Restoration of the Reprogramming of the FY 2012 Spend Plan	0	418
Subtotal, Adjustments	0	(8,651)
<u>Financing:</u>		
NOAA expects to realize recoveries of prior year obligations of \$7,000,000. This amount will be used to offset the budget authority in FY 2014.	0	(7,000)
Subtotal, Financing	0	(7,000)
Other Changes	0	0
Total Adjustments to Base	0	(15,651)

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction **SUMMARY**
OF REQUIREMENTS BY OBJECT CLASS (Dollar
Amounts in Thousands)

Object Class	FY 2012 Actual	FY 2013 Annualized CR	FY 2014 Base	FY 2014 Estimate	Increase / (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	32,173	33,216	32,785	32,575	(210)
11.3 Other than full-time permanent	356	368	363	6	(357)
11.5 Other personnel compensation	457	472	466	463	(3)
11.6 Military personnel basic allowance for housing	0	0	0	0	0
11.7 Military personnel	0	0	0	0	0
11.8 Special personnel services payments	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
11.9 Total Personnel Compensation	32,986	34,055	33,614	33,044	(570)
12 Civilian personnel benefits	9,074	9,368	9,246	9,086	(161)
13 Benefits for former personnel	5	5	5	5	0
21 Travel and transportation of persons	2,439	2,518	2,485	2,485	0
22 Transportation of things	37	38	37	37	0
23.1 Rental payments to GSA	2,855	2,947	2,909	2,909	0
23.2 Rental payments to others	1,127	1,163	1,148	1,148	0
23.3 Communications, utilities and miscellaneous charges	4,533	4,680	4,619	4,619	0
24 Printing and reproduction	36	37	37	37	0
25.1 Advisory and assistance services	47,729	49,276	48,638	82,909	34,271
25.2 Other services	108,359	111,872	110,423	336,451	226,028
25.3 Purchases of goods and services from Govt accounts	1,307,599	1,349,993	1,332,505	1,332,505	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	21,220	21,908	21,624	27,607	5,983
26 Supplies and materials	9,278	9,579	9,454	9,454	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Procurement, Acquisition, and Construction **SUMMARY**
OF REQUIREMENTS BY OBJECT CLASS (Dollar
 Amounts in Thousands)

Object Class	FY 2012 Actual	FY 2013 Annualized CR	FY 2014 Base	FY 2014 Estimate	Increase / (Decrease)
31 Equipment	196,525	202,897	200,268	239,029	38,761
32 Lands and structures	642	663	655	655	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	41,094	42,427	41,877	42,556	679
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	18	19	19	19	0
44 Refunds	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
99 Total Obligations	1,785,554	1,843,444	1,819,564	2,124,555	304,991
Cash Refund	(2,222)				
Prior Year Recoveries					
Deobligations	(2,999)	(8,000)	(7,000)	(7,000)	
Unobligated Balance, expiring	2,990				
Unobligated Balance, Start of Year	(9,396)				
Unobligated Balance, End of Year	24,298	(24,298)			
Subtotal Budget Authority	<u>1,798,225</u>	<u>1,811,146</u>	<u>1,812,564</u>	<u>2,117,555</u>	<u>304,991</u>
Total Discretionary PAC Budget Authority	1,798,225	1,811,146	1,812,564	2,117,555	304,991
Positions	205	196	191	184	(7)
FTE	196	186	181	174	(7)

Department of Commerce
 National Oceanic and Atmospheric Administration
 NOAA Working Capital Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar Amounts in Thousands)

	Positions	FTE	Budget Authority	Reimbursable Obligations
FY 2013 Annualized Continuing Resolution	0	0		0
less: Unobligated balance	0	0		0
plus: 2014 Adjustments to Base	0	0		0
FY 2014 Base	55	55		100,000
plus(or less): 2014 Program Changes	0	0		0
FY 2014 Estimate	55	55		100,000

Department of Commerce
National Oceanic and Atmospheric Administration
NOAA Working Capital Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar Amounts in Thousands)

Comparison by program/sub-program		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actual		Annualized CR		Base		Estimate		Personnel	Amount
Program Support - OCIO	Pos/BA	0	0	0	0	55	96,666	55	96,666	0	0
	FTE/OBL	0	0	0	0	55	96,666	55	96,666	0	0
NESDIS - Satellite, Data, & Info Service	Pos/BA	0	0	0	0	0	3,334	0	3,334	0	0
	FTE/OBL	0	0	0	0	0	3,334	0	3,334	0	0
TOTALS	Pos/BA	0	0	0	0	55	100,000	55	100,000	0	0
	FTE/OBL	0	0	0	0	55	100,000	55	100,000	0	0
Unobligated balance, start of year			0		0		0		0		0
Unobligated balance, end of year			0		0		0		0		0
Total reimbursable authority			0		0		100,000		100,000		0

Department of Commerce
National Oceanic and Atmospheric Administration
NOAA Working Capital Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar Amounts in Thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
	FTE	Actual Amount	FTE	Annualized CR Amount	FTE	Base Amount	FTE	Estimate Amount	FTE	Amount
Direct Discretionary Obligation	0	0	0	0	55	100,000	55	100,000	0	0
Total Obligations	0	0	0	0	55	100,000	55	100,000	0	0
Adjustments to Obligations:										
Cash Refunds/Prior Year Recoveries	0	0	0	0	0	0	0	0	0	0
Deobligations	0	0	0	0	0	0	0	0	0	0
Unobligated Balance Expired	0	0	0	0	0	0	0	0	0	0
Unobligated Balance Adj SOY	0	0	0	0	0	0	0	0	0	0
Unobligated balance, Adj EOY	0	0	0	0	0	0	0	0	0	0
Transfer to NOAA ORF	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	0	0	0	0	55	100,000	55	100,000	0	0
Financing from Transfers and Other:										
Transfer from P&D to ORF	0	0	0	0	0	0	0	0	0	0
Transfer from CZMF to ORF	0	0	0	0	0	0	0	0	0	0
Transfer from Pacific Salmon	0	0	0	0	0	0	0	0	0	0
Transfer from PAC	0	0	0	0	0	0	0	0	0	0
Transfer from PAC to ORF	0	0	0	0	0	0	0	0	0	0
Net Appropriation										

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: NOAA WORKING CAPITAL FUND

BASE JUSTIFICATION FOR FY 2014:

For FY 2014, NOAA requests a total of \$100,000,000 funded on a reimbursable basis for a WCF.

NOAA proposes to establish a NOAA Working Capital Fund, which will finance, on a reimbursable basis, NOAA-wide information technology functions that are more efficiently and economically performed on a centralized basis.

Proposed Legislation:

Sec. 110. There is hereby established in the National Oceanic and Atmospheric Administration a Working Capital Fund, which shall be available without fiscal year limitation, for expenses and equipment necessary for the performance of such services and projects that the Administrator of the National Oceanic and Atmospheric Administration determines may be performed more advantageously when centralized: Provided, That such central services shall, to the fullest extent practicable, be used to make unnecessary the maintenance of separate like services in the divisions and offices of the National Oceanic and Atmospheric Administration and the Department of Commerce: Provided further, That a separate schedule of expenditures and reimbursements, and a statement of the current assets and liabilities of the Working Capital Fund as of the close of the last completed fiscal year, shall be prepared each year: Provided further, That notwithstanding 31. U.S.C. 3302, the Working Capital Fund may be credited with advances and reimbursements from applicable appropriations of the divisions and offices for whom the services are provided: Provided further, That any inventories, equipment, and other assets pertaining to the services to be provided by such funds, either on hand or on order, less the related liabilities or unpaid obligations, and any appropriations made hereafter for the purpose of providing capital, shall be used to capitalize the Working Capital Fund: Provided further, That the Working Capital Fund shall provide for centralized services at rates which will return in full all expenses of operation, including depreciation or replacement of Fund plant, equipment, and automated data processing software and hardware systems, and an amount necessary to maintain a reasonable operating reserve as determined by the Administrator of the National Oceanic and Atmospheric Administration and the Secretary of Commerce.

NOAA Working Capital Fund Overview:

The NOAA Working Capital Fund is a non-appropriated account which finances, on a reimbursable basis, NOAA-wide information technology functions that are more efficiently and economically performed on a centralized basis.

- Enterprise Provision of IT Services- Consistent with NOAA's IT vision, cost reductions can be achieved by eliminating unnecessary duplication within IT infrastructure investments through the establishment of shared services, consolidated assets, and expanded strategic sourcing. These efforts will be complemented by the establishment of standardized processes and key performance metrics that drive service delivery improvements and provide the workforce with appropriate incentives to succeed. Enterprise IT services include Grants Online, eMail and Unified Messaging Service (UMS), NOAA Directory Services, NOAA Net-NOC, Administrative Licenses (Oracle), NOAA Enterprise Telecom Billing, Microsoft and Secure Active Directory Support, NOAA Emergency Notification System (ENS). The CIO Business Operating Plans (BOPs) provide technical and engineering services for the development and maintenance of network and telecommunications infrastructure. Architecture & Engineering of Shared

Infrastructure Services include the development and operations & maintenance (O&M) of the strategic enterprise architecture, engineering and design services (e.g., capacity planning) of core data centers, and interaction with the NOAA Link cloud service provider(s).

- Enterprise Provision of IT Security- Enterprise IT security includes Enterprise IT Security hardware, Cybersecurity Assessment and Management (CSAM), and NOAA Emergency Operations Center (WebEOC). Enterprise IT security activity (1) Implements a comprehensive insider threat detection and management capability; (2) Implements the logical access and 2-factor authentication requirements of HSPD-12 (Policy for a Common Identification Standard for Federal Employees and Contractors) to complement and leverage the Facilities Program's implementation of the HSPD-12 Physical Access Control System (PACS); (3) Eliminates 8 known single points of failure in Silver Spring Metro Center (SSMC) IT infrastructure; and (4) Acquires, manages, and deploys enterprise security software for patch management, virus protection, anti-spam, security event correlation, and other functions.
- Consolidated Website Operations- The CIO will facilitate the migration of several hundred additional websites to the NOAA Web Operations Center (WOC), an enterprise-wide service for providing public access to NOAA data. NOAA has over 600 websites; most are hosted by individual Line and Staff organizations. The Web Operations Center (WOC) is a unified web service available by all organizational units in NOAA, but currently only an estimated 60% of NOAA websites reside at the WOC. The WOC acts as a data repository whereby any NOAA element can securely post information for public access. It is highly reliable with five locations dispersed across the US and can efficiently scale to meet all NOAA requirements for secure, public dissemination. By migrating the majority of NOAA's websites to the WOC, significant savings in NOAA's budget can be gained from reducing duplication, aggregating demand, pooling buying power, and pursuing safe and secure IT cloud solutions. NOAA is planning to aggressively pursue efficiencies by consolidating its websites to public, community, and private clouds.
- Consolidated Data Centers- The CIO will reduce and consolidate NOAA Data Centers with the goal of having services provided by a relatively small number of large, state of the art, high performing and well-managed facilities distributed across NOAA's geographic footprint. Data center servers will be substantially virtualized, resulting in higher server utilization. NOAA will no longer host the majority of commodity infrastructure services, but rather acquire these as managed services from either commercial public or Federal community cloud providers. The overall data center architecture will be designed to minimize aggregate data center costs across NOAA (including telecommunications to deliver data and virtual services), maximize performance and efficiency through intelligent load balancing, and mitigate current mission risks through enhanced failover and alternative site processing capabilities.
- Enterprise Archiving- The Comprehensive Large Array Data Stewardship System (CLASS) program currently supports large data arrays from satellite programs. FY 2014 funding within the NOAA Working Capital Fund will be used to conduct a study to assess whether a fee-for-service model could be implemented within CLASS, and also to determine whether CLASS' current capability could support an Enterprise Archive Service. An Enterprise Archive Service would be used to provide additional archival storage for NOAA's environmental data from other NOAA line offices and programs.

- NOAALink- Improves IT acquisition practices across NOAA, establishes enterprise-wide solutions, standardizes common IT products and services, leverages purchasing power, and achieves the most significant cost advantages possible.

Department of Commerce
 National Oceanic and Atmospheric Administration
 NOAA Working Capital Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in Thousands)

Object Class	FY 2012 Actual	FY 2013 Annualized CR	FY 2014 Base	FY 2014 Estimate	Increase / (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	0	0	5,454	5,454	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.6 Military personnel basic allowance for housing	0	0	0	0	0
11.7 Military personnel	0	0	0	0	0
11.8 Special personnel services payments	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
11.9 Total Personnel Compensation	0	0	5,454	5,454	0
12 Civilian personnel benefits	0	0	1,430	1,430	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	54	54	0
22 Transportation of things	0	0	15	15	0
23.1 Rental payments to GSA	0	0	3,193	3,193	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Communications, utilities and miscellaneous charge	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	0	0	70,507	70,507	0
25.3 Other goods and services from Federal sources	0	0	0	0	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 NOAA Working Capital Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in Thousands)

Object Class	FY 2012 Actual	FY 2013 Annualized CR	FY 2014 Base	FY 2014 Estimate	Increase / (Decrease)
26 Supplies and materials	0	0	11,245	11,245	0
31 Equipment	0	0	8,103	8,103	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies, and contributions	0	0	0	0	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	0	0	0	0
44 Refunds	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
99 Total Obligations	0	0	100,000	100,000	0
Unobligated Balance Lapse					
Cash Refund	0	0	0	0	0
De-obligations	0	0	0	0	0
Prior Year Recoveries	0	0	0	0	0
Unobligated Balance, Start of Year	0	0			
Transfer of Unobligated P&D Balance	0	0			
Unobligated Balance, End of Year	0	0			
Unobligated Balance, Expiring	<u>0</u>	<u>0</u>			
Subtotal Budget Authority	0	0	0	0	0
Less: NOAA Corps	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total Discretionary ORF Budget Authority	0	0	0	0	0
Positions	0	0	55	55	0
FTE	0	0	55	55	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 NOAA Working Capital Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in Thousands)

Personnel Data	FY 2012 Actual	FY 2013 Annualized CR	FY 2014 Base	FY 2014 Estimate	Increase/ Decrease
Full-Time Equivalent Employment:					
Full-time permanent	0	0	55	55	0
Other than full time permanent	0	0	0	0	0
Total	0	0	55	55	0
Authorized Positions:					
Full-time permanent	0	0	55	55	0
Other than full time permanent	0	0	0	0	0
Total	0	0	55	55	0

Department of Commerce
National Oceanic and Atmospheric Administration
NOAA Working Capital Fund
DIRECT COST BY OFFICE
(Dollar amounts in thousands)

	FY 2012			FY 2013			FY 2014		
	POS	FTE	Amount	POS	FTE	Amount	POS	FTE	Amount
Offices:									
Program Support - OCIO	0	0	0	55	55	96,666	55	55	96,666
NESDIS	0	0	0	0	0	3,334	0	0	3,334
Total Working Capital Fund	0	0	\$0	55	55	\$ 100,000	55	55	\$ 100,000

Department of Commerce
 National Oceanic and Atmospheric Administration
 NOAA Working Capital Fund
DIRECT COST BY OFFICE
 (Dollar amounts in thousands)

	FY 2012 Actual	FY 2013 Annualized CR	FY 2014 Estimate
National Ocean Service	0	0	\$9,355
National Marine Fisheries Service	0	0	16,008
Oceanic and Atmospheric Research	0	0	9,738
National Weather Service	0	0	31,712
Satellite, Data, Info Service	0	0	21,674
Office of Marine and Aviation Operations	0	0	3,057
Program Support	0	0	8,456
Total NOAA	\$0	\$0	\$100,000

BUDGET PROGRAM: NATIONAL OCEAN SERVICE

For FY 2014, NOAA requests a net increase of \$29,871,000 and 7 FTE above the FY 2014 base level for a total of \$529,209,000 and 1,248 FTE for the National Ocean Service after technical transfers of \$501,000 and 1 FTE to the National Marine Fisheries Service. This includes \$4,350,000,000 and 0 FTE in inflationary adjustments and \$714,000 in IT savings for reinvestment in DOC Working Capital Fund IT initiatives.

National Ocean Service Overview

The National Ocean Service (NOS) is the primary Federal agency that is responsible for enabling and promoting the sustainable, safe, and efficient use of coastal resources and coastal places. As the health of marine resources faces increasing threats, NOS's science-based products and services have never been more essential to the Nation's economic and ecological well-being. In addition to informing smart resource management and stewardship, NOS directly enables the safe and efficient operation of all oceangoing economic activity—including maritime commerce, offshore energy development, fishing, aquaculture, and tourism.

In 2014, NOAA is proposing to restructure National Ocean Service projects, programs and activities (PPAs) as part of a broader effort to refocus NOS and improve coordination and collaboration among activities that serve its interlocking missions and mandates. The new budget structure presents a more functional grouping of budgetary resources while retaining separate PPAs for major extramural activities. NOAA believes that this approach balances transparency with enhanced accountability for achieving ocean and coastal goals and objectives at the line office level. This restructure is reflected in the crosswalk tables provided in the ORF Exhibits 18 and 19 (pages ORF-18 and ORF-19) and in the table accompanying this narrative (page NOS-5).

The National Ocean Service proposes three sub-programs in the restructuring under the Operations, Research and Facilities (ORF) account (\$465,296,000 and 1,224 FTE), which include:

- Navigation, Observations and Positioning (\$180,138,000 and 575 FTE) includes NOAA's physical oceanographic activities conducted under the authority of the Coast and Geodetic Survey Act, the Hydrographic Services Improvement Act, the Integrated Coastal and Ocean Observation System Act, and the Ocean and Coastal Mapping Integration Act.
- Coastal Science and Assessment (\$72,282,000 and 312 FTE) includes research, assessment and monitoring programs conducted under the authority of the Harmful Algal Bloom and Hypoxia Research and Control Act; the National Coastal Monitoring Act; the Marine Debris Act; the Oceans and Human Health Act; the Oil Pollution Act; and the Comprehensive Environmental Response, Compensation, and Liability Act.
- Ocean and Coastal Management and Services (\$212,876,000 and 337 FTE) includes NOAA programs conducted under the authority of the Coastal Zone Management Act, the National Marine Sanctuaries Act, Executive Order 13158 (Marine Protected Areas) and the Coral Reef Conservation Act.

Procurement, Acquisition, and Construction (PAC) activities (\$8,042,000 and 1 FTE) include: the Coastal Estuarine Land Conservation Program (CELCP), the National Estuarine Research Reserve System (NERRS) Construction and Land Acquisition Program and the National Marine Sanctuaries Construction Program.

NOS manages two mandatory accounts, the NOAA Damage Assessment and Restoration Revolving Fund (\$25,000,000 and 16 FTE) and the Sanctuaries Enforcement Asset Forfeiture Fund (\$1,000,000 and 0 FTE).

- The NOAA Damage Assessment and Restoration Revolving Fund facilitates and sustains: (1) natural resource damage assessment while the Departments of Commerce and Justice seek full reimbursement from potentially responsible parties; and (2) restoration, replacement or acquisition of the equivalent of injured or lost natural resources, including resources of National Marine Sanctuaries and National Estuarine Research Reserves, tidal wetlands and other habitats for which NOAA is trustee. These program functions are conducted jointly within NOAA by the Office of General Counsel, the National Ocean Service, and the National Marine Fisheries Service.
- The Sanctuaries Enforcement Asset Forfeiture Fund receives proceeds from civil penalties and forfeiture claims against responsible parties, as determined through court settlements or agreements, for violations of NOAA sanctuary regulations. Proceeds from penalties and forfeitures are held in sanctuary site-specific accounts from year to year, as the funds are spent on resource protection within the sanctuary site where the violation occurred. Funds are expended for resource protection purposes which may include all aspects of law enforcement (from equipment to labor), community oriented policing programs, and other resource protection and management measures such as the installation of mooring buoys or restoration of injured resources.

The decennial Census counted 163.8 million people (over 50 percent of the United States population) living in coastal counties in 2010, and this number is expected to increase by more than 15 million by 2020 (*National Coastal Population Report*, <http://stateofthecoast.noaa.gov>). As population densities and levels of economic activity increase, so do their accompanying negative externalities: port congestion, navigation hazards, shoreline erosion, pollution, and other ill effects. These pressures, along with long-term environmental shifts such as sea level change, ocean acidification and the increasing incidence of catastrophic weather events, make the task of managing coastal resources increasingly difficult.

Against this challenging backdrop, states, other Federal agencies, coastal communities, and coastal industries depend on NOS for accurate information, reliable expertise, and vital services to support everyday policy and business decisions that sustain lives and livelihoods, reduce risk, and anticipate future challenges. NOS's physical oceanographic science activities—mapping, observations, and positioning—are essential not only to ensuring the safety and efficiency of maritime commerce, but also to managing coastal resources, planning for multiple uses of coastal areas, and addressing coastal flooding and water quality issues. NOS continuously improves the quality and applications of ocean and coastal observations through applied research, data integration, and collaboration.

In other program areas, NOS translates data and scientific knowledge into technical assistance, tools, and direct stewardship actions. NOS delivers scientific expertise on releases of oil, chemicals and marine debris, to promote sound, science-based decision making in the assessment and restoration of damaged coastal resources. In collaboration with international, Federal, state, and local managers, NOS is also the steward of the National Marine Sanctuaries system and the Papahānaumokuākea Marine National Monument, Federal partner to National Estuarine Research Reserves, and coordinator of the National System of Marine Protected Areas. With respect to management of coastal zone resources, NOS helps its Federal and non-Federal partners build capacity to protect and sustainably use coastal ecosystems through financial and technical assistance, applied research, effective policies, and partnership-building resources.

NOS's ethos of collaboration creates synergies between National and regional interests in working towards vibrant, healthy coasts and coastal economies. These synergies result both from vertically integrating actions—NOS brings together applied research, observations, mapping, assessment, planning, management, restoration, and conservation—and from horizontally coordinating activities of Federal, state, local, and non-governmental stakeholders in any given coastal zone. NOS work on preparing for sea level rise is a prominent demonstration of the benefits of integrated and coordinated action. As both natural and human-induced hazards threaten our Nation's coasts, NOS products and services are directly improving resiliency.

NOS staff and facilities are located around the country, with concentrations in Silver Spring, MD; Charleston, SC; Seattle, WA; Norfolk, VA; Mobile, AL; Beaufort, NC; and Honolulu, HI.

Research and Development Investments

The NOAA FY 2014 Budget estimates for its activities, including research and development (R&D) programs, are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. NOS requests \$82,886,000 for investments in R&D in the FY 2014 budget.

NOAA's R&D planning is tied to the goals, enterprises, and associated objectives outlined in NOAA's Next Generation Strategic Plan. Specifically, NOAA's Science and Technology Enterprise and underlying objectives of holistic understanding of the Earth system through research; accurate and reliable data from observing systems; and an integrated environmental modeling system, provide the basis for a set of internal implementation plans covering a 7-year period which guide NOAA's research and development activities. The NOAA Research Council, an internal body composed of senior scientific personnel from every line office, informs the annual updates to these implementation plans, and is developing the next 5-Year Research and Development Plan for NOAA (FY 2013-2018), which will be publicly available when completed. This new plan will provide a single guiding document for our scientists, the public, and our partners, and inform future internal planning efforts.

Significant Adjustments-to-Base (ATBs)

NOAA requests an increase of \$4,350,000 and 0 FTE to fund adjustments to current programs for NOS activities. This increase will fund the estimated 2014 Federal pay raise of 1.0 percent. The increase will also provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NOAA requests technical adjustments of \$714,000 and 0 FTE from several NOS PPAs to reflect IT savings. These funds will be reinvested in the DOC Working Capital Fund in order to support three new Department level IT initiatives: the Enterprise Security Operations Center (ESOC), the new Financial System (BAS) and the Personal Identity Verification (PIV) program.

These savings are applied to the following PPAs:

Navigation, Observations and Positioning	\$338,000
Coastal Science, Assessment, Response and Restoration	\$208,000
Coastal Zone Management and Services	\$83,000
Sanctuaries and Marine Protected Areas	\$85,000

NOAA also requests the following transfer for a net change of \$0 and 0 FTE to the agency:

From Office	PPA	To Office	PPA	Amount/FTE
NOS	Coastal, Science, Assessment, Response and Restoration (Estuary Restoration Program)	NMFS	Habitat Management & Restoration	\$501,000/1 FTE

NOAA requests a technical adjustment to transfer \$501,000 and 1 FTE from NOS Coastal Science, Assessment, Response and Restoration to NMFS Habitat Management & Restoration. This transfer will consolidate NOAA's Estuary Restoration Program within the NMFS Office of Habitat Conservation.

Headquarters Administrative Costs:

In FY 2014, NOS headquarters will use \$25,017,100 to support general management activities, policy direction, financial management, information technology, facilities, and other general operating costs, including service contracts, utilities, and rent payments to the General Services Administration. Specifically, these headquarters administrative funds will support the following:

Headquarters Program Support Type	Description	FY 2014 Amount	FY 2014 FTE associated with NOS HQ
General Management & Direction/Executive Management	Includes Assistant Administrator's office, public affairs, information services	\$11,424,000	49.7
Budget & Finance	Includes Budget, Finance and Accounting	\$3,568,000	15.3
Facilities/Other Administrative Functions (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$2,071,000	1.7
Human Resources	All HR services, including EEO	\$861,600	4.7
Acquisitions and Grants		\$241,100	1.3
Information Technology	Includes IT-related expenses and other CIO related activities	\$6,851,400	13.0
Total		\$25,017,100	85.7

Narrative Information:

Following this section are base justification materials and program change narratives by subactivity for this line office. Please note that no program change narrative is provided for program changes of less than \$100,000, however, a summary exhibit is provided at the end of each sub-program showing the object class detail for the small program changes. Please contact the Department of Commerce if details for any of these changes are required.

PROPOSED NOS BUDGET RESTRUCTURE

Current Sub-program	Current PPA	Proposed Sub-program	Proposed PPA
Navigation Services	Mapping & Charting Base	Navigation, Obs and Positioning	Navigation, Observations and Positioning
Navigation Services	Hydrographic Research & Technology Development	Navigation, Obs and Positioning	Navigation, Observations and Positioning
Navigation Services	Electronic Navigational Charts	Navigation, Obs and Positioning	Navigation, Observations and Positioning
Navigation Services	Shoreline Mapping	Navigation, Obs and Positioning	Navigation, Observations and Positioning
Navigation Services	Address Survey Backlog / Contracts	Navigation, Obs and Positioning	Hydrographic Survey Priorities / Contracts
Navigation Services	Geodesy Base	Navigation, Obs and Positioning	Navigation, Observations and Positioning
Navigation Services	National Height Modernization	Navigation, Obs and Positioning	Navigation, Observations and Positioning
Navigation Services	Tide & Current Data Base	Navigation, Obs and Positioning	Navigation, Observations and Positioning
Ocean Resources, Conservation, and Assessment (ORCA)	IOOS Regional Observations	Navigation, Obs and Positioning	IOOS Regional Observations
ORCA	NOAA IOOS	Navigation, Obs and Positioning	Navigation, Observations and Positioning
ORCA	Coastal Storms	Ocean and Coastal Mgmt and Services	Coastal Zone Management and Services
ORCA	Coastal Services Center	Ocean and Coastal Mgmt and Services	Coastal Zone Management and Services
ORCA	Coral Reef Program	Ocean and Coastal Mgmt and Services	Coral Reef Program
ORCA	Response and Restoration Base	Coastal Science and Assessment	Coastal Science, Assessment, Response, and Restoration
ORCA	Estuary Restoration Program	Coastal Science and Assessment	Coastal Science, Assessment, Response and Restoration
ORCA	Marine Debris	Coastal Science and Assessment	Coastal Science, Assessment, Response, and Restoration
ORCA	National Centers for Coastal Ocean Science	Coastal Science and Assessment	Coastal Science, Assessment, Response, and Restoration
ORCA	Competitive Research	Coastal Science and Assessment	Competitive Research
Ocean and Coastal Management	CZM Grants	Ocean and Coastal Mgmt and Services	Coastal Management Grants
Ocean and Coastal Management	CZM and Stewardship	Ocean and Coastal Mgmt and Services	Coastal Zone Management and Services
Ocean and Coastal Management	Regional Ocean Partnership Grants	Ocean and Coastal Mgmt and Services	Coastal Management Grants
Ocean and Coastal Management	National Estuarine Research Reserve System	Ocean and Coastal Mgmt and Services	National Estuarine Research Reserve System - NERRS
Ocean and Coastal Management	Marine Protected Areas	Ocean and Coastal Mgmt and Services	Sanctuaries and Marine Protected Areas
Ocean and Coastal Management	Marine Sanctuary Program Base	Ocean and Coastal Mgmt and Services	Sanctuaries and Marine Protected Areas

THIS PAGE LEFT INTENTIONALLY BLANK

**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES
SUB-PROGRAM: MULTIPLE NOS SUB-PROGRAMS**

PROGRAM CHANGES IN FY 2014:

Multiple NOS PPAs: NOS IT Reductions (Base Funding: \$40,978,000 and 0 FTE: Program Change: -\$1,346,000 and 0 FTE): NOAA requests a decrease of \$1,346,000 and 0 FTE for a total of \$39,632,000 and 0 FTE to reduce the technology refresh rate, consolidate data centers and standardize IT approaches across the National Ocean Service.

Proposed Actions:

NOAA proposes to reduce the rate of IT technology refresh cycles, consolidate data centers, and standardize IT approaches, applying per-seat reductions to the following NOS PPAs:

Sub-Program	PPA	Reduction
Navigation, Observations and Positioning		
	Navigation, Observations and Positioning	\$635K
	Subtotal:	\$635K
Coastal Science and Assessment		
	Coastal Science, Assessment, Response and Restoration	\$393K
	Subtotal:	\$393K
Ocean and Coastal Management and Services		
	Coastal Zone Management and Services	\$157K
	National Marine Sanctuaries Base	\$161K
	Subtotal:	\$318K
	NOS Total:	\$1,346K

In compliance with the NOAA OCIO Desktop-Laptop Purchase Management Policy, NOS will institute a cycle of technology refresh (replacement of desktop/laptop devices) of no less than four years. The current cycle of technology refresh is three years. In addition, any purchases that are made will comply with the policy by using the DOC PC acquisition portal and ensuring that users' second assigned devices are not replaced at the end of their lifespans (except for mission purposes).

In keeping with the OMB recommendation that data center consolidation would result in a large cost savings for NOAA, NOS will coordinate with the NOAA CIO in consolidating server rooms and data centers under one hosting provider. While an initial outlay will be necessary, this effort will yield savings in facilities, utilities, and staff needed to maintain separate hosting environments.

The NOAA IT Strategic Plan calls for consolidated infrastructure and shared services. Eliminating overlapping services will result in cost avoidance for infrastructure and staffing. In addition, NOAA anticipates cost reductions through greater competition and bulk purchasing by

using NOAA and DOC BPAs and other procurement vehicles to consolidate purchases of computing devices and common software.

Base Resources Assessment:

The NOS Information Management Division coordinates with the NOAA CIO for all NOS IT planning, management, and security, of NOS-wide systems. The Division implements IT management policy and supplements higher level policy as needed to ensure clear guidance on IT management activities and industry best practices, creates and maintains NOS Enterprise Architecture and responds to information requests from NOAA, Department of Commerce, Office of Management and Budget and other Federal organizations. This effort includes coordinating NOAA-wide-IT initiatives and systems implementations in NOS.

The Division provides advice to the Assistant Administrator and the NOS Program and Staff Office Directors on NOAA and NOS-wide information technology (IT) management. The Division conducts a comprehensive program of IT planning, investment review, evaluation, and management to ensure high quality, cost-effective IT initiatives. It advises on IT planning and budget submissions including, but not limited to OMB 300 and Financial Summaries used in the Department's Capital Planning and Investment Control System. It manages the Paperwork Act, and Section 508 responsibilities for NOS.

The Division is responsible for carrying out the Federal Information Security Management Act (FISMA) and the Clinger Cohen Act and ensuring compliance with Federal IT Security policy and risk management through initiatives including Certification and Accreditation, and Continuous Monitoring. The NOS Information Technology Security Officer (ITSO) is a Staff member of the office.

The Division integrates a broad array of IT systems, services including Wide Area and Local Area networks (WAN/LAN), Desktop/Laptop management, systems administration and management, and application development and hosting. To support network users, the OCIO manages a computer help desk for NOS headquarters offices and drives acquisition initiatives for computer/network hardware, software, and support services.

The NOS Information Management Division works closely with NOS programs in their planning and execution of information technology activities to meet mission needs.

Schedule and Milestones:

- Annual IT Security Awareness Training Course
- Cyclical review of helpdesk response times and customer satisfaction surveys
- Consolidate server rooms and data centers where appropriate
- Eliminate overlapping services and utilize cost-saving procurement vehicles where appropriate

Deliverables:

- Four-year technology refresh rate of desktops and laptops where appropriate
- Annual IT Security Awareness Training Course
- Cyclical review of helpdesk response times and customer satisfaction surveys

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Ocean Service
Sub-program: Multiple
Program Change: IT Reduction

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	(1,346)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,346)</u>

THIS PAGE LEFT INTENTIONALLY BLANK

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUB-PROGRAM: NAVIGATION, OBSERVATIONS AND POSITIONING

NOAA proposes to create a newly organized “Navigation, Observations and Positioning” budget sub-program, which will include the activities currently under NOS’s Navigation Services sub-program and the U.S. Integrated Ocean Observing System® currently under Ocean Resources, Conservation, and Assessment. These changes would reflect ongoing efforts under the “Refocusing NOS” initiative to integrate data and applications across all of NOS’s ocean and coastal mapping, measurement and observation activities. NOAA conducts these activities under the authority of the Coast and Geodetic Survey Act, the Hydrographic Services Improvement Act (as amended in 2008), the Integrated Coastal and Ocean Observation System Act, and the Ocean and Coastal Mapping Integration Act. NOAA also represents these programs for the Department of Commerce on the interagency Committee for the Marine Transportation System.

NOS’s activities under this sub-program produce an integrated suite of physical oceanographic data and applications that are essential to safe, efficient, and sustainable uses of busy coastal areas and waterways. Positioning and geodetic control provide the foundational data layer for mapping of underwater features and observations of coastal environmental variables. The activities make possible much more than safe navigation—storm surge forecasting, ecological forecasting, habitat restoration, coastal ocean science and oil spill response, to name just a few, all rely on these NOS products and services to inform decisions.

The following program offices are responsible for carrying out the Navigation, Observation, and Positioning sub-program:

- **Office of Coast Survey (OCS).** Established by President Thomas Jefferson in 1807, the Coast Survey is the oldest U.S. scientific agency and the longest-standing NOAA organization. OCS is responsible for conducting hydrographic surveys and producing charts of the Nation’s waters. The OCS director serves as the Nation’s Hydrographer and represents the United States on the International Hydrographic Organization, which sets standards for surveying and charting and builds hydrographic capacity in other nations for safe navigation globally.
- **National Geodetic Survey (NGS).** NGS defines maintains, and provides access to the National Spatial Reference System to meet our nation’s economic, social, and environmental needs. NGS coastal mapping activities define the national shoreline and aids emergency response, among other functions. Additionally, NGS develops industry guidelines, specifications, and standards and provides training for conducting geodetic surveys and using surveying equipment.
- **Center for Operational Oceanographic Products and Services (CO-OPS).** CO-OPS provides the national infrastructure, science, and technical expertise to monitor, assess, and distribute tide, current, water level, and other coastal oceanographic and meteorological products and services that support NOAA’s missions. Its products combine observations and monitoring with operational nowcast/ forecast modeling.
- **Integrated Ocean Observing System (IOOS).** NOAA leads the implementation and administration of IOOS, a major improvement to ocean observing capability. IOOS draws together the vast network of Federal and non-federal observing systems to fulfill regional, national, and global needs for integrated ocean information. At the national level, U.S. IOOS represents a partnership of 17 Federal agencies and 11 Regional Associations (RAs) for coastal and ocean observing. These organizations share responsibility for the design, operation, and improvement of global, national, and regional networks

The proposed budget structure includes the following projects, programs, and activities under this sub-program:

- Navigation, Observations and Positioning
- Hydrographic Survey Priorities / Contracts (formerly Address Survey Backlog / Contracts)
- IOOS Regional Observations

Navigation, Observations and Positioning will be comprised of all former Navigation Services, Geodesy, and Tide and Currents line items, plus the NOAA IOOS base from the former Ocean Assessment Program. For detailed information see the breakout and crosswalk on p. NOS 5 and ORF-18 and ORF-21. Below are the base services that will be provided in the Navigation, Observations and Positions sub-program:

Navigation Charts and Services

The Coast and Geodetic Survey Act and the Hydrographic Services Improvement Act (as amended) authorize NOAA to survey and chart the 3.4 million square nautical miles of waters in the U.S. Exclusive Economic Zone (EEZ). Since Thomas Jefferson was President of the United States, NOAA and its predecessor agencies have supported safe and efficient transportation in U.S. waters through its hydrographic surveys and nautical charts. Today NOAA continues to meet the navigation information needs of vessel operators that are carrying ever-larger payloads of people, cargo and hazardous materials. These customers include commercial shippers, fishers, the U.S. Navy, the U.S. Coast Guard, state and local governments, and recreational boaters. NOAA also conducts research and development activities to improve the accuracy and productivity of hydrography and charting efforts.

In addition to navigation, the hydrographic and shoreline data from NOS navigation services provide a foundation for many other uses including coastal zone and emergency management, climate assessments, and coastal research. NOAA also leads the interagency Integrated Ocean and Coastal Mapping (IOCM) initiative as mandated by the Ocean and Coastal Mapping Integration Act. IOCM activities include coordination and collaboration on data acquisition, end-to-end data management, and processing and tools development for maximum use and re-use of ocean and coastal mapping data. The ultimate goal of IOCM is to leverage and coordinate Federal, state, regional, local, academic, and private sector investments in mapping data to achieve maximum return on these data collection efforts for all users.

The following activities contribute to NOAA's integrated suite of charting and navigation products and services:

- Hydrographic Surveys – This unit acquires hydrographic data through the NOAA hydrographic fleet and contract surveyors, primarily in the 511,000 square nautical miles of navigationally significant U.S. waters. These hydrographic surveys provide the most essential depth and hazardous obstruction data for nautical charts and other applications such as water level modeling, fisheries management, coastal land use, and planning. Additionally, through participation in data collection on NOAA survey platforms, the program ensures that NOAA personnel maintain the hydrographic expertise necessary to oversee contracts, quality control data, develop more efficient survey technologies, and interact with the International Hydrographic Organization and other nations.
- Water Level Datums – NOAA's National Water Level Program (NWLPP) provides the framework for the national tidal datum network, an elevation network used for navigation and shoreline boundary purposes. Reference datums, such as the International Great Lakes Datum (IGLD) or Mean Lower Low Water (MLLW) are used for nautical chart products, as

well as for definitions of marine boundaries and the national shoreline. Among its many other functions, NWLP supports the entire portfolio of NOAA's Navigation Services by providing accurate and reliable tide data to support hydrographic and shoreline mapping surveys.

- Marine Charts – NOAA cartographers compile data from many sources to produce 2,000 nautical charts and products. These products provide the basis for all vessel navigation in and out of U.S. ports. NOAA marine charts are available in both electronic and traditional paper form. These cartographers also provide active leadership and technical expertise on International Hydrographic Organization working groups to maintain international standards for charts and the electronic systems that assist with vessel navigation. NOAA is continually testing and vetting new techniques and software systems to enhance production of nautical charts.
- Research and Development – NOS continually develops, evaluates, and implements emerging cartographic, hydrographic, and oceanographic systems to advance the science and processes that underpin NOAA's coastal ocean mapping efforts. The program delivers new acoustic survey technologies, scientific software, coastal ocean models, and geospatial products and tools. Specific projects include the National Vertical Datum Transformation tool, or VDatum, Autonomous Underwater Vehicles, and support to Ellipsoidally Referenced Surveys. NOAA's Joint Hydrographic Center (JHC) develops new sonar and light detection and ranging (LIDAR) technologies and processes to improve efficiencies in hydrographic data acquisition, IOCM processing, and nautical charting. JHC also conducts bathymetric data collection and analysis necessary to support the extension of sovereign rights and delimitation of the U.S. Extended Continental Shelf beyond 200 nautical miles.
- Navigation Response Teams and Regional Services – The program's Regional Navigation Managers interact directly with customers and stakeholders on charting issues and Marine Transportation System infrastructure improvements. These interactions improve NOAA's response to charting and navigation questions and serves as a means to educate constituents on emerging charting technologies and their uses. In addition, Navigation Response Teams perform hydrographic surveys in inshore areas and provide rapid response surveys after maritime emergencies or natural disasters to minimize port closures and draft restrictions.
- Coastal Mapping – The Coastal Mapping Program (CMP) defines the official 95,000-mile U.S. shoreline that serves as the baseline for defining America's marine territorial limits, including its EEZ. The national shoreline is the single largest data layer for nautical charts, as well as the geographic reference needed to manage coastal resources, conduct marine planning, adapt to climate change, support Homeland Security emergency response efforts, and perform many other IOCM activities. NOAA delineates the shoreline by processing tidally coordinated, geo-referenced data from multiple sources – primarily stereo aerial photographs and high-resolution satellite imagery. In addition, CMP conducts research into new technologies including LIDAR and hyperspectral imaging. The program uses NOAA, contract, and IOCM resources to collect and process shoreline data.
- Physical Oceanographic Real-Time System (PORTS[®]) – PORTS[®] is a decision support tool that improves the safety and efficiency of maritime commerce and coastal resource management through the integration of real-time environmental observations, forecasts and other geospatial information. PORTS[®] measures and disseminates observations and predictions of water levels and currents and provides meteorological (e.g., winds, atmospheric pressure, visibility, air and water temperatures), salinity, bridge air gap and wave information that mariners need to navigate safely. There are currently 21 active PORTS[®] nationwide. For more information on PORTS[®] see the Tides and Currents Program information under Ocean and Coastal Observations.

Positioning and Geodesy

NOS's Geodesy program originates from a 200-year old requirement to provide the Nation's public and private sectors with accurate positioning data. NOS is responsible for defining, maintaining, and providing access to the National Spatial Reference System (NSRS), the common reference framework for establishing the coordinate positions of all geospatial data: latitude, longitude, height, scale, gravity, and orientation. A 2009 study estimated that the NSRS provides more than \$2.4 billion in potential annual benefits to the U.S. economy. The study found that the NOAA CORS network alone provides an estimated \$758 million per year in benefits. The study estimated that an additional \$522 million in annual economic benefits could be generated by the full implementation of a new vertical reference system through GRAV-D, with approximately \$240 million saved from improved floodplain management alone (Socio-Economic Benefits Study: Scoping the Value of CORS and GRAV-D, Levenson 2009).

NOS conducts geodesy activities in all 50 states and many U.S. territories. NOS's geodesy products provide the foundational data layer for transportation, mapping and charting, and a multitude of scientific and engineering applications. The NSRS, as the fundamental geodetic control for the United States, is also an essential component of all national observing systems. To meet growing demand for more accurate, timely, and consistent positioning services, the Geodesy program is continually improving the quality and accessibility of the NSRS. As the Federal geodetic control theme lead, NOS also participates in the development of international geodetic policy, standards, and guidelines relating to GPS and other global navigation satellite systems.

The NOAA Geodesy Program can be grouped into five major overlapping elements:

- Passive Network Infrastructure Support – A major component of NSRS is a network of over one million permanently marked passive reference points. These monuments form a crucial foundation for all geospatially-referenced activities conducted in the United States.
- Continuously Operating Reference Stations (CORS) – The National CORS Network is a network of permanent GPS receivers that enables positioning accuracies that approach a few centimeters relative to the NSRS. NOAA provides access to GPS data from this network free of charge via the Internet. NOS is also working to establish a small network of Foundation CORS, at the rate of about one per year, which link the NSRS to the International Terrestrial Reference Frame (ITRF) and contribute data to the ITRF. Foundation CORS differ from others in their geodetic stability and are fully owned by the NOS rather than as a public private partnership. Foundation CORS improve forecasts of absolute global sea level rise on the order of millimeters per year and inform coastal management and construction project planning.
- Modernization of the Vertical Datum – NOS leads the Nation's efforts to enhance the vertical aspect of the NSRS through its Gravity for the Re-Definition of the American Vertical Datum (GRAV-D) initiative, a long-term multi-year effort to collect airborne gravity data and build the Nation's gravimetric geoid model. This initiative will ultimately lead to new, highly accurate national vertical datum allowing GPS to efficiently establish accurate elevations for all types of positioning and navigational needs. Because GRAV-D will take a number of years to complete, ongoing height modernization efforts are also focusing on integrating GPS technology with existing survey techniques in areas of the country that have critical need for updated height data in response to changing land elevations.
- Data Access and Capacity Building – NOS provides web access to geodetic control, shoreline, and aeronautical survey data from its own surveys and from cooperating organizations. As part of its technology transfer efforts NOS conducts a series of workshops and constituent forums around the country. NOS also manages the State Geodetic Advisor Program, a cost-shared program that provides a liaison to states to provide assistance to

states' geodetic and surveying programs. There are currently advisors or coordinators for 25 states. NGS is transitioning to a fully funded regional advisor program, which will serve the entire U.S.

- **Research and Development** – NOS develops standards, specifications, guidelines, and best practices for the surveying and positioning industry, as well as a variety of models and programs describing geophysical and atmospheric phenomena that affect spatial measurements. These tools and models are crucial to scientific and commercial positioning activities. To improve the collection, distribution, and use of spatial data, NGS also conducts cutting-edge applied research and development in geophysics, including geodynamics and geodesy. Current research interests include improving accuracies and precision of geodetic positions/velocities, automated processing of GPS data for static and/or kinematic positioning, orbital dynamics, sea level rise, crustal motion, GPS antenna characteristics, meteorological effects, and tidal effects.

Ocean and Coastal Observations

Beyond positioning and mapping activities, NOS's ocean and coastal observation programs support three interconnected legislative mandates. The Coast and Geodetic Survey Act authorizes the collection and dissemination of water level data, analysis, and predictions. The Hydrographic Services Improvement Act provided updated authorities for the collection of real-time information and the use of information for coastal resource management. The Integrated Coastal and Ocean Observation System Act (ICOOS Act) charges NOAA with leading oversight and administration of the regional observing systems and coordinating across Federal and non-Federal entities to maximize the Nation's return on investment in IOOS. Other relevant legislation includes the Tsunami Warning and Education Act, which directs the use of real-time tide data for tsunami warnings.

Tides and Currents Program

NOAA, through its Tides and Currents Data Program, directly operates two primary observing systems that the maritime community relies upon for safe and efficient navigation: the National Water Level Observation Network (NWLON) and National Current Program. NOAA conducts tidal data analysis and current surveys to update NOAA's annual tide and tidal current prediction tables. Mariners of all types use tide and current tables to navigate safely—U.S. Coast Guard carriage regulations require large commercial vessels to carry NOAA's annual Tide and Tidal Current Prediction tables along with Nautical Charts. In FY 2012, NOS conducted tidal current surveys in Fernandina Beach, FL; Johns Pass, FL; Cook Inlet, AK; and San Francisco, CA.

The NWLON consists of 210 long-term, continuously operating water level stations throughout the coastal U.S., the Great Lakes, and U.S. island possessions and territories. Information from the NWLON ranges from real-time, high frequency content in the record (e.g., tsunami 1-minute data and storm surge) to long-term datasets (e.g., sea level and lake level trends). In 2012, NOS completed two station hardening upgrades and two more are planned for 2013. NWLON data forms the basis of the vertical reference framework (tidal datums in coastal areas; International Great Lakes Datum (IGLD) in the Great Lakes) for all marine boundary applications (ranging from international-to-Federal- to-state-to-private property), delineation of the national shoreline, nautical chart products, and dredging operations. In addition to navigation and mapping uses, applications include habitat restoration, emergency management, dredging, coastal planning and management, and coastal construction projects.

Using NWLON, National Current Program, and other measurements, NOS produces and disseminates observations, nowcasts and forecasts of water levels, currents, salinity, and

meteorological parameters (e.g., winds, atmospheric pressure, and air and water temperatures) that commercial mariners need to navigate safely. Recreational users and the fishing industry are also among the core users of these products. Updated, accurate predictions of water levels and currents are essential for these users to navigate coastal areas safely and for fishers to determine best catch times. Emergency response agencies use NOS's water level predictions and current models for effective oil spill response planning.

In 21 locations around the U.S. that support 50 of the top seaports, NOS leverages its infrastructure and expertise to enable the operation of Physical Oceanographic Real Time Systems (PORTS[®]), a decision-support tool that integrates and disseminates real-time data on water levels, currents, salinity, winds, and other atmospheric observations to various users. In some locations, PORTS[®] also includes sensors for visibility, waves and bridge air gap to enable safe navigation. PORTS[®] is a cost-shared program; local partners provide funding for the cost of equipment, installation and operation and maintenance of the sensor systems. In partnership with local port authorities, pilot associations, shippers, the U.S. Coast Guard, the U.S. Army Corps of Engineers, the U.S. Navy, academia and others, NOS provides technical expertise for systems design, 24/7 quality control of the data, data collection and dissemination infrastructure and ongoing management of the data. In FY 2012, the 21st and 22nd PORTS[®] in New London, CT and Humboldt, CA became operational. New PORTS[®] are underway in Jacksonville, FL., Charleston, SC and Matagorda Bay, TX and are scheduled to begin operating within the next two years. However, a PORTS[®] in Gulfport, MS went offline in FY 2013 due to lack of partner funding.

Where sensors are not present or future data is needed, NOS operates nowcast and forecast models that provide short-term water level and other environmental forecasts that are accurate out to 48 hours and enable better planning and decision-making, particularly for vessel transits. NOS typically operates these models in conjunction with PORTS[®] to address needs for real-time data. NOS presently operates thirteen nowcast/forecast models; ten are currently running on the high performance computers at the National Centers for Environmental Prediction (NCEP) and the remaining three will be transitioned to NCEP when they are upgraded or replaced over the next several years. The change will improve performance by coupling the models with other models and taking advantage of more capable infrastructure. In FY 2012, NOS made available its first regional model in the Northern Gulf of Mexico and introduced a new model on the Columbia River, OR.

Data and modeling from NWLON and the National Current Program also provide essential information to users and applications outside the navigation community. Examples of these applications include generating beneficial uses for dredged material, coastal planning, habitat restoration, long-term sea-level assessments, storm-surge monitoring, tsunami warning, emergency preparedness, hydrokinetic energy development, and HAZMAT response. Of note, NWLON and Current Program data contribute to harmful algal bloom forecasts for the Gulf of Mexico (a critical component of NOAA's Ecological Forecasting Roadmap).

For all its observation activities, NOAA regularly seeks the input of the maritime transportation community and other stakeholders to identify new requirements, product improvements, and training needs. The Tides and Currents Data Program further extends the reach of its interactions by leveraging regional networks such as the Office of Coast Survey Navigation Managers, the National Geodetic Survey State Advisors, the Coastal Services Center Regional Representatives, the NOAA Regional Coordination Teams, and others. NOS also partners with other Federal agencies, such as the U.S. Army Corps of Engineers, to collaborate on standards for national vertical reference; NOAA defines tidal datums for the United States and maintains the National Tidal Datum Epoch.

Data Integration and Regional Support

The United States Integrated Ocean Observing System (U.S. IOOS) program, led by NOAA, serves the dual functions of improving compatibility between Federal and regional observing systems and providing direct support for regional observing systems. The vision of IOOS is a unified network of Federal and non-federal observing assets, which serve coastal industries and decisionmakers. Users of ocean data, including modelers, researchers, and meteorologists, spend an average of 25–50 percent of their time searching for, accessing, formatting, and ingesting data into their products. Significant resources are expended on data management activities that might otherwise be used to forecast and research. By improving the accessibility and interoperability of ocean data, IOOS delivers time and cost savings that can be redirected to improving existing and developing new products. NOAA adheres to international standards used by other countries and entities that provide similar geospatial reference systems and data. Observations by NOS assets and partners are critical components of the U.S. IOOS and the Global Earth Observation System of Systems (GEOSS).

The IOOS Regional component complements Federal ocean observing assets data, models, and information tailored to the economic and environmental requirements of local communities. NOAA supports regional IOOS associations primarily through cooperative agreements that support operations and maintenance, capital investment, and research, development, testing, and evaluation of new sensor equipment and new sensor technologies. IOOS Regional Associations deploy observing assets in accordance with nationally-coordinated build-out plans; recent investments have focused on expanded use of buoys, gliders, coastal high frequency (HF) radar, animal telemetry (data from electronic tags attached to marine animals) and models to support hurricane storm surge and inundation forecasting. These capabilities protect American lives and support American livelihoods by aiding storm forecasting, response to oil spills and extreme weather events, climate adaptation strategies, ocean acidification monitoring and near-shore search-and-rescue operations.

Schedule and Milestones:

- Maintain VDatum for contiguous United States (FY 2014-2018)
- Develop Nautical Charting System II – one central database available for all formats of charts (FY 2014-2018)
- Build and maintain Electronic Navigational Charts (ENCs) for a total of 1,100 available to public (FY 2018)
- Schedule, prepare and maintain 175 new editions of Raster Navigational Charts each year, increasing 10 percent each year with a final goal of 250 per year (FY 2014-2018)
- Publish eight New Editions of Coast Pilot each year (FY 2014-2018)
- Evaluate and approve 100 hydrographic surveys conducted by NOAA survey units, contractors, and other sources for nautical charting and other uses (FY 2014-2018)
- Collaborate on developing and maintaining IOCM standards/ specifications to aid integrated data acquisition, management and archival (FY 2014-2018)
- Accept/process data, deliver products to ocean and coastal mapping programs, and archive data at NGDC, providing custom and standard products that would otherwise be unavailable (e.g. gridded multibeam data and side-scan sonar mosaics) (FY 2014-2018)
- Implement data archive capability for NOAA charter mapping data from University-National Oceanographic Laboratory System (UNOLS) projects (FY 2014-2018)
- Provide Homeland Security National Response Framework support (FY 2014-2018)
- Publish Annual NOAA Tide and Tidal Current Predictions (FY 2014-2018)
- Maintain 180 of 210 total NWLON stations (FY 2014-2018)
- Deliver > 95 percent water level data availability (FY 2014-2018)
- Maintain data management systems for all operational PORTS® (FY 2014-2018)
- Conduct 40 tidal current surveys per year (FY 2014-2018)

- Support hydrographic survey and shoreline survey projects (FY 2014-2018)
- Produce Operational Forecast Models (FY 2014-2018)
- Install one foundation CORS site for the improvement of the National Spatial Reference System (NSRS) and the International Terrestrial Reference Frame (ITRF) (FY 2014)
- Establish Table Mountain Gravity Observatory as a North American IAG sanctioned site of international absolute gravity comparisons (FY 2014)
- Complete field survey work for the second geoid slope validation survey (FY 2015)
- Provide a Method for Real-Time Network (RTN) Operators to validate that their RTNs are aligned with the National Spatial Reference System (FY 2016)
- Complete two-thirds of all GRAV-D (Gravity for the Redefinition of the American Vertical Datum) areas (FY 2018)
- Maintain regional data assembly centers, including registration of metadata to make regional IOOS data holdings discoverable through IOOS Data Catalog (FY 2014-2018)
- Develop an initial version of IOOS System Status Dashboard (FY 2014)
- Develop initial versions of Data Integration Services (FY 2014)
- Coordinate an initial data management framework for the national fleet of gliders (FY 2014)
- Meet ICOOS Act requirements: promulgate guidelines to certify non-federal assets; identify observing gaps and or needs for capital improvements, for Federal and non-federal assets; submit annual report to interagency ocean observing committee; administer the IOOS Advisory Committee; and deliver biennial report to Congress (FY 2014-2018)
- Execute and evaluate the process by which new participants, Federal and non-federal, participate in the Coastal and Ocean Modeling Testbed (FY 2014)
- Partner with NOAA / OAR / Ocean Acidification Program to deploy and operate ocean acidification sensors on regional IOOS platforms (buoys, shore stations, gliders) (FY 2014-2018)
- Establish processes for Regional IOOS partners to engage with stakeholders in their respective regions and provide updated stakeholder input (FY 2014-2018)
- Sustain Regional IOOS operations and maintenance of existing HF Radar network, including quality assurance, control procedures and fail-over redundancy, to support U.S. Coast Guard operational search and rescue, oil spill response, water quality and pollutant tracking, harmful algal bloom (HAB) monitoring, and offshore wind energy siting (FY 2014-2018)
- Increase collaboration with USGS Ocean Biogeographic Information System (OBIS) to integrate biological data into IOOS (FY 2014)

Deliverables

- VDatum maintained along the contiguous U.S. coastline, enabling seamless integration of land and water information
- Hydrographic survey backlog reduced by 10,380 SNM from FY 2014 to FY 2018 within navigationally significant areas
- New editions of Raster Navigational Charts produced at a rate of 175 per year
- New editions of Coast Pilot published at a rate of eight per year
- Improved efficiency and accuracy of hydrographic surveys by surveying on the ellipsoid where practical, eliminating the need for time-consuming activities such as tide gauge installations concurrent with hydro data collection (where validated VDatum grids are available), vessel settlement and squat corrections, and inefficient post-survey-processing
- Data standards, tools and expertise for IOCM and guidance on acquisition, processing and archives in support of the OCM community and ocean.data.gov
- Acoustic backscatter collection protocols that will facilitate the acquisition of these valuable data while maintaining the quality of bathymetric data

- Participation in the development of international geodetic policy, standards, and guidelines and in the development of GPS and other global navigation satellite system policy to the extent it relates to the NSRS
- Positioning, instrument testing, and calibration services to ensure accurate implementation of NSRS
- Publicly accessible models and tools relating spatial datums and describing geophysical, atmospheric, equipment, and GPS orbit phenomena impacting accurate spatial measurement
- Enhanced GPS augmentation by managing, monitoring, and providing access to the CORS Networks, in support of civil positioning and the U.S. transportation infrastructure
- GPS satellite orbit analysis and act as the International GNSS Service (IGS) Analysis Center Coordinator to pinpoint the locations of more than 40 GPS and GNSS satellites to ensure the accuracy of satellite-delivered positioning information
- Continuous accurate, reliable, and timely quality controlled real time data from over 2,000 oceanographic and meteorological sensors to support safe and efficient navigation, hazmat response, emergency response planning and execution, NWS tsunami and storm surge warnings, and dredging
- Tide and tidal current predictions and nowcast/forecast oceanographic and meteorological parameters for safe and efficient navigation, coastal resource management, and dredging
- Periodic releases of IOOS Data Catalog with increased contributions from all participating coastal, Great Lakes and open ocean data providers
- Formal documentation for implementation and training of IOOS data providers and partners
- Standardized data access services and data formats at key NOAA and regional data providers, thereby simplifying access to new and archived oceanographic data
- Published “Quality Assurance of Real Time Oceanographic Data” (QARTOD) manuals for IOOS core variables including dissolved oxygen, salinity, etc.
- Improved IOOS information products and applications to meet the priority needs of regional and local communities
- Refined IOOS enterprise metrics for assessing performance and maturity of the system
- Expanded capability of U.S. IOOS, improving mission readiness of Federal agencies and ability of U.S. IOOS regions to meet local and regional stakeholder needs for ecosystems data including new data from marine sensor development
- High Frequency radar trend analysis of system performance and “up time” of the system

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percentage of top US Seaports with access to suite of NOAA Navigation Products and Services (ENCs and access to VDatum and NRTs)	74%	74%	74%	74%	74%	74%	74%
<p>Description: The U.S. Army Corps of Engineers tracks the number of vessel transits and cargo tonnage that pass through the approximately 300 ports in the U.S. on an annual basis. Over 95 percent of the annual tonnage passes through the top 175 seaports. By identifying the seaports to which NOAA provides a full suite of its products and services, NOAA can determine what percentage of cargo is benefitting from NOAA navigational products and services.</p>							

Performance Measure: Reduce the hydrographic survey backlog within navigationally significant areas (Measure 18f)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	2,947	2,028	2,076	2,076	2,076	2,076	2,076
Description: NOAA conducts hydrographic surveys to determine bathymetry primarily in U.S. waters significant for navigation. This activity includes the detection, location, and identification of wrecks and obstructions with side scan and multi-beam sonar technology. NOAA uses the data to produce nautical charts in a variety of formats for safe and efficient navigation, in addition to the commercial shipping industry; other user communities that benefit include recreational boaters, the commercial fishing industry, port authorities, coastal zone managers, and marine spatial and emergency planners.							

Performance Measure: Update National Shoreline and Priority Ports (Percentage of total per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	3.2% / 12%	3.5% / 17%	3.5% / 17%	3.5% / 17%	3.5% / 17%	3.5% / 17%	3.5% / 17%
Description: Updating the National Shoreline and Priority Ports is a measure NOAA typically uses to capture annual performance of NOAA in-house and contract assets for acquiring shoreline data for navigation safety and other programs.							

Performance Measure: Percent of U.S. and territories enabled to benefit from a new national vertical reference system for improved inundation management (Measure 18g)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	23.9%	28%	36%	44%	52%	60%	68%
Description: This measure tracks progress of NOAA's National Geodetic Survey toward completing the Gravity for the Redefinition of the American Vertical Datum (GRAV-D) initiative and implementation of a new National Vertical Datum for a wide variety of applications including improved inundation management. This improved vertical reference system is critical for all observing systems and activities requiring accurate heights and is a key component of the enhanced geospatial framework required for success in achieving NOAA's strategic priorities. It is of particular importance for community resilience by determining where water flows in order to make accurate inundation models and assessments as well as better management and planning decisions with improved water level predictions based on accurate elevations. "Enabled" is technically defined as having GRAV-D data necessary to support 2 cm orthometric heights (heights relative to sea level) necessary to define a new national vertical datum where possible. NGS will calculate the percentage of area enabled relative to a pre-defined total area that includes U.S. territorial land and adjacent land and water areas necessary for final determination of a national vertical reference system. As progress is made, each survey area will be represented by a polygon that will define the completed areas. The performance measure will be tracked as a percent of the total area that is identified as complete.							

Performance Measure: Percentage of top 175 US Seaports with access to suite of NOAA Navigation Products and Services (CO-OPS contribution by tonnage)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	55%	55%	55%	55%	55%	55%	55%
Description: The U.S. Army Corps of Engineers tracks the number of vessel transits and cargo tonnage that pass through the 300 or so ports in the U.S. on an annual basis. Over 95 percent of the annual tonnage passes through the top 175 seaports. By tracking how many seaports to whom NOAA is providing a full suite of its products and services, one can determine what percentage of cargo is transiting more safely and efficiently. The percentage of seaports can then be correlated with these statistics.							

Performance Measure: Percentage of U.S. coastline with accurate vertical control (tidal and geodetic)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	8%	8%	8%	8%	8%	8%	8%
Description: The Coast and Geodetic Survey Act authorizes NOAA to conduct tide and current observations and geodetic control surveys. NOAA is the authority for providing vertical reference datums for all marine boundary applications, national shoreline, and nautical chart products. This measure tracks NOAA's ability to provide these datums by measuring the percentage of the U.S. coastline that has accurate vertical control.							

Performance Measure: Update accuracy of NOAA tidal current predictions (number of locations)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	40	40	40	40	40	40	40
Description: The Coast and Geodetic Survey Act authorizes NOAA to conduct tide and current observations and to analyze and predict tide and current data and publish data, information, compilations, and reports, including short term tidal current surveys that are used to update the NOAA annual tidal current prediction tables. This measure tracks NOAA's progress in updating the accuracy of these predictions by tracking the number of locations that have been updated.							

PROPOSED LEGISLATION:

The Administration will work with Congress to reauthorize the Integrated Coastal Ocean Observing System Act.

THIS PAGE LEFT INTENTIONALLY BLANK

PROGRAM CHANGES FOR FY 2014:

Navigation, Observations and Positioning Base: Accelerate processing of hydrographic survey data (Base Funding: \$50,669,000 and 262 FTE; Program Change: +1,710,000 and 0 FTE):

NOAA requests an increase of \$1,710,000 and 0 FTE for a total of \$52,379,000 and 262 FTE for Mapping and Charting activities to improve the accuracy of nautical charts for safe navigation and deliver mapping data for coastal hazards and resilience decision-support.

Proposed Actions:

With this increase, NOAA will expand the existing capacity and expertise needed for the verification and validation of in-house, contract and 3rd-party survey data for nautical charts. NOAA is improving coordination and collaboration on mapping data acquisition through its Integrated Ocean and Coastal Mapping (IOCM) initiative, in accordance with the Ocean and Coastal Mapping Integration Act, 2009 (OCMIA). However, one consequence of IOCM is the availability of more data for nautical chart updates to support maritime commerce and other important uses. Data collected from recent Extended Continental Shelf cruises, USGS and USACE topographic/bathymetric LIDAR in the Delaware River, Barnegat Bay, Fire Island, and Long Island Sound, and other contract data sets are available and waiting to be analyzed for charting and other uses. To ensure that new data is applied in a timely manner, this program increase will augment NOAA's existing hydrographic data processing capacity.

NOAA will invest a portion of this increase to support additional nautical chart cartographic capacity at NOAA's hydrographic survey processing centers. NOAA's IOCM Center, co-located with the NOAA/University of New Hampshire Joint Hydrographic Center (JHC), will process the other portion of these data. Leveraging JHC's expertise in the new techniques for data processing and analysis, the IOCM Center will develop and maintain IOCM standards and specifications for broader use; accept mapping data from a variety of sources; manage these data with advanced data systems; and deliver quality-assured products to support both navigation and non-navigation requirements such as living marine resource and habitat conservation and post-storm event marine debris identification.

These combined investments will enable NOAA to increase the number of surveys evaluated, validated and applied to nautical charts by 20 percent over existing production levels.

Statement of Need and Economic Benefits:

NOAA's performance of its charting mandate enables safe navigation of in U.S. territorial waters and the U.S. Exclusive Economic Zone, a combined area of 3.4 million square nautical miles (SNM) extending 200 nautical miles offshore from the nation's coastline. As cargo ship drafts approach 60 feet below the waterline and import-export container traffic is forecast to double by 2019, reliable navigational charts and related products and services are essential to maritime commerce and, by extension, Nation's economic health and welfare.¹ Maritime commerce—including foreign trade and the shipping of goods, commercial and sport fishing, the cruise industry, recreational boating, and the ferry industry—has a combined effect of \$3 trillion on the U.S economy or nearly 21 percent of GDP (2008 values).

¹ Socio-economic Study on Value added to Gross Domestic Product from surface transportation of Import and export bulk traffic (1993-2007) – K.Eric Wolfe, Chief Economist, National Ocean Service

Additionally, many other users also rely on NOAA's coastal and ocean data for diverse purposes, including emergency planning, oil spill response, tsunami inundation mapping/modeling, offshore and renewable energy siting, coastal zone management, and ocean science. Demand for these data is growing exponentially, particularly following major events such as Hurricane Katrina and Superstorm Sandy. Improving capabilities for integration and data sharing provides an opportunity to meet multiple needs more efficiently, as codified in the OCMIA. OCMIA places NOAA in a lead role to foster collaborative approaches for Federal mapping agencies, building on IOCM recommendations of NOAA's Hydrographic Services Review Panel Federal Advisory Committee, the National Academy of Sciences report, *A Geospatial Framework for the Coastal Zone*, and the U.S. Commission on Ocean Policy, among others.

NOAA's primary center of seafloor mapping expertise – the hydrographic surveying program – receives more requests for data acquisition and processing than it can process in a timely manner. As NOAA equips its new vessels with multibeam sonar systems that collect more data, the data management challenges are compounding. Carrying out OCMIA's mandates will reduce the potential for duplication of effort and realize untapped efficiencies from multi-use data and collaborative mapping efforts, particularly in high cost areas like the Arctic and Alaska. For example, data collected by NOAA to update nautical charts can be reprocessed to support the development of benthic habitat maps. Conversely, data collected by the U.S. Army Corps of Engineers to support sediment transport and sand delivery modeling can be applied to nautical charts.

The proposed increase would support work exemplified by NOAA's cost-share partnership with California to survey the state's coastal waters in support of conservation and climate adaptation needs, as well as navigation. Processing existing seafloor mapping data for an additional need or use allows collaborators to avoid field acquisition costs of an additional separate survey. At a cost of \$5,300/SNM of seafloor data acquired in support of the California partnership, the state and NOAA realized an overall cost savings of \$14.5 million. The cost to acquire similar data in nearshore areas can be as much as four times greater. With the requested funds, more existing datasets can be re-processed to standards appropriate for both charting and habitat mapping. This includes \$40 million of recently collected mapping data that NOS does not currently have the capacity to ingest. Without this investment, thousands of SNM of data previously acquired in coastal waters for non-navigation purposes will not be processed in a timely fashion for navigation purposes and may result in a considerable investment in data re-acquisition costs.

Base Resource Assessment:

The base resources for this activity are found in the Navigation, Observations and Positioning base narrative.

Schedule and Milestones:

- Evaluate and approve hydrographic surveys conducted by NOAA survey units, contractors, and other 3rd party sources for nautical charting (FY 2014-2018)
- Collaborate on developing and maintaining IOCM standards/specifications to aid integrated data acquisition, management and archival (FY 2014-2018)
- Develop and maintain IOCM standards, specs, and metadata for mapping data (FY 2014-2018)

- Accept and process data, deliver products to OCM programs, and archive at NGDC, providing custom and standard products that would otherwise be unavailable (e.g. gridded multibeam data and side-scan sonar mosaics) (FY 2014-2018)
- Schedule, prepare and maintain 225 new editions of Raster Navigational Charts (RNCs) each year, increasing each year with final goal of 250 (FY 2014-2018)
- Implement data archive capability for NOAA charter mapping data from University-National Oceanographic Laboratory System (UNOLS) projects (FY 2014-2018)

Deliverables:

- Hydrographic survey data forwarded for application to nautical charts and made accessible for non-navigation uses
- Data standards, tools and expertise for IOCM and guidance on acquisition, processing and archives in support of the OCM community and ocean.data.gov
- Acoustic backscatter collection protocols that will facilitate the acquisition of these valuable data while maintaining the quality of bathymetric data
- New editions of Raster Navigational Charts produced at a rate of 225 per year

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Evaluate and approve hydrographic surveys conducted by NOAA survey units, contractors, and other sources for nautical charting							
With Increase	N/A	N/A	120	120	120	120	120
Without Increase	124	100	100	100	100	100	100
<p>Description: This measure tracks the number of hydrographic surveys acquired by NOAA in-house vessels, hydrographic service contractors and other 3rd party sources to be evaluated and approved for application to NOAA Nautical Charts.</p> <p>NOTE: NOAA exceeded target of 100 in FY 2012. Without increase targets for FY 2013 and beyond are straight-lined from the FY 2012 projection.</p>							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Datasets processed for IOCM seafloor/water column mapping data products (annual SNM)							
With Increase	N/A	N/A	1,000	2,000	3,000	4,000	5,000
Without Increase	362	350	350	350	350	350	350
<p>Description: This measure highlights existing datasets that the IOCM center will focus on for re-processing. The metric illustrates the large quantities of data available but not accessible for multiple uses. These datasets were collected for one purpose, but with some assistance, can be rendered more useful to other purposes such as marine geospatial products, habitat mapping, tsunami and storm surge models, and nautical chart updates in areas less critical for navigation.</p> <p>NOTE: This metric assumes growth over the years as the IOCM program becomes more efficient as it develops familiarity with various types of processing/re-processing, allowing the program to process more work each year.</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Navigation, Observations and Positioning
Program Change: Accelerate Processing of Hydrographic Survey Data

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	60
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	1,400
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	100
31 Equipment	150
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,710

Navigation, Observations and Positioning: Hydrographic Research and Technology Development (Base Funding: \$7,326,000 and 0 FTE; Program Change: -\$362,000 and 0 FTE): NOAA requests a decrease of \$362,000 and 0 FTE for a total of \$6,964,000 and 0 FTE to reduce grant funding at the Joint Hydrographic Center.

Proposed Actions:

At this funding level, NOAA will reduce the amount of grant funding provided to NOAA's Joint Hydrographic Center that supports research personnel. NOAA's Joint Hydrographic Center (JHC) evaluates sonar technologies and processes to improve efficiencies in hydrographic data acquisition. The program will continue to develop improved standards and methods for collecting data and creating Integrated Ocean and Coastal Mapping (IOCM) products such as habitat maps from nautical charting data, or nautical charting data from fish survey assessments on an adjusted timetable. NOAA will procure new technologies for hydrographic testing and development as resources allow.

Base Resource Assessment:

The base resources for this activity are found in the Navigation, Observations and Positioning base narrative.

Schedule and Milestones:

- Continue to develop technology for IOCM mapping and data processing on an adjusted schedule
- Test and develop new technologies as resources allow
- Provide custom and standard products that would otherwise be unavailable (gridded multibeam data in Bathymetry Attributed Grid (BAG) format and side-scan sonar mosaics)

Deliverables:

- Data standards, tools and expertise for Integrated Ocean and Coastal Mapping and guidance on acquisition and processing in support of the OCM community
- Acoustic backscatter collection protocols that will facilitate the acquisition of these valuable data while maintaining the quality of bathymetric data

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Sub-program: Navigation, Observations, and Positioning
Program Change: Hydrographic Research and Technology Development

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(362)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(362)

Navigation, Observations and Positioning: Coastal LIDAR Data Collection and Coordination (Base Funding: \$2,279,000 and 0 FTE; Program Change: +\$7,993,000 and +2 FTE): NOAA requests an increase of \$7,993,000 and 2 FTE for a total of \$10,272,000 and 2 FTE to participate in an integrated, government-wide LIDAR data collection effort in high priority coastal regions.

Proposed Actions:

With this increase, NOAA will participate in an integrated Federal LIDAR (light detection and ranging) data collection effort in high priority coastal regions, working with U.S. Army Corps of Engineers and U.S. Geological Survey through the 3D Elevation Program, the Interagency Committee on Ocean and Coastal Mapping (IOCM) and the Interagency National Digital Elevation Program. This government-wide effort will streamline coordination of Federal LIDAR data acquisition activities, improve LIDAR data collection methods, ensure that all data meet shared standards reflecting application and integration requirements, support cooperative development of data collection, processing, and delivery capabilities across the community of practice, and substantially increase the quantity and quality of data collected and processed to meet a broad range of IOCM applications. Resources provided would focus on addressing priority data gaps and newly arising needs as identified through stakeholder engagement with regional ocean alliances and coastal zone resource and emergency management agencies at the state, tribal, and Federal levels.

Coastal LIDAR mapping provides the accurate elevation framework and scientific knowledge needed for decision-making on coastal zone land management and resource use, and future development in the coastal zone and adjacent watersheds. LIDAR data are essential for responding to national issues associated with shoreline erosion, flood inundation, geologic hazards, sea level rise, and ecosystem health. Coastal LIDAR is also used for nautical charting, aids to navigation, and to provide hydrographic information in waters too shallow and unsafe for survey vessels.

This increase will allow for broader LIDAR data collection concurrent with aerial imagery and vastly improve coordination across agencies through shared products, standards and protocols. The elevation information both above and below the shoreline will be used by a multitude of Federal and state agencies for a variety of applications. The addition of this continuous LIDAR data layer will reduce the cost to the government overall as this data can be truly applied across many applications that reduce risks ranging from improved safety of life and property, disaster mitigation to decision support and long-term adaptation.

NOAA will collect the data primarily through external contract support, but will need to hire two additional FTE to oversee task orders and contracts, which will increase in both quantity and complexity, and perform Quality Assurance of the data and products delivered.

Statement of Need and Economic Benefits:

Coastal storms, sea level rise, development and many other natural and engineered changes to the environment are rapidly altering our shoreline. This is happening across the U.S., including regions of specific interest such as the Arctic. Decreased sea ice in the Arctic will increase the possibility of commercial shipping around Alaska's coast but increase the amount of coastal erosion and impacts from storms. However, many maps and nautical charts have not been updated in that area since the early 1900s, if at all, resulting in inaccurate navigational information. Accurate mapping of the nation's shoreline is imperative for multiple applications including navigation, geodesy, monitoring land changes, environmental protection, recreation,

habitat mapping, energy exploration, natural disaster response, research, and many more cross industry applications.

A 2012 socio-economic scoping study found that NOAA's Coastal Mapping Program (CMP) yielded over \$200 million per year in total economic benefits to the Nation². For every \$1 in program costs, there is a combined direct and indirect return of \$35 in benefits for the Nation. Additionally, CMP supports over 1,500 jobs at its current funding levels. NOAA's shoreline mapping work, Coast and Shoreline Change Analysis Program (CSCAP), and Emergency Response efforts will all be improved with this increase. Integrating LIDAR elevation mapping into NOAA's Coastal Mapping Program will allow the government to "map once, use many times" and increase efficiencies across sectors as well as increase the cost benefit of the program exponentially along with the number of users.

Fifty-two percent of the Nation's total population lived in coastal watershed counties in 2010 (less than 20 percent of the total land area excluding Alaska). Most of these coastal populations reside within 10 meters of elevation of existing sea levels. Recent events such as Sandy and Hurricane Irene have highlighted the importance of accurate elevation and charting data to ensure responsible Coastal Zone Management in order to deal with effects of climate and sea level change. These new resources allow NOAA to monitor and map these changes to our coasts with greater accuracy and consistency while also providing data to meet broader stakeholder requirements.

Base Resource Assessment:

At current funding levels, the National Geodetic Survey (NGS) updates shoreline at a rate of approximately 3.5 percent per year, and updates priority ports at a rate of approximately 17 percent per year. At this rate, it takes over 28 years to update shoreline data for the entire country (though coastal areas subject to dynamic change are mapped more frequently). Under current resources, NGS is engaged in the NOAA wide IOCM effort that seeks to "map once use many times" to improve efficiency in government spending. However, the number of applications supported by current methodologies is constrained in comparison to the datasets that would be developed with the proposed increase.

Schedule and Milestones:

- Begin increased data collection in 2014 and reach full production levels in FY 2018.

Deliverables:

- Streamlined application of Federal LIDAR capacity and data that support multiple agency needs.
- A seamless, topo-bathy shoreline derived from imagery and LIDAR, which advances IOCM goals and NOAA's nautical charting mission.

Performance Goals and Measurement Data:

² Leveson, Ira. *Socio-Economic Study: Scoping the Value of NOAA's Coastal Mapping Program*, 2012.

Performance Measure: Update National Shoreline/ Priority Ports (Percentage of total per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	4.5%/ 29%	5.0%/ 34%	6.0%/ 40%	7.0%/ 45%	8.0%/ 50%
Without Increase	3.2%/ 12%	3.5%/ 17%	3.5%/ 17%	3.5%/ 17%	3.5%/ 17%	3.5%/ 17%	3.5%/ 17%
Description: Updating the National Shoreline and Priority Ports is a measure NOAA typically uses to capture annual performance of NOAA in-house and contract assets for acquiring shoreline data for navigation safety and other applications.							

PROGRAM CHANGE PERSONNEL DETAIL

Program: National Ocean Service
Sub-program: Navigation, Observations and Positioning
Program Change: Coastal LIDAR Data Collection and Coordination

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Contract Specialist	Silver Spring, MD	ZP-III	1	62,467	62,467
Contract Monitor	Silver Spring, MD	ZP-IV	2	89,033	178,066
Subtotal			<u>3</u>		<u>240,533</u>
2013 Pay Adjustment (0.5%)					1,203
Total					<u>241,736</u>
less Lapse		25%	<u>1</u>		<u>(60,434)</u>
Total full-time permanent (FTE)			2		181,302
2014 Pay Adjustment (1.0%)					1,813
TOTAL					<u>183,115</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	2
Other than full-time permanent	0
Total	<u>2</u>
Authorized Positions:	
Full-time permanent	3
Other than full-time permanent	0
Total	<u>3</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Navigation, Observations and Positioning
Program Change: Coastal LIDAR Data Collection and Coordination

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$183
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>183</u>
12 Civilian personnel benefits	37
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	7,773
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>7,993</u>

Navigation, Observations and Positioning: GRAV-D (Base Funding: \$3,000,000 and 1 FTE; Program Change: +\$3,159,000 and 0 FTE): NOAA requests an increase of \$3,159,000 and 0 FTE for a total of \$6,159,000 and 1 FTE for improving elevations and height information as part of the Gravity for the Redefinition of the American Vertical Datum (GRAV-D) initiative.

Proposed Actions:

With the requested increase, NOAA will accelerate a multi-year effort to collect airborne gravity data to produce a new national vertical datum. The 2007 GRAV-D plan laid out an efficient process to acquire gravity measurements across the Nation and redefine the geoid model based on areas of most critical need. Now seven years into the project, interest and demand have significantly increased among national, state, and local stakeholders to accelerate data collection and realize the socio-economic benefits earlier. New resources will increase the rate of data collection over the entire U.S. and its territories, as well as accelerate the release of a gravity based geoid, from 2022 to 2020. In addition to increasing the rate of data collection, NOAA will use these funds to improve capabilities to analyze and manage the data, and support development of geoid products.

Statement of Need and Economic Benefits:

Updating the Nation's gravity-based geoid model from 40 cm of accuracy to 2 cm of accuracy across the Nation will allow the Global Navigation Satellite System (GNSS), the global satellite positioning system, to establish more accurate elevations that will contribute to improved commerce, promote economic efficiencies, and better protect against inundation from storms, flooding, and sea level change. The Hydrographic Services Review Panel recommended in December of 2012 full support for the acceleration of the improved geoid model. This has been reinforced by many similar statements from state and local groups.

A 2009 socio-economic benefits study estimated benefits to the nation of the completed GRAV-D effort funded by this increase to be \$4.8 billion over 15 years, including \$2.2 billion in avoidance costs from improved floodplain management³. While there are some benefits as data is collected in local areas, the primary benefit occurs when a continuous gravity data set can be used for a national product. The complete data set will affect and significantly improve heights for all areas of the country, including critical coastal areas.

The GRAV-D initiative has demonstrated numerous cost efficiencies through partnerships across the government and with private companies. Data collection activities have utilized resources from NOAA, Department of Interior Bureau of Land Management and U.S. Geological Survey, and Department of Defense Office of Naval Research Laboratory. The program continues to explore other opportunities to leverage resources. In addition, the program has strategically contracted with private companies for collection and processing of data.

Base Resource Assessment:

The base resources for this activity are found in the Navigation, Observations and Positioning base narrative.

³ Leveson, Ira. *Socio-Economic Benefit Study: Scoping the Value of CORS and GRAV-D*, 2009.

Schedule and Milestones:

- Award contracts and increase capabilities to increase data collection rates (FY 2014)
- Increase collection rate of gravity data by 12 percent per year of within U.S. and territories are enabled to benefit from a new national vertical reference system for improved inundation management (FY 2015-2018)

Deliverables:

- An experimental gravity-based geoid will be released in FY 2015 and FY 2018 using all gravity data released through FY 2014 and FY 2017 respectively
- Completion of GRAV-D and release of a gravity-based geoid (FY 2020)
- Public release of data for all completed areas within one year of collection

Performance Goals and Measurement Data:

Performance Measure: Percent of U.S. and territories enabled to benefit from a new national vertical reference system for improved inundation management (Measure 18g)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	38%	50%	63%	75%	88%
Without Increase	23.9%	28%	36%	44%	52%	60%	68%

Description: This measure tracks progress of NOAA’s National Geodetic Survey toward completing the Gravity for the Redefinition of the American Vertical Datum (GRAV-D) initiative and implementation of a new National Vertical Datum for a wide variety of applications including improved inundation management. This improved vertical reference system is critical for all observing systems and activities requiring accurate heights and is a key component of the enhanced geospatial framework required for success in achieving NOAA’s strategic priorities. It is of particular importance for community resilience by determining where water flows in order to make accurate inundation models and assessments as well as better management and planning decisions with improved water level predictions based on accurate elevations. “Enabled” is technically defined as having GRAV-D data necessary to support 2 cm orthometric heights (heights relative to sea level) necessary to define a new national vertical datum, where possible. NGS will calculate the percentage of area enabled relative to a pre-defined total area that includes U.S. territorial land and adjacent land and water areas necessary for final determination of a national vertical reference system. As progress is made, each survey area will be represented by a polygon that will define the completed areas. The performance measure will be tracked as a percent of the total area that is identified as complete.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Navigation, Observations, and Positioning
Program Change: GRAV-D

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	2,689
25.2 Other services	470
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	3,159

Navigation, Observations and Positioning: Tide and Current Data Program (TCDP) (Base Funding: \$27,984,000 and 124 FTE; Program Change: +\$3,963,000 and 0 FTE): NOAA requests an increase of \$3,963,000 and 0 FTE for a total of \$31,947,000 and 124 FTE to ensure the availability of accurate and reliable current and water level products.

Proposed Actions:

This increase will enable NOAA to significantly strengthen its ability to support multiple NOAA missions related to safety of life and property with accurate, reliable and timely water level and current data by: 1) ensuring the National Water Level Observation Network (NWLON) is adequately maintained to provide at least 95 percent data availability; 2) filling 30 key gaps in coastal areas identified by the 2008 NWLON Gap Analysis Report over five years; 3) infusing new technology required to replace aging water level sensors and enable observations in remote arctic waters; and 4) conducting additional tidal current measurements needed to maintain the tidal current tables in an accurate status.

The funds will enable NOAA to adequately maintain the NWLON and ensure timely and reliable data. The increase will eliminate recent “brownouts” in NWLON maintenance by fully supporting annual inspections and emergency maintenance of all 210 current NWLON stations, including far flung Pacific Island, arctic Alaskan, and Caribbean locations. Automated NWLON stations provide continuous real time data from often remote locations constantly subjected to harsh, dynamic environmental ocean conditions. All stations require an annual inspection to ensure continued reliability, document stability, and address maintenance needs. The funds will also enable maintenance on all NWLON meteorological sensors. The meteorological sensors support both safe navigation and are widely used by National Weather Service forecasting offices to improve and validate marine weather forecasts.

As part of maintenance efforts, NOS will upgrade existing NWLON stations, replacing the aging acoustic technology with new microwave water level technology. This non-contact device is more accurate and easier to maintain. Proof of concept bottom-mounted tide gauge technology demonstrated in Barrow, Alaska, will be transitioned to operations and deployed to begin establishing much improved tidal datum vertical control in remote arctic areas. These data are necessary to produce accurate nautical charts and shoreline mapping where geospatial data is scarce. Data management system improvements will enable NWLON to better partner with and leverage Integrated Ocean Observing System Regional Associations and other partners to improve national and local product delivery and ingest data from locally operated observing networks.

In addition to maintenance and upgrades, the increase will fill, by FY 2018, 30 critical gaps in the NWLON identified in a 2008 report, in order to increase the accuracy of tidal current predictions. NOAA will first focus on Gulf and East Coast areas most vulnerable to extreme storm events. New stations will be constructed on hardened platforms to ensure data is available when most needed, with five of the stations established as Sentinels of the Coast, open coast platforms designed to withstand Category 4 hurricane wind and wave forces. The stations will support the establishment of new PORTS as necessary and provide vertical control for locally funded storm surge and habitat restoration networks. The new stations will also allow NOAA to conduct a seasonal gauging program in the Great Lakes and update the International Great Lakes Datum of 1985, fulfilling its international responsibilities under the International Joint Commission to provide tidal datum information.

Also as part of this increase, NOS will resume current surveys needed to ensure that accurate tidal current predictions are available in all major US seaports. Dredging, water front

development, and other ongoing geomorphic changes in the Nation's harbors and estuaries often alter the physical hydrodynamics of those systems. Each current survey consists of short term deployments of current meters (30-90 days) to acquire data needed to generate predictions in those locations. Accurate tidal current predictions are essential information for large vessels seeking to safely navigate congested harbors. U.S. Coast Guard carriage regulations mandate that large commercial vessels carry a copy of the annual NOAA Tidal Current Tables on the bridge. In addition, these data also help support offshore hydrokinetic renewable energy projects and improve the accuracy of nowcast/forecast hydrodynamic oceanographic models, among other uses.

Statement of Need and Economic Benefits:

The Tides and Currents Data Program (TCDP) provides the physical oceanographic geospatial foundation to support safe and efficient maritime navigation and information for other NOAA mission areas such as hazards (storm surge and tsunami warnings), climate (long-term local sea level trends), ecosystems (habitat restoration and coastal resource management), weather forecasting, and others. Closing physical oceanographic geospatial gaps supports and provides benefits to multiple NOAA and broader Federal Government mission requirements.

A number of studies have documented the economic benefits provided by NOAA's navigational services including the broad suite of products and services supplied by the TCDP. A 2009 benefit-cost analysis study conducted by the Department of Transportation Volpe National Transportation Systems Center estimated that the net benefit provided by nautical charts, tide and current information is \$1.2 billion based on gross baseline 2006 data. The ratio of the net benefits from the use of the products to the government costs of producing them is 24-to-1; that is, each dollar of government investment results in \$24 in national benefits.

In addition, a series of more targeted economic benefits studies have been conducted for various Physical Oceanographic Real Time Systems (PORTS[®]), which TDCP data underpin. The studies all show significant reductions in groundings following the establishment of a PORTS[®] as well as annual economic benefits far exceeding the annual recurring costs. For example, the economic benefits documented for the Port of Houston-Galveston is \$16-\$18 million annually, as opposed to the annual maintenance cost of under \$300,000. NOAA's Continuity of Operations Plan classifies these real-time data as a Mission Essential Function for safe navigation as well as improved hazmat response, storm surge and tsunami warnings, and other safety of life and property missions.

A common, accurate vertical datum (the International Great Lakes Datum, or IGLD) for the U.S. and Canada is a bi-national responsibility required for the coordinated management of the water resources of the Great Lakes, and is essential to the missions of Natural Resources Canada, Environment Canada, NOAA, EPA, U.S. Army Corps and many other Federal agencies and partners. The benefits of updating the IGLD include improved coastal zone management, beach re-nourishment and marsh restoration projects. The IGLD also guides coastal development risk assessments, climate change mitigation and adaptation strategies as a result of long-term falling water levels in the Great Lakes, and land-use planning.

Base Resource Assessment:

The base resources for this activity are described in the Navigation, Observations and Positioning base narrative.

Schedules and Milestones:

- Annually inspect 100 percent of NWLON stations
- Collect current meter data at 70 locations

- Establish a total of 30 new NWLON stations over multiple years (FY 2014-FY2018)
- Upgrade 54 NWLON stations to new microwave water level technology
- Install six seasonal tide gauges per year in support of the International Great Lakes Datum update starting in (FY 2017-2018)

Deliverables:

- Accurate and reliable (>95% reliability) real-time oceanographic and meteorological data
- Operational bottom mounted tide gage technology for Arctic

Performance Goals and Measurement Data:

Performance Measure: Conduct Annual Inspections at National Water Level Observation Network Stations	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	210	218	225	231	236*
Without Increase	165	180	170	170	170	170	170
Description: This measure tracks the number of Annual Inspections conducted each year at NWLON locations. Annual Inspections are critical to ensuring the NWLON continues to exceed 95% reliability in delivering real time data when most needed to support safe navigation, oil spill response, and NWS issued storm surge and tsunami warnings. *240 stations planned to be in service by end of FY 2018 but new stations will not require inspection in the first year of service.							

Performance Measure: Update accuracy of NOAA tidal current predictions	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	70	70	70	70	70
Without Increase	40	40	40	40	40	40	40
Description: The Coast and Geodetic Survey Act authorizes NOAA to conduct tide and current observations and to analyze and predict tide and current data and publish data, information, compilations, and reports, including short term tidal current surveys that are used to update the NOAA annual tidal current prediction tables. This measure tracks NOAA's progress in updating the accuracy of these predictions by tracking the number of locations that have been updated.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Navigation, Observations, and Positioning
Program Change: Tides and Currents Data Program

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	160
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	2,193
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	890
31 Equipment	720
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	3,963

Regional IOOS Observations: Marine Sensor Innovation (Base Funding: \$0 and 0 FTE; Program Change: +\$10,000,000 and 0 FTE): NOS requests an increase of \$10,000,000 and 0 FTE for a total of \$10,000,000 and 0 FTE to develop and improve marine sensors for ocean chemical, biological, and physical parameters at multiple spatial and temporal scales to monitor changing conditions in the oceans, coasts, and Great Lakes.

Proposed Actions:

With these funds NOAA will establish a research and development program to develop and transition to operations a variety of biological, chemical, and physical marine sensing technologies to allow rapid, accurate, and cost effective detection, identification, characterization, and quantification of environmental conditions. The program will incorporate the successful marine sensor technologies and observing strategies into IOOS operations and other monitoring and prediction programs to meet region-specific stakeholder needs as mandated by the Integrated Coastal and Ocean Observation System (ICOOS) Act.

NOAA will make competitive, extramural awards to teams from IOOS Regions, industry, academia, and Federal partners for the development, demonstration, testing, and evaluation of marine sensor technologies. By coordinating with the National Oceanographic Partnership Program (NOPP), IOOS can leverage other agency investments and focus on transitioning technologies into operations. Required coordination between U.S. IOOS Regions and other partners from the research community and Federal operational programs will ensure new technologies and resulting data sources integrate with existing regional and national operational models and forecasts.

Under the cooperative agreements, the grantees and other partners will:

- Develop and identify appropriate biogeochemical sensors and platforms for rapid and accurate detection, identification, and quantification of ocean and coastal pathogens, nutrients, contaminants and harmful algae and their toxins that may indicate health risks to humans;
- Develop sensors to support validation of ocean satellite and in-situ observation systems;
- Evaluate and test sensors for transition to operational use to support harmful algal bloom monitoring, ocean acidification monitoring, aquaculture production, and ecosystem-based management;
- Develop technologies to ensure sustainable and reliable use of sensors in the marine environment, including analysis of emerging technologies such as miniaturization of sensors for hosting on smaller, energy constrained platforms such as gliders and the use of marine animals as mobile observing platforms via tagging;
- Enhance coastal ocean and human health risk assessments and forecasts by refining models to describe and predict impacts of stressors (climate change, freshwater availability, coastal development, anthropogenic pollutants, and naturally occurring pathogens and toxins);
- Evaluate the increased benefit of new data sources for transitioning into operational coastal models through the U.S. IOOS Coastal and Ocean Modeling Testbed; and
- Integrate U.S. IOOS compliant data into user-specified tools and information products (observations, model output, forecasts) at local and regional scales.

The demonstrations will be staggered and phased to allow new topics or new demonstration regions to be competed every two years and will include cross-agency prioritization of topics. NOS will select projects in consultation with groups such as the Ocean Research Advisory Panel, the Interagency Ocean Observation Committee, the Interagency Working Group on

Ocean Partnerships, and the U.S. IOOS Advisory Committee. Of the total amount, NOS will allocate \$1 million to sensor evaluation and verification activities that support this initiative.

Statement of Need and Economic Benefits:

Through recreation, residential and commercial development, and employment, human populations are coming into increasing contact with our oceans and coastal waters. Continued coastal development, changes in land use, a varying climate, and altered ecosystem diversity add a complexity of environmental and human stresses, the consequences of which are not yet fully understood and will be challenging to manage. Approximately 100 million Americans use coastal and Great Lakes waters for recreation each year, and in doing so they are exposed to an increasingly dangerous array of ocean health threats from industrial, urban, and agricultural sources. In 2004, there were nearly 20,000 days of beach closings and advisories at ocean, bay and Great Lakes beaches, of which, 73 percent were attributed to unknown sources and cost millions to local economies. During 2006-2007, there were 4,000 beach advisory days due to sewage contamination and 35 percent of tested estuaries and 12 percent of ocean shoreline waters were considered unfit for designated uses.⁴

Our ability to rapidly and accurately monitor and assess ocean conditions, biodiversity and other indicators of marine ecosystem health, and biological responses to changes in environmental conditions have lagged far behind our capacity to detect physical changes in the oceans and atmosphere. This capability gap is a target of the Marine Sensor Innovation program described here. This work will enable development of new marine sensing technologies designed to deliver rapid and cost-effective data to inform our understanding of coastal, ocean, and Great Lakes ecosystems, and to support better decision making to improve public, animal, and ecosystem health.

U.S. IOOS provides continuous data on open oceans, coastal waters, and Great Lakes to inform decision-making. Two studies confirmed that investments in ocean observation will generate significant economic benefits to both NOAA and the Nation.⁵ Users of ocean data, including modelers and meteorologists, spend an average of 25–50 percent of their time searching for, accessing, formatting, and ingesting data into their products. The Kite-Powell study summarized the magnitude of potential economic benefits of deploying a network of ocean observing systems. Conservative estimates of benefits demonstrate that between \$100 million and \$1 billion in economic growth would be created by an investment in regional ocean observing systems. Developing the next generation of marine sensors will help upgrade and strengthen our U.S. ocean observing system and will contribute to marine sector businesses, job growth, and scientific discovery.

⁴ Dorfman and Rosselot. *Testing the Waters: A Guide to Water Quality at Vacation Beaches*, Natural Resources Defense Council, 2009.

⁵ Willis, Zdenka. *The Business Case for Improving NOAA's Management and Integration of Ocean and Coastal Data*, 2009 and Kite-Powell et al. *Estimating the Economic Benefits of Regional Ocean Observing Systems*, 2004.

Base Resource Assessment:

The base resources for U.S. IOOS are described in the Navigation, Observations and Positioning base narrative. This program also leverages efforts of NOAA/OAR's Ocean Acidification Program.

Schedule and Milestones:

	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Prioritize topics with Federal agencies and the National Oceanographic Partnership Program (NOPP) for marine sensor innovative technology demonstrations to advance three-dimensional monitoring of coastal, Great Lakes, and ocean conditions		X		X	
Publish proposal solicitation for 3-year marine sensor technology demonstrations for transition to operations within U.S. IOOS Regions.		X		X	
Initiate competitively selected demonstration projects	X		X		X
Make awards and conduct technology demonstrations and evaluations in U.S. IOOS Regions	X	X	X	X	X
Conduct Technology and Instrument Evaluations and publish results in technology database	X	X	X	X	X
Evaluate benefit of new data sources for transitioning into operational coastal models				X	X
Transition demonstrated tools or technologies into operations			X	X	X

Deliverables:

- Incorporation of two or more emerging tools or technologies into operations of two or more U.S. IOOS regions every three years (FY 2016–2018)
- Expanded capability of U.S. IOOS, improving mission readiness of Federal agencies and ability of U.S. IOOS regions to meet local and regional stakeholder needs for ecosystems data including new data from marine sensor development (FY 2014–2018)
- Marine Sensor Innovation topic demonstrations for sensor development, platform integration, tool development, and technology transition into operations (FY 2016–2018)
- Expansion of scientific and technical jobs as well as training and education among industry and U.S. IOOS regional partners involved in demonstrations (FY 2014–2018)

Performance Goals and Measurement Data

Performance Measure: Cumulative number of new marine sensors or ecosystem tools developed to enhance ecosystem based management for fisheries, protected species, public health, and additional topics as defined by the National Oceanographic Partnership Program process	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0	0	4	4	8
Without Increase	0	0	0	0	0	0	0
Description: This measure focuses on the development of new sensors or tools resulting from 3-year NOPP marine sensor technology demonstrations. Staggered starts for projects will lead to four new sensors or tools every two years starting in FY 2016. This assumes at least one sensor or tool per topic demonstration.							

Performance Measure: Annual number of tools, technologies, or products developed from tested and validated sensors or related research used to improve ecosystem-based management and additional issue areas as defined by the National Oceanographic Partnership Program process	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0	0	8	8	8
Without Increase	0	0	0	0	0	0	0
Description: This measure focuses on the application of marine sensor technologies and tools. Specifically, this measure tracks success in translating tested and validated sensor technologies and related findings into information products, tools, or technology that improve ecosystem-based management of ocean, coastal and Great Lakes resources, protection of trust resources, and the prediction and reduction of ocean and coastal related human and marine organism health risks. This measure assumes three-year technology demonstrations with resulting tools becoming available in year three and becoming available to operations in year four.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Navigation, Observations and Positioning
Program Change: Marine Sensor Innovation

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	2,500
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	7,500
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	10,000

Regional IOOS Observations Base Funding: \$23,095,000 and 5 FTE: Program Change: +\$2,425,000 and 0 FTE): NOAA requests an increase of \$2,425,000 and 0 FTE for a total for a total of \$25,520,000 and 5 FTE to support ocean and coastal observing efforts.

Proposed Actions:

With this funding, NOAA will increase the Federal support to the eleven Regional Associations, enabling them to (a) better maintain existing investments and (b) make targeted increases to their capacity to foster the national and international application of local data and products broadly across oceans, coasts, and Great Lakes. Investments will be consistent with specific regional needs outlined in the IOOS Regional Build-Out Plans. NOAA ensures that regional activities are coordinated with the IOOS Advisory Committee, the Interagency Ocean Observation Committee, and prioritized according to the recommendations of the 2012 U.S. IOOS Summit.

NOAA will award funds through cooperative agreements selected through its established merit-based competitive process conducted through the National Oceanographic Partnership Program. Regions will:

- Continue to leverage and expand Federal and non-federal partnerships to expose new data sources, such as those collected by shellfish industry, other maritime industry partners, and the animal telemetry network;
- Implement Data Management and Communications (DMAC) tools to support open access to regional data consistent with national standards; and
- Prioritize observing capabilities such as gliders, buoys, gauges, High Frequency Radars, and sensors, to meet highest priority stakeholder needs.

IOOS regional observations and models deliver both real-time and long-term ocean observations that support operational oceanography, responses to environmental challenges, decision support, and climate research. Regional Associations are effective at leveraging additional investments across state, local and private sector partners.

Statement of Need and Economic Benefits:

U.S. IOOS delivers the data and information needed to increase understanding of our coastal waters, so that decision-makers can take action to improve safety, enhance the economy, and protect the environment. U.S. IOOS supplies critical information about our Nation's waters. Scientists working to understand climate change, governments adapting to changes in the Arctic, municipalities monitoring local water quality, industries understanding coastal and marine spatial planning all have the same need: reliable and timely access to data and information that inform decision making. Two studies confirmed that investments in ocean observation generate significant economic benefits to both NOAA and the Nation⁶.

⁶ Willis, Zdenka. *The Business Case for Improving NOAA's Management and Integration of Ocean and Coastal Data*, 2009, and Kite-Powell et al. *Estimating the Economic Benefits of Regional Ocean Observing Systems*, 2004

A 2011 Kite-Powell study used a newly developed economic framework for the design, evaluation and enhancement of ocean observing systems. When applied to Northeastern Regional Association of Coastal and Ocean Observing Systems (NEARACOOS), the framework yielded a conservative estimate of \$6 million as the annual economic benefit of NERACOOS data based upon users visiting NERACOOS or affiliated websites. Based upon average annual Federal funding under \$2 million for NERACOOS annually, a separate study indicates a 3 to 1 return on investment.⁷

Base Resource Assessment:

The base resources for this activity are described in the Navigation, Observations and Positioning base narrative.

Schedule and Milestones:

	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Sustain existing observing networks to continue to deliver real-time ocean, coastal, and Great Lakes observing data, models, and products	X	X	X	X	X
Maintain and expand partnerships to increase access to and expose new data sources, such as those collected by shellfish industry partners	X	X	X	X	X
Implement DMAC tools to support interoperability of regional data consistent with national standards	X	X	X	X	X
Develop prioritized list of Regional IOOS actions to support U.S. IOOS Summit recommendations	X				
Implement prioritized U.S. IOOS Summit recommendations		X	X	X	X

Deliverables:

- Regional online data portals, real-time sensor maps, and research assets maps to meet local community stakeholder needs (FY 2014-2018)
- Increased membership and partners to U.S. IOOS through outreach efforts, such as the 2012 U.S. IOOS Industry Workshop, which resulted in four new members (FY 2014-2018)

⁷ Kite-Powell et al. *Observing System Infrastructure and Economic Value*, US IOOS summit white paper, July 2012

- U.S. IOOS products such as nowcasts and forecasts for the oceans, coasts and Great Lakes describing winds, waves, currents, temperature, salinity, and visibility (FY 2014-2018)
- Increased visualization tools combining observations and forecasts with bathymetry, navigation charts and vessel tracking as decision support tools (FY 2015-2018)
- Decision support tools and information to support regional ecosystem and health indices that are needed to integrate biological, chemical, physical and geological conditions and provide tools for managers to evaluate and refine management strategies (FY 2014-2018)
- Improved observing and modeling capability to support extreme events such as hurricanes and coastal storms, including new ways to assimilate observations from buoys, gauges, or gliders (FY 2015-2016)

Performance Goals and Measurement Data:

Performance Measure: Annual number of real-time or historical data requests of IOOS-partner observing stations through the IOOS Data Assembly Center at the National Data Buoy Center (in millions)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	81	84	87	87	87
Without Increase	78	78	76	74	72	72	72

Description:

This performance measure includes both “data requests” and “RSS requests” for non-federal IOOS partner observing station data distributed through the IOOS Data Assembly Center at the National Data Buoy Center (NDBC). “Data requests” is a statistic regularly tracked by NDBC and indicates a demand signal from users for coastal, ocean, and Great Lakes data. “Data Requests” includes web based access hits on any of the real-time or historical data files for each station. “RSS Requests” is another NDBC statistic that includes hits on the RSS feeds for each station. Hits on RSS feeds are analogous to requesting data via Weblinks and represent users accessing data.

This Measure does not include counts from observing platforms operated by Federal agencies. “Without Increase” projects a decline due to anticipated increases in downtime of current observation stations due to inflationary pressure on operations and maintenance costs.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Navigation, Observations and Positioning
Program Change: Regional IOOS Observations

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,425
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>2,425</u>

Regional IOOS Observations: Sensor Verification and Validation (Base Funding: \$23,095,000 and 0 FTE; Program Change: -\$1,000,000 and 0 FTE): NOAA requests a decrease of \$1,000,000 and 0 FTE for a total of \$22,095,000 and 0 FTE to transition existing marine sensor technology and instrument evaluations and validation activities to a broader sensor research and development program. As part of NOAA's FY 2012 spend plan, Congress directed NOAA to provide \$1,000,000 for verification and validation activities. This work has been completed and NOAA will support future sensor evaluation and validation activities as part of its broader Marine Sensor Innovation proposal to develop and improve new marine sensor technologies.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Navigation, Observations and Positioning
Program Change: Sensor Verification and Validation

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(1,000)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,000)</u>

The following exhibit shows the summary object class detail for Navigation, Observations and Positioning program changes less than \$100,000. Please contact the Department of Commerce if details for any of these changes are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Navigation, Observations and Positioning
Program Change: Multiple

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(73)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(73)

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUB-PROGRAM: COASTAL SCIENCE AND ASSESSMENT

NOAA proposes to create a new “Coastal Science and Assessment” budget sub-program, which will include NOS’s applied science functions from its current Ocean Resources Conservation and Assessment sub-program, along with the Office of Response and Restoration. This functional grouping would encompass NOS’s core scientific advisory functions and capabilities: applied research, forecasting, assessment, and emergency response.

The activities under this sub-program provide a scientific foundation for sustainable management, protection, restoration, and use of U.S. coastal resources, especially NOAA’s public trust resources. Burgeoning coastal development continues to lead to ever-increasing stressors on ecosystem services in the Nation’s coastal areas. NOS research and advisory services promote Federal, state, local, and private industry management actions and practices to mitigate the cumulative effects of these stressors. Furthermore, the increase level of coastal human activity from activities such as drilling and shipping increases the risk of emergencies, such as ship groundings and oil spills, which lead to both pollution and physical damage to sensitive ecosystems. NOS is the Nation’s leading scientific expert on responding to such emergencies and conducting natural resource damage assessments in oceans and coasts. These assessments support litigation and negotiated settlements and enable restoration of public trust resources. For long-term management and restoration efforts, NOS continues to develop a capability to research, monitor, and predict coastal changes in the health of ecosystems that have enormous implications for the Nation’s economic well-being. Of note, in 2012, NOAA developed an Ecological Forecasting Roadmap to transition mature research into operational ecological forecasts, particularly in the areas of HABs, Hypoxia, and Pathogens.

NOS implements the activities of this sub-program under the legislative mandates of the Clean Water Act; Oil Pollution Act; the Comprehensive Environmental Response, Compensation, and Liability Act; the National Coastal Monitoring Act; the Marine Debris Act; and the Harmful Algal Bloom and Hypoxia Research and Control Act. This sub-program also supports NOAA’s and the Nation’s obligations under international treaties and conventions, and increase effectiveness of international programs for coastal environmental science and technology, integrated coastal zone management, and sustainability of coastal resources.

The following program offices and program office components are responsible for carrying out the Coastal Science and Assessment sub-program:

- **National Centers for Coastal Ocean Science.** NOS’ National Centers for Coastal Ocean Science (NCCOS) conduct research, monitoring, and assessments to build the scientific foundation essential for sustainable use of coastal resources. Although each center has unique expertise, NCCOS’ research, monitoring and assessment capabilities are leveraged and enhanced by partnerships to manage threats of harmful algal blooms (HABs), support marine planning, and advance knowledge of ecological effects of climate change and coastal contamination. NCCOS engagement with stakeholders ensures research activities meet the highest priority national, regional and local issues. NCCOS centers are located in Maryland, South Carolina, North Carolina and Alaska.
- **Office of Response and Restoration.** NOAA’s Office of Response and Restoration (OR&R) is a center of expertise in preparing for, evaluating, and responding to threats to coastal environments, including oil and chemical spills, releases from hazardous waste sites, and marine debris. When oil or hazardous substances threaten or injure coastal and marine resources, OR&R is responsible for assessing damage to natural resources and ensuring

that cleanup actions protect those resources from further injury. NOAA responds to approximately 180 significant oil or chemical spills each year as scientific advisors to the U.S. Coast Guard and provides comprehensive solutions to cleanup agencies and organizations at more than 200 hazardous waste sites each year along the Nation's ocean and Great Lakes coasts.

The proposed budget structure includes the following projects, programs, and activities under this sub-program:

- Coastal Science, Assessment, Response, and Restoration
- Competitive Research

Coastal Science, Assessment, Response, and Restoration will be composed of the former Response and Restoration, Marine Debris Program, and National Centers for Coastal Ocean Science (NCCOS) PPAs. For detailed information, see the breakout and crosswalk on p. NOS 5, ORF-18 and ORF-21. Below are the base services that will be provided in the Coastal Science and Assessment sub-program:

Coastal Science and Monitoring

NOS conducts applied research, monitoring, and assessments to build the scientific foundation essential for sustainable use of coastal resources. NOS pursues these research priorities both through its laboratories and by providing grants for competitive, peer-reviewed, interdisciplinary research investigations.

This mixed intramural-extramural approach allows NOS to combine the benefits of both program models. NOS laboratories have the flexibility to pivot quickly to address the most current and pressing research demands from NOAA, states, and territories. For example, within ten days of the Deep Water Horizon spill, NCCOS had scientists on the ground in the Gulf of Mexico collecting baseline hydrocarbon data across the entire Gulf coastline well before any oil reached the beaches or marshes. Many of NOS's state-of-the-art laboratories are unique in location—providing ready access to a diversity of coastal habitats—and analytical capability. Furthermore, NOS intramural research programs are uniquely positioned to conduct long term monitoring and maintain standardized, longitudinal datasets.

At the same time, grantees are well positioned to conduct research projects on specific questions over a 3 to 5 year period. Merit-based grant awards often address specific coastal management needs on a regional scale and benefit significantly from subject matter expertise of the most qualified teams of scientists in the Nation, whether they are in academic institutions, private industry, and other government laboratories. Grantee research often culminates with the development of models explaining how ecosystems work and how they will respond to change, both negative (e.g. pollution or drought) and positive (e.g. protection or restoration).

Current research priorities for both NOS laboratories and grants include ecological stressors such as HABs, hypoxia and climate change. NOS research, monitoring and assessment capabilities are leveraged and enhanced by partnerships to manage threats of harmful algal blooms (HABs), support

marine planning, advance understanding of climate change impacts to coastal ecosystems and address impacts of coastal contamination. Literally putting NOS science in the hands of the public, NOS develops test kits for coastal managers to detect harmful algae and their toxins, and improve forecasts of toxic blooms. The importance of these applications cannot be overstated—Harmful Algal Blooms cost the Nation at least \$82 million annually and cumulative losses may reach one billion dollars over ten years.⁸ Furthermore, this estimate is conservative and better documentation of local impacts would likely yield higher even greater estimates of economic harm. For example, State of Florida Department of Health has estimated the economic cost of harmful algal blooms off the coast of Sarasota, FL, including impacts on fisheries, hospitality industry, and human health, to be \$50 million per year.

In other research areas, NOS continues to map and understand ecosystems and their ongoing evolution as shaped by climate change and other human factors. Some examples include modeling of climate change impacts on biological communities and habitats; characterizing and forecasting of coastal, marine, and Great Lakes ecosystem conditions; identifying the environmental impacts of marine aquaculture. Activities include developing core capabilities in pathogen detection, environmental chemistry and toxicology, molecule-level diagnostics, marine wildlife epidemiology, statistical models and human dimension indicators.

Response and Restoration of NOAA Trust Resources

NOS is a center of expertise in preparing for, evaluating, and responding to threats to coastal environments, including oil and chemical spills, releases from hazardous waste sites, and marine debris. NOS responds to approximately 180 significant oil or chemical spills each year as scientific advisors to the U.S. Coast Guard and provides comprehensive solutions to cleanup agencies and organizations at more than 200 hazardous waste sites each year along the Nation's ocean and Great Lakes coasts. When oil or hazardous substances threaten or injure coastal and marine resources, NOS, along with other state and Federal natural resource trustees, is responsible for assessing natural resource damages, seeking compensation on behalf of the public for the loss of services that the natural resources provided, and ensuring that cleanup actions protect those resources from further injury.

NOS' emergency response capabilities support Federal, state, and local agencies across the country that depend on NOAA's science-based guidance during oil and chemical spills, vessel groundings, search and rescue efforts, national security events, and other emergencies. NOS provides scientific expertise, including oil spill trajectory modeling, shoreline cleanup assessment, identification of sensitive resources, information management, and development of cleanup strategies. This knowledge and experience enables Federal on-scene coordinators to make the best cleanup decisions to minimize the environmental and economic impacts of oil spills and response actions. NOS enhances national knowledge and readiness by training hundreds of Federal, state

⁸ Hoagland and Scatasta." The economic effects of harmful algal blooms," E Graneli and J Turner, eds., Ecology of Harmful Algae. Ecology Studies Series. Dordrecht, The Netherlands: Springer-Verlag, Chap. 29., 2006.

and local partners each year. NOS continues to provide critical scientific support to the Coast Guard for the Deepwater Horizon oil spill in the Gulf of Mexico.

NOS' assessment and restoration program works closely with other Federal and state trustees and responsible parties to assess and restore resources injured by oil spills, releases from hazardous waste sites, and vessel groundings on corals and sea grass beds. NOS is a leader among the state and Federal damage assessment community and supports the protection and restoration of natural resources vital to coastal ecosystems and local economies. NOS also ensures that remediation at hazardous waste sites protects NOAA trust resources. The NOS assessment and restoration program and its partners have generated over \$500 million of restoration over the life of its program, all of which has been paid for by responsible parties. NOS is now leading the damage assessment activities for the Deepwater Horizon oil spill in the Gulf of Mexico. In this arena, NOS works with the NOAA Restoration Center to provide assistance for estuary habitat restoration projects and to develop and enhance restoration monitoring and research capabilities. NCCOS research under this sub-program is also essential to establishing a baseline state of the ecosystem before the pollution event, enabling damage to be quantified and long-term restoration projects to be evaluated.

In FY 2012, NOAA began implementing an oil spill research and development program. The goal of this program is to conduct research to provide tools and training for planners, oil spill responders, and assessment practitioners. In FY 2012, the oil spill R&D program delivered several advancements in pollution response science, including development of an advanced chemical air dispersion model for local emergency managers delivered through the NOAA Weather Forecast Offices; upgrades to the NOAA oil spill trajectory analysis planner (TAP) that covered the entire U.S. East Coast in preparation for drilling off of Cuba; and improvements to the NOAA GNOME model for sub-surface oil spills and marine debris.

NOS' Marine Debris Program (MDP), mandated by the Marine Debris Act, has a lead role in addressing marine debris affecting the ocean and coastal environment and navigation safety in the United States. Through the MDP, NOS conducts reduction, prevention, and research activities, as well as supports grants, partnerships, and contracts to address marine debris. Current activities emphasize research, establishing a network of partners to implement standardized monitoring protocols, and removal projects that benefit communities, coastal habitat, waterways, and wildlife. Over the past year, the program has led Federal efforts to address marine debris generated by the March 2011 tsunami in Japan. These efforts have included contingency planning assistance to states, debris detection, shoreline modeling, removal grants, and data dissemination. In 2012, the U.S. government received a \$5 million gift from the Government of Japan to aid in the response to tsunami debris. NOS is managing these gift funds by working closely with impacted states to monitor shorelines, mitigate invasive species impacts, and remove of tsunami debris. The MDP has also positioned itself as a leader on marine debris issues within NOAA and the Federal community, including chairing the Federal Interagency Marine Debris Coordinating Committee.

In FY 2014, NOAA proposes to consolidate the functions and resources of the Estuary Restoration Program into the Office of Habitat Conservation within the National Marine Fisheries Service.

Schedule and Milestones:

- Identify and analyze biological, benthic and oceanographic datasets at appropriate spatial and temporal scales to support New York and North Carolina offshore energy plans (FY 2014-2018)

- Research to support National Marine Sanctuary (NMS) rezoning and boundary delineation (FY 2014-2018)
- Characterize environmental conditions for HAB species to produce toxins and estimate toxin flux into food chains (FY 2014-2018)
- Collect and analyze data to support national baseline assessments of coastal resource health (FY 2014-2018)
- Investigate land use and weather modifications on runoff, eutrophication, HABs and pathogens for coastal Southeast, Gulf of Mexico and Chesapeake Bay (FY 2014-2018)
- Assess impacts of coastal erosion and beach modifications on marsh vegetation (FY 2014-2018)
- Respond to approximately 180 oil spills and other pollution events to influence sound, science-based cleanup decisions (FY 2014-2018)
- Establish Memoranda of Agreement with states impacted by marine debris from the March 2011 tsunami to facilitate shoreline monitoring, mitigation of invasive species impacts, and removal activities (FY2014-2015)
- Influence remedial decisions at more than 200 hazardous waste sites to protect NOAA trust resources (FY 2014-2018)
- Conduct natural resource damage assessments at priority spill and hazardous waste sites (FY 2014-2018)
- Train 700 responders and partners (Federal, state and local) in technical and scientific elements of incident response and damage assessment (FY 2014-2018)
- Achieve significant progress on regional ecosystem restoration planning, implementation, and monitoring (FY 2014-2018)
- Plan and Implement priority oil spill and marine debris research and development projects including assessment and response tools, techniques and methods development (FY 2014-2018)
- Provide national and international leadership on reducing the harmful effects of marine debris through coordination, research, monitoring, education, outreach, partnership-building, and debris removal (FY 2014-2018)

Deliverables:

- Enhanced data integration and visualization tools such as DIVER/EXPLORER, ERMA, Chemical Reactivity Worksheet, and GNOME
- Baseline ecological assessments in the Gulf of Mexico, Chesapeake Bay and selected NMS and NERRs
- Reports on national ecological conditions and stressor impacts in coastal-ocean waters
- Models on marsh response to sea level rise and assessments of impacts of shoreline modification on ecosystem services in Mid-Atlantic region
- Forecasts of harmful algal blooms (west coast of Florida; Lake Erie; western Gulf of Mexico; and Gulf of Maine) and hypoxic conditions (northern Gulf of Mexico; and Chesapeake Bay); and developing capability for harmful bacteria forecasting (Chesapeake Bay)
- Technical support to Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) lead agencies, investigate potential injury to NOAA trust resources, develop protective remedial strategies, and address contaminated sediments
- Significant progress toward completing natural resource damage assessments or cases settled to recover funds for restoration of coastal resources
- Two regional response exercises per quarter with NOAA presence (Federal, state, local, private)
- Enhanced functionality of Environmental Response Management Application (ERMA) through development of stand-alone version and integration of oil & gas industry data.

- Socioeconomic monitoring of Deepwater Horizon restoration projects to estimate restoration project benefits to Gulf Coast economies

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Annual number of coastal, marine and Great Lakes ecosystem sites adequately characterized for management (Measure 18a: NCCOS contribution only)	9	11	13	13	10	10	10
Description: Ecological characterizations provide the scientific basis for coastal and ocean assessments and forecasts, and the development of plans to manage resources and assess the effectiveness of measures implemented to effectively manage natural resources. Characterizations are conducted on NOAA trust resources, essential fish habitats, Great Lakes habitats and living resources and throughout the Nation's coastal zone. A subset of these metrics contributes to NOAA's measure 18a. For full performance actual, see the U.S. Department of Commerce FY 2012 Performance & Accountability Report.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Cumulative number of coastal, marine and Great Lakes forecast capabilities developed and used for management (Measure 18b: NCCOS contribution only)	2	4	5	4	4	3	3
Description: This measure is a subset of Measure 18b. NOAA's discrete forecast models allow resource managers to: 1) make decisions based on predicted environmental and socioeconomic impacts related to a particular issue; 2) use issue-based forecasts to predict the impacts of a single ecosystem stressor (e.g., climate change, extreme natural events, pollution, invasive species, and land and resource use) and 3) evaluate the potential options to manage those stressors to fulfill the ultimate goal for resource managers to use NOAA's forecasts to better manage ecosystem use, condition, and productivity. These forecasts will be based on field and laboratory studies, existing data, and models predicting environmental conditions under different scenarios and will have capabilities specific to a geographic area and be counted for each ecosystem as they become operational. For example, harmful algal bloom forecasts in the Gulf of Mexico and Gulf of Maine are two separate forecast capabilities and similarly, multiple, distinct forecast capabilities could be counted within a single ecosystem (i.e., harmful algal blooms, pink shrimp harvest, and hypoxia – all in the Gulf of Mexico). For full performance actual, see the U.S. Department of Commerce FY 2012 Performance & Accountability Report.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percent of all coastal communities susceptible to harmful algal blooms verifying use of accurate HAB forecasts (Measure 18h)	N/A	11	11	11	11	11	11
Description: This is a pilot measure in FY 2013, which was developed to track the forecast communities (currently using operational forecasts) within a coastal region vulnerable to harmful algal blooms (HAB) and the utility and accuracy of HAB forecasts as verified through customer feedback responses before and after a forecast HAB event.							

Performance Measure: Number of hazardous waste sites where assessments or cleanup plans address risks to NOAA trust resources	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	15	15	15	15	15	15	15
Description: This measure tracks the number of hazardous waste sites (e.g., Superfund sites) for which NOAA provides scientific expertise to assess and develop cleanup plans, thereby reducing the risk to NOAA's trust resources.							

Performance Measure: Number of enhancements to scientific support tools that support US government response to hazardous material releases	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	59	59	59	59	59	59	59
Description: This measure tracks the number of improvements to scientific support tools, e.g., fate and trajectory models, ERMA, environmental sensitivity maps, that will help decision makers make the best cleanup decisions to minimize the environmental and economic impacts of oil and chemical spills and marine debris releases.							

Performance Measure: Number of Natural Resource Damage Assessment cases where liability is resolved	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	4	4	4	4	4	4	4
Description: This measure tracks the annual number of natural resource damage cases that are resolved and supply restoration funds. Successful cases reflect NOAA's ability to conduct assessments, provide assistance and work cooperatively with industry and other trustees on natural resource damage cases.							

PROPOSED LEGISLATION:

The Administration will work with Congress to reauthorize the Coral Reef Conservation Act, the Harmful Algal Bloom and Hypoxia Research and Control Act, and the Oceans and Human Health Act.

THIS PAGE LEFT INTENTIONALLY BLANK

PROGRAM CHANGES FOR FY 2014:

Coastal Science, Assessment, Response and Restoration: Natural Resource Damage Assessment: (Base Funding: \$21,928,000 and 110 FTE: Program Change: +\$2,000,000 and +4 FTE): NOAA requests an increase of \$2,000,000 and 4 FTE for a total of \$23,928,000 and 114 FTE to improve NOAA's capacity to carry-out natural resource damage assessments and to expedite the restoration process.

Proposed Actions:

With the requested increase, NOAA will increase its capacity to achieve Natural Resource Damage settlements by two cases per year. In addition to the Deepwater Horizon case, NOAA is currently engaged as a trustee in more than 200 cases. Additional funds will enhance the level of technical, strategic, and legal support available to cases under the Oil Pollution Act (OPA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). NOAA will use portion of these funds to hire additional natural resource injury specialists, restoration specialists, and attorneys.

Statement of Need and Economic Benefits:

As a trustee NOAA is charged, along with state and Federal co-trustees, with conducting Natural Resource Damage Assessments (NRDA), pursuing settlements, and carrying out restoration planning. The NRDA process determines the type and amount of restoration needed to compensate the public for harm or injury to natural resources that occur as a result of a pollution event. To help expedite cases, NOAA leads its co-trustees on most of the NRDA cases, which involve NOAA trust resources by providing technical, strategic, and process guidance and support. The goal of NOAA's NRDA activities is to work expeditiously with Federal and state co-trustees to restore the environment to conditions present prior to a hazardous material release.

The Deepwater Horizon oil spill provided a stark reminder that the risk to the Nation from major oil and chemical spills is increasing. Factors that point toward more frequent spills and more extensive harm in the future include increasing marine transportation; offshore oil and gas development; aging coastal infrastructure susceptible to sea level rise; more frequent extreme coastal weather events; and increased shipping and oil development in the Arctic. With much of NOAA's current NRDA capacity focused on the DWH case, NOAA needs additional capacity to conduct multiple, simultaneous damage assessments under OPA, and to address long-term impacts from multiple waste sites under CERCLA.

The value of reducing, mitigating, and remediating injury to natural resources is easily quantifiable. Over the past 15 years, the Nation has recovered more than \$437 million for the protection and restoration of coastal resources after spills and waste site releases which have involved NOAA trust resources. In a study, Californians stated they would be willing to pay \$75 per household to prevent oil spills off the coast of Central California over a 10-year period⁹. In

⁹ *Value of Preventing Oil Spill Injuries to Natural Resources along California's Central Coast*, Natural Resource Damage Assessment Inc., San Diego, Calif., March, 1996

addition, the American public values the prevention of another major oil spill similar to the Exxon Valdez at approximately \$3 billion in 1990 dollars.¹⁰

Base Resource Assessment:

The base resources for this activity are described in the Coastal Science and Assessment base narrative.

Schedules and Milestones:

- Complete six Damage Assessment and Restoration Plans annually*

**Note: NOAA can only estimate the number of cases that it can expedite as a result of this proposed increase at this time. While NOAA would direct the increased funding toward cases in which additional NOAA resources are most likely to speed recoveries, settlements are often dependent on the actions of many co-trustees and other external stakeholders. As such, NOAA cannot assure accelerated timelines for particular cases.*

Deliverables:

- Damage Assessment and Restoration Plans for cases in which NOAA is currently engaged as a trustee

Performance Goals and Measurement Data:

Performance Measure: Number of Natural Resource Damage Assessment cases in which liability is resolved.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	5	6	6	6	6
Without Increase	4	4	4	4	4	4	4
Description: This measure tracks the number of natural resource damage cases that are resolved, and for which restoration funds are secured. Successful cases reflect NOAA's ability to provide assistance and work cooperatively with industry and co-trustees on natural resource damage cases.							

¹⁰ A Contingent Valuation Study of Lost Passive Use Values Resulting from the Exxon Valdez Oil Spill, Natural Resource Damage Assessment, Inc., La Jolla, Calif., November, 1992)

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Ocean Service
Sub-program: Coastal Science and Assessment
Program Change: Natural Resource Damage Assessments

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Anchorage, AK	ZP-IV	1	89,370	89,370
Physical Scientist	St. Petersburg, FL	ZP-IV	1	86,575	86,575
Economist	Silver Spring, MD	ZP-IV	1	89,033	89,033
Restoration Specialist	Gloucester, MA	ZP-IV	1	81,823	81,823
Attorney	Silver Spring, MD	ZP-V	1	123,758	123,758
Attorney	Seattle, WA	ZP-V	1	121,357	121,357
Subtotal			<u>6</u>		<u>591,916</u>
2013 Pay Adjustment (0.5%)					5,919
Total			<u>6</u>		<u>597,835</u>
less Lapse		25%	<u>2</u>		<u>(149,459)</u>
Total full-time permanent (FTE)			<u>4</u>		<u>448,376</u>
2014 Pay Adjustment (1.0%)					4,484
TOTAL					452,860

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	4
Other than full-time permanent	0
Total	<u>4</u>
Authorized Positions:	
Full-time permanent	6
Other than full-time permanent	0
Total	<u>6</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Coastal Science and Assessment
Program Change: Natural Resource Damage Assessments

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$453
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	453
12 Civilian personnel benefits	135
13 Benefits for former personnel	0
21 Travel and transportation of persons	10
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	1,392
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	10
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	2,000

Coastal Science, Assessment, Response and Restoration: Enhanced Emergency Scientific Support (Base Funding: \$21,928,000 and 110 FTE; Program Change: +\$634,000 and 0 FTE): NOAA requests an increase of \$634,000 and 0 FTE for a total of \$22,562,000 and 110 FTE to improve NOAA's capacity to prepare for and respond to coastal environmental hazards, including two simultaneous large environmental hazard events in different regions.

Proposed Actions:

This funding for NOAA's Office of Response and Restoration will increase NOAA's engagement in review of plans and proposals; ensure that the Environmental Response Management Application (ERMA) modules are accessible to coastal managers, emergency responders, and others; and provide tools to Federal, state, and local coastal decision makers. Specific actions include:

- Delivery of NOAA science to support escalating oil and gas activities in the Arctic;
- Science and technical services to a broad group of emergency responders in the Gulf of Mexico region; and
- Support for initial investment in ERMA cloud infrastructure.

Statement of Need and Economic Benefits:

This increase is needed to ensure NOAA preparedness and response capacity and as the U.S., Canada, Russia, Norway, and Iceland all proceed with plans for high Arctic oil and gas exploration, requests for improved pollution response capability are on the rise¹¹. Given the interest and pace of oil and gas exploration in the Arctic, engagement between NOAA responders and other Federal, state, local agencies and native tribes will be critical to ensuring that the Federal government is prepared to respond to spill events.

Over 40 percent of oil and chemical pollution events that require NOAA science support occur in the Gulf of Mexico region. This increase will allow NOAA to better support a variety of customers requiring NOAA science support in a region known to be particularly vulnerable to both natural and man-made disasters. Examples of NOAA science support customers are: U.S. Coast Guard (USCG) Federal on-scene coordinators during an oil or chemical spill scenario; NWS storm surge teams during hurricane season; state and local emergency managers during state and county disaster planning sessions; and the Bureau of Ocean Energy Management (BOEM) and Bureau of Safety and Environmental Enforcement (BSEE) during offshore oil spill drills.

ERMA is a proven operational system that can be expanded into a national network of coverage; however, conversion of the current platform to cloud based infrastructure will allow NOAA to establish a highly flexible and more cost effective system with enhanced capabilities for data storage, management, integration, and dissemination to any user with an Internet connection. The new platform will better meet the needs of NOAA customers.

¹¹ *US Arctic Research Commission, 2010.*

Base Resource Assessment:

The base resources for this activity are described in the Coastal Science and Assessment base narrative.

Schedules and Milestones:

- Increase NOAA engagement in and support to interagency review of Arctic Exploration and Production Plans, as well as Arctic drills and exercises (FY 2014-2018)
- Develop and maintain comprehensive response capabilities, tools and training programs focused on NOAA products and services for critical fed/state/local decision makers (FY 2014-2018)
- Migrate active ERMA modules to a cloud server environment (FY 2014)

Deliverables:

- Leadership on two workshops annually in the North Slope specific to oil spill response environmental decision making
- A standard emergency decision support tool kit for all NOAA facilities in the Gulf of Mexico region
- Participation in eight Gulf regional response exercises with Federal, state, local, and private partners
- Cloud-based dissemination of active ERMA modules to users

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of enhancements to scientific support tools that support US government response to hazardous material releases							
With Increase	N/A	N/A	77	80	80	80	80
Without Increase	59	59	59	59	59	59	59
Description: This measure tracks the number of improvements to scientific support tools, e.g., fate and trajectory models, ERMA, environmental sensitivity maps, that will help decision makers make the best cleanup decisions to minimize the environmental and economic impacts of oil and chemical spills and marine debris releases.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Sub-program: Coastal Science and Assessment
Program Change: Enhanced Emergency Scientific Support

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	634
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	634

Coastal Science, Assessment, Response and Restoration: Marine Debris Research and Development: (Base Funding: \$4,646,000 and 3 FTE; Program Change: +\$1,000,000 and 1 FTE): NOAA requests an increase of \$1,000,000 and 1 FTE for a total of \$5,646,000 and 4 FTE to address priority marine debris research and development areas.

Proposed Actions:

With this increase, the NOAA Marine Debris Program will carry out the research and development mandates of the recently reauthorized Marine Debris Act and engage in approximately four additional research projects per year. Priority research topics for these additional resources will include:

- economic impacts of marine debris;
- baseline levels of marine debris and the effectiveness of efforts to reduce the amount of land-based and ocean-based sources;
- alternatives to fishing gear posing threats to the marine environment;
- enhanced tracking, recovery, and identification of lost and discarded fishing gear

To advance research and development in these areas, NOAA will use grant authority in the Marine Debris Act to competitively distribute funds to research institutions with demonstrated expertise. NOS will also hire a Chief Scientist for the Marine Debris Program to lead the implementation and coordination of these research activities.

Statement of Need and Economic Benefits:

Marine debris is a relatively new field of research and NOS has many opportunities to advance understanding of how debris affects sensitive ecosystems. The Marine Debris Program has developed a strategy that will maximize the return on marine debris research investments through 2016. Improved knowledge of marine debris causes and effects is necessary to ensure that investments in prevention, monitoring, and removal efficiently and successfully mitigate the harmful effects of marine debris on habitat, living marine resources, human health and navigation safety.

In particular, this increase will close knowledge gaps on methods for quantifying debris and the impacts associated with different types of debris. Harmful effects of marine debris include ghost-fishing, habitat degradation, and harm to marine life from ingestion of debris. Furthermore, this increase will help NOAA develop other capabilities that will lead to more effective strategies to prevent and mitigate marine debris, such as tools, best practices, and improved monitoring methods.

Base Resource Assessment:

The base resources for this activity are described in the Coastal Science and Assessment base narrative.

Schedule and Milestones:

- Hire a lead scientist (FY 2014)
- Announce and compete research and development projects (FY 2014)
- Conduct research and development that address priority marine debris questions (FY 2015-2018)

Deliverables:

- Up to 10 projects funded annually that address priority marine debris research and development focus areas

Performance Goals and Measurement Data:

Performance Measure: Number of research projects started that address priority research questions	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	10	10	10	10	10
Without Increase	6	6	6	6	6	6	6
Description: This measure tracks the number of projects funded that address priority marine debris research and development questions/gaps as defined in the NOAA Marine Debris Program FY 2012-2016 R&D Strategy.							

PROGRAM CHANGE PERSONNEL DETAIL

Program: National Ocean Service
Sub-program: Coastal Science and Assessment
Program Change: Marine Debris Research and Development

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Silver Spring, MD	ZP-IV	1	89,033	89,033
Subtotal			<u>1</u>		<u>89,033</u>
2013 Pay Adjustment (0.5%)					445
Total			0		89,478
less Lapse		25%	<u>0</u>		<u>(22,370)</u>
Total full-time permanent (FTE)			1		67,109
2014 Pay Adjustment (1.0%)					336
TOTAL					<u>67,444</u>

Personnel Data

	Number
Full-Time Equivalent Employment	
Full-time permanent	1
Other than full-time permanent	0
Total	<u>1</u>
Authorized Positions:	
Full-time permanent	1
Other than full-time permanent	0
Total	<u>1</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Coastal Science and Assessment
Program Change: Marine Debris Research and Development

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$67
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	67
12 Civilian personnel benefits	13
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	920
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,000

Coastal Science, Assessment, Response and Restoration: Regional Marine Debris Coordination: (Base Funding: \$4,646,000 and 3 FTE; Program Change: +\$354,000 and 0 FTE): NOAA requests an increase of \$354,000 and 0 FTE for a total of \$5,000,000 and 3 FTE to enhance regional coordination in the Gulf of Mexico, the Southeast and the Northeast, as outlined in the Marine Debris Act.

Proposed Actions:

With this increase, the NOAA Marine Debris Program will carry out provisions of the recently reauthorized Marine Debris Act. Regional coordination on marine debris, including all-hazard planning and preparedness, will ensure that Federal, state, local and tribal preparedness for the next severe marine debris event. The NOAA Marine Debris Program will develop marine debris assessment and removal plans with Federal, state and local partners and optimize capabilities for rapid marine debris response. These plans will incorporate best practices for marine identification, assessment and removal to mitigate the natural and socioeconomic impacts to the greatest extent possible.

Statement of Need and Economic Benefits:

Marine debris poses a perennial hazard to navigation safety, commercial fishing grounds, and sensitive ecosystems. In the aftermath of natural hazards like Sandy and the Japan Tsunami, hazardous substances from sunken vessels and containers such as paints, fuel, and industrial cleaners and solvents can create secondary threats to ecosystems.

NOAA biologists, chemists, modelers, and detection experts provide scientific support on debris and hazardous materials that is integral to any marine debris response, assessment and removal project. The Marine Debris Program also regularly assists planners in the areas of project coordination, data analysis, and applied science. With this increase, the regional coordinators will work with Federal, state and local partners to develop best practices for marine debris preparedness, response, impact assessment and removal. Below are two examples of the benefits of regional coordination:

- In 2006, NOAA worked closely with state natural resource managers to assess debris along the Gulf Coast following Hurricanes Katrina and Rita, surveying more than 1,500 square nautical miles of nearshore waters. The project participants, which included local contractors and Federal and state agencies, surveyed fishing grounds and areas outside of shipping channels, mapped the items found, disseminated survey information to assist states with removal, and kept the public informed with digital communications.
- In 2009, NOAA brought together Federal and state coastal managers, including officials from Sandy- affected states, to a workshop focusing on abandoned and derelict vessels (ADVs). One of benefits of bringing together different stakeholders was cataloging the different laws and approaches each state takes to addressing ADVs.

Base Resource Assessment:

The base resources for this activity are described in the Coastal Science and Assessment base narrative.

Schedule and Milestones:

- Develop Marine Debris Rapid Response Plans with partners in the Gulf of Mexico, the Southeast and the Northeast, as outlined in the Marine Debris Act 2012 reauthorization (FY 2014-2018)

Deliverables:

- Marine Debris Rapid Response Plan for NY, NJ, CT, RI (FY 2014-2015)
- Marine Debris Rapid Response Plan for TX (FY 2014-2015)
- Marine Debris Rapid Response Plan for MA, NH, ME (FY 2015-2016)
- Marine Debris Rapid Response Plan for FL (FY 2015-2016)
- Marine Debris Rapid Response Plan for GA, SC, NC, (FY 2017-2018)
- Marine Debris Rapid Response Plan for VA, MD, DE (FY 2017-2018)

Performance Goals and Measurement Data:

Performance Measure: Number of marine debris rapid response plans developed in priority areas	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	2	3	3	3	3
Without Increase	1	1	1	1	1	1	1
Description: This measure tracks the number of rapid response plans developed with for the Gulf of Mexico, the Southeast and the Northeast, as outlined in the 2012 reauthorization of the Marine Debris Act.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Coastal Science and Assessment
Program Change: Regional Marine Debris Coordination

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	354
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>354</u>

Competitive Research: Competitive Research (Base Funding: \$9,087,000 and 0 FTE: Program Change: +\$5,913,000 and 0 FTE): NOAA requests an increase of \$5,913,000 and 0 FTE for a total of \$15,000,000 and 0 FTE to address coastal ocean issues across NOAA's mission responsibilities including harmful algal blooms, hypoxia, and coastal ecosystem research.

Proposed Actions:

With this increase, NOAA will be able to address accelerating threats of Harmful Algal Bloom (HAB), hypoxia, and impacts to coastal ecosystems in areas of national and economic significance. NOAA will continue to focus on the Nation's highest priority research needs of forecasting the ecological effects of regional stressors on coastal ecosystems and applying that information toward proactive management. The National Centers for Coastal Ocean Science (NCCOS) supports competitive, peer-reviewed, interdisciplinary research investigations with finite life cycles conducted on a regional ecosystem scale over a 3-5 year period. The program relies upon established processes that reflect the requirements and advice of both the management and science communities in setting its priorities to ensure the utility and credibility of funded research and its support of NOAA's mission and Congressional direction. This approach has proven highly successful over the past two decades in bringing together and leveraging subject matter and management expertise of the most qualified teams of scientists and managers in the nation across academic institutions, private industry and government laboratories.

Statement of Need and Economic Benefits:

Harmful algal blooms, hypoxia, and a diverse array of ecosystem stressors negatively impact human health, impair coastal ecosystems, and severely limit a community's ability to achieve economic and environmental sustainability. NCCOS competitive funding of research and applied science provides the information and tools, such as ecological forecasts, that coastal managers need to combat and mitigate the accelerating decline of the ecosystems and living resources under their purview. The importance of these applications cannot be overstated—harmful algal blooms alone cost the Nation over \$80 million annually in losses to coastal economies that rely on recreation, tourism, and seafood harvesting. These economic and resource impacts are increasing dramatically in many areas, thus increasing the demand for the type comprehensive and actionable science supported by these funds to combat these threats. Funded activities will directly support a range of NOAA's legal mandates, including the Harmful Algal Bloom and Hypoxia Research and Control Act, the Coastal Zone Management Act, the National Coastal Monitoring Act, and the Oceans and Human Health Act and are also responsive to Administration ocean and coastal policy priorities, including in the Great Lakes and Chesapeake Bay.

Base Resource Assessment:

Coastal Science and Assessment competitive funds support three major focus areas; harmful algal blooms, hypoxia, and regional scale research to support ecosystem management. Currently there are 50 ongoing projects managed by NCCOS, representing an active full life-cycle investment in excess of \$87 million, involving 400 plus investigators at partner research institutions and management agencies. Together, these efforts are leading to rapid advances in the capacity of NOAA and coastal managers to understand, respond to, and mitigate the impacts of ecosystem stressors such as harmful algal blooms, hypoxia, sea level rise, nutrient pollution and coral reef declines. Key advances include the following: the development and transition to application of an advanced harmful algal bloom forecasting system; the capability to predict hypoxia and its impacts in the Nation's most important water bodies in order to guide ecosystem-level management; the ability to incorporate the ecological effects of sea level rise

into future planning scenarios; harmful algal bloom detection tools that are protecting public safety and allowing harvesting of economically valuable shellfisheries; and tools allowing managers to evaluate the trade-offs and linkages between watershed development and impacts to coastal ecosystems. Additional base resources for this activity are described in the Coastal Science and Assessment base narrative.

Schedule and Milestones:

- Develop coupled hydrodynamic-biogeochemical model of Green Bay in Lake Michigan (FY 2014-2015)
- Establish metrics for coral health and resilience and recovery that can be used to guide and track the effectiveness of restoration (FY 2015-2016)
- Develop sea level rise forecast modeling system for the northern Gulf of Mexico to drive coastal planning, restoration and protection of economic interests in the face of long-term sea level rise (FY 2014-2017)
- Develop and operationalize regional ecological forecast models for harmful algal bloom prediction and mitigation of economic impacts (FY 2014-2017)
- Develop operational hypoxia forecast modeling system for Chesapeake Bay, Narragansett Bay, and Gulf of Mexico to provide critical information for management (FY 2014-2018)
- Transition detection and monitoring technologies for harmful algal bloom cells and their toxins into observing systems to support forecasting and state shellfish surveillance (FY 2014-2018)
- Develop methods of harmful algal bloom prevention, control, and mitigation for high priority coastal management requirements (FY 2014-2018)

Deliverables:

- Model output evaluating the impact of alternative land management actions on the export of phosphorus and suspended solids into the lower portion of Lake Michigan (FY 2015)
- Hypoxia ensemble forecast for the Gulf of Mexico (FY 2015)
- Model output for developing and refining shoreline management guidelines in the Chesapeake and Delaware Bays, and the MD and DE Inland Bays (FY 2016)
- Coupled regional biophysical model for understanding population connectivity between Pulley Ridge and Florida Keys ecosystems (FY 2016)
- Multidisciplinary ecological model to evaluate marsh, oyster and sea grass response to sea level rise in selected locations of the Gulf of Mexico (FY 2017)
- Forecasts of harmful algal blooms in five major coastal regions (FY 2017)
- Forecasts of hypoxia conditions in three major coastal regions (FY 2018)

Performance Goals and Measurement Data:

Performance Measure: Cumulative number of coastal, marine and Great Lakes forecast capabilities developed and used for management (Measure 18b: NCCOS contribution only)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	6	7	7	7	5
Without Increase	2	4	5	4	4	4	3
<p>Description: This measure is a subset of measure 18b. NOAA's discrete forecast models allow resource managers to: 1) make decisions based on predicted environmental and socioeconomic impacts related to a particular issue; 2) use issue-based forecasts to predict the impacts of a single ecosystem stressor (e.g., climate change, extreme natural events, pollution, invasive species, and land and resource use) and 3) evaluate the potential options to manage those stressors to fulfill the ultimate goal for resource managers to use NOAA's forecasts to better manage ecosystem use, condition, and productivity. These forecasts will be based on field and laboratory studies, existing data, and models predicting environmental conditions under different scenarios and will have capabilities specific to a geographic area and be counted for each ecosystem as they become operational. For example, harmful algal bloom forecasts in the Gulf of Mexico and Gulf of Maine are two separate forecast capabilities and similarly, multiple, distinct forecast capabilities could be counted within a single ecosystem (i.e., harmful algal blooms, pink shrimp harvest, and hypoxia –all in the Gulf of Mexico).</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Coastal Science and Assessment
Program Change: Competitive Research

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	5,913
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	5,913

Coastal Science, Assessment, Response and Restoration: National Centers for Coastal Ocean Science (NCCOS) (Base Funding: \$36,621,000 and 199 FTE; Program Change: -\$105,000 and 0 FTE): NOAA requests a decrease of \$105,000 and 0 FTE for a total of \$36,246,000 and 199 FTE to reflect savings from a realignment of NCCOS intramural research activities. In FY 2010 and 2011, NCCOS engaged in the evaluation and transformation of its intramural research portfolio. This has resulted in consolidating scientific priorities into four thematic areas consistent with Congressional direction, Administration and Agency priorities, and in line with NCCOS capabilities. Additionally, administrative functions have been streamlined and consolidated at the NCCOS Center in Charleston, SC and NCCOS headquarters in Silver Spring, MD. Finally, the number of contract positions has been reduced at the Center for Coastal Ecosystem Health and Biomolecular Research in Charleston and the NCCOS Headquarters in Silver Spring.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Coastal Science and Assessment
Program Change: National Centers for Coastal Ocean Science

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(105)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(105)

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUB-PROGRAM: OCEAN AND COASTAL MANAGEMENT AND SERVICES

NOAA proposes to create a new “Ocean and Coastal Management and Services” budget sub-program, which will include NOS’s place-based management programs and coastal services from its current “Ocean Resources Conservation and Assessment” and “Ocean and Coastal Management” sub-programs. Activities and programs under this new sub-program employ a diverse range of place-based and national-level approaches to achieve sound management and sustainable use of resources in coastal watersheds and marine areas of the U.S. Exclusive Economic Zone. NOAA’s mandates in these areas emphasize full consideration of economic, ecological, cultural, historic, and aesthetic values of places.

Within this sub-program, NOS employs a broad range of approaches that emphasize inter-governmental collaboration. Through partnerships, capacity building, applied science, incentives, regulation, and direct management, NOS works collaboratively with Federal, state, tribal, local, and private entities to achieve national goals. NOAA conducts these activities under the Coastal Zone Management Act; National Marine Sanctuaries Act; the Coastal Zone Act Reauthorization Amendments of 1990 (the Coastal Nonpoint Pollution Control Program); the Department of Commerce, Justice, and State Appropriations Act of 2002 and Omnibus Public Land Management Act (the Coastal and Estuarine Land Conservation Program); the Ocean Thermal Energy Conversion Act and the Deep Seabed Hard Mineral Resources Act; the Ocean and Coastal Mapping Integration Act; Executive Order 13158 on Marine Protected Areas; and Presidential Proclamations 8031 and 8337.

The following program offices and program office components are responsible for carrying out the Ocean and Coastal Management and Services sub-program:

- **Office of Ocean and Coastal Resource Management/ Coastal Services Center.** These offices are collaborating and integrating in new ways. They are responsible for supporting states’ development and implementation of their Coastal Zone Management programs and National Estuarine Research Reserve management plans and promoting effective management of the associated coastal zones. This support includes delivery of a comprehensive suite of applied tools, technical assistance, and training resources to a range of coastal partners to address priority management challenges. These offices also are cooperating to administer and support NOAA’s Digital Coast Partnership, the Coastal Storms Program, the Coral Reef Conservation Program, Regional Ocean Partnerships, and the Ocean Thermal Energy Conversion Act and the Deep Seabed Hard Mineral Resources Act.
- **Office of National Marine Sanctuaries/ National Marine Protected Areas Center.** This newly merged office is responsible for the direct management of the National Marine Sanctuary System and the Papahānaumokuākea Marine National Monument. This office facilitates public and private uses of the resources of these special places that are compatible with resource protection and conservation. This office is also responsible for developing a national system of marine protected areas, which includes sanctuaries. By coordinating actions of a national network of Federal, state, tribal and local protected areas, the Office advances national conservation goals and helps to identify additional areas in need of protection.

The proposed budget structure includes the following projects, programs, and activities under this sub-program:

- Coastal Zone Management and Services

- Coastal Management Grants
- National Estuarine Research Reserve System - NERRS
- Coral Reef Program
- Sanctuaries and Marine Protected Areas

Coastal Zone Management and Services will be comprised of the former Coastal Storms, Coastal Services Center (CSC), and CZM and Stewardship PPAs. Coastal Management Grants will be comprised of the former CZM Grants and Regional Ocean Partnership Grants PPAs. Sanctuaries and Marine Protected Areas will be comprised of the former Marine Protected Areas, and Marine Sanctuary Program Base PPAs. For detailed information see the breakout and crosswalk on p. NOS 5, ORF-18 and ORF-21. Below are the base services that will be provided in the Coastal Science and Assessment sub-program:

Coastal Zone Management Partnerships and Services

Coastal states and local governments play an important role in fostering resilient coastal communities and protecting and managing natural resources. The challenges are increasing with population growth and resource impacts and use, particularly given extreme weather events and a changing climate. Voluntary partnerships between states and NOAA form the basis of NOS's comprehensive approach under the Coastal Zone Management Act. NOAA provides financial assistance, national policy guidance, coordination and leadership, technical assistance, and other support to implement 34 coastal management programs; support research, monitoring, education, training and stewardship at 28 National Estuarine Research Reserves; and support the protection of ecologically significant coastal lands (such as wetlands, natural shorelines and other important habitats through the Coastal and Estuarine Land Conservation Program.

NOS's Coastal Zone Management Program assists states with balancing the competing demands of resource use, economic development, and conservation along the Nation's coasts. The 34 (out of 35 eligible) coastal and Great Lakes states, territories and commonwealths with Federally approved coastal management programs, protect more than 61,000 miles of ocean and Great Lakes coastline which benefits 99 percent of the U.S. coastal population. NOS approves state coastal management programs and policies, which allows the states to participate in the program, and provides implementation assistance in the form of technical, policy, and legal guidance. NOS also analyzes national and regional issues in coastal management, measures progress of the national program in meeting its goals, and communicates on issues of importance from the national to the local levels. The program also helps to ensure that Federal agency activities are consistent with approved state coastal management policies. NOS assesses the performance of each state program approximately every five years to provide guidance on improving programs.

In support of state management plans, NOS provides financial assistance to states through cooperative agreements (Coastal Zone Management Grants). States may use these funds toward a broad range of approved activities under the Act, including habitat conservation and restoration, protection of life and property from coastal hazards, public access to the coast for recreation, and urban waterfront and port revitalization. NOS allocates the majority of CZM grant funding using a formula based on shoreline mileage (60 percent) and coastal population (40 percent) of each state. NOS also competitively awards some CZM funding, such as a portion of the Coastal Zone Enhancement grants (Section 309 CZMA), for projects of special merit. States match most of the CZM Grant funding on a 1:1 basis.

In addition to the partnerships with individual states and territories, NOS promotes regional collaboration among states and other entities, including other Federal agencies. Representatives of the CZM program participate actively on a number of regional ocean governance initiatives. NOS provides financial support for some regional coordination activity in the form of Regional Ocean Partnership Grants. These grants fund two categories of activities: implementation of a range of priorities within existing regional ocean partnership plans and 2) support for development and implementation of additional plans. Current recipients include the Gulf of Mexico Alliance, Northeast Regional Ocean Council, the West Coast Governors' Alliance on Ocean Health, Mid-Atlantic Regional Ocean Council, South Atlantic Alliance, Caribbean Regional Ocean Partnership, and the Pacific Regional Ocean Partnership. NOS also partners with other Federal agencies, including other parts of the Department of Commerce, the Department of Interior (Fish and Wildlife Service, National Park Service, U.S. Geological Survey, Bureau of Safety and Environmental Enforcement, and Bureau of Ocean Energy Management), the Environmental Protection Agency, the Federal Emergency Management Agency, the Department of Agriculture, the Department of Defense (particularly the U.S. Army Corps of Engineers), and the Department of State.

To enable more effective implementation of the Coastal Zone Management Act, NOS (through its Coastal Services Center) builds regional, state, and local capacity for informed decision making that improves the resiliency of our coasts and coastal communities and economies. The Coastal Storms Program, which harnesses and leverages NOAA and community resources to reduce the impacts of coastal storms, is included in these efforts. Eighty percent of decisions that affect our coasts are made at the local level, and the primary customers for these efforts are the Nation's coastal managers: natural resource managers, planners, and emergency officials. By developing successful tools, social science applications, strategies, and partnerships and transferring them to the broader coastal management community, NOS effectively "buys down" the cost of improving state and local coastal management programs.

For example, NOS expertise in socioeconomic analysis, vulnerability assessment, and resilience planning supports a NOAA-led team to coordinate and execute activities established by the RESTORE Act under the Gulf Coast Ecosystem Restoration Council, chaired by DOC. NOAA collaborates with the Federal Emergency Management Agency, U.S. Army Corps of Engineers, and the Department of Housing and Urban Development to develop a consistent suite of resilience principles for development and redevelopment in coastal areas. Also included in NOS' suite of coastal services is a partnership to plan and execute effective habitat conservation with NOAA's Office of Habitat Conservation and the Department of Interior's Landscape Conservation Cooperatives.

Coral Reef Conservation and Science

NOS' Coral Reef Conservation Program (Coral Program) brings together multidisciplinary expertise from over 30 NOAA offices and partners with state, jurisdictional and international coastal resource managers to protect, conserve and restore coral reefs. Nineteen percent of the world's reefs are effectively lost¹² and up to 75 percent are either under threat or seriously threatened with loss in the

¹² Wilkinson, C. *Status of Coral Reefs of the World*, 2008.

next few decades from unsustainable fishing practices, climate change impacts, and land-based sources of pollution¹³. In response to these threats, NOAA's Coral Program invests in ecosystem-based management initiatives to build marine protected area (MPA) management capacity; monitor, model and forecast climate-related risks and vulnerabilities to coral reefs; and foster partnerships to address and reduce impacts of land-based sources of pollution. In addition, the program's educational efforts foster an engaged public that understands the importance of conserving coral reef ecosystems.

To date, the Coral Program's integrated coastal management efforts across NOAA and with more than 170 partners have mapped over 50 percent of shallow reef ecosystems in U.S. jurisdictions, established approximately 200 operational and experimental coral bleaching alert stations and developed watershed management plans in over 85 percent of U.S. jurisdictions with coral reef habitats. These collaborations have supported 20 assessments on MPA management effectiveness, increased reef managers' monitoring and response efforts on coral bleaching events and addressed the release of land-based sources of pollution from over 200 square miles discharging to six priority site coral reef habitats.

Coral reefs are some of the most biologically diverse ecosystems in the world and provide a range of economic benefits and vital ecosystem services: food, recreation, marine habitat, medicines, coastal protection, climate regulation, and maintenance of genetic diversity. A study in 2009 estimated the average annual value of these ecosystem services at \$130,000 per hectare of reef, reaching \$1,200,000 in some cases¹⁴. Therefore, declines in coral reef habitats have alarming consequences for approximately 500 million people who depend on them for their livelihoods.¹⁵

Place-Based Protection, Conservation and Coordination

Through the Coastal Zone Management Act, the National Marine Sanctuaries Act and Executive Order 13158, NOS conducts a range of activities in America's marine and estuarine protected areas including planning and national coordination, research and outreach, and direct stewardship activities.

National Estuarine Research Reserves

The National Estuarine Research Reserve System (NERRS) is a national network of protected areas established under the Coastal Zone Management Act to conduct research, provide long-term protection and enhance public awareness and opportunities for education. NERRs sites represent the diverse biological and physical characteristics of estuarine systems of the United States. The 28 reserves in 22 states and territories protect over 1.3 million acres of estuarine lands and waters and are owned and operated by state agencies or universities. The Governors of Connecticut and Hawaii have submitted a request to NOAA to begin the process for designation of a new reserve in their state. Each Reserve serves as both a mixed-use protected area and a living laboratory. Reserves enable improvements in resource management by serving as research sites, testing grounds for

¹³ Burke et al. *Reefs at Risk Revisited*, 2011.

¹⁴ The Economics of Ecosystems and Biodiversity (TEEB), 2009.

¹⁵ Wilkinson, C. *Status of Coral Reefs of the World*, 2008.

direct resource management and restoration practices, and venues for the translation and dissemination of information to coastal decision makers, teachers, students, and the public. The Reserves are also economically significant areas for marine recreation, commercial and recreational fishing, and ecotourism.

NOAA provides funding assistance, national guidance and technical assistance, while state agencies or universities perform day-to-day management of each reserve with input from local partners. NOAA funds site-specific programs as well as system-wide activities. Federal NERRS funding (70 percent) is matched by the states (30 percent) for reserve operations, research, monitoring, training, education and facilities construction. Federal NERRS funding (50 percent) for land acquisition is also matched by the states (50 percent). The NERRS Science Collaborative, a 5-year competitive collaborative research program involving intended users throughout each research project helps reserves and coastal managers address complex management issues. To respond to the high priority need to better understand local sea level change and impacts to key estuarine habitats, reserves participate in the NOAA Sentinel Sites Program.

As states and NOS have selected each reserve site for its unique ecological and conservation characteristics, the reserve system is invaluable for piloting innovative resource management practices, researching restoration practices, and providing professional training and education. Scientists working in NERRs have contributed to more than 300 peer-reviewed scientific publications since FY 2000. Research and monitoring data are used to inform stakeholders such as coastal managers, shellfish growers, public health officials, search and rescue personnel, and recreation users. Coastal decision-makers participating in reserve-based training gain practical information to inform estuarine management at the local and regional level. In the last year alone, reserves organized training to more than 10,000 coastal decision-makers in communities across the Nation.

National Marine Sanctuaries

Under the National Marine Sanctuary Act, NOS manages and operates the Nation's system of 13 designated marine sanctuaries and the Papahānaumokuākea Marine National Monument. The sanctuaries range in size from one square mile near Cape Hatteras, North Carolina, to over 13,500 square miles in the waters off America Samoa. Together, these sanctuaries and NOS-managed Monument encompass over 172,000 square miles of protected special marine places. Unique sanctuaries habitats include deep ocean and near-shore coral reefs, live bottom, whale migration corridors, deep sea canyons, areas of deep water upwelling, submerged banks that rise close to the ocean surface, kelp forests, and sea grass beds. The sanctuary system also protects maritime heritage assets such as the wreck of the *USS Monitor*.

Individual sanctuary and monument offices are responsible for the daily operation of a wide variety of education, research, monitoring and management activities:

- Development, implementation, and systematic review of comprehensive management plans to protect these unique areas;
- Local research and monitoring programs to better understand the resources and potential impacts on those resources;
- Cultural resource programs to survey and inventory resources to ensure their long-term protection;
- Education and outreach activities to inform the public about the value of marine resources and how human activities impact the marine environment;
- Coordination through partnerships to ensure enforcement of sanctuary regulations;

- Permitting of otherwise prohibited activities to allow valuable research and education activities;
- Management of volunteer programs that monitor and educate on marine resources; and
- Management of citizen advisory councils to ensure that each sanctuary is responsive to community needs.

Sanctuaries' national and regional offices provide overall programmatic oversight and guidance to ensure that the National Marine Sanctuary System (NMSS) operates as an integrated system that has greater national impact than the sum of the individual site actions. Headquarters functions include system-wide research, monitoring, and outreach programs; review and revisions of existing management plans; evaluation of new sites; and overall policy development and program direction. Sanctuaries' regional offices serve as hubs for program integration with NOAA's evolving ecosystem approach to management and NOAA regional teams for national priorities pertaining to climate change and marine planning. Sanctuary regions coordinate programs and assets among the sites, build partnerships with regional stakeholders and enable Federal interagency regional activities.

Marine Protected Area Coordination

NOS manages its sanctuaries and estuarine reserves activities in close coordination with its activities under the Marine Protected Areas Program, as guided by the Framework for the National System of MPAs. The program, in coordination with the Department of the Interior, fills a long-standing need for objective science, policy, and management tools to advance the effective use of MPAs in meeting diverse conservation and management objectives. The MPA Center's primary goal is to coordinate among the various Federal, state and tribal MPA programs to develop a comprehensive and integrated national system of MPAs, including NERRs and sanctuaries, that more effectively conserves and protects significant areas of our natural and cultural marine heritage. A diverse MPA Federal Advisory Committee—including representatives of industry, user groups, scientists, and others— provides advice on the establishment and management of the national system.

Sentinel Sites

The NOAA Sentinel Site Program (SSP) uses existing capacity of range of NOAA programs to answer critical coastal management science questions using place-based approaches. While the concept of leveraging existing resources is not new, the NOAA Sentinel Site Program provides a framework to connect programs across disciplines and activities to fully inform decision makers at relevant spatial and temporal scales. The SSP's initial focus is on assessing and responding to the impacts of climate change, specifically sea level change and coastal inundation. In the future, NOAA plans to expand the program's issue coverage to include other pressing issues that affect both NOAA trust resources and surrounding communities, such as ocean acidification.

The three major criteria for site selection are scientific rationale and ecological significance; practicality of working in the area and the potential for leveraging existing assets; and potential relevance to local management and the potential for responsiveness of the local communities and ecosystems to management actions. Using these criteria, five Cooperatives were selected for initial implementation. They are: Hawaii; San Francisco Bay and Outer Coast; Chesapeake Bay; North Carolina, and; the Northern Gulf of Mexico.

Each of the current five Sentinel Site Cooperatives includes a coastal commerce center and at least one sanctuary or NERR. Sanctuaries and NERRs generally contain significant existing NOAA investments in observing infrastructure, monitoring, modeling assets, historical data, and partnerships. The SSP leverages these existing investments to maximize the benefit of the end-to-end spectrum of products and services— monitoring, research, modeling, spatial analysis,

knowledge transfer, and resource management action. The presence of significant coastal commerce at the sites maximizes the potential economic return on improved management and planning practices.

Schedule and Milestones:

- Develop and deliver state coastal resource and emergency manager decision support tools, such as hazard assessment tools, sea level rise visualizations, and coastal county snapshots (FY 2014-2018)
- Provide regional technical assistance, tools and coordination on priority issues to support managers in state led regional partnerships including the Gulf of Mexico Alliance, the West Coast Governors' Alliance on Ocean Health, the Northeast Regional Ocean Council, the Hawaii Ocean Partnership, and others (FY 2014-2018)
- Develop, distribute, update, and apply moderate resolution coastal land cover change analysis data (refreshed on five-year basis) for coastal regions (FY 2014-2018)
- Develop integrated models to provide information about storm vulnerability and ecological impacts (FY 2014-2018)
- Complete revision of 15 NERR management plans by FY 2016
- Complete 96 percent of National Estuarine Research Reserve site profiles by FY 2016
- Pilot sentinel site monitoring of sea level change and habitat response at four reserves (FY 2014-2018)
- Work with states/territories toward approval of non-point pollution control programs (FY 2014-2018)
- Conduct national competition annually for Regional Ocean Partnership projects for funding and report on how they support regional priorities (FY 2014-2018)
- Conduct reef assessment and monitoring cruises in Pacific and Atlantic/Caribbean (FY 2014-2018)
- Continue to improve coral bleaching forecasts and ocean acidification models (FY 2014-2018)
- Complete the State of Coral Reef Ecosystems Report every four years and distribute to policy makers, resource managers and others to facilitate implementation of coral reef conservation strategies (FY 2016)
- Conduct three social marketing campaigns to raise awareness of coral reef conservation and change behavior (FY 2014-2018)
- Conduct surveys in the U.S jurisdictions to monitor social change regarding reef resources (FY 2014-2018)
- Revise management plans for Gray's Reef (draft FY 2013, final FY 2014), and Florida Keys (draft FY 2014)
- Implement additional sentinel monitoring activities where necessary to assess impacts of threats (e.g. climate change, biodiversity loss, invasive species) to ONMS resources and detect early warnings of change at national, regional, and local scales (FY 2014-2018)
- Conduct baseline assessments for priority coral marine protected areas (MPA) using the MPA Assessment Checklist developed in FY 2013 and reevaluate these MPAs to determine improvements in management (FY 2014-2016)
- Update the Framework for the National System of Marine Protected Areas of the United States of America
- Implement data management (including access and distribution) protocols, infrastructure, and partnerships for ONMS Sentinel Monitoring Program (FY 2014- 2018)
- Complete watershed management plans for 19 priority coral reef areas (FY 2017)

- Complete assessments on management effectiveness of 20 Marine Protected Areas (MPAs) in priority coral reef sites (FY 2014, FY 2017)

Deliverables

- Data, mapping, tools, and information resources through Digital Coast to address competing using of coastal resources and adaptation to coastal hazards and climate change
- Training and workshops on data, tools, and techniques that address competing using of coastal resources and adaptation to coastal hazards/climate change
- Effective regional ocean partnerships by building capacity through facilitation, training, and workshops addressing competing uses of coastal resources and adaptation to coastal hazards and climate change
- A coordinated NOAA structure that supports targeted capacity building for Regional Planning Bodies and geospatial data and decision support tools needed for regional planning efforts
- Outreach publications to increase capacities among coastal resource managers, land use planners, emergency managers, floodplain managers, and others
- Development of risk and vulnerability decision-support tools to assist with decision making regarding the impacts of storms on natural resources and communities
- Average of 250 sites created or improved each year that provide public access to the coast for recreation
- Average of 2,000 acres of key coastal habitats protected by state coastal management programs through acquisition or easement per year
- More than 300 training activities conducted annually for coastal decision makers through the NERRS Coastal Training Program
- More than 80,000 annual participants in experiential education activities that increase their understanding about estuaries
- 140 operational monitoring stations delivering water quality and weather data to a wide range of private and public users
- Development and/or expansion of partnerships with local communities and businesses to implement sustainable practices for fishing, tourism, recreation, ecosystem protection and alternative energy technologies
- Development and/or expansion of education and public outreach, including those with multi-cultural communities, related to ecosystems, climate change and human use impacts
- Identified and implemented suite of actions to increase local capacity to management priority coral reef sites in U.S. jurisdictions
- Forecasts and models that increase reef managers' monitoring and response efforts on coral bleaching events
- Priority coral reef Marine Protected Areas (MPAs) demonstrating an improvement in management
- Seven reports – one per jurisdiction – on the status of jurisdictional management capacity (organizational, human resources, legal and technical) to determine the capacity gaps that need to be addressed in order for local resource management efforts to be effective
- Development and implementation of watershed management plans to reduce pollutant loadings in target watersheds adjacent to priority coral reef habitats
- New management strategies to better protect coral reef areas implemented through targeted research to better understand the impacts of stressors to coral reefs
- Habitat restoration and marine debris removal at all sanctuaries
- Monitoring programs, scientific assessments, technology application, public awareness and mitigation strategies associated with ecosystem changes at all sanctuaries
- Marine acoustics programs to determine the distribution of marine mammals and vessel traffic patterns at Stellwagen Bank and Channel Islands sanctuaries. Develop education

initiatives at all sites that protect marine mammals from vessel strikes and conduct disentanglement and rescue operations

- Design and implantation of MPA networks, to enable effective conservation of more acres of coral reefs within U.S. boundaries
- New education, survey and eradication programs to avoid and mitigate introduction of invasive species in multiple sanctuaries
- Community-based management plan for HI/Humpback Whale NMS
- Add one new Sentinel Site Cooperative to the National Program (FY 2014)

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percentage of U.S. coastal states and territories demonstrating 20% or more annual improvement in resilience capacity to weather and climate hazards (Measure 18e)	46%	40%	46%	51%	57%	63%	69%
Description: This measure tracks a range of contributions to address coastal community risk, vulnerability, and resilience to coastal hazards. It quantifies NOAA's contributions to this important goal across NOAA's coastal programs, measuring how NOAA is improving the Nation's capacity for resilience to hazards and is contributing significantly to NOAA's efforts to improve integration of its coastal programs, and expanding beyond the three coastal integration programs providing inputs to the measure (CSC, OCRM, and Sea Grant).							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percentage of tools, technologies, and information services that are used by NOAA partners/ customers to improve ecosystem-based management (Measure 18c)	88%	89%	90%	91%	91%	91%	91%

Description: This measure tracks NOAA's success in providing tools, technologies, and information services such as those for coastal and marine resource managers that enable progress toward the principles of ecosystem-based management (considering ecological, economic, social, and security concerns) for coastal, marine, and Great Lakes ecosystems. By cataloging and tracking each fiscal year the existing and new tools, technologies, and information services authorized and developed to meet stakeholders' needs (50 to 100), NOAA encourages their completion and use to advance ecosystem-based management. NOAA can also then ensure investments in the most effective programs and products for the Nation. NOAA partners and customers include Federal, state, local and tribal authorities who make decisions affecting resources in the U.S. coastal zone, and other users impacting the condition of coastal ecosystems (e.g., private industry). Actuals are derived by dividing the number of tools/services developed by the end of the year by the number proposed at the beginning of the year. Targets are established based on historical patterns and the amount of funds being requested. Services can include on-line courses for managers, enhanced websites, broadcasts of live events, and workshops and other training techniques. New tools are developed with partners and customers that improve our products and services for ecosystem managers. Benefits of better management of the Nation's coastal, marine, and Great Lakes resources accrue to all citizen's through sustainable ecosystems that provide jobs, products and services that are unique to coastal and ocean areas.

Performance Measure: Annual number of new or improved public access sites through CZMP	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	495	250	250	250	250	250	250
Description: This measure tracks the number of sites that have been created or enhanced under the Coastal Zone Management Program for public recreational access to the coast.							

Performance Measure: Percentage of NERR System adequately characterized for management	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	86%	89%	93%	96%	96%	96%	96%
Description: This tracks NOAA's progress in characterizing each National Estuarine Research Reserve's resources and condition to guide effective long-term management. Reserves are characterized through site profiles, which summarize the existing state of knowledge about reserve research and monitoring activities and identify research needs that should be addressed in the future. It is measured as the percent of designated Reserves that have completed a site profile.							

Performance Measure: Number of priority sites with completed and approved watershed management plans	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	10	13	14	16	17	19	19
Description: This measure tracks the progress of NOAA's Coral Program to reduce land-based sources of pollution (LBSP) from priority site watersheds to coral reef areas that have been identified through the jurisdictional management priority setting process. Watershed management plans include to the greatest extent practicable, the nine (9) required elements of a WMP according							

to the EPA Section 319 program and include a ridge to reef approach to ensure coral reef ecosystems are integrated into watershed planning processes. Once plans are approved, projects are implemented to reduce LBSP to coral reef ecosystems.

Performance Measure: Number of participants of focus area training activities	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	1,050	1,071	1,092	1,114	1,136	1,159	1,182
Description: This measure tracks the number of participants trained by the NOAA Coastal Services Center on priority coastal issues (e.g., climate adaptation strategies, coastal inundation mapping) the application of geospatial technology (e.g., GIS), process skills (e.g., project design and evaluation), and tool-based trainings that explain how to apply certain customized decision support tools to coastal management (e.g., CanVis)							

Performance Measure: Implementation of priority action activities identified in regional action plans (cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	19	24	28	32	36	40	44
Description: Regional ocean partnerships will make progress in achieving the actions within integrated plans that have clearly identified goals and objectives for long term ocean health and sustainability and engage academic, non-governmental organizations and private interests. These efforts will build upon the existing accomplishments of the regional ocean partnerships including the Gulf of Mexico Alliance.							

Performance Measure: Number of NMS Sites that maintain or improve water quality, habitat and living marine resources	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	10	10	10	10	12	12	12
Description: This measure assesses the status of water quality, habitat, and/or living marine resources based on indicators of biodiversity, key species, extracted species, invasive species, health and human impacts. The NMSP and independent evaluators (universities, research institutions SAC research subcommittees, and environmental consultants) evaluate data to determine whether the condition is improving, remaining stable (maintaining), or deteriorating. These outcome-based measures are derived from the National Marine Sanctuaries Act and provide direct and quantifiable evidence to demonstrate Program effectiveness. For each sanctuary, a "condition report" integrates the best available science and scientific interpretation to quantify the status and trends of WQ, habitat and living resource conditions. During the past five years, ONMS has undergone two additional formal external reviews (NAPA and DOC OIG) that have documented successful application and progress toward these performance measures.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of MPA stewardship projects and technical assistance projects funded	4	4	4	4	4	4	4
<p>Description: A primary goal of the National Marine Protected Areas Center is to provide technical assistance to Federal, state and territorial MPA programs. This measure tracks the number of MPA Partnership Grants (provided through a partnership with the National Fish and Wildlife Foundation) and technical assistance projects directly supported by the MPA Center that enhance the management of coastal and marine resources.</p>							

Coastal Zone Management and Services: Coastal Climate Adaptation Strategies (Base Funding: \$30,643,000 and 84 FTE; Program Change: +\$833,000 and 0 FTE): NOAA is requesting an increase of \$833,000 and 0 FTE for a total of \$31,476,000 and 84 FTE for implementation of coastal climate adaptation strategies to allow coastal communities to prepare for the impacts of a changing climate, specifically sea level rise and the related impacts of coastal inundation.

Proposed Actions:

NOAA requests an increase of \$833,000 for implementation of coastal climate adaptation strategies to allow coastal communities to prepare for the impacts of a changing climate, specifically sea level rise and the related impacts of coastal inundation. NOAA will apply its scientific and technical expertise to develop improved tools and work with communities to apply these tools so that the devastating human, economic, and environmental impacts of sea level rise and severe flooding events caused by hurricanes, tsunamis, and other storms can be effectively managed.

Building on the success of NOAA's Sea Level Rise and Coastal Flooding Impacts Viewer and other visualization tools in use by coastal planners and emergency managers, NOAA will develop a visualization tool that incorporates socio-economic data overlaid with coastal inundation scenarios. This tool will allow city, county and state planners to understand how their critical infrastructure (e.g., ports, roads, water treatment facilities) community infrastructure (e.g., schools, hospitals, businesses) and the population (e.g. elderly, economically disadvantaged) could be at risk from coastal inundation exacerbated by climate change impacts.

NOAA will also support development of statewide adaptation plans to help state and local communities evaluate and incorporate this type of information into coastal planning and development decisions. Working with Federal, state and local partners, NOAA will provide grants and technical assistance to develop adaptation plans that apply best practices, promote the use of natural and built systems ('green and gray' infrastructure), and rely on best available scientific data and information. The increased availability of statewide adaptation plans will allow a greater number of communities to incorporate coastal climate adaptation strategies into their existing planning efforts.

To address the needs expressed in the 2010 Sea Level Rise Needs Assessment, NOAA will facilitate a series of workshops with key modelers to develop standards and integrate practices to allow the global scale models to downscale and the local models to upscale so that a spectrum of spatial scales relevant to decision makers can be modeled. Just as one can zoom in and out on Google Earth imagery to see both large and small scale images of the same geography, these models will seamlessly connect and inform one another for a more accurate projection of future conditions. These efforts will address the current knowledge gap, improving all sea-level change models, and potentially gaining efficiencies through overall improved modeling.

Statement of Need and Economic Benefits:

Coastal inundation is a major issue facing society. More than 160 million people live in the coastal watershed counties of the United States and the five U.S. territories, representing just over half the U.S population in 2010. U.S. coasts are five times more densely populated than inland areas. The population density at the coast is expected to continue increasing, further intensifying the pressures on these ecologically sensitive and economically important areas. Approximately 58 percent of our nation's gross domestic product, or GDP, is generated at the coast. In 2009, the coastal region accounted for more than 66 million jobs, \$3.2 trillion in wages, and over \$7.8 trillion in GDP. As Sandy has demonstrated, a single event can cripple an entire region.

From acute events like tsunamis, riverine flooding and storm surge, to more chronic challenges like sea-level change, coastal inundation threatens coastal communities, economies, and aging infrastructure that is expensive and time consuming to upgrade or replace. Each community faces unique inundation issues. Policies and mandates for development, zoning and emergency evacuations are most often issued by towns, cities and counties rather than state or Federal agencies and each location has different geomorphology and hydrology. The devastation wrought by Sandy illuminated the vulnerability facing coastal communities and the Nation is clamoring for both knowledge and assistance.

Base Resource Assessment:

NOAA has identified Coasts and Climate Resilience as one of four climate-related challenges to society. Resilience represents a spectrum of needs for which NOAA offices and programs cooperate to develop and deliver services with information provided to stakeholders to make informed decisions for effective adaptation actions and other climate-sensitive decisions. NOAA's Coastal Zone Management and Services support coastal climate adaptation strategies by providing resource managers the data, decision tools, training, and technical assistance they require to make informed planning and management decisions. Examples of specific activities include: decision support tools and training needed to understand the potential community and ecological impacts of sea level rise, providing guidance on shoreline management vulnerabilities, publishing guides on costs and benefits of shoreline protection for estuarine waterfront property owners, and assessing the effects of climate change on fate of pollutants and their impacts on ecosystems as well as the health/condition of sentinel species.

Schedule and Milestones:

- Visualization tool incorporating socio-economic data overlaid with coastal inundation scenarios (FY 2014-2018)
- Two state or local adaptation plans annually to decrease community vulnerability (FY 2015-2018)
- Three workshops to develop standards and integrate practices between global and local modelers (FY 2014-2015)

Deliverables:

- Data, mapping tools and information to address the impacts of coastal inundation
- Training and workshops on data, tools, and techniques that address competing using of coastal resources and adaptation to coastal hazards/climate change
- Outreach publications to increase capacities among coastal zone managers, land use planners, emergency management, floodplain managers, and others
- Workshop reports to summarizing decisions on standards and practices to join global and local models
- Test model capable of up- and down-scaling

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percentage of U.S. coastal states and territories demonstrating 20% or more annual improvement in resilience capacity to weather and climate hazards (Measure 18e)							
With Increase	N/A	N/A	48%	53%	59%	65%	71%
Without Increase	46%	40%	46%	51%	57%	63%	69%
<p>Description: This measure tracks a range of contributions to address coastal community risk, vulnerability, and resilience to coastal hazards. It quantifies NOAA’s contributions to this important goal across NOAA’s coastal programs, measuring how NOAA is improving the Nation’s capacity for resilience to hazards and is contributing significantly to NOAA’s efforts to improve integration of its coastal programs, and expanding beyond the three coastal integration programs providing inputs to the measure (CSC, OCRM, and Sea Grant).</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Ocean and Coastal Management and Services
Program Change: Coastal Climate Adaptation Strategies

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	25
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	708
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	100
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	833

Coastal Zone Management and Services: Consolidate Coastal Zone Programs and Services (Base Funding: \$5,896,000 and 57 FTE; Program Change: -\$1,199,000 and 0 FTE):

NOAA requests a decrease of \$1,199,000 and 0 FTE for a total of \$7,095,000 and 57 FTE to Coastal Zone Management and Services. This reduction is the result of a consolidation review of NOAA's coastal activities, and will drive the development of a more streamlined and focused coastal program that will integrate data to inform management and decision-making, and leverage activities and resources from outside partners, especially at the regional and state level.

Proposed Actions:

NOAA proposes a consolidation of certain coastal activities, particularly those associated with the Coastal Services Center and the Office of Ocean and Coastal Resource Management (OCRM). NOAA is revising the organization of its coastal programs to maximize program effectiveness by better coordination of ongoing efforts and resources, and improve focus on the Nation's priority coastal issues. As part of this effort, NOAA is evaluating (and will eliminate or reallocate where appropriate) Coastal Zone Management Act (CZMA) FTE, contractor support, and other resources in some or all of the following areas, and others, as appropriate:

- Effective management of coastal ecosystems (e.g., wetlands, marshes, barrier islands, corals, etc.)
- State and community planning for the impacts of storms, sea level rise, and other forms of coastal inundation
- Training and assistance on Federal consistency and critical coastal policy issues
- Delivery of coastal monitoring and products
- Support for securing energy independence from ocean sources
- Guidance that enable states and local governments to effectively carry out planning, implementation, program updates, and compliance activities

All current and future vacancies will remain unfilled for the balance of the fiscal year including the current unfilled 17 OCRM positions. NOS will also reduce its level of contract labor which supports the CZM program.

Statement of Need and Economic Benefits:

The Nation's coastal and ocean areas represent some of its most ecologically and economically important regions. However, there are many challenges to balancing the often competing demands of resource use, economic development, and conservation along the Nation's coasts. These challenges are increasing with continued population growth and resource impacts and use, particularly given extreme weather events and a changing climate, and the need for improved energy security. NOAA's coastal programs play an important role in fostering resilient coastal communities and protecting and managing the coast's natural resources.

As result of a recently completed consolidation review, NOAA is implementing changes to coastal programs, with a goal of enhanced program integration, improved collaboration, and increased value to coastal constituents. This is being achieved by better alignment of requirements, partnerships, tools, data, and resources focused on coastal issues and constituencies. Through this improved collaboration across coastal programs, NOAA is increasing the effectiveness of its strong array of capabilities and requirements to make coastal communities and habitats more resilient.

Base Resource Assessment:

The base resources for this activity are described in the Ocean and Coastal Management and Services base narrative.

Schedule and Milestones:

- Provide regional technical assistance, and coordination on priority issues to support managers in state led regional partnerships including the Gulf of Mexico Alliance, the West Coast Governors' Alliance on Ocean Health, the Northeast Regional Ocean Council, the Hawaii Ocean Partnership, and others (FY 2014-2018)
- Complete revision of seven NERR management plans by FY 2016
- Complete 96 percent of National Estuarine Research Reserve site profiles by FY 2016
- Pilot sentinel site monitoring of sea level change and habitat response at two reserves (FY 2014-2018)
- Work with states/territories toward approval of non-point pollution control programs (FY 2014-2018)
- Conduct national competition annually for Regional Ocean Partnership projects for funding and report on how they support regional priorities (FY 2014-2018)

Deliverables:

- Average of 250 sites created or improved each year that provide public access to the coast for recreation
- Average of 2,000 acres of key coastal habitats protected by state coastal management programs through acquisition or easement per year
- More than 250 training activities conducted annually for coastal decision makers through the NERRS Coastal Training Program
- 140 operational monitoring stations delivering water quality and weather data to a wide range of private and public users

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Ocean and Coastal Management and Services
Program Change: Consolidate Coastal Zone Programs and Services

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(1,168)
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	(6)
31 Equipment	(25)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,199)</u>

Coastal Zone Management and Services: Regional Geospatial Modeling Grants (Base Funding: \$2,861,000 and 0 FTE; Program Change: -\$2,861,000 and 0 FTE): NOAA requests a decrease of \$2,861,000 and 0 FTE for a total of \$0 and 0 FTE for the Regional Geospatial Grant program which supported development of models and geographic information systems by researchers and regional resource managers. In the Consolidated and Further Continuing Appropriations Act, 2012, Congress provided funds to support Regional Geospatial Modeling Grants administered by NOAA's Coastal Services Center and National Geodetic Survey. Base funding from the Coastal Services Center and Geodesy Program currently supports a range of regional geospatial requirements, including Continuously Operating Reference Stations (CORS) support, Height Modernization, data access, capacity building, and development of tools and models. NOAA will continue to work with states and across Federal agencies to provide geospatial data and tools, training, social science information, and partnership-building services.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Coastal Zone Management and Services
Program Change: Regional Geospatial Modeling Grants

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(2,861)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(2,861)</u>

Coastal Management Grants: Regional Ocean Partnership Grants (Base Funding: \$3,510,000 and 1 FTE; Program Change: +\$1,490,000 and 0 FTE): NOAA requests an increase of \$1,490,000 and 0 FTE for a total of \$5,000,000 and 1 FTE to expand a targeted competitive grant program to advance regional ocean partnerships.

Proposed Actions:

NOAA proposes to expand its competitive grants program aimed at advancing effective ocean management through regional ocean governance. Through public processes, regional ocean partnerships have identified critical management issues such as coastal water quality; nutrient loading and clean beaches; wetland and habitat restoration, protection and characterization; environmental education and literacy; coastal community resilience and sustainability; sustainable offshore renewable energy; ecosystem based management; coastal scientific information, research, and monitoring; addressing impacts from climate change; and aquatic invasive species.

This program continues to support priority actions identified in the plans of existing regional ocean partnerships (e.g., Gulf of Mexico Alliance, Northeast Regional Ocean Council, Mid-Atlantic Regional Council on the Ocean, the Governors' South Atlantic Alliance, and the West Coast Governors' Alliance on Ocean Health, Council of the Great Lakes Governors, Caribbean Regional Ocean Partnership, Pacific Regional Ocean Partnership, Hawaii Ocean Resources Management Plan), as well as the development and implementation of coordinated approaches in other regions (e.g. Alaska). Eligible grant recipients include state, local and tribal governments, institutions of higher learning, and non-profit organizations working with these regional ocean partnerships or member states.

Statement of Need and Economic Benefits:

Regional Ocean Partnerships (ROP) funding provides opportunity for states and partners to address a wide range of regional priorities, including improving community and state coastal hazards resilience, and undertaking habitat-related projects. Ecosystem-based management requires consideration of both natural resources and human elements—neither of which are confined by state borders. To be effective, strong partnerships are required among Federal, state, and local agencies and decision-makers, as well as private and non-governmental organizations, to identify and address together the highest priority issues impacting coastal communities.

Regional coordination increases efficiency, reduces duplication of effort, and enhances NOAA's ability to provide technical assistance. Despite the challenge of engaging a variety of stakeholder groups, regional efforts have leveraged resources across the many partners involved to allow for projects like data portals and regional mapping efforts to advance. ROPs are working to address shared economic, social, and environmental challenges on a regional scale in a collaborative manner. Increased federal investment in ROPs will build upon state and nongovernmental investments and lead to enhanced economic development, growth in green technologies, and sustainable use of our oceans, coasts, and Great Lakes.

Base Resource Assessment:

Base funding for this program currently supports nine annual agreements supporting Regional Ocean Partnership coordination and development and/or implementing Regional Ocean Partnership priorities. These agreements are supporting priority projects such as the development of data portals in the Northeast and Mid-Atlantic which provide critical tools needed to advance an inclusive, ecosystem-based and scientifically informed ocean management approach. The program also prioritizes supporting tribal coordination at the

regional level. Additional resources will allow for the support of up to three additional cooperative agreements implementing Regional Ocean Partnership priorities. Additional base resources for this activity are described in the Ocean and Coastal Management and Services base narrative.

Schedule and Milestones:

- Assist ROPs with improving data management and decision support tools to support Regional Ocean Partnership priorities (FY 2014-2018)
- Continue to develop strategies to link national and regional information management approaches (FY 2014-2018)
- Develop performance measurement system to support ROP implementation (FY 2014-2018)

Deliverables:

- Enter into up to three additional cooperative agreement awards to implement Regional Ocean Partnership priorities in FY 2014

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Implementation of priority action activities identified in regional action plans (cumulative)							
With Increase	N/A	N/A	31	35	39	43	47
Without Increase	19	24	28	32	36	40	44
Description: Regional Ocean Partnerships will make progress in achieving the actions within integrated plans that have clearly identified goals and objectives for long-term ocean health and sustainability and engage academic, non-governmental organizations and private interests. These efforts will build upon the existing accomplishments of the Regional Ocean Partnerships including the Gulf of Mexico Alliance, Northeast Regional Ocean Council, Mid-Atlantic Regional Council on the Ocean, as well as supporting tribal coordination on regional partnerships.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Ocean and Coastal Management and Services
Program Change: Regional Ocean Partnership Grants

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	1,490
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>1,490</u>

Coastal Management Grants: Coastal Zone Management Grants (Base Funding: \$66,336,000 and 0 FTE; Program Change: -\$190,000 and 0 FTE): NOAA requests a decrease of \$190,000 and 0 FTE for a total of \$66,146,000 and 0 FTE to support coastal zone management cooperative agreements with coastal states and territories. Remaining funds are adequate to continue to effectively enhance the ability of state and territorial coastal zone management (CZM) programs to balance coastal economic growth with conservation of the Nation's coastal resources.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Ocean and Coastal Management and Services
Program Change: Coastal Zone Management Grants

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(190)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(190)

National Estuarine Research Reserve System: National Estuarine Research Reserve System (Base Funding: \$21,844,000 and 0 FTE; Program Change: +\$135,000 and 0 FTE):

NOAA requests a net increase of \$135,000 and 0 FTE for a total of \$21,979,000 and 0 FTE to support implementation of reserve management plans. NOAA proposes to terminate \$640,000 for the National Estuarine Research Reserve System (NERRS) graduate research fellowship program currently supporting 28 fellows, and redirect these funds along with the \$135,000 increase for a total of \$775,000, to support reserve management plans that guide site-based research, monitoring, education, training and resource stewardship programming. The NERRS is a national network of protected areas established under the Coastal Zone Management Act to conduct research, provide long-term protection and enhance public awareness and opportunities for education. NERRS sites represent the diverse biological and physical characteristics of estuarine systems of the United States.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: National Estuarine Research Reserve System
Program Change: NERRS

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	135
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	135

Sanctuaries and Marine Protected Areas Program Base: Marine Sanctuary System and Marine Protected Areas (Base Funding: \$49,916,000 and 191 FTE; Program Change: -\$2,736,000 and 0 FTE):

NOAA requests a decrease of \$2,736,000 and 0 FTE for a total of \$47,180,000 and 191 FTE for Sanctuaries and Marine Protected Areas Program. The FY 2014 Budget proposes to consolidate the National Marine Protected Areas Center with the Office of National Marine Sanctuaries to create a single more efficient and effective program. At this level, NOAA will fund the highest priorities of the Marine Protected Areas (MPA) Program within the Office of National Marine Sanctuaries.

Proposed Actions:

The FY 2014 Budget request for the consolidated Office of National Marine Sanctuaries (ONMS) will continue support for the 13 Sanctuaries in the National Marine Sanctuary System, the Papahānaumokuākea Marine National Monument, and National Marine Protected Areas Center as required by Executive Order 13158. The proposed consolidation will allow NOAA to fully leverage ONMS capacities and regional networks for MPA management and foster more effective information sharing among national and regional ocean management interests. At the requested funding level NOAA will support the highest priorities of all its mandates, maintain its unique capabilities, and continue engaging coastal communities and stakeholders to promote science-based stewardship of designated areas.

Base Resource Assessment:

The base resources for this activity are described in the Ocean and Coastal Management and Services base narrative.

Schedule and Milestones:

- Complete development and implementation of final management plans for HI/Humpback Whale (FY 2014) and Grays Reef (FY 2014)
- Implement additional sentinel monitoring activities where necessary to assess impacts of threats (e.g. climate change, biodiversity loss, invasive species) to ONMS resources and detect early warnings of change at national, regional, and local scales (FY 2014-2018)
- Conduct baseline assessments for priority coral marine protected areas (MPA) using the MPA Assessment Checklist then reevaluate these MPAs to determine improvements in management (FY 2014-2016)
- Implement data management (including access and distribution) protocols, infrastructure, and partnerships for ONMS Sentinel Monitoring Program (FY 2014-2018)
- Update the Framework for a national system of Federal, state, tribal, and local marine protected areas
- Complete additions to the MPA Inventory on the natural and cultural resources protected by U.S. MPAs to support improved MPA management
- Continue to build and strengthen the National System of MPAs by providing technical assistance and tools to member programs (FY 2014-2018)

Deliverables:

- Development and/or expansion of partnerships with local communities and businesses to implement sustainable practices for fishing, tourism, recreation, ecosystem protection and alternative energy technologies
- Development and/or expansion of education and public outreach, including those with multi-cultural communities, related to ecosystems, climate change and human use impacts
- Habitat restoration and marine debris removal at all sanctuaries

- Monitoring programs, scientific assessments, technology application, public awareness and mitigation strategies associated with ecosystem changes at all sanctuaries
- Marine acoustics programs to determine the distribution of marine mammals and vessel traffic patterns at Stellwagen Bank and Channel Islands sanctuaries. Develop education initiatives at all sites that protect marine mammals from vessel strikes and conduct disentanglement and rescue operations
- Design and implementation of MPA networks, to enable effective conservation of more acres of coral reefs within U.S. boundaries
- New education, survey and eradication programs to avoid and mitigate introduction of invasive species in multiple sanctuaries
- Community-based management plan for HI/Humpback Whale NMS and Grays Reef NMS

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Ocean and Coastal Management and Services
Program Change: Marine Sanctuary System and Marine Protected Areas

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(2,736)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(2,736)

Sanctuaries and Marine Protected Areas: Dr. Nancy Foster Scholarship Program (Base Funding: \$601,000 and 0 FTE; Program Change: -\$601,000 and 0 FTE): NOAA requests a decrease of \$601,000 and 0 FTE for a total of \$0 and 0 FTE to terminate the Dr. Nancy Foster Scholarship Program and decrease funding for the Office of Marine Sanctuaries.

Scientists and engineers create many of the innovations that drive our nation's global competitiveness. Our nation's capacity to create and innovate must never be limited by a shortage of talent in science, and technology, engineering and mathematics (STEM) fields. To prepare our students for STEM jobs and other high-skilled careers, we must provide them with opportunities to learn and develop knowledge and competencies in these areas.

To meet future workforce needs, and to leverage their expertise and unique assets in support of STEM education, Federal agencies have developed a range of education programs. In the absence of a single guiding plan, these efforts have proliferated over many years to include over 220 programs across 13 different agencies at an annual Federal investment of almost \$3 billion. Many of these initiatives are not effectively aligned either to the needs of students or to national priorities, and this fragmented approach to investment has made it difficult to reform and improve Federal STEM education efforts. The Administration is proposing a comprehensive reorganization to facilitate a cohesive national strategy of STEM education programs to increase the impact of Federal investments in four areas: K-12 instruction; undergraduate education; graduate fellowships; and education activities that typically take place outside the classroom. The reorganization involves consolidating or restructuring 90 programs across 11 agencies and improving the delivery, impact, and visibility of STEM efforts. Nearly \$180 million will be redirected from consolidated programs to the Department of Education, the National Science Foundation (NSF), and the Smithsonian Institution to implement initiatives in the four core reform areas. The Administration will ensure that all science mission agencies have input into the development and implementation of these initiatives so that they align with agency goals while improving STEM education at all levels in a streamlined way.

The Department of Education will lead an initiative to improve K-12 STEM instruction by supporting partnerships between school districts and universities, science agencies, businesses, or other educational entities to transform teaching and learning. NSF will focus on improving the delivery of undergraduate STEM education through evidence-based approaches and reforming graduate fellowships so they reach more students and address national workforce needs. The Smithsonian Institution, which already has strong partnerships with several mission agencies, will improve the reach of federally-supported informal education activities, and help align those activities with State standards so that they are relevant to what students are learning in the classroom.

NOAA currently provides awards through the Dr. Nancy Foster Scholarship Program to graduate students in oceanography, marine biology or maritime archeology. The FY 2014 funding for the Dr. Nancy Foster Scholarship Program is estimated at \$510,000 (1 percent of Marine Sanctuaries funding in ORF and PAC). The remaining \$91,000 decrease will reduce support for the Office of Marine Sanctuaries.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Ocean and Coastal Management and Services
Program Change: Dr. Nancy Foster Scholarship Program

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(91)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(510)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(601)</u>

The following exhibit shows the summary object class detail for Ocean and Coastal Management and Services program changes less than \$100,000. Please contact the NOAA Budget Office if details for any of these changes are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: Ocean and Coastal Management and Services
Program Change: Multiple

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	77
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	77

APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION AND CONSTRUCTION
SUB-PROGRAM: NATIONAL OCEAN SERVICE PROCUREMENT, ACQUISITION AND CONSTRUCTION

The NOS Procurement, Acquisition, and Construction account includes three line items.

Coastal and Estuarine Land Conservation Program

The Coastal and Estuarine Land Conservation Program (CELCP) provides grants to state and local governments to protect important coastal and estuarine areas that have significant conservation, recreation, ecological, historical or aesthetic values, or are threatened by conversion from their natural or recreational state. The Federal grants require matching funds, which leverage additional state, local or private contributions. NOAA develops and issues guidelines delineating criteria for grant awards and a process for conducting a national competitive grants program under the CELCP. Through this program, NOAA supports efforts to protect important stream corridors and habitats, reduce the flow of polluted runoff into coastal waters, lessen the impacts of coastal flooding from severe storm events, and provide opportunities for coastal recreation and nature-based tourism. This program is authorized by the Coastal and Estuarine Land Conservation Act, which requires that 15 percent of any appropriation be allocated to projects that benefit a National Estuarine Research Reserve (NERR). These funds supplement those in the NERRS construction/acquisition line by supporting land acquisition in the watershed of the reserve. The program is now a component of the CZMA (Section 307A). As of the end of FY 2012, the program had protected almost 100,000 acres of coastal land.

National Estuarine Research Reserve System Construction/Acquisition

The National Estuarine Research Reserve System (NERRS) is a Federal-state partnership established under the CZMA designed to protect and understand valuable estuarine resources through research and education. For PAC, NERRS funding is matched 70:30 (Federal: state) for facilities construction and 1:1 for land acquisition. Reserves are publicly owned lands and onsite facilities that provide opportunities for researchers as well as the public to better understand these estuarine areas. Supplementing or updating facilities at the 28 reserves is carried on in conjunction with the development of system-wide construction plans. All construction activities are based on current needs for implementing core NERRS programs and external opportunities for partnerships. When land buying opportunities are available, reserves acquire additional nearby critical habitat within, or adjacent to, a reserve boundary as identified in reserve management plans to increase protection and provide places for conducting long-term science, education, and demonstration programs. The facilities and land of the reserves are owned and managed by the states in this Federal-state partnership. NERRS construction and land acquisition projects are selected on a competitive basis.

The Outyear Funding Estimates are provided with the program change requested for this activity.

National Marine Sanctuary Program Construction/Acquisition

NOAA administers the National Marine Sanctuary System under authority of the National Marine Sanctuaries Act. The Office of National Marine Sanctuaries manages and operates the Nation's system of 13 Marine Sanctuaries and the Papahānaumokuākea Marine National Monument. The program has developed a comprehensive facilities plan that prioritizes needs and opportunities at individual sites for constructing exhibits, collaborative education and visibility projects, and operational needs. In order to establish better understanding and appreciation for sanctuary and other ocean resources by the public, the program constructed a network of exhibits, signage, and kiosks. Whenever possible, sanctuaries utilize existing aquaria, museums and other appropriate facilities to

develop cooperative centers where the public and environmental decision makers can gain direct, objective and focused information on conservation issues. These facilities serve as important windows into the resources of the Sanctuaries and act as a storefront for public interaction with NOAA programs. The goal of these exhibits is to share with the public these ocean treasures. In addition to these efforts, PAC funding supported operational facility requirements for NOAA-owned facilities, including safety improvements, ADA (Americans with Disabilities Act) upgrades, and replacement and repair.

The Outyear Funding Estimates are provided with the program change requested for this activity.

Schedule and Milestones:

- Conduct national competitions for CELCP and NERRS Acquisition/Construction to select projects for funding and report acres protected through the programs (FY 2014-2018)

Deliverables:

- Financial assistance awards to state or local governments for competitively-selected projects
- Permanent protection of approximately 500-600 additional acres of land identified as high priority within state Coastal and Estuarine Land Conservation Plans.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Annual number acres acquired designated for long-term conservation (CELCP, NERRS and CZMP) Measure 18d	Actual	Target	Target	Target	Target	Target	Target
	2,150	2,500	1,500	550	550	550	550
<p>Description: This measure tracks NOAA's success through the National Estuarine Research Reserve System (NERRS), Coastal Zone Management (CZM) Program and Coastal and Estuarine Land Conservation Program (CELCP) programs in protecting habitats identified in the Coastal Zone Management Act as priorities. The measure tracks the number of acres acquired with NOAA funds by state or local government agencies from willing sellers for long-term protection of important coastal habitats and opportunities for recreational access to the coast through the CZM Program and, CELCP, or the number of acres designated for long-term protection by NOAA and state partners through the NERRS. The targets in the budget submission reflect the estimated number of acres that were or could be acquired with the level of investment available each year. The actual number can vary depending on cost and acreage for each project selected for funding through the competitive process. These targets will vary from what is reported in the Performance and Accountability Report and the Annual Performance Plan as those targets reflect the number of acres acquired in a particular year regardless of the when the funding was available.</p>							

PROGRAM CHANGES FOR FY 2014:

National Estuarine Research Reserve Construction: National Estuarine Research Reserve Construction (Base Funding: \$1,005,000 and 0 FTE: Program Change: +\$695,000 and 0 FTE): NOAA requests an increase of \$695,000 and 0 FTE for a total of \$1,700,000 and 0 FTE to accomplish the following infrastructure/facilities construction priority projects at National Estuarine Research Reserves (NERRS).

Proposed Actions:

This increase would support both the construction of new, sustainably designed visitor-serving and public access facilities and upgrades to critical existing infrastructure through a 70/30 cost share with states. By providing new or upgraded visitor facilities, trails and water access ways, visitors and ecotour operators can have a meaningful experience and reserves will be equipped to handle additional visitors in a sustainable way. Upgrading critical research, monitoring and educational infrastructure will make these assets more resilient in response to changing coastal conditions (i.e., inundation, storm impacts). Incorporating green design features in reserve facilities and infrastructure also serve to educate visitors about ways to construct sustainably, thus showcasing the innovative businesses that build in this way. Funds are awarded through an annual competition. Based on reserve plans, priority, cost-effective construction projects include: enhanced public access, trails, boardwalks at Wells, ME, Great Bay, NH, Jacques Cousteau Reserve, NJ, Chesapeake Bay-MD, Delaware, Mission Aransas, TX, South Slough, OR, Old Woman Creek, OH, and Kachemak Bay, AK; new or expanded visitor centers and exhibits at Elkhorn Slough, CA, Guana Tolomato Matanzas, FL, Chesapeake Bay-MD, North Carolina, and Tijuana River, CA; and resilient facilities and monitoring platforms at Weeks Bay, AL, Chesapeake Bay-VA, and South Slough, OR.

Statement of Need and Economic Benefits:

Coastal natural resources provide not only habitat for fish and wildlife, but other ecosystem services such as flood control, storm protection, and nursery grounds for commercial species of fish and shellfish, and recreational benefits. Reserves are natural laboratories for discovering and testing approaches communities and the nation can use to improve coastal management. The facilities and infrastructure to support the ongoing research, monitoring, and education activities at reserves are critically important to this effort. In the counties where reserves are located, tourism can account for as much as 98 percent of the ocean-dependent jobs. Reserves provide an excellent entry point for visitors and tourists to enjoy and learn about the importance of coastal and marine ecosystems. Many reserves work closely with ecotour operators and local Chambers of Commerce to offer high quality visitor experiences. By investing in key visitor-serving, and public access projects at reserves, NOAA and its state partners can foster enhanced ecotourism, support local construction jobs, and provide a model for sustainable design and construction in their communities. Given the dynamic conditions of coastal areas, reserve facilities and infrastructure that are constructed to be resilient also will be more cost-effective in the long run.

Base Resources Assessment:

The base resources for this activity are described in the NOS Procurement, Acquisition, and Construction base narrative.

Schedule and Milestones:

- Conduct national competitions annually for NERRS Land Acquisition/Construction to select up to seven projects for funding (FY 2014-2018)
- Report acres protected through the program (FY 2014-2018)

Deliverables:

- One to four competitively awarded projects annually

Performance Measure: Annual number of NERRS facility construction projects that improve safety or environmental sustainability	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	7	7	7	7	7
Without Increase	4	4	4	4	4	4	4
Description: NERRS PAC funding is awarded for construction projects based on a competitive process. Projects must be consistent with approved reserve management plans. Projects are prioritized by those that address safety or inadequate facilities and projects that improve environmental sustainability or public use/access.							

Outyear Funding Estimates (\$ in thousands):

NERRS Construction and Land Acquisition	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		695	695	695	695	695		
Total Request	97,423	1,700	1,700	1,700	1,700	1,700	N/A	Recurring

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: NOS Construction
Program Change: National Estuary Research Reserve System Construction (NERRS)

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	695
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	695

Marine Sanctuaries Construction: Marine Sanctuaries Construction (Base Funding: \$4,021,000 and 0 FTE; Program Change: -\$2,021,000 and 0 FTE): NOAA requests a decrease of \$2,021,000 and 0 FTE for a total of \$2,000,000 and 0 FTE to enhance, renovate, and perform capital maintenance on infrastructure and vessels.

Proposed Actions:

With remaining funds, NOAA will address one of three ongoing high-priority projects in FY 2014. The selection will be based on estimated cost. The three major ongoing projects are

- Crissy Field in San Francisco, CA, Gulf of Farallones National Marine Sanctuary (GFNMS): The GFNMS “Crissy Field Campus” includes five buildings; two of which have been renovated to date. The renovation of three buildings, including the main administrative building/visitor center (The Life Saving Station), will be considered.
- Galveston, TX, Flower Gardens Banks National Marine Sanctuary (FGBNMS): NOAA has completed a 100% design document for the restoration of the first floor of a two story building they occupy at the National Marine Fisheries Service Laboratory, Galveston.
- Scituate, MA, Stellwagen Bank National Marine Sanctuary (SBNMS): The “Scituate Campus” includes a recently renovated former USCG building, recently acquired land to be used to stage marine operations, and an old boathouse that needs to be renovated into a Marine Operations Center.

Funds will also be used for construction of exhibits, signage, and kiosks. NOS is committed to these construction efforts because they are effective in establishing a better understanding and appreciation for NOAA, marine sanctuary, and other ocean and coastal resources by the public. These facilities will continue to serve as important windows into the resources of the Sanctuaries and will act as a storefront for public interaction with NOAA programs. The overall goal of these exhibits has always been and will always be to share these ocean treasures with the public.

A portion of the remaining funds will also support major repairs, both scheduled and emergency, on sanctuaries vessels.

Statement of Need and Economic Benefits:

Public-facing NOAA facilities are “gateways” between NOAA and local communities as they directly support visitor access, tourism, and recreation, and independently support dependent businesses. Additionally, sanctuaries enable visitors and tourists to experience and learn about special marine places, their resources, and NOAA’s role in protecting them. Small boats are necessary for essential on-water management, enforcement, and research activities, which enable NOAA to ensure that these unique ecosystem and historic resources continue to provide economic benefits in the long term.

Base Resources Assessment:

The base resources for this activity are described in the NOS Procurement, Acquisition, and Construction base narrative.

Schedule and Milestones:

- Conduct critical capital construction activities on Sanctuaries facilities and vessels, construction of exhibits, signage, and kiosks, and funding for limited emergency and required major small boat repairs.

Deliverables:

- As resources allow, complete ongoing projects at one of three sites: Crissy Field in San Francisco, CA, Gulf of Farallones National Marine Sanctuary (GFNMS), Galveston, TX, Flower Gardens Banks National Marine Sanctuary (FGBNMS), or Scituate, MA, Stellwagen Bank National Marine Sanctuary (SBNMS).
- Construction of exhibits, signage, and kiosks.
- Major emergency ship yard work on vessels (FY 2014)

Outyear Funding Estimates (\$ in thousands):

National Marine Sanctuaries Construction	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		(2,021)	(2,021)	(2,021)	(2,021)	(2,021)		
Total Request	110,361	2,000	2,000	2,000	2,000	2,000	N/A	Recurring

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: NOS Construction
Program Change: Marine Sanctuaries Construction

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(2,021)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>(2,021)</u>

The following exhibit shows the summary object class detail for NOS PAC Acquisition and Construction program changes less than \$100,000. Please contact the Department of Commerce if details for any of these changes are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Ocean Service
Sub-program: NOS Acquisition
Program Change: CELCP

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(16)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(16)

THIS PAGE LEFT INTENTIONALLY BLANK

APPROPRIATION ACCOUNT: DAMAGE ASSESSMENT AND RESTORATION REVOLVING FUND

A National Oceanic and Atmospheric Administration (NOAA) Damage Assessment and Restoration Revolving Fund was established, under Section 1012(a) of the Oil Pollution Act, for deposit of sums provided by any party or governmental entity for response to discharges of oil or releases of hazardous substances, for assessment of damages to NOAA trust resources resulting from those discharges and releases, and for the restoration of the injured natural resources. Through the Revolving Fund, NOAA:

- Retains funds that are recovered through settlement or awarded by a court for restoration of injured natural resources, and retains reasonable costs of conducting spill response and damage assessments that are recovered by NOAA through negotiated settlement, court award, or other reimbursement.
- Ensures funds deposited shall remain available to the trustee, without further appropriation, until expended to pay costs associated with response, damage assessment, and restoration of natural resources.

The NOAA Damage Assessment and Restoration Revolving Fund facilitates and sustains: (1) natural resource damage assessment while the Departments of Commerce and Justice seek full reimbursement from potentially responsible parties; and (2) restoration, replacement, or acquisition of the equivalent of injured or lost natural resources, including resources of National Marine Sanctuaries and National Estuarine Research Reserves, tidal wetlands and other habitats, for which NOAA is trustee. These program functions are conducted jointly within NOAA by the Office of General Counsel, the National Ocean Service, and the National Marine Fisheries Service.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 Damage Assessment and Restoration Revolving Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution	16	16	8,000	25,000
less: Obligations from prior year balances	0	0	0	0
less: Unobligated balance transferred, DOI	0	0	0	0
plus: 2013 Adjustments to Base	0	0	0	0
FY 2014 Base	16	16	8,000	25,000
plus: 2014 Program Changes	0	0	0	0
FY 2014 Estimate	16	16	8,000	25,000

		FY 2012 Actual		FY 2013 Currently Available		FY 2014 Base Program		FY 2014 Estimate		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Damage Assessment and Restoration Revolving Fund	Pos/BA	62	7,279	16	8,000	16	8,000	16	8,000	0	0
	FTE/OBL	62	170,651	16	25,000	16	25,000	16	25,000	0	0
Total: Damage Assessment and Restoration Revolving Fund	Pos/BA	62	7,279	16	8,000	16	8,000	16	8,000	0	0
	FTE/OBL	62	170,651	16	25,000	16	25,000	16	25,000	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Damage Assessment and Restoration Revolving Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
	FTE	Actual Amount	FTE	Currently Available Amount	FTE	Base Program Amount	FTE	Estimate Amount	FTE	Amount
Direct Mandatory Obligation	16	170,651	16	123,173	16	25,000	16	25,000	0	0
Total Obligations	16	170,651	16	123,173	16	25,000	16	25,000	0	0
Adjustments to Obligations:										
Federal funds	0	(1,304)	0	0	0	0	0	0	0	0
New offsetting collections	0	(201,470)	0	(9,000)	0	(9,000)	0	(9,000)	0	0
Recoveries	0	(692)	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(51,300)	0	(98,173)	0	0	0	0	0	0
Unobligated balance, transferred (From DOI)	0	(6,779)	0	(8,000)	0	(8,000)	0	(8,000)	0	0
Unobligated balance, EOY	0	98,173	0	0	0	0	0	0	0	0
Total Budget Authority	16	7,279	16	8,000	16	8,000	16	8,000	0	0
Financing from Transfers and Other:										
Transfer from Other Accounts	0	0	0	0	0	0	0	0	0	0
Transfer to/from Dept of Interior	0	(7,279)	0	(8,000)	0	(8,000)	0	(8,000)	0	0
Net Appropriation	16	0	16	0	16	0	16	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Damage Assessment and Restoration Revolving Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	FY 2012 Actual	FY 2013 Currently Available	FY 2014 Base Program	FY 2014 Estimate	Increase/ (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	5,670	1,373	1,373	1,373	0
11.3 Other than full-time permanent	434	8	8	8	0
11.5 Other personnel compensation	942	29	29	29	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	7,046	1,410	1,410	1,410	0
12.1 Civilian personnel benefits	1,928	552	552	552	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	1,282	210	210	210	0
22 Transportation of things	10	4	4	4	0
23.1 Rental payments to GSA	462	130	130	130	0
23.2 Rental payments to others	116	6	6	6	0
23.3 Commun., util., misc. charges	133	0	0	0	0
24 Printing and reproduction	9	4	4	4	0
25.1 Advisory and assistance services	(762)	844	844	844	0
25.2 Other services	147,402	117,876	19,703	19,703	0
25.3 Other purchases of goods and services from Govt accounts	470	182	182	182	0
26 Supplies and materials	738	146	146	146	0
31 Equipment	229	144	144	144	0
41 Grants, subsidies and contributions	11,586	1,652	1,652	1,652	0
42 Insurance claims and indemnities	0	1	1	1	0
43 Interest and dividends	2	12	12	12	0
99 Total Obligations	170,651	123,173	25,000	25,000	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Damage Assessment and Restoration Revolving Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

	FY 2012 Actual	FY 2013 Currently Available	FY 2014 Base Program	FY 2014 Estimate	Increase/ (Decrease)
Less collections	(202,774)	(9,000)	(9,000)	(9,000)	0
Less recoveries	(692)	0	0	0	0
Less unobligated balance, SOY	(51,300)	(98,173)	0	0	0
Plus unobligated balance, EOY	98,173	0	0	0	0
Plus unobligated balance transferred	(6,779)	(8,000)	(8,000)	(8,000)	0
Total Budget Authority	7,279	8,000	8,000	8,000	0
Transfers:					
Transfer from Other Accounts	0	0	0	0	
Transfer from DOI	(7,279)	(8,000)	(8,000)	(8,000)	0
Discretionary Budget Authority	0	0	0	0	0
Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	62	16	16	16	0
Other than full-time permanent	0	0	0	0	0
Total	62	16	16	16	0
Authorized Positions:					
Full-time permanent	62	16	16	16	0
Other than full-time permanent	0	0	0	0	0
Total	62	16	16	16	0

APPROPRIATION ACCOUNT: SANCTUARIES ENFORCEMENT ASSET FORFEITURE FUND

The Sanctuaries Enforcement Asset Forfeiture Fund receives proceeds from civil penalties and forfeiture claims against responsible parties, as determined through court settlements or agreements, for violations of NOAA sanctuary regulations. Penalties received are held in sanctuary site-specific accounts from year to year (technically reimbursables), as the funds are spent on resource protection within the sanctuary site where the penalty or forfeiture occurred. Funds are expended for resource protection purposes which may include all aspects of law enforcement (from equipment to labor), community oriented policing programs, and other resource protection and management measures such as the installation of mooring buoys or restoration of injured resources.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 Sanctuaries Enforcement Asset Forfeiture Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution	0	0	1,000	1,000
less: Obligations from prior year balances	0	0	0	0
plus: 2014 Adjustments to Base	0	0	0	0
FY 2013 Base	0	0	1,000	1,000
plus: 2014 Program Changes	0	0	0	0
FY 2014 Estimate	0	0	1,000	1,000

Comparison by activity/subactivity		FY 2012		FY 2013		FY 2014		FY 2014		Increase/Decrease	
		Actual		Currently Available		Base Program		Estimate			
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Sanctuaries Asset	Pos/BA	0	491	0	1,000	0	1,000	0	1,000	0	0
Forfeiture Fund	FTE/OBL	0	3	0	1,000	0	1,000	0	1,000	0	0
Total: Sanctuaries Asset	Pos/BA	0	491	0	1,000	0	1,000	0	1,000	0	0
Forfeiture Fund	FTE/OBL	0	3	0	1,000	0	1,000	0	1,000	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Sanctuaries Enforcement Asset Forfeiture Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	3	0	1,488	0	1,000	0	1,000	0	0
Total Obligations	0	3	0	1,488	0	1,000	0	1,000	0	0
Adjustments to Obligations:										
New offsetting collections	0	0	0	0	0	0	0	0	0	0
Recoveries	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	0	0	(488)	0	0	0	0	0	0
Unobligated balance, EOY	0	488	0	0	0	0	0	0	0	0
Total Budget Authority	0	491	0	1,000	0	1,000	0	1,000	0	0
Financing from Transfers and Other:										
Transfer from Other Accounts	0	0	0	0	0	0	0	0	0	0
Net Appropriation	0	491	0	1,000	0	1,000	0	1,000	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Sanctuaries Enforcement Asset Forfeiture Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Object Class	FY 2012 Actual	FY 2013 Currently Available	FY 2014 Base Program	FY 2014 Estimate	Increase/ (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services	0	1,488	1,000	1,000	0
25.3 Other purchases of goods and services from Govt accounts	0	0	0	0	0
26 Supplies and materials	3	0	0	0	0
31 Equipment	0	0	0	0	0
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	0	0	0	0
99 Total Obligations	3	1,488	1,000	1,000	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Sanctuaries Enforcement Asset Forfeiture Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

	FY 2012 Actual	FY 2013 Currently Available	FY 2014 Base Program	FY 2014 Estimate	Increase/ (Decrease)
Less collections	0	0	0	0	0
Less recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Plus unobligated balance transferred	0	0	0	0	0
Total Budget Authority	491	1,488	1,000	1,000	0

BUDGET PROGRAM: NATIONAL MARINE FISHERIES SERVICE

For FY 2014, NOAA requests a net increase of \$9,524,000 and a net decrease of 30 FTE from the FY 2014 base level for a total of \$929,342,000 and 2,836 FTE for the National Marine Fisheries Service after a technical transfer of \$501,000 and 1 FTE from the National Ocean Service. This includes \$12,968,000 and 0 FTE in inflationary adjustments and \$837,000 in IT savings for reinvestment in DOC Working Capital Fund IT initiatives.

National Marine Fisheries Service Base Overview

The National Marine Fisheries Service (NMFS) is responsible for the management and conservation of living marine resources within the U.S. Exclusive Economic Zone (EEZ)—the area extending from three to 200 nautical miles offshore. NMFS provides critical support, and scientific and policy leadership in the international arena, and plays a key role in the management of living marine resources in coastal areas under state jurisdiction. NMFS implements science-based conservation and management actions aimed at sustaining long-term use and promoting the health of coastal and marine ecosystems. These actions result in maximized benefits to the Nation from the use of living marine resources. Programmatic authority for fisheries management, species protection, and habitat conservation activities is derived primarily from the Magnuson-Stevens Fishery Conservation and Management Act (MSA), Marine Mammal Protection Act (MMPA), and Endangered Species Act (ESA). Other acts provide additional authority for enforcement, seafood safety, habitat restoration, and cooperative efforts with states, tribes, interstate fishery commissions, and other countries. All of these activities rely on a strong scientific and research competency to support the challenging public policy decision process associated with NMFS's stewardship responsibility.

The National Marine Fisheries Service budget is organized into five sub-programs under the Operations, Research and Facilities appropriation account:

- Protected Species Research and Management (\$178,527,000 and 812 FTE) includes Protected Species Research and Management Programs Base, Species Recovery Grants, Marine Mammals, Marine Turtles, Other Protected Species (Marine Fish, Plants, and Invertebrates), Atlantic Salmon, and Pacific Salmon.
- Fisheries Research and Management (\$434,314,000 and 1,384 FTE) includes Fisheries Research and Management Programs, National Catch Share Program, Expand Annual Stock Assessments - Improve Data Collection, Economics & Social Sciences Research, Salmon Management Activities, Regional Councils and Fisheries Commissions, Fisheries Statistics, Fish Information Networks, Survey and Monitoring Projects, Fisheries Oceanography, American Fisheries Act, National Standard 8, Reducing Bycatch, and Product Quality and Safety.
- Enforcement and Observers/Training (\$107,192,000 and 385 FTE).
- Habitat Conservation and Restoration (\$42,910,000 and 150 FTE) includes Habitat Management & Restoration.
- Other Activities Supporting Fisheries (\$58,631,000 and 134 FTE) includes Antarctic Research, Aquaculture, Climate Regimes & Ecosystem Productivity, Computer Hardware and Software, Cooperative Research, Information Analyses & Dissemination, Marine Resources Monitoring, Assessment & Prediction Program (MarMap), National Environmental Policy Act (NEPA), NMFS Facilities Maintenance, and Regional Studies.

The National Marine Fisheries Service budget includes the following other accounts:

- Fishermen's Contingency Fund

- Pacific Coastal Salmon Recovery Fund
- Promote and Develop American Fishery Products & Research Pertaining to American Fisheries, which includes Saltonstall-Kennedy (S-K) Funds
- Environmental Improvement and Restoration Fund
- Limited Access System Administration Fund
- Foreign Fishing Observer Fund
- Marine Mammal Unusual Mortality Event Fund
- Federal Ship Financing Fund
- Fisheries Finance Program Account
- Western Pacific Sustainable Fisheries Fund
- Fisheries Enforcement Asset Forfeiture Fund
- North Pacific Observer Fund

In partnership with other Federal agencies and with state and local governments, NMFS is responsible for managing living marine resources along the Nation's coastal zone and throughout the EEZ. This is done through restoring degraded habitats; protecting and ensuring sustainable use of ocean, coastal, and Great Lakes living resources; and enabling domestic marine aquaculture production. NMFS is responsible for protecting, restoring, and managing species listed under the ESA and MMPA, as well as their habitats, and for managing and rebuilding fish stocks to population levels that will support economically viable and sustainable harvest opportunities. NMFS also provides advice, technical tools, scientific information, and training to coastal residents, communities, and other decision makers and users of ocean, coastal, and Great Lakes areas.

Ecosystem-based management is an important component of NMFS's conservation and management practices. By understanding the complex ecological and socioeconomic environments in which living marine resources exist, managers may be able to better anticipate and predict the effects of management actions on a given coastal or marine ecosystem. NMFS uses the following strategies for implementing ecosystem-based management:

- Engage and collaborate with partners to achieve regional objectives by delineating regional ecosystems, working with regional ecosystem councils, and implementing cooperative strategies to improve regional ecosystem health.
- Where appropriate, seek to transform the way fisheries are managed, moving from more traditional management tools to market-based approaches to fisheries management - variously called catch shares, limited access privilege programs, or sector management. These types of approaches create incentives for fishermen to engage in sustainable and economically efficient fishing practices that conserve and protect the fishery, thereby maximizing the current and future value of the resource.
- Improve management of living marine resources by advancing the understanding of ecosystems through better simulation and predictive models.
- Develop coordinated regional and national outreach and education efforts to improve public understanding and involvement in stewardship of coastal and marine ecosystems.
- Engage in technological and scientific exchange with domestic and international partners to protect, restore, and manage living marine resources within and beyond the Nation's borders.

Work is conducted by NMFS field elements, with oversight, review, and direction provided from NMFS headquarters in Silver Spring, Maryland. The field structure consists of six Regional Offices, each with a Science Center that conducts research and directs the work carried out by the other laboratories and satellite/special purpose facilities in that region.

Major NMFS facilities are located at the following sites:

- Northeast: Regional Office - Gloucester, MA
Science Center - Woods Hole, MA
Major Laboratories - Milford, CT; Narragansett, RI; J. J. Howard, Sandy Hook, NJ
Satellite/Special Purpose Facilities - Smithsonian (National Systematics Lab), Washington, DC
- Southeast: Regional Office - St. Petersburg, FL
Science Center - Miami, FL
Major Laboratories - Beaufort, NC; Galveston, TX; Panama City, FL; Pascagoula, MS
Satellite/Special Purpose Facilities - Stennis Space Center Bay, St. Louis, MS
- Southwest: Regional Office - Long Beach, CA
Science Center - La Jolla, CA
Major Laboratories - Santa Cruz, CA
Satellite/Special Purpose Facilities – Pacific Grove, CA
- Northwest: Regional Office - Seattle, WA at Sand Point
Science Center - Seattle, WA at Montlake
Satellite/Special Purpose Facilities - Manchester, WA; Mukilteo, WA; Pasco, WA; Newport, OR; Hammond, OR
- Alaska: Regional Office - Juneau, AK
Science Center - Seattle, WA at Sand Point
Major Laboratories – Ted Stevens Marine Research Institute, AK; Auke Bay, AK; Kodiak, AK
Satellite/Special Purpose Facilities - Little Port Walter, AK
- Pacific Islands: Regional Office – Honolulu, HI
Science Center – Honolulu, HI

Research and Development Investments:

The NOAA FY 2014 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. NMFS requests \$58,517,000 for investments in R&D in the FY 2014 budget.

NOAA's R&D planning is tied to the goals, enterprises, and associated objectives outlined in NOAA's Next Generation Strategic Plan. Specifically, NOAA's Science and Technology Enterprise and underlying objectives of holistic understanding of the Earth system through research, accurate and reliable data from observing systems, and an integrated environmental modeling system provide the basis for a set of internal implementation plans covering a 7-year period which guide NOAA's research and development activities. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - informs the annual updates to these implementation plans, and is developing the next 5-Year

Research and Development Plan for NOAA (FY 2013- 2018), which will be publicly available when completed. This new plan will reflect NOAA's strategic objectives, provide a single guiding document for our scientists, the public, and our partners, and inform future internal planning efforts.

Significant Adjustments to Base:

NOAA requests an increase of \$12,968,000 and 0 FTE to fund adjustments to current programs for NMFS. The increase will fund the estimated FY 2014 Federal pay raise of 1.0 percent. The increase will also provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration (GSA).

NOAA requests technical adjustments of \$837,000 and 0 FTE from several NMFS PPAs to reflect IT savings. These funds will be reinvested in the DOC Working Capital Fund in order to support three new Department level initiatives: the Enterprise Security Operations Center (ESOC), the new Financial System (BAS) and the Personal Identity Verification (PIV) program.

These savings are applied to the following PPAs:

Protected Species Research and Management	\$128,000
Fisheries Research and Management	\$104,000
Fisheries Statistics	\$27,000
Fish Information Networks	\$78,000
Enforcement	\$334,000
Habitat Management & Restoration	\$128,000
Computer Hardware and Software	\$38,000

NOAA also requests the following transfers for a net change of \$0 and 0 FTE to the agency:

From Office	PPA	To Office	PPA	Amount/FTE
NOS	Estuary Restoration Program	NMFS	Habitat Management and Restoration	\$501,000/1 FTE
NMFS	Fisheries Habitat Restoration	NMFS	Habitat Management and Restoration	\$20,891,000/54 FTE

NOAA requests a technical adjustment to transfer the Estuary Restoration Program from NOS to NMFS. The consolidation of the Estuary Restoration Program with NMFS's Habitat Management and Restoration will allow NMFS to manage the activities in these programs in one line office and budget line.

NOAA requests technical adjustments to: 1) change the name of the Sustainable Habitat Management line to Habitat Management and Restoration, and 2) move \$20,891,000 and 54 FTEs from Fisheries Habitat Restoration to the renamed line: Habitat Management and Restoration. This renaming and transfer will allow NMFS to manage sustainable habitat management activities and fisheries habitat restoration activities in one budget line – Habitat Management and Restoration.

Headquarters Administrative Costs:

In FY 2014 NMFS Line Office headquarters will use \$24,145,971 in funds to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, NMFS will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2014 Amount	FY 2014 FTE associated with NMFS
General Management & Direction/Executive Management	Includes Assistant Administrator's office, public affairs, information services	\$6,997,304	31.0
Budget & Finance	Includes Budget, Finance and Accounting	\$7,283,808	20.8
Facilities/Other Administrative (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$3,413,648	5.2
Human Resources	All HR services, including EEO	\$2,497,495	13.6
Acquisitions and Grants		\$385,051	2.2
Information Technology	Includes IT-related expenses and other CIO related activities	\$3,568,665	19.2
Total		\$ 24,145,971	92.0

Narrative Information:

Following this section are base justification materials and program change narratives by subactivity for this line office. Please note that no program change narrative is provided for program changes of less than \$100,000, however, a summary exhibit is provided at the end of each sub-program showing the object class detail for the small program changes. Please contact the Department of Commerce if details for any of these changes are required.

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUB-PROGRAM: PROTECTED SPECIES RESEARCH AND MANAGEMENT

The mission of the Protected Species Research and Management program is to protect and improve the health of protected species, the ecosystems that sustain them, and the communities that value and depend on them. The program fosters partnerships and employs scientific excellence and rigorous conservation actions to reverse the trend of human-caused declines that threaten the marine and coastal ecosystems we all share. Further, healthy habitats and sustainable populations of protected species are necessary for the continuity and promotion of the Nation's fishery operations. Protected species include those listed under the Endangered Species Act (ESA) and most of the marine mammals covered by the Marine Mammal Protection Act (MMPA).

NMFS shares responsibility for implementing the ESA and MMPA with the U.S. Fish and Wildlife Service (USFWS). In general, USFWS is responsible for the conservation of terrestrial and freshwater aquatic organisms, some marine mammals, and marine turtles on their nesting beaches. NMFS is responsible for the conservation of most marine mammals, most marine and anadromous fish, marine turtles at sea, marine invertebrates (including corals), and marine plants. In addition, the Marine Mammal Commission provides oversight and advice to NMFS on marine mammal issues and objective, independent review of our science.

NMFS develops recovery and conservation plans to identify and evaluate threats to species, and how they can be reduced and/or eliminated. NMFS implements conservation programs for protected resources in cooperation with federal partners, states, territories, tribal communities, and economic interests (e.g. energy and fisheries) by leveraging resources and engaging local knowledge and expertise. Conservation actions may also include promulgating regulations to ensure that lawful activities are compatible with species recovery, for example, reducing ship speed in coastal waters to reduce vessel collisions with endangered whales. To ensure its decisions are based on the best available science, NMFS conducts investigations within an ecosystem-based framework using ship, aerial, and acoustic surveys, as well as ecological modeling tools. Data gathered from these investigations provide information on the status of protected species and the effects on these species from fisheries, energy exploration and development, climate change, and natural disasters. This data also helps NMFS develop methods to eliminate, minimize, or mitigate the adverse effects of these activities.

Protected Species Programs are administered through the following budget line items:

Protected Species Research and Management Programs Base

Under the legislative authority of the ESA and MMPA, as well as other environmental legislation, international treaties, and agreements, this budget line supports activities that conserve and recover species threatened or endangered with extinction, as well as most marine mammals. This effort is critical to ensuring biological sustainability of all marine and anadromous species and the ecosystems on which they depend, as well as sustainable economic development in a manner compatible with species conservation and recovery. These funds are also used to coordinate with other NOAA programs to deliver science for the assessment of threats to these species and understand the risk of proposed actions. The science is used for determining appropriate conservation measures to reduce or eliminate threats to protected species while authorizing appropriate economic and national defense readiness activities that may affect these species. Some examples of the scientific research conducted includes identifying and quantifying the effects of anthropogenic and natural factors on protected species populations and the variability of these effects over time and space. It also includes identifying and evaluating various science-based management tools such as fishing gear modifications and passive acoustic monitoring devices that

can be used to monitor populations as well as recover and conserve protected species. Major components of this budget line include:

Interagency Consultation (ESA Section 7): ESA Section 7 requires Federal agencies to ensure that any action they fund, authorize, or undertake is not likely to jeopardize the continued existence of threatened or endangered species, or result in the destruction or adverse modification of critical habitat that has been designated for these species. This consultation with Federal action agencies is critical for decision-making regarding authorizations for lawful activities such as building roads and bridges, commercial fishing, or defense readiness training to be implemented in a manner that is compatible with species conservation and recovery.

Listing: Any U.S. citizen or organization may petition NMFS to list a species as threatened or endangered, reclassify an already listed species, or revise designated critical habitat under the ESA. Once a petition is received, the ESA outlines specific deadlines that must be followed. Within 90 days of receiving a petition to list a species, reclassify a species, or revise critical habitat, NMFS must announce in the *Federal Register* its initial determination regarding whether the petitioned action may be warranted. If NMFS determines the petitioned action may be warranted it must begin a status review of the species. Status reviews rely upon the best available scientific and commercial data to determine whether a species should be listed or reclassified. Within 12 months of receiving the petition, NMFS must determine if the listing or reclassification is warranted. If warranted, NMFS must then publish a proposed rule to list the species. NMFS then considers public comments and any new information that might become available and must publish a final determination a year after the date of publishing the proposed rule. The ESA also generally requires that critical habitat be designated concurrently with the final listing.

Once a species is listed, NMFS is required by the ESA to develop a recovery plan and implement the protections of the ESA. When a species is listed as endangered, the ESA prohibits any harm to it. However, if the species is listed as threatened, NMFS must issue separate protective regulations under Section 4(d) of the ESA in order to specify the prohibitions against harming the species.

Permits and Authorizations: Permits and authorizations to conduct activities that may result in the take (harassing, hunting, capturing, harming, killing, or collecting) of a protected species are required under the ESA and MMPA. NMFS issues permits and authorizations related to direct and indirect take of listed species as authorized by the ESA and MMPA. For example, permits and take authorizations cover scientific research to study the ecology and biology of protected species and the incidental take and harassment of marine mammals by otherwise lawful activities, such as seismic surveys, construction activities, or Navy training exercises.

Marine Mammal Health and Stranding Program: This program, authorized by the 1992 Amendments to the MMPA, designates NMFS as the lead Federal agency to coordinate stranding networks; responses and investigations of mortality events; biomonitoring; tissue and serum banking; and analytical quality assurance.

Marine Mammal and Sea Turtle Assessment and Marine Acoustics: The protected resources stock assessment and monitoring activities supported under this line determine whether a species' ecological status is declining, stable, or increasing. Assessments include the determination of the effects of noise on marine mammals from human-caused sources. These assessments are critically important to assessing the risks of human activities (e.g., fishing, offshore energy development, national defense readiness training, and scientific research) to protected species and NMFS's authorizing or permitting of these activities.

Species Recovery Grants

Recovery and conservation actions for ESA-listed species under NMFS's jurisdiction are implemented through Species Recovery Grants, which are awarded to states and tribes under the authority of Section 6 of the ESA and the Fish and Wildlife Coordination Act. To be eligible, states must first enter into an agreement with NMFS under Section 6 of the ESA—all federally recognized tribes are automatically eligible. NMFS currently has agreements with 23 states and territories, and is developing additional agreements. Funding supports management, research, monitoring, or public outreach and education activities that have direct conservation benefits for listed species. Funding may also support monitoring of candidate species and recently de-listed species.

Marine Mammals

Under the authority of the MMPA and ESA (for listed marine mammals), NMFS develops and implements a variety of programs for the protection, conservation, and recovery of the approximately 160 marine mammal stocks listed under the MMPA. The major activities conducted under this budget line include:

Marine Mammal–Commercial Fisheries Interactions: NMFS annually classifies fisheries into one of three categories according to the level of incidental mortality or serious injury of marine mammals based on verification by trained observers on fishing vessels. The categories are: 1) frequent incidental mortality or serious injury of marine mammals; 2) occasional incidental mortality or serious injury of marine mammals; and 3) remote likelihood of or no known incidental mortality or serious injury of marine mammals. For those fisheries classified in category 1 and 2, NMFS works collaboratively with the commercial fishing industry and other stakeholders to identify measures to reduce the impact of commercial fisheries on marine mammals to sustainable levels. NMFS convenes take reduction teams to develop plans that reduce the incidental serious injury or mortality of marine mammals and turtles from commercial fishing to levels less than the potential biological removal level (the maximum number of animals, not including natural mortalities that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population).

Population Assessment and Monitoring: NMFS uses several years of assessments and statistical modeling to assess the status of marine mammal stocks, identify population trends, classify fisheries interactions, assess other anthropogenic threats, and determine the impact of climate and natural environmental variations on marine mammals. Population assessments, analyses of population trends over time, and estimates of human-caused mortality and serious injury provide the biological basis for developing management actions to recover and conserve marine mammals. Further, the results of assessments inform the consideration of proposed actions affecting marine mammals and guide the development of regulatory actions to minimize the impacts of human activities.

Research: NMFS conducts research to address management actions focusing on specific questions concerning the biology and behavior of the species, status of marine mammal populations within the larger marine ecosystem, and the effects of human activities on the sustainability of marine mammals on regional and international scales.

Partnerships with Alaska Native Organizations: Under the MMPA, NMFS has entered into agreements with Alaska Native groups regarding the management of harvested marine mammal stocks in Alaska. These agreements provide funding for cooperative management of these stocks.

Marine Turtles

Under the legislative authority of the ESA, NMFS and USFWS implement the identification, listing, and recovery of threatened and endangered marine turtles. All six species of sea turtles occurring in the United States are protected under the ESA. NMFS has the lead responsibility for the conservation and recovery of sea turtles in the marine environment, and the USFWS has the lead for the conservation and recovery of sea turtles on nesting beaches. Major threats to sea turtles in the United States include: destruction and alteration of nesting and foraging habitats; incidental capture in commercial and recreational fisheries; entanglement in marine debris; and vessel strikes. To reduce the incidental capture of sea turtles in commercial fisheries, NMFS has enacted regulations to restrict certain U.S. commercial fishing gears (gillnets, longlines, pound nets, and trawls) that are known to result in significant bycatch of sea turtles. To effectively address all threats to sea turtles, NMFS and the USFWS have developed recovery plans to direct research and management efforts for each sea turtle species.

Sea turtles are highly migratory, therefore their conservation and recovery requires multilateral cooperation and agreements. NMFS uses a broad national and international program for the conservation and recovery of sea turtles and works closely with two international environmental agreements that deal exclusively with sea turtle conservation: Indian Ocean-South-East Asian (IOSEA) Marine Turtle Memorandum of Understanding, and Inter-American Convention (IAC) for the Protection and Conservation of Sea Turtles. The goal of the international component of the sea turtle program is to facilitate the global conservation and recovery of sea turtles by working closely with other nations through diplomatic channels, capacity building, and scientific exchange.

Under the Marine Turtle budget line, NMFS conducts interagency Section 7 consultations and listing activities as described under Protected Species Research and Management Programs Base, as well as the following activity:

Bycatch in Commercial Fisheries: Incidental take in fishing operations (bycatch) is one of the most serious threats to the recovery and conservation of sea turtle populations. To reduce this threat, NMFS uses fishery observer programs to document the bycatch of sea turtles and promulgates regulations to reduce sea turtle bycatch in the Pacific and Atlantic Oceans and the Gulf of Mexico. NMFS is currently involved in cooperative gear research projects designed to reduce sea turtle bycatch in the Gulf of Mexico and Atlantic pelagic longline fisheries, the Hawaii-based deep set longline fishery, the Atlantic sea scallop dredge fishery, the Chesapeake Bay pound net fishery, and non-shrimp trawl fisheries in the Atlantic and Gulf.

Other Protected Species

This budget line includes invertebrates, plants, and non-salmonid fishes. Funding authorized under the ESA provides support for recovery of these species through recovery planning, interagency Section 7 consultations, Section 10 habitat conservation development as well as Section 4 listing and regulatory activities as previously described in the Protected Species Research and Management Programs Base.

Atlantic Salmon

Under the legislative authority of the ESA, NMFS implements stock assessments, interagency Section 7 consultations, and listing and recovery actions to protect and recover the endangered Atlantic salmon. The major threats to Atlantic salmon are dams and their inter-related effects on freshwater salmon habitat, such as preventing or impeding access to spawning habitat for returning adult salmon, and low marine survival. NMFS continues to work to remove and or modify these barriers to improve the population status of Atlantic salmon.

Pacific Salmon

Under the legislative authority of the ESA, NMFS implements stock assessments, interagency Section 7 consultations, and listing and recovery actions to protect and recover threatened and endangered Pacific salmon. Population declines and extirpations of Pacific salmon and steelhead are the result of numerous factors affecting habitat (such as hydropower development, land development, resource extraction, timber harvest practices, and other land uses), as well as effects from harvest, hatchery practices, natural variation in ocean-climate conditions, and other factors such as predation and the introduction of non-native species. These threats affect each listed species differently, and no single factor is solely responsible for declines. Loss of habitat ultimately limits the ability of salmon and steelhead populations to adapt to natural and human-caused changes. Variable ocean conditions over the past two decades reduced populations already weakened by loss of freshwater and estuary habitat, fishing pressures, and hatchery practices. Improved ocean conditions as well as improvements in habitat, the hydrosystem, and hatchery management have led to increased salmon returns.

NMFS is also responsible for ensuring that hydroelectric facilities do not compromise the survival of salmon and steelhead that must pass through them while migrating. The majority of hydroelectric dams lack adequate fish passage. To stem the loss of habitat critical for listed salmonids, NMFS works to develop and implement ESA Section 10 habitat conservation plans with Federal and state partners whose actions affect these resources. NMFS works with these same partners to improve fish passage through hydroelectric dams through ESA Section 7 interagency consultation. In addition, NMFS consults with the Environmental Protection Agency to assess the adverse effects of 37 active pesticide ingredients on threatened and endangered salmonids.

Schedule and Milestones:

FY 2014 - 2018

- Solicit and review Species Recovery Grant proposals submitted by states for conservation and recovery activities.
- Prepare final recovery plans and designate critical habitat.
- Provide technical assistance, consultation, and authorization services for all Federal agencies' proposed actions (ESA Section 7).
- Continue development and implementation of 10 Take Reduction Teams to achieve MMPA goals through increased compliance monitoring and bycatch assessments.
- Evaluate effectiveness and recommend enforcement measures, modify existing regulations, and add protective measures to reduce marine mammal bycatch in fisheries.
- Review listing petitions and issue 90-day findings.
- Conduct ESA status reviews and issue 12-month findings.
- Promulgate ESA protective regulations.
- Respond to marine animal strandings and unusual mortality events.
- Update the National Marine Mammal Tissue Bank and Marine Mammal Health and Stranding Response databases.
- Participate in international and regional agreements to further the U.S. policy on protected species conservation.
- Conduct protected species stock assessments.

Deliverables:

FY 2014 - 2018

- Recovery actions identified in recovery plans to prevent species extinction.

- Comprehensive strategies for assessing the effectiveness of each marine mammal take reduction plan.
- MMPA and ESA permits.
- Take Reduction Teams to reduce marine mammal and sea turtles bycatch in fisheries that meet MMPA requirements.
- Developed or improved abundance and fishery mortality estimates for stocks in Alaska, the Pacific Islands, and the Gulf of Mexico to inform management decisions.
- Formal and informal consultation for other Federal agencies.
- Protection to species that are listed after the completion of status reviews.
- Assessments of protected species stocks with inadequate information to inform management decisions.
- Stock identification for more than 60 percent of protected species.

Performance Goals and Measurement Data:

Performance Measure: Number of Protected Species Designated as Threatened, Endangered or Depleted with Stable or Increasing Population Levels (Measure 17d)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	29	27	27	27	28	28	28

Description: This measure tracks progress at achieving partial recovery of endangered, threatened, or depleted protected species under the jurisdiction of the National Marine Fisheries Service (NMFS). These species include those listed as threatened or endangered under the Endangered Species Act (ESA) as well as those marine mammal species listed as “depleted” under the Marine Mammal Protection Act (MMPA). Recovery of threatened, endangered or depleted species can take decades, so while it may not be possible to recover or de-list a species in the near term, progress can be made to stabilize or increase the species population. For some, it is trying to stop a steep decline, while for others it is trying to increase their numbers. This measure currently tracks 78 species/stocks designated as threatened, endangered, or depleted. The change in number in FY 2016 is based on NMFS’s prediction that the status of three large whale stocks will go from Mixed or Unknown to Stable.

Performance Measure: Percent of Protected Species with Adequate Population Assessments and Forecasts (Measure 17c)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	77/20.40%	88/22.60%	100/25.60%	98/25.10%	93/23.80%	93/23.80%	93/23.80%

Description: This measure tracks the percentage of protected species stocks for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as “Level III” by the Protected Species Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under different management scenarios. This measure covers the protected species stocks covered by MMPA or listed under ESA. The number of such stocks can change as new species are listed and as new stocks of listed species and marine mammals are identified.

Performance Measure: Number and Percentage of Recovery Actions Ongoing or Completed (Measure 17e)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	1862/ 44.3%	1875/ 44.6%	1922/ 45.7%	1967/ 46.8%	2006/ 47.8%	2047/ 48.7%	2085/ 49.6%

Description: This measure tracks progress of ongoing or completed recovery actions (including Priority 1 actions needed to prevent extinction) included in NMFS approved recovery plans for species listed as threatened or endangered under the ESA. Recovery actions are those actions found to be necessary to remove species from the ESA. They are identified, quantified to the extent possible, ranked in importance to prevent extinction and to promote recovery, and are described in species recovery plans. Actions may include items that can be completed in a year or other actions, including monitoring, that may take many years to complete or be ongoing. Recovery of threatened or endangered species is a gradual process that can take decades, and completed recovery actions can show incremental progress made in achieving recovery. The total number of actions in final recovery plans included in this measure in FY 2013 is 4,202.

THIS PAGE INTENTIONALLY LEFT BLANK

Program Changes for FY 2014:

Protected Species Research and Management Programs Base: Protected Species Research and Management Programs Base (Base Funding: \$40,282,000 and 174 FTE: Program Change: \$1,904,000 and 0 FTE): NOAA requests an increase of \$1,904,000 and 0 FTE for a total of \$39,595,000 and 157 FTE for supporting activities that conserve and recover species threatened or endangered with extinction, as well as most marine mammals.

Proposed Actions:

NOAA will conduct ESA Section 7 consultations and provide authorizations of proposed federal actions affecting protected species. NOAA will meet emerging requirements for Endangered Species Act (ESA) interagency technical assistance and authorizations under the Marine Mammal Protection Act (MMPA) and ESA for all proposed actions for energy exploration and development, national defense–related activities, and fishery operations.

Statement of Need and Economic Benefits:

Section 7 of the ESA requires federal agencies to ensure that any action they fund, authorize, or undertake is not likely to jeopardize the continued existence of “threatened” or “endangered” species, or result in the destruction or adverse modification of critical habitat that has been designated for such species. This is accomplished through interagency cooperation with NOAA under Section 7 of the ESA. This consultation with federal “action agencies” results in authorizations for lawful activities such as building roads, bridges, commercial fishing, defense readiness training or water uses to be implemented in a manner that is compatible with species conservation and recovery.

NOAA also issues permits and authorizations related to direct and indirect take of listed species as authorized by the ESA and MMPA. NOAA also works to develop Habitat Conservation Plans under the ESA with non-federal entities requesting authorization to incidentally take listed species as part of otherwise lawful activities. Activities such as scientific research to study the ecology and biology of protected species, authorizing the incidental take and harassment of marine mammals by explosive detonations or high energy sonars are examples of activities allowed by permits and take authorizations.

Knowledge of the health and status of marine mammals is invaluable to NOAA in assessing the effect of fisheries interactions, and helps ensure that fisheries are operating sustainably and in a manner compatible with conservation of ecosystems and to the economic benefit of coastal communities.

Base Resource Assessment:

The base resources for this activity are described in the Protect Species Research and Management base narrative.

Schedules and Milestones:

FY 2014 – 2018:

- Provide technical assistance, consultation and authorization services for all federal agencies’ proposed actions.
- Provide diagnostic services to the stranding network to aid in the marine mammal cause of death determinations.

Deliverables:

FY 2014 – 2018:

- Conduct formal and informal consultation to other federal agencies.
- Consider and authorize appropriate economic and national defense activities that may affect protected species.
- Establish a contract with a diagnostic services laboratory to analyze samples from the marine mammal stranding network.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of additional Section 7 formal consultations and authorizations prepared for proposed federal activities							
With Increase	N/A	N/A	18	18	20	26	26
Without Increase	0	0	0	0	0	0	0
Description: Increased consultations and related authorizations represent incremental improvement in performance by increased capacity and improvement in efficiencies in out years. The number of formal consultations completed in FY 2012 (i.e., baseline) was 417, however, the number in the baseline is highly variable and depends on the requests for consultations.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Protected Species Research and Management Programs

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	1,904
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,904

Protected Species Research and Management Programs Base: West Coast Proposal: (Base Funding: \$40,282,000 and 174 FTE: Program Change: -\$2,591,000 and -17 FTE):

NOAA requests a decrease of \$2,591,000 and 17 FTE for a total of \$39,595,000 and 157 FTE in the Protected Species Research and Management Programs Base to reconfigure NMFS's Southwest and Northwest Regional Offices into a single West Coast Regional Office, and to close the Pacific Grove Laboratory in California.

NOAA requests a decrease of \$5,000,000 and 27 FTE in several NOAA programs as part of the Administration's efforts to find efficiencies and savings in a constrained fiscal environment. These efficiencies will be achieved, by reducing program activities and reconfiguring the West Coast Regional Offices, closing a science lab and eliminating support for a specific survey and assessment, as well as a research program. The various budget lines affected by this proposal are identified below and will be discussed throughout the Congressional Justification in budget order.

The proposal includes reductions in the following budget lines:

Protected Resources Research and Management	-\$2,591,000	current page
Marine Mammals	-\$ 7,000	page NMFS - 26
Pacific Salmon	-\$ 484,000	page NMFS - 44
Fisheries Research and Management	-\$1,460,000	page NMFS - 68
Expand Annual Stock Assessments	-\$ 8,000	page NMFS - 77
<u>Information, Analysis, and Dissemination</u>	<u>-\$ 450,000</u>	<u>page NMFS - 163</u>
Total	-\$5,000,000	

Proposed Actions

As a result of the consolidation of offices, NMFS will reduce support for staff and salaries and benefits as part of reconfiguring NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office and closure of the Pacific Grove Lab.

West Coast Proposal:

A total reduction of \$5.0 million is requested to reduce lower value program activities and reconfigure NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office; eliminate the Puget Sound ecosystem surveys and assessments; close the Pacific Grove Laboratory in California; and end the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon. NMFS' reconfiguration of the Northwest and Southwest Regional offices will result in the elimination of a total of up to 20 staff including one Regional Administrator and one Deputy Regional Administrator. The geographic distribution of the remaining staff will be driven by programmatic needs. As part of eliminating the Puget Sound ecosystem survey, NMFS would lay up the small vessel, R/V *Harold Streeter*, and eliminate approximately four staff. Laying up this vessel would eliminate costs in operating and maintenance of this vessel. With closure of the Pacific Grove Laboratory, programmatic functions would be maintained by relocating staff to the Santa Cruz and La Jolla Laboratories. Both Santa Cruz and La Jolla are larger and more modern facilities that can accommodate the additional programs currently conducted at Pacific Grove. Approximately three staff may be eliminated instead of transferring to Santa Cruz and La Jolla. Because the Northwest Fisheries Science Center would no longer support the Newport Seawater Research Program, staff currently working on this program would be relocated to the Manchester Laboratory in Washington State.

The reconfiguration of the West Coast regional offices will result in a leaner management structure and reduction in staff capacity, while the proposed facilities changes will reduce NMFS's physical footprint and associated costs over time. These changes reflect NOAA's efforts to focus its limited resources on its highest priority mission functions and reduce costs to the greatest possible extent.

Base Resource Assessment:

The base resources for activities associated with these reductions are described in the Protected Resources Research and Management base narrative.

Schedule and Milestones:

- The reconfiguration of the Northwest and Southwest Regional Offices needs to be implemented by October 2013.
- The excess and disposal of the Pacific Grove Facility should begin in FY 2013, as NMFS will need to continue to pay utility costs at the vacated facility pending GSA disposal.

Deliverables:

N/A

PROGRAM CHANGE PERSONNEL DETAIL

Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Protected Species Research and Management Programs: West Coast Proposal

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Director, Regional Office	TBD	SES	-0.83	170,000	(141,100)
Deputy Director, Regional Office	TBD	ZP-V	-0.83	113,735	(94,400)
Various titles	TBD	Various	-15.34	116,093	(1,780,867)
Subtotal			<u>-17</u>		<u>(2,016,367)</u>
2013 Pay Adjustment (0.5%)					<u>(10,082)</u>
Total					<u>(2,026,449)</u>
less Lapse		0%	<u>0</u>		<u>0.00</u>
Total full-time permanent (FTE)			-17		(2,026,449)
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(2,026,449)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-17
Other than full-time permanent	<u>0</u>
Total	-17
Authorized Positions:	
Full-time permanent	-17
Other than full-time permanent	<u>0</u>
Total	-17

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Protected Species Research and Management Programs: West Coast Proposal

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	(2,026)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(2,026)
12 Civilian personnel benefits	(565)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(2,591)

Species Recovery Grants: Species Recovery Grants (Base Funding: \$2,810,000 and 1 FTE: Program Change: \$15,003,000 and 0 FTE): NOAA requests an increase of \$15,003,000 and 0 FTE for a total of \$17,813,000 and 1 FTE for the conservation and recovery of marine and anadromous species under NMFS's jurisdiction and listed under the Endangered Species Act (ESA) through the Species Recovery Grant Program.

Proposed Actions:

Recovery and conservation actions for ESA-listed species under NMFS's jurisdiction are implemented through Species Recovery Grants, which are awarded to states and tribes under the authority of Section 6 of the ESA and the Fish and Wildlife Coordination Act. This funding will provide additional grants to increase the capacity of states and tribes to conduct high priority recovery actions for listed species. Priority recovery actions can include reducing or removing significant sources of mortality and injury, assessing and monitoring species status and trends, developing conservation plans to minimize and mitigate bycatch of listed species, conserving habitat, and educating and engaging the public in the conservation of ESA-listed species. Grants may also support needed monitoring of candidate and recently de-listed species. Species Recovery Grants will be administered in close coordination with the Community Based Restoration Program (CBRP) and the Pacific Coastal Salmon Recovery Fund (PCSRF) to realize efficiencies, identify strategic opportunities, and achieve significant conservation benefits on a national scale.

Statement of Need and Economic Benefits:

NMFS currently has jurisdiction over 94 threatened or endangered species, 66 species that have been proposed for listing, and 20 species that are candidates for listing under the ESA. An additional 58 species are the subject of listing petitions currently under review by NMFS. Given the large number of species that have been petitioned or are under consideration for listing, many more species will likely be added to the list by 2014. The escalating number of species requiring the protections of the ESA without increased investment in recovery and delisting will increase the agency's statutory and regulatory responsibilities and lead to increased pressure on Protected Species programs nationwide (e.g., Section 7 consultations, Section 10 permitting). Similarly, state agencies that share management responsibilities for these species will also require additional support in order to adequately manage the growing number of threatened and endangered species in state waters.

The Species Recovery Grants Program is the primary mechanism for funding and implementing recovery actions for listed species. Recovery actions are those actions needed to recover and delist species. These actions are identified in NMFS Recovery plans, which are developed by expert teams and subjected to public and peer reviews. Proposals selected for Species Recovery Grant funding are those that address high priority recovery actions for listed species. Additional species and actions may be supported (e.g., candidate species monitoring) when funding is available.

Two competitive grant programs are administered under the Species Recovery Grant Program - one for states and one for tribes. States and tribes have management authorities and responsibilities for protected species within their jurisdictions, and as such, they are uniquely qualified to partner with NMFS in the implementation of recovery actions for listed species. These partnerships leverage existing state and tribal resources and expertise. Section 6 of the ESA also includes a matching provision that requires states to provide 25 percent of total projects costs, or 10 percent of total project costs when two or more states work together.

The Species Recovery Grant Program supports all types of activities identified in recovery plans —management, monitoring, research and outreach—and funding may be applied to any

one of the species under NMFS' jurisdiction from blue whales to black abalone (excluding Pacific salmon and steelhead, which are supported through PCSRF). Twenty-three states (including U.S. territories), from Guam to Alaska to Puerto Rico, are eligible for this funding. All federally recognized tribes are also eligible. A total of almost \$30 million in federal grant funding has been provided to states, tribes, and approximately 53 other partner organizations to support conservation and recovery of 26 threatened or endangered species since fiscal year 2003, when just under \$1 million was first available for grants to states. Examples of funded work to date include Hawaiian monk seal disentanglement and rescue; captive breeding efforts to prevent extinction of white abalone; development of an Atlantic coast sturgeon tagging network and database; and repair of water control structures to allow Atlantic salmon access to historical spawning grounds. Jobs have been created or maintained directly through this funding, and multiple indirect economic benefits are expected as grant dollars are expended to improve populations of listed species, which typically receive significant public interest and attention and often have recreational and commercial value for coastal states, as well as cultural and subsistence value for tribes.

Base Resource Assessment:

The base resources for this activity are described in the Protected Species Research and Management base narrative.

Schedules and Milestones:

FY 2014 – 2018:

- Solicit and review Species Recovery Grant proposals submitted by states and tribes for conservation and recovery activities.
- Develop additional Section 6 agreements with states and territories.
- Update the U.S. Fish and Wildlife Service Recovery Online Activity Reporting System and the Species Recovery Grants Tracking Database.

Deliverables:

FY 2014 – 2018:

- Implement recovery actions identified in recovery plans to prevent species extinction.
- Complete updates to Recovery Online Activity Reporting System and Species Recovery Grants Tracking Database.

Performance Goals and Measurement Data:

Performance Measure: Number of priority recovery actions being addressed through Species Recovery Grants	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	99	99	99	99	99
Without Increase	14	14	14	14	14	14	14
<p>Description: Funding may support recovery actions for any of the listed species under NMFS jurisdiction, with the exclusion of Pacific salmonids.</p> <p>Note: NMFS has established an online database for use by agency personnel monitoring grant performance to enter successfully completed priority recovery actions. This monitoring and reporting will assist NMFS to more accurately track and evaluate species progress to recovery. In the past an assumption of \$200K per priority recovery action has applied and is based on prior year activities.</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Species Recovery Grants

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	15,003
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	15,003

Marine Mammals: West Coast Proposal: (Base Funding: \$50,187,000 and 163 FTE: Program Change: -\$7,000 and 0 FTE): NOAA requests a decrease of \$7,000 and 0 FTE for a total of \$45,039,000 and 161 FTE to reconfigure NMFS's Southwest and Northwest Regional Offices into a single West Coast Regional Office, and to close the Pacific Grove Laboratory in California.

NOAA requests a decrease of \$5,000,000 and 27 FTE in several NOAA programs as part of the President's efforts to find efficiencies and savings in a constrained fiscal environment. These efficiencies will be achieved, by reducing program activities and reconfiguring the West Coast Regional Offices, closing a science lab and eliminating support for a specific survey and assessment, as well as a research program. The various budget lines affected by this proposal are identified below and will be discussed throughout the Congressional Justification in budget order.

The proposal includes reductions in following budget lines:

Protected Resources Research and Management	-\$2,591,000	page NMFS - 18
Marine Mammals	-\$ 7,000	current page
Pacific Salmon	-\$ 484,000	page NMSF - 44
Fisheries Research and Management	-\$1,460,000	page NMFS - 68
Expand Annual Stock Assessments	-\$ 8,000	page NMFS - 77
<u>Information, Analysis, and Dissemination</u>	<u>-\$ 450,000</u>	<u>page NMFS - 163</u>
Total	-\$5,000,000	

Proposed Actions

The reduction in this PPA reflects saving from the closure of the Pacific Grove Laboratory. Marine Mammal funding has supported a limited amount of research on the influence of oceanographic processes on top predator distribution and community structure in the lab. NMFS will continue to support marine mammals through the La Jolla and Santa Cruz labs. The closure of the Pacific Grove Laboratory will result in administrative efficiencies and the savings proposed above.

West Coast Proposal:

A reduction of \$5,000,000 million is requested to reduce lower value program activities and reconfigure NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office; eliminate the Puget Sound ecosystem surveys and assessments; close the Pacific Grove Laboratory in California; and end the Northwest Fishery Science Center's support for the Newport Seawater Research program at the Newport Laboratory in Oregon. NMFS' reconfiguration of the Northwest and Southwest Regional offices will result in the elimination of up to 20 staff including one Regional Administrator and one Deputy Regional Administrator. The geographic distribution of the remaining staff will be driven by programmatic needs. As part of eliminating the Puget Sound ecosystem survey, NMFS would lay up the small vessel, *R/V Harold Streeter*, and eliminate approximately four staff. Laying up this vessel would eliminate costs in operating and maintenance of this vessel. With closure of the Pacific Grove Laboratory, programmatic functions would be maintained by relocating staff to the Santa Cruz and La Jolla Laboratories. Both Santa Cruz and La Jolla are larger and more modern facilities that can accommodate the additional programs currently conducted at Pacific Grove. Approximately three staff may be eliminated instead of transferring to Santa Cruz and La Jolla. Because the Northwest Fisheries Science Center would no longer support the Newport Seawater Research Program, staff currently working on this program would be relocated to the Manchester Laboratory in Washington State.

The reconfiguration of the West Coast regional offices will result in a leaner management structure and reduction in staff capacity, while the proposed facilities changes will reduce NMFS's physical footprint and associated costs over time. These changes reflect NOAA's efforts to focus its limited resources on its highest priority mission functions and reduce costs to the greatest possible extent.

Base Resource Assessment:

The base resources for activities associated with these reductions are described in the Protected Resources Research and Management base narrative.

Schedule and Milestones:

N/A

Deliverables:

N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Marine Mammals: West Coast Proposal

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	(7)
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(7)

Marine Mammals: Prescott Grants Program (Base Funding: \$3,999,000 and 2 FTE: Program Change: -\$3,999,000 and -2 FTE): NOAA requests an decrease of \$3,999,000 and 2 FTE for a total of \$0 and 0 FTE to terminate funding for the John H. Prescott Marine Mammal Rescue Assistance Grant program.

Proposed Actions:

This reduction will eliminate funding for the John H. Prescott Marine Mammal Rescue Assistance Grant program. The Prescott Grant Program provides grants to stranding network organizations to rescue, rehabilitate, or investigate sick, injured or distressed live marine mammals and to determine the cause of death or disease in dead marine mammals. NOAA will continue to provide coordination support and guidance to the stranding network through the Protected Species Research and Management Base program.

Base Resource Assessment:

The base resources for this activity are described in the Protect Species Research and Management base narrative.

Schedule and Milestones:

FY 2014 – 2018:

- Administer the remaining FY 2012 and FY 2013 Prescott Grant awards whose period of performance is for FY 2014.

Deliverables:

FY 2014 – 2018:

- Close out the FY 2012 Prescott Grant awards.
- Process changes to FY 2012 and FY 2013 Prescott Grant awards including: budget modification and no-cost extensions.
- FY2012 and FY2013 Prescott Grant recipients whose period of performance includes FY2014 will continue to receive Prescott grant funds to respond to marine mammal stranding and collect data on diseases and causes of strandings.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Respond to known strandings in a timely manner and collect data on diseases, cause of death and injuries							
With Decrease	N/A	N/A	33%	17%	4%	0%	0%
Without Decrease	32%	33%	33%	33%	33%	33%	33%

Description: Percentage of stranding network organizations that have Prescott Grants to improve their rapid response and examination of stranded marine mammals. Rapid responses enable a higher probability of decreasing pain and suffering, saving individuals, and determining cause of death, type of disease, and other types of injuries.

Note: The FY 2013 Prescott program grants will provide some funding for effort during FY 2014 and beyond depending on the type and length of award.

Performance Measure: Rapid first response and further examination in Navy training ranges	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	4/5	2/5	1/5	0/5	0/5
Without Decrease	4/5	4/5	4/5	4/5	4/5	4/5	4/5
<p>Description: The US Navy has five training ranges that have letters of authorization to take or harass marine mammals. Examples of actions that may take/harass marine mammals include high frequency sonar and explosive detonations. This performance measure indicates the number of US Navy training ranges that have at least one stranding network participant funded by the Prescott Grant Program to improve their ability for rapid response and further examination when strandings occur during Navy Training Exercises.</p> <p>Note: The FY 2013 Prescott program grants will provide some funding for FY 2014 and beyond depending on the type and length of award.</p>							

Performance Measure: Percent detection of Unusual Mortality Events	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	35	20	5	0	0
Without Decrease	35	35	35	35	35	35	35
<p>Description: Percent of the coast with Prescott Grant funded stranding coverage in the contiguous states along the Pacific, Atlantic, and Gulf of Mexico that enables detection of Unusual Mortality Events.</p> <p>Note: The FY 2013 Prescott program grants will provide some funding for effort during FY 2014 and beyond depending on the type and length of award.</p>							

PROGRAM CHANGE PERSONNEL DETAIL

Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Marine Mammals: Prescott Grants Program

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Fishery Biologist	Silver Spring, MD	ZP III	-0.5	62,467	(31,234)
Administrative Specialist	Silver Spring, MD	ZA III	-1	62,467	(62,467)
Subtotal			<u>-1.5</u>		<u>(93,701)</u>
2013 Pay Adjustment (0.5%)					<u>(469)</u>
Total					<u>(94,169)</u>
less Lapse		0%	<u>0</u>		<u>0.00</u>
Total full-time permanent (FTE)			-1.5		<u>(94,169)</u>
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(94,169)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-1.5
Other than full-time permanent	<u>0</u>
Total	-1.5
Authorized Positions:	
Full-time permanent	-1.5
Other than full-time permanent	<u>0</u>
Total	-1.5

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Marine Mammals: Prescott Grants Program

Object Class		2014 Decrease
11	Personnel compensation	
11.1	Full-time permanent	(94)
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	(94)
12	Civilian personnel benefits	(29)
13	Benefits for former personnel	0
21	Travel and transportation of persons	(5)
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	(1)
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	(5)
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	(3,865)
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	(3,999)

Marine Mammals: Marine Mammals (Base Funding: \$50,187,000 and 163 FTE: Program Change: -\$1,142,000 and 0 FTE: NOAA requests a decrease of \$1,142,000 and 0 FTE for Marine Mammals for a total of \$45,039,000 and 161 FTE.

Proposed Actions:

In the FY 2012, additional funds were provided for recovery and protection activities related to Hawaiian monk seals. The additional funds were used to conduct limited population assessment and survival enhancement activities in the Northwestern Hawaiian Islands (NWHI) and main Hawaiian Islands (MHI); analyze data and biological specimens in the program's archives; conduct additional education and outreach projects; initiate foraging and fisheries interactions research and mitigation studies; initiate behavioral research and mitigation programs for human-seal interactions, and hastened implementation of other recovery actions specified in the PEIS and Hawaiian monk seal recovery plan. This proposed reduction will allow for continued analysis of data and biological samples; monitoring of the MHI population; monk seal response in the MHI and NWHI; and education and outreach projects.

Base Resource Assessment:

The base resources for this activity are described in the Protect Species Research and Management base narrative.

Schedules and Milestones:

FY 2014 – FY2018

- Implement recovery actions identified in recovery plan to improve the status of Hawaiian monk seals.
- Provide technical assistance, consultation, and authorization services for all federal agencies' proposed actions (ESA Section 7).
- Conduct marine mammal stock assessments.

Deliverables:

FY 2014 – FY2018

- Conduct monk seal education and outreach projects.
- Prepare formal and informal consultation for other federal agencies.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Marine Mammals

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(1,142)
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,142)</u>

Marine Turtles: Marine Turtles (Base Funding: \$12,653,000 and 55 FTE: Program Change: -\$1,869,000 and 0 FTE): NOAA requests a decrease of \$1,869,000 and 0 FTE for Hawaiian Marine Turtles for a total of \$10,784,000 and 55 FTE across all Marine Turtle programs.

Proposed Actions:

In FY 2012,, additional funds were provided for recovery and protection activities related to Hawaiian sea turtles. The FY 2014 President's Budget provides funding for recovery activities, such as interagency consultation and technical assistance on marine turtle bycatch reduction strategies; cooperative conservation actions with Hawaii, Territories of America Samoa and Guam, the Commonwealth of the Northern Mariana Islands, and foreign nations; and marine turtle stock assessments and limited scientific research projects.

Base Resource Assessment:

The base resources for this activity are described in the Protect Species Research and Management base narrative.

Schedules and Milestones:

- Provide technical assistance, consultation, and authorization services for all federal agencies' proposed actions (ESA Section 7).
- Evaluate effectiveness and recommend enforcement measures, modify existing regulations, and add protective measures to reduce marine turtle bycatch in fisheries.
- Promulgate ESA protective regulations.
- Participate in international and regional agreements to further the U.S. policy on marine turtle conservation.
- Conduct marine turtle stock assessments.

Deliverables:

- Implement recovery actions identified in recovery plans to improve the status of marine turtle populations.
- Reduce marine turtle bycatch in commercial and recreational fisheries.
- Improve abundance and fishery mortality estimates for marine turtles stocks in the Atlantic, Pacific, and the Gulf of Mexico to inform management decisions.
- Prepare formal and informal consultation for other Federal agencies.

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Marine Turtles

Object Class		2014 Decrease
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<u>0</u>
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	(935)
25.2	Other services	(934)
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<u>(1,869)</u>

Other Protected Species: Other Protected Species (Base Funding: \$6,696,000 and 33 FTE: Program Change: +\$568,000 and 0 FTE): NOAA requests an increase of \$568,000 and 0 FTEs for a total of \$7,264,000 and 33 FTE to augment its existing capability to support required Endangered Species Act (ESA) listing activities such as status reviews, development of recovery plans and protective regulations, and critical habitat designations.

Proposed Action:

With this proposed increase, NOAA will complete listing determinations for newly petitioned species; conduct post-listing activities (recovery plans, critical habitat designations, Section 4(d) rules) for several species that have been petitioned for listing; and monitor ongoing and completed recovery actions to better assess the effectiveness of its recovery program.

Any U.S. citizen or organization may petition NOAA to list a species as threatened or endangered, reclassify an already listed species, or revise designated critical habitat under the ESA. If warranted once a species is listed, NOAA is required by the ESA to designate critical habitat, develop a recovery plan and implement the protections of the ESA. When a species is listed as endangered, the ESA Section 9 take prohibitions are automatically extended. However, if the species is listed as threatened NOAA must issue separate protective regulations under Section 4(d) of the ESA in order to extend take prohibitions to the species. Implementation of recovery actions usually takes place after these activities conclude.

Statement of Need and Economic Benefits:

NMFS currently has jurisdiction over 94 threatened or endangered species, 66 species that have been proposed for listing, and 20 species that are candidates for listing under the ESA. An additional 58 species are the subject of listing petitions currently under review by NMFS.

There has been a significant increase in the number of species listed under the ESA in recent years, as well as an increase in the number of petitions to list species, which NOAA must analyze. The work required to analyze petitions and list new species impacts NOAA's ability to recover protected species already listed. In many cases, federal courts have directed NOAA to list species and designate critical habitat, as well as take other conservation measures. Responding to such court-ordered mandates, in addition to statutory requirements for listed species, has diverted staff and resources from existing conservation activities.

Base Resource Assessment:

The base resources for this activity are described in the Protect Species Research and Management base narrative.

Schedules and Milestones:

FY 2014 – 2018

- Complete ESA status reviews for candidate species.
- Compile public comment period for proposed species and make final listing determinations.
- Prepare ESA Section 4(d) rules for new species that are listed as threatened.
- Complete recovery plans for newly listed coral species.
- Designate critical habitat for newly listed species such as Atlantic sturgeon and corals.

Deliverables:

FY 2014 – 2018

- Publish *Federal Register* notices on 90 day petitions, and 12 month findings, and final listing determinations.
- Final Section 4(d) rules, recovery plans and critical habitat designations.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Other Protected Species

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	568
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> 568

Atlantic Salmon: Atlantic Salmon (Base Funding: \$5,677,000 and 27 FTE: Program Change: \$406,000 and 0 FTE): NOAA requests an increase of \$406,000 and 0 FTE for a total of \$6,083,000 and 27 FTE for the conservation and recovery of Atlantic salmon. The funds will be used to support ongoing projects that address fish passage barriers, restore habitat, and study major threats to Atlantic salmon. Activities that NMFS will implement with Atlantic salmon funds include conducting estuarine and early marine survival assessments using telemetry to better assess movements and migrations patterns; undertake hatchery evaluation studies to condition fish to increase predator avoidance behavior; study diseases to minimize disease and parasite transition from farmed fish to wild fish; and research the development of hydroacoustic techniques to monitor smolts and estimate abundance. All these activities will enable the effective conservation and protection of Atlantic salmon by NOAA.

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Atlantic Salmon

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	406
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> 406

Pacific Salmon: Pacific Salmon (Base Funding: \$60,222,000 and 359 FTE: Program Change: -\$347,000 and 0 FTE): NOAA requests a decrease of \$347,000 and 0 FTE for a total of \$59,391,000 and 357 FTE for ESA Pacific salmon activities. At the level requested, NOAA will meet existing requirements for Endangered Species Act (ESA) interagency technical assistance related to Pacific salmon in the Western United States, including completion of formal and informal Section 7 Consultations and Biological Opinions. NOAA will also continue to support the recovery of Pacific salmon through the Pacific Coastal Salmon Recovery Fund.

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Pacific Salmon

Object Class		2014 Decrease
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<u>0</u>
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	(347)
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<u>(347)</u>

Pacific Salmon: West Coast Proposal: (Base Funding: \$60,222,000 and 359 FTE: Program Change: -\$484,000 and -2 FTE): NOAA requests a decrease of \$484,000 and 2 FTE for a total of \$59,391,000 and 357 FTE in Pacific Salmon to reconfigure NMFS's Southwest and Northwest Regional Offices into a single West Coast Regional Office and eliminate support for Puget Sound ecosystem surveys and assessments.

NOAA requests a decrease of \$5,000,000 and 27 FTE in several NOAA programs as part of the President's efforts to find efficiencies and savings in a constrained fiscal environment. These efficiencies will be achieved by reducing program activities and reconfiguring the West Coast Regional Offices, closing a science lab and eliminating support for a specific survey and assessment, as well as a research program. The various budget lines affected by this proposal are identified below and will be discussed throughout the Congressional Justification in budget order.

The proposal includes reductions in following budget lines:

Protected Resources Research and Management	-\$2,591,000	page NMFS - 18
Marine Mammals	-\$ 7,000	page NMFS - 26
Pacific Salmon	-\$ 484,000	current page
Fisheries Research and Management	-\$1,460,000	page NMFS - 68
Expand Annual Stock Assessments	-\$ 8,000	page NMFS - 77
<u>Information, Analysis, and Dissemination</u>	<u>-\$ 450,000</u>	<u>page NMFS - 163</u>
Total	-\$5,000,000	

Proposed Actions

Under this part of the proposal, NMFS will eliminate salmon research funding for the Newport Seawater Research program at the Newport Laboratory in Oregon. Salmon research will continue within other west coast research programs.

West Coast Proposal:

A reduction of \$5.0 million is requested to reduce lower value program activities and reconfigure NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office; eliminate the Puget Sound ecosystem surveys and assessments; close the Pacific Grove Laboratory in California; and end the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon. NMFS' reconfiguration of the Northwest and Southwest Regional offices will result in the elimination of up to 27 staff including one Regional Administrator and one Deputy Regional Administrator. The geographic distribution of the remaining staff will be driven by programmatic needs. As part of eliminating the Puget Sound ecosystem survey, NMFS would lay up the small vessel, *R/V Harold Streeter*, and eliminate approximately four staff. Laying up this vessel would eliminate costs in operating and maintenance of this vessel. With closure of the Pacific Grove Laboratory, programmatic functions would be maintained by relocating staff to the Santa Cruz and La Jolla Laboratories. Both Santa Cruz and La Jolla are larger and more modern facilities that can accommodate the additional programs currently conducted at Pacific Grove. Approximately three staff may be eliminated instead of transferring to Santa Cruz and La Jolla. Because the Northwest Fisheries Science Center would no longer support the Newport Seawater Research Program, staff currently working on this program would be relocated to the Manchester Laboratory in Washington State.

The reconfiguration of the West Coast regional offices will result in a leaner management structure and reduction in staff capacity, while the proposed facilities changes will reduce NMFS's physical footprint and associated costs over time. These changes reflect NOAA's

efforts to focus its limited resources on its highest priority mission functions and reduce costs to the greatest possible extent.

Base Resource Assessment:

The base resources for activities associated with these reductions are described in the Protected Resources Research and Management base narrative.

Schedule and Milestones:

- The excess and disposal of the Pacific Grove Facility should begin in FY 2013, as NMFS will need to continue to pay utility costs at the vacated facility pending GSA disposal.
- The Puget Sound ecosystem surveys and assessments and the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon will end in FY 2014.

Deliverables:

N/A

PROGRAM CHANGE PERSONNEL DETAIL

Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Pacific Salmon: West Coast Proposal

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Director, Regional Office	TBD	SES	0	170,000	0
Deputy Director, Regional Office	TBD	ZP-V	0	113,735	0
Various titles	TBD	Various	-2	116,093	(232,186)
Subtotal			<u>-2</u>		<u>(232,186)</u>
2013 Pay Adjustment (0.5%)					<u>(1,161)</u>
Total					<u>(233,347)</u>
less Lapse		0%	<u>0</u>		<u>0.00</u>
Total full-time permanent (FTE)			<u>-2</u>		<u>(233,347)</u>
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(233,347)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-2
Other than full-time permanent	<u>0</u>
Total	-2

Authorized Positions:

Full-time permanent	-2
Other than full-time permanent	<u>0</u>
Total	-2

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Marine Fisheries Service
Sub-program: Protected Species Research and Management
Program Change: Pacific Salmon

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$(233)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(233)
12 Civilian personnel benefits	(70)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	(181)
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(484)

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUB-PROGRAM: FISHERIES RESEARCH AND MANAGEMENT

The Fisheries Research and Management sub-program base funding encompasses many of the scientific and management activities that enable NMFS to be effective stewards of living marine resources by using an ecosystem-based approach, for the benefit of the Nation.

Managing the Nation's marine fisheries at sustainable harvest rates and rebuilding depleted fish stocks requires the best available scientific information to implement sound management and conservation actions. Together, NMFS's science quality assurance activities and a rigorous peer review program ensure that management decisions are based on the highest quality scientific information of the fisheries. This includes species' responses to environmental changes, species interactions, and fishing and other human activities that affect species and their habitat. Social, cultural, and economic behaviors and incentives that influence interactions between humans and marine fisheries are also addressed.

NMFS and the eight regional Fishery Management Councils develop fishery management plans and regulations through an adaptive public process for sustainable management of fisheries, using the best available science. The regulatory process involves extensive analysis of alternatives to meet a number of statutory requirements. The sub-program also supports key partners, such as the interstate marine fishery commissions and States that manage many of the same fish stocks within state waters and therefore contribute to the sustainable fishery outcomes for which NMFS is responsible.

Fisheries Research and Management Programs:

Under the authority of the Magnuson-Stevens Act (MSA), and other fisheries legislation, the Fisheries Research and Management Program budget line supports activities and staff working on preventing and eliminating overfishing and rebuilding overfished stocks. This is essential to ensuring biological sustainability and to increasing long-term economic and social sustainability of fisheries. The funds are used to coordinate with other NOAA programs to deliver products and services, including basic and applied science for the analysis and decision-making that support ecosystem approaches to fisheries management, fishery management plans and regulatory implementation, and enforcement to ensure compliance with regulations. Major components of this line include:

- *Annual Catch Limits (ACLs) and Accountability Measures (AMs), Peer Reviews, and Stipends:* Overfishing has a detrimental impact on the ecological and economic sustainability of fisheries, negatively affecting fishing communities, industry and recreational interests and other marine resources. In accordance with MSA requirements, ACLs and AMs are now implemented in all fisheries. The Councils use the funds to develop amendments to their Fishery Management Plans (FMPs), and to track the progress that implementation of ACLs and AMs has made toward preventing and ending overfishing. The six NMFS Regions and the Atlantic Highly Migratory Species Division monitor ACLs and AMs, process and analyze catch data, and report annual data for national performance monitoring. Analysis of this data will determine management action and lead to the development or improvement of ACL management systems. In addition, this base activity supports independent and authoritative reviews of fisheries science and recommendations necessary for the management of marine fisheries resources using the best available science, as specified in the MSA.

- *International Requirements of the Magnuson-Stevens Reauthorization Act (MSA)*: The international requirements of the MSA includes participation and leadership for international obligations under the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean as mandated by the reauthorized MSA. This program also allows NOAA to provide leadership for the U.S. delegation to the Western and Central Pacific Fisheries Commission (WCPFC). The WCPFC is responsible for the conservation and management of highly migratory fish stocks in the Western and Central Pacific Ocean.
- *Illegal, Unreported, Unregulated (IUU)*: NMFS publishes a biannual report identifying nations whose vessels are engaging in Illegal, Unreported, Unregulated (IUU) fishing. The identification of these nations opens the way for continued consultations between the U.S. Government and officials of these nations to take corrective action to stop IUU fishing. NMFS activities include bycatch identification, consultation and certification procedures, and collection of data to support the identification, consultation and certification actions with nationals engaged in IUU/bycatch activities and governing Regional Fishery Management Organizations. In the event that any nation fails to take MSA-required actions, the Department of Commerce, working through NOAA and in coordination with the State Department, the U.S. Trade Representative, and other agencies, is required to take remedial steps. Such actions could lead to the eventual implementation of fishery- product trade prohibitions.
- *Recreational Fisheries Engagement and Information*: NOAA is currently implementing the Recreational Fisheries Engagement Initiative to establish a strong and trusting relationship with the recreational fishing community by listening to anglers, taking action to address critical issues of concern, following through on commitments, and empowering anglers to be responsible stewards and resource users. Continued discussions have resulted in specific tasks outlined in the national and subsequent regional Action Agendas. The Engagement Initiative and Action Agendas are fundamental to improving our conservation and management of marine resources and increasing the positive economic impact of the recreational fishing industry. In addition, under MSA, NOAA established and implemented a regionally-based registry program for recreational fishermen and for-hire fishing vessels. NOAA has also developed an improved recreational fisheries statistics program that uses the new regional registries and incorporates more complete and reliable data, to the maximum extent feasible. Along with funds in Fisheries Statistics, this base funding is used to support the Marine Recreational Information Program's work to improve and expand NMFS's data collection efforts for monitoring recreational fisheries impacts. This is contributing significantly to improving relations with the recreational fishing community and improving Federal fisheries management.
- *Regulatory Streamlining Program*: The implementation of the Regulatory Streamlining Program (RSP) improves the quality and timeliness of regulatory processes and policy development for its Fishery Management Program through comprehensive impact analyses, full and timely consideration of all relevant issues, and compliance with all applicable laws and procedures. RSP enables NOAA to efficiently address policy issues with the Regional Fishery Management Councils early in the regulatory process, rather than later when it becomes difficult to comprehensively address a new and possibly contentious issue.

- *Regional Fishery Management Councils:* All eight Regional Fishery Management Councils and six NMFS regions receive support to frontload development, analysis, evaluation, and implementation of fishery management actions. Deliverables include fishery management plans, plan amendments, implementation regulations (proposed and final rules), annual harvest specifications, and in-season management actions. NOAA assists in the development, review, and implementation of Council-proposed actions. NMFS staff assist Councils' efforts by facilitating and expediting Secretarial approval and implementation of Fishery Management Plans and amendments, and preparing analytical documents in support of rulemaking.
- *Marine National Monuments:* Funds are used to sustainably manage three Marine National Monuments in the Pacific Ocean. These Monuments encompass nearly 200,000 square miles and together represent the largest marine reserve in the world. This requires that NOAA conduct fisheries and living marine ecosystem observation and monitoring, develop a management plan and monument advisory council, conserve Essential Fish Habitat designations, and consult on protected species.
- *Pelagic Fisheries Research:* NOAA collaborates with academic and research institutions that provide resources and opportunities relevant to NOAA's mission, but generally extend beyond the agency's own capacities. Projects under this program are determined via a competitive proposal process. Examples of previously funded projects include: research to improve the assessments of tuna and billfish populations in the Pacific; studies on the biology and ecology of sea turtles, seabirds, sharks and other non-target key open ocean ecosystem inhabitants that interact with or are incidentally taken in these fisheries; research on essential habitat for open ocean animals; and studies on fisheries economics and socio- cultural profiles of the Pacific Islands region fishing communities.
- *West Coast Groundfish Management and Research:* The West Coast groundfish program provides the key science support needed for management of over 80 fish stocks along the coasts of Washington, Oregon, and California. The full-service program conducts resource surveys to track trends in fish abundance; manages the coastwide observer program; conducts needed biological studies on fish habitat, bycatch, and other pertinent issues; and prepares stock assessments that provide the information needed to track rebuilding of six stocks and to guide sustainable catch levels for all stocks.
- *Atlantic Bluefin Tuna Observer Coverage:* These funds support observer coverage of the pelagic longline fishery in the Gulf of Mexico where Atlantic bluefin tuna (ABFT) are incidentally caught. ABFT is an extremely valuable and severely overfished stock, and while a rebuilding plan has been in place since 1999, management measures have yet to result in rebuilding the stock. Observers have been trained in documenting ABFT bycatch, collecting and preserving biological samples, and evaluating the performance of commercial and experimental fishing gear in reducing ABFT bycatch.
- *Regional Science and Operations:* These funds are used to support core survey and stock assessment activities in Alaska. These activities include groundfish survey and stock assessment personnel, as well as groundfish age and growth program, charters for survey vessels, fuel, supplies and gear. All of these basic components provide information on current Alaskan groundfish stock status for use by NMFS and the North Pacific Council in determining annual catch quotas. Funds are used internally and for competitive contracts in the case of charter survey vessels. Funds are also used support

implementation of fishery management plans, amendments, and regulations for managing the commercial fisheries in the EEZ off Alaska, and commercial, subsistence, and recreational halibut fisheries in U.S. Convention waters off Alaska, as well as the operational inseason management of fisheries under Federal management. In addition, funds are used for the identification of Essential Fish Habitat (EFH) affected by fishery management actions and environmental review of non-fishing related activities that may adversely affect habitat described as EFH or other habitats for living marine resources.

- *Charters in Lieu of COBB*: These funds provide charter vessel support for the NMFS Alaska Fisheries Science Center's fishery-independent surveys, habitat assessments, longstanding marine mammal research, and logistical support of the Little Port Walter remote field station in Southeast Alaska. These funds are necessary since the NOAA ship *John N. Cobb* was retired in 2008.
- *Pacific Islands Region/Center*: Funds are included to support effective science-based fishery management decisions and advance peer-reviewed ecosystem science within the Pacific Islands. Furthermore, this base funding enhances the ability of NOAA and the Western Pacific Council to deliver timely, accurate advice and scientific input to inquiries from NMFS and other stakeholders.

National Catch Share Program:

"Catch share" is a general term for several fishery management strategies that allocate a specific portion of the total allowable fishery catch to individuals, cooperatives, communities, or other entities. Each recipient of a catch share is directly accountable to cease fishing when its specific quota is reached. The term includes specific programs defined in law such as limited access privilege (LAP) and individual fishing quota (IFQ) programs.

Catch share management provides a tool to improve the economic and ecological quality of certain fisheries. A number of U.S. fisheries are under-performing biologically and economically and require the consideration of additional tools to improve management effectiveness. While this management strategy is not new, Congress, in its 2006 amendments to the MSA, and national experts, have recognized that catch shares are an important management tool that should be available for use in any fishery. In November 2010, NOAA released its Catch Share Policy, which encourages the consideration and adoption of catch share programs. Catch share programs have been used in the United States since 1990 and now include 15 different fisheries from Alaska to Florida managed by six different Councils. Additional fisheries are in the process of considering catch share programs as part of their management plans. Both here and in other countries catch shares have shown they can effectively achieve annual catch limits, reduce the negative biological and economic impacts of the "race for fish," and when properly designed can eliminate overfishing and result in safer and more profitable fisheries while also addressing other social objectives. Base funding supports:

- Activities and capabilities that support development of catch share programs. This category includes program management at the national and regional levels, improvements in fishery-dependent data collection systems to support future catch share programs, quality control on historic catch data to support individual or group allocations, fishery data management, social and economic data collection or analysis, and adjudication of administrative appeals by program participants.
- Implementation and operation of specific catch share programs, including NE Sectors, Pacific

Trawl ITQ, Gulf of Mexico Grouper/Tilefish, Alaska Halibut Sportfish and development and implementation of new programs currently being worked on by the Councils. Key implementation activities include support for management and enforcement staff, establishment of share accounting databases and reporting systems, identification of eligible participants, issuance of catch shares, and computation of annual quota for each participant. These activities need to be completed before fishermen begin fishing under the catch share program. The operational costs include program administration, at-sea and dockside monitoring, enforcement, and science evaluation. Some or all of the incremental operational costs for the catch share programs that meet the definition of a LAP program under the MSA can be recovered once the catch share program is operational. Agency cost recovery is capped at a maximum of three percent of the ex-vessel value of the fishery.

Expand Annual Stock Assessment (EASA):

One of NMFS's core functions is to provide accurate and timely assessments of fish and shellfish stocks that support commercial and recreational fisheries. This activity determines changes in abundance of fishery stocks in response to fishing, ecosystem and environmental factors, then forecasts future trends in stock abundance and sustainable fishery yield. These assessments provide the technical basis for fishery management decisions, such as setting ACLs to achieve optimum yield from the fishery while avoiding overfishing and ecosystem harm. Good assessments are a foundation for successful catch share programs.

These funds support major data collection efforts that include catch and biological data collected directly from the fisheries, fishery-independent surveys conducted on chartered vessels or NOAA Fishery Survey Vessels (FSVs), and processing of biological samples to determine fish age and growth. Typically, the fishery catch monitoring is a year-round continuous activity to monitor the total fishery catch, while the fishery-independent surveys are conducted annually to track changes in the abundance, distribution, and biological characteristics of the fish stocks. The funds also support the assessment scientists who analyze these data to produce the assessment results. Of the 230 stocks considered most important, NMFS has sufficient capacity to conduct enough new or updated assessments each year to maintain 132 of these stocks with adequate, timely information.

The Stock Assessment program achieves efficiency through increased standardization of methods and establishment of protocols for assessments, as well as development of advanced technologies for improved sampling and operations. Examples include: national working groups to share development efforts among all regions; widespread adoption of consistent assessment modeling software; and well-defined review processes to shorten time lag between assessment completion and management action. The program addresses a wide range of assessment activities, such as: baseline monitoring for minor stocks; adequate assessments with periodic updates for typical stocks in fisheries; high precision/high update frequency for highly important stocks; and ecosystem, climate, and habitat linkages for stocks that are particularly sensitive to these factors. Ecosystem studies include EASA support for the Fisheries and the Environment projects (see Fishery Oceanography program) and for the Habitat Assessment Improvement Plan.

Economics and Social Science Research:

NMFS economists and social scientists conduct legislatively-mandated (e.g., NEPA and MSA) economic and social analysis for almost 300 rulemakings each year. Underpinning these assessments are a broad range of socioeconomic data collection, modeling, and research activities, as well as the development of decision support tools. The NMFS Economics and Social Sciences Program addresses topics ranging from traditional fishery management issues

(effects of rebuilding programs, catch share programs and fishery allocation decisions) to emerging coastal and marine resource management issues such as marine spatial planning, ecosystem services trade-offs and valuation, and community resiliency.

Research and assessments undertaken by the Program may be used to identify cost-minimizing solutions, which respects the hardship imposed on participants from regulations and establishes credibility with stakeholders. The program enables NOAA to better respond to community needs, identify and provide market incentives that achieve management goals, and use information to achieve more sustainable marine ecosystems. Specifically, this capability enables NOAA to: a) develop indicators describing the status and trends of catch share fishery and non-catch share fishery participants, shoreside firms and fishing communities that help prevent economic and social hardship as well as detect it early on; b) assess the benefits/cost-effectiveness of fisheries' rebuilding programs and habitat restoration in an integrated ecosystem framework; c) assess the economic and social impacts of management options and current policies on fishery participants, shoreside firms and coastal communities; and d) develop means by which to identify whether a catch share program has excessive market share, is mindful of potential harmful effects on fishing communities, and ensures fair and equitable allocations of harvest privileges.

Salmon Management Activities:

This base funding supports research and management activities associated with salmon not listed under the ESA. Funding for the Mitchell Act component supports the operations and maintenance of Columbia River hatcheries through grants and contracts to the states of Washington, Oregon, and Idaho, and the U.S. Fish and Wildlife Service to mitigate the loss of salmon on the Columbia and Snake Rivers.

The Pacific Salmon Treaty component funds NMFS and the states of Alaska, Washington, Oregon, and Idaho to provide personnel support to the Pacific Salmon Commission's technical committees and conduct a broad range of salmon stock assessment and fishery monitoring programs to produce information required to implement Pacific Salmon Treaty provisions. These programs are carried out in fisheries and rivers located from Southeast Alaska to Oregon, including the Columbia River.

Regional Councils and Fisheries Commissions:

NOAA is the sole source of funding for the eight Regional Fishery Management Councils. The Councils were established by the MSA to prepare fishery management plans for the Nation's fisheries for approval by the Secretary of Commerce. The funding is divided among the eight councils and is used for their operating costs such as staff costs, rent, public meeting costs, council member salaries, and travel. It also supports the Interstate Fish Commissions and their related activities. Council members are appointed and consist of members from state governments, industry, and academia.

- **International Fisheries Commissions:** This project was established in 1993 to meet U.S. obligations regarding joint enhancement efforts on the Transboundary River system as specified in the U.S.-Canada Agreement Relating to the Pacific Salmon Treaty. The program involves supplementing the number of sockeye salmon available to fishermen by increasing fry production from several Transboundary Lakes through hatchery incubation in the United States. The program utilizes otolith mass marking to identify these hatchery fish as a means to monitor the program and to aid in the management of fisheries targeting the Transboundary River stocks. The three Interstate Marine Fishery

Commissions are critical to managing and conserving our shared coastal fisheries within the first three miles of the Nation's coastline.

- Interstate Marine Fisheries Commissions:
 - The Atlantic States Marine Fisheries Commission was formed by the Atlantic coastal states in 1942 for the promotion and protection of coastal fishery resources. The 15 member states of the Commission are: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida. The States and NOAA Fisheries Service work together using the Striped Bass Conservation Act and the Atlantic Coastal Fisheries Cooperative Management Act to sustain Atlantic coastal resources.
 - The Gulf States Marine Fisheries Commission (GSMFC) is an organization of five states (Texas, Louisiana, Mississippi, Alabama, and Florida), whose principal objectives are the conservation, development, and full utilization of the fishery resources of the Gulf of Mexico, to provide food, employment, income, and recreation to the Nation.
 - The Pacific States Marine Fisheries Commission's primary goal is to promote and support policies and actions to conserve, develop, and manage our fishery resources in California, Oregon, Washington, Idaho and Alaska.

Fisheries Statistics:

Accurate data and reliable statistics on fishing effort and catch are essential for assessing impacts on fish stocks, as well as for monitoring fishing performance relative to fishery management targets. Funds are used to manage and conduct data collection, data processing, statistical analysis, information management, and statistical reporting activities for commercial and recreational fisheries. Specifically, funds support three functions: 1) statisticians, fishery biologists, economists, and information technology specialists in the regional science centers, regional offices, and headquarters offices; 2) the collection of biological data on commercial and recreational fishery catches in all regions through well-designed survey sampling programs and the continued development of electronic reporting systems that will deliver more timely landings data for commercial and for-hire fisheries; and 3) the Marine Recreational Information Program (MRIP).

The MRIP continues the development of the National Saltwater Angler Registry needed for conducting more accurate and efficient telephone or mail surveys of recreational fishing activities. In addition, the MRIP continues the development, testing, and implementation of improved survey designs for the monitoring and assessment of marine recreational fishing participation, fishing effort, and catch. Upgrading NMFS's data collection efforts for monitoring recreational fisheries impacts on stocks is important for improving relations with the recreational fishing community and improving Federal fisheries management.

Fish Information Networks:

The Fish Information Networks program supports several different State-Federal cooperative programs that coordinate data collection, data management, and information management activities, which are essential for accurate monitoring of commercial and recreational fishing impacts in each region. These cooperative programs collect data and manage information on fishing participation, fishing effort, and catch. They also help to collect fishery-dependent biological data that are needed for stock assessments, as well as some economic data that are essential for use in economic impact and valuation assessments for recreational fisheries. The programs included are:

- Atlantic States Marine Fisheries Commission, to help fund the Atlantic Coast Cooperative Statistics Program, which coordinates state and Federal fisheries statistics programs for the mid-Atlantic coast;
- Gulf of Mexico Fisheries Information Network, to coordinate state and Federal fisheries statistics programs for the Gulf of Mexico and the Atlantic coast of Florida;
- Alaska Fisheries Information Network, which supports the coordination of state and Federal commercial fisheries statistics work in Alaska;
- Pacific Fisheries Information Network, to coordinate state and Federal commercial fisheries statistics programs for both the Pacific and Western Pacific regions;
- Recreational Fisheries Information Network, which supplements cooperative recreational fisheries statistics and economics programs for the Atlantic, Gulf, and Pacific coasts;
- National Fisheries Information System, to coordinate cross-regional communication and planning efforts that enhance development of the regional networks while supporting improved national gathering and reporting of statistics on the status of U.S. fisheries; and
- Marine Fisheries Initiative (MARFIN), to operate a competitive grant program that provides financial assistance for research and development projects that optimize the use of fisheries in the Southeast region.

Survey and Monitoring Projects:

The science center survey and regional office fisheries monitoring activities are complementary to those conducted under the Expand Annual Stock Assessments (EASA) line. These activities support bluefin tuna tagging research, red snapper monitoring and research, west coast groundfish surveys, Alaska extended jurisdiction programs, Maine and New Hampshire inshore trawl surveys, Chesapeake Bay multi-species surveys and research, Bering Sea Pollock Research, and Gulf of Maine groundfish assessment, to name a few. These targeted surveys and biological investigations improve the information available to conduct accurate stock assessments and directly contribute to the Percentage of Fish Stocks with Adequate Population Assessments and Forecasts performance measure.

Fisheries Oceanography:

NMFS's resource management focuses on the connectivity of managed living resources with their predators and their prey, their habitats, and the effects of environmental variation within a determined ecosystem. Humans are also considered to be part of these ecosystems. The ecosystem approach to management relies upon research and analyses that integrate biological, socioeconomic, environmental, and oceanographic data into predictive models that improve the Nation's forecasting capabilities for resource management. NMFS's use of an ecosystem-based approach increases the ability to make scientifically sound management decisions that are less prone to risk and more likely to succeed. Improved scientific analyses ensure that constituents receive the most accurate and complete analyses, thereby fostering a constructive public stewardship process. Fisheries Oceanography funds are distributed between two programs; Fisheries and the Environment, and Integrated Ecosystem Assessment.

Fisheries and the Environment (FATE) is a research program to advance the understanding of environmental impacts on living marine resources for improving information available to stock and ecosystem assessments. FATE projects analyze the response of living marine resources to environmental change, including the development of ecosystem indicators, construction of

new forecasting models, and development of techniques to incorporate ecosystem indicators into stock or ecosystem assessments.

The Integrated Ecosystem Assessment (IEA) program offers a mechanism to enhance advice for better managing the Nation's resources and achieve economic and societal objectives. Building upon research conducted under other programs, like FATE, IEAs are a dynamic, iterative, and adaptive process that includes the analysis of diverse ecosystem information to manage and conserve essential parts of an ecosystem and ecosystem processes.

American Fisheries Act:

The American Fisheries Act (AFA) requires a suite of management measures that fall into four general categories: (1) regulations that limit access into the fishing and processing sectors of the Bering Sea and Aleutian Islands (BSAI) pollock fishery and that allocate pollock to such sectors; (2) regulations governing the formation and operation of fishery cooperatives in the BSAI pollock fishery; (3) regulations to protect other fisheries from spillover effects from the AFA; and, (4) regulations governing catch measurement and monitoring in the BSAI pollock fishery.

National Standard 8:

The Magnuson-Stevens Act requires all fishery management plans include a fishery impact statement intended to assess, specify, and describe the likely effects of the measures on fishermen and fishing communities (§303(a)). When establishing any new regulations, the cultural and social framework relevant to the fishery and any affected fishing communities (§303(b)(6)) must be taken into account. Values obtained from analyses may also be used for assessing the costs and benefits derived from stock rebuilding programs, protected species recovery efforts and habitat restoration and recovery efforts.

Reducing Bycatch:

National Standard 9 of the MSA requires that "conservation and management measures shall, to the extent practicable, minimize bycatch and to the extent bycatch cannot be avoided minimize the mortality of such bycatch." This funding supports the collection of observer information on bycatch of overfished stocks, marine mammals, sea turtles, seabirds and other protected species, and data on fishing practices and gears that contribute to bycatch. These data are used to develop new gear technologies that reduce the bycatch and bycatch mortality of non-target species and can save fishing jobs by preventing fishery closures due to interactions with endangered species or attainment of strict bycatch quotas. Fisheries observers are required to monitor the effectiveness of bycatch reduction measures such as gear modifications or time/area closures. Information on bycatch of these critical species enhances the agency's ability to effectively manage and monitor their recovery.

Product Quality and Safety:

NMFS helps ensure that the Nation's seafood industry is economically sustainable and complies with food regulations. This is done through support for the National Seafood Inspection Laboratory that provides an analysis laboratory, data management, regulatory compliance risk analysis, and information transfer expertise to support the Department of Commerce's National Seafood Inspection Program. Voluntary services, such as sanitation evaluation, product inspection and certification, auditing of food quality and safety programs, and training are also part of the program. Approximately 10 percent of the seafood industry uses NOAA services, and 20 percent of the seafood consumed in the United States is processed by facilities that are inspected by the Program. This line also supports the economic sustainability of fishermen and

fishing communities through improvements in the fishing fleet and shoreside processing operations; and reductions in overcapacity in fisheries.

Schedule and Milestones:

Fisheries Management

- The Fish Stock Sustainability Index (FSSI), a performance measure for the sustainability of 230 U.S. fish stocks selected for their importance to commercial and recreational fisheries, will increase from 606 (FY 2012 actual) to 681 by the end of 2018.
- NMFS will address MSA mandates to implement IUU/Bycatch identification, monitoring, certification procedures, and reports to Congress, and engage in technical assistance to improve the capacity of other countries to conserve and manage living marine resources of mutual interest. (FY 2014 - FY 2018)
- NMFS will submit to Congress IUU/Bycatch Identification/ Certification Reports on a biennial basis. In the event of countries engaging in IUU or bycatch of protected living marine resources, the Program will coordinate with other government agencies to consider possible fishery-product trade prohibitions.

National Catch Share Program (FY 2014 - 2018)

- NMFS will continue to work with interested Regional Fishery Management Councils to develop and implement new catch share programs.
- NMFS will advance efforts to explore the use of technology to improve the cost effectiveness of catch share programs.

Fisheries Monitoring, Assessment and Forecasting (FY 2014 - 2018)

- Conduct fishery independent surveys to provide the information necessary to conduct stock assessments for commercially and recreationally important species.
- Continue to develop advanced technologies to enhance data collection for stock assessments and work towards operationalizing these technologies in the outyears.
- Improve the frequency of updating assessments for key stocks, provide adequate assessments for more FSSI stocks, conduct a baseline monitoring report for all managed fish stocks, and add next-generation assessments for selected stocks with high sensitivity to ecosystem conditions.
- Improve the quality of marine recreational fishery catch statistics by increasing the number of NMFS subregions with: improved registry-based telephone and mail surveys of recreational anglers for the collection of fishing effort data; improved shoreside surveys of recreational fishing trips for the collection of catch data; and, improved survey programs that include logbook reporting programs to provide catch and effort data for for-hire fisheries.
- NMFS will conduct non-market recreational fishery valuation surveys for recreationally important fish species.

Ecosystem Science (FY 2014 - 2018)

- Continue to provide Management Strategy Evaluations to resource managers for evolving constituent defined management issues in the California Current IEA.
- Develop and evaluate environmental indicators for improving stock assessments

and integrated ecosystem assessments.

Economics and Social Science (FY 2014 - 2018)

- Partner with state agencies and fishing commissions, as appropriate, to expand economic and social data collection programs.
- Predict the benefits and costs associated with specific stock rebuilding programs in commercial fisheries.
- Implement BLAST - an integrated Bioeconomic Length-structured Angler Simulation Tool for estimating benefits associated with a broad range of recreational fisheries management measures.
- Expand a Social Indicator Toolbox for assessing community resiliency and impacts of management measures.
- Assess the economic performance of catch share and non-catch share fisheries, providing results to improve fishery management and catch share program design features.

Deliverables:

Fisheries Management

- Support preventing and eliminating overfishing and rebuilding overfished stocks. This is essential to ensuring biological sustainability and to increasing long-term economic and social sustainability of fisheries.
- Coordinate with other NOAA programs to deliver products and services, including basic and applied science for the analysis and decision-making that support ecosystem approaches to fisheries management and enforcement to ensure compliance with regulations.
- Work within the legislative structure to implement international agreements, education and outreach.
- Development of fisheries regulations and Fisheries Management Plans and amendments in order to maintain and restore productive stocks important to commercial, recreational, tribal, and subsistence fisheries.
- Analysis and research to identify, consult and certify nations whose vessels engage in IUU fishing and bycatch of Protected Living Marine Resources (PLMR).
- Provide recommendations to the Secretary of Commerce, after coordination with other Federal agencies, on possible fishery-product trade prohibitions on nations whose vessels engage in IUU and bycatch of PLMRs.
- Implement and monitor a worldwide international technical assistance program, including use of bilateral and regional workshops, invitational travel to agency facilities and technology transfer to support domestic conservation and management objectives.
- Ensure the continuation of economically and ecologically sustainable fishing communities in a manner consistent with the goals of the MSA and each Council's fishery management plan objectives.

National Catch Share Program

- Implement electronic monitoring to reduce costs while maintaining data quality.
- Manage catch share programs as determined by Fishery Councils.
- Continue assessments of the economic and social impacts of catch share management options and current policies on fishery participants, firms, and communities.

Fisheries Monitoring, Assessment and Forecasting

- Continuation of fishery-independent surveys, including South Atlantic reef fish, to provide ongoing data for stock assessments
- Continued development of advanced technologies to survey fish stocks inhabiting rough terrain that cannot be surveyed with current methods.
- Initiate work on a next generation, comprehensive, standardization assessment modeling framework.
- Achieve more precise estimates of recreational catch through improved surveys.

Ecosystem Science

- Updated or new Management Strategy Evaluations (MSEs) delivered to resource managers from the California Current IEA.
- Delivery of environmental indicators and predicted impacts on managed species to appropriate stock assessment scientists and management councils through the FATE program.

Economics and Social Science

- Assessments of the benefits/cost-effectiveness of fisheries rebuilding programs and habitat and protected species recovery programs.
- Assessments of the economic and social impacts of management options and current policies on fishery participants, firms, and communities.
- Developed indicators describing the status and trends of fishery participants and shoreside firms and communities.
- Decision support tools and improved quantitative models for conducting benefit-cost analyses and predicting how fishery participants will respond to changes in management measures.

Performance Goals and Measurement Data:

Performance Measure: Fish Stock Sustainability Index (Measure 17a)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	606	617	645	663	671	676	681
Description: The FSSI tracks the rebuilding and maintaining of fish stocks at sustainable levels, along with critical components of NOAA’s efforts to achieve outcomes, such as managing fish harvest rates and increasing knowledge about the status of fish stocks. It is calculated by assigning a score between 0 and 4 to each of 230 stocks selected for their importance to commercial and recreational fisheries and then adding the scores together. For more information: http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm .							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percentage of Fish Stocks with Adequate Population Assessments and Forecasts (Measure 17b)	56.1% (129/230)	57.0% (131/230)	57.0% (131/230)	56.5% (130/230)	56.5% (130/230)	56.1% (129/230)	56.1% (129/230)
Description: This measure tracks the percentage of the 230 FSSI fish stocks for which adequate assessments are available to scientifically determine the impact of fishery management actions. To reach this standard, assessments must be based on quantitative information which is sufficient (defined as "Level 3" in the Fisheries Stock Assessment Improvement Plan (SAIP)) to determine current stock status (abundance and mortality relative to established reference levels), is no more than five years old, and can forecast stock status under different management scenarios.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of defined management needs, identified through the Integrated Ecosystem Assessment process, met by Management Strategy Evaluations (cumulative)	0	4	6	8	10	12	14
Description: This measure tracks the annual performance of Integrated Ecosystem Assessments (IEAs) by identifying the number of management needs, as defined by resource managers through the IEA process that are met by a Management Strategy Evaluation (MSE). MSEs are a formal approach using models and forecast scenarios, based on the best available science, to evaluate the benefits and risks (trade-offs) of proposed management actions on ecosystems (including the human component) and to inform management decisions.							

Performance Measure: Number of key objectives met by catch share programs	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	14	14	16	16	16	16	16
<p>Description: This measure tracks the number of key objectives met by catch share programs. The key objectives are:</p> <ul style="list-style-type: none"> Increased revenue per vessel (with catch share program)* Increased or full utilization of target species* Decreased bycatch* ACL not exceeded <p>Four key objectives are tracked for the four current catch share programs (NE groundfish sectors, NW groundfish trawl, GOM Snapper Grouper, Mid-Atlantic tilefish) therefore the total possible objectives to be met is 16.</p> <p>*Changes will be determined by comparing the performance under the catch share program with the average performance prior to implementation of the catch share program.</p>							

Performance Measure: Number of new catch share programs meeting all objectives	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	3	4	4	4	4	4	4
<p>Description: The four key objectives are expected outcomes of implementing catch share programs. By meeting these key objectives, the programs will demonstrate their success in improving the ecological and economic health of that fishery. More detailed information will be reported on a fishery- by-fishery basis when available.</p>							

Program Changes for FY 2014:

Fisheries Research and Management Programs: Teacher at Sea Program (Base Funding: \$450,000 and 0 FTE; Program Change: -\$450,000 and 0 FTE): NMFS requests a decrease of \$450,000 and 0 FTE as part of a government-wide plan to consolidate NOAA Science, Technology, Engineering, and Math (STEM) programs, including the Teacher at Sea Program, at the Department of Education and the National Science Foundation, thus terminating this program at NOAA.

Proposed Actions:

Scientists and engineers create many of the innovations that drive our Nation's global competitiveness. Our Nation's capacity to create and innovate must never be limited by a shortage of talent in science, and technology, engineering and mathematics (STEM) fields. To prepare our students for STEM jobs and other high-skilled careers, we must provide them with opportunities to learn and develop knowledge and competencies in these areas.

To meet future workforce needs, and to leverage their expertise and unique assets in support of STEM education, federal agencies have developed a range of education programs. In the absence of a single guiding plan, these efforts have proliferated over many years to include over 220 programs across 13 different agencies at an annual federal investment of almost \$3 billion. Many of these initiatives are not effectively aligned either to the needs of students or to national priorities, and this fragmented approach to investment has made it difficult to reform and improve Federal STEM education efforts. The Administration is proposing a comprehensive reorganization to facilitate a cohesive national strategy of STEM education programs to increase the impact of Federal investments in four areas: K-12 instruction; undergraduate education; graduate fellowships; and education activities that typically take place outside the classroom. The reorganization involves consolidating or restructuring 90 programs across 11 agencies and improving the delivery, impact, and visibility of STEM efforts. Nearly \$180 million will be redirected from consolidated programs to the Department of Education, the National Science Foundation (NSF), and the Smithsonian Institution to implement initiatives in the four core reform areas. The Administration will ensure that all science mission agencies have input into the development and implementation of these initiatives so that they align with agency goals while improving STEM education at all levels in a streamlined way.

The Department of Education will lead an initiative to improve K-12 STEM instruction by supporting partnerships between school districts and universities, science agencies, businesses, or other educational entities to transform teaching and learning. NSF will focus on improving the delivery of undergraduate STEM education through evidence-based approaches and reforming graduate fellowships so they reach more students and address national workforce needs. The Smithsonian Institution, which already has strong partnerships with several mission agencies, will improve the reach of federally-supported informal education activities, and help align those activities with State standards so that they are relevant to what students are learning in the classroom.

The Teacher at Sea Program provides authentic at-sea research experiences for kindergarten through college-level teachers by partnering them with NOAA scientists and effectively leveraging existing NOAA facilities, resources, research, and scientific platforms, including fisheries vessels, aircraft, and laboratories.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: Teacher at Sea Program

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	(150)
22 Transportation of things	(25)
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	(30)
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	(100)
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	(30)
31 Equipment	(35)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(80)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(450)

Fisheries Research and Management Programs (Base Funding: \$182,496,000 and 825 FTE: Program Change: -\$663,000 and 0 FTE): NOAA requests a decrease of \$663,000 and 0 FTE for a total of \$179,923,000 and 820 FTE for Fisheries Research and Management Programs.

Proposed Actions

NOAA requests a \$633,000 reduction that will be spread across all NMFS regional offices and Science Centers. NOAA has annual catch limits in place for all fisheries and NOAA anticipates that the regulatory workload at the Regional Fishery Management Councils will be reduced. Therefore, NMFS proposes to reduce funding to its fishery regulation and monitoring activities in all of the NMFS Regional Offices and Science Centers. NMFS staff and Councils will work closely together to ensure that adaptive fishery management actions can be put in place in a timely manner and that the effectiveness of catch monitoring efforts will be maintained.

With the FY 2014 request, NMFS regional offices will continue to work with the eight Regional Fishery Management Councils to manage more than 446 stocks, monitor annual catch limits (ACLs) to identify appropriate harvest levels, administer management programs through which ACLs are implemented, and collaborate on administering fishery management plans. The scientific activities that Fisheries Research and Management support enable NMFS to be effective stewards of living marine resources, using an ecosystem-based approach, for the benefit of the Nation. This in turn provides the scientific knowledge base for NMFS's Regional Offices, regional fishery management councils, interstate fishery commissions, and other agencies to facilitate informed marine resource management decisions for sustainable fisheries, aquaculture, protected resources, endangered species and habitat.

Base Resource Assessment:

The base resources for this activity are described in the Fisheries Research and Management base narrative.

Schedule and Milestones:

FY 2014 – 2018:

- Continue to support critical fisheries science activities in order to deliver applied science data and information necessary for decision-making supporting ecosystem approaches to fisheries management.
- Address MSA mandates to implement IUU/Bycatch identification, monitoring, certification procedures, and reports to Congress, and engage in technical assistance to improve the capacity of other countries to conserve and manage living marine resources of mutual interest.
- Coordinate with other government agencies to consider possible fishery-product trade prohibitions in response, if a country is identified as engaging in IUU or bycatch of protected living marine resources in the Biennial IUU/Bycatch Identification/ Certification Reports.

Deliverables:

FY 2014 – 2018:

- Support preventing and eliminating overfishing and rebuilding overfished stocks. This is essential to ensuring biological sustainability and to increasing long-term economic and social sustainability of fisheries.
- Coordinate with other NOAA programs to deliver products and services, including basic and applied science for the analysis and decision-making that support ecosystem approaches to fisheries management and enforcement to ensure compliance with regulations.

- Implement international agreements within our legislative framework and engage in outreach activities with our partners and stakeholders.
- Development of fisheries regulations and Fisheries Management Plans and amendments in order to maintain and restore productive stocks important to commercial, recreational, tribal, and subsistence fisheries.
- Provide for agency analysis and research to implement agency responsibilities to identify, consult, and certify nations whose vessels engage in IUU fishing and bycatch of Protected Living Marine Resources (PLMR).
- Provide recommendations to the Secretary of Commerce, after coordination with other Federal agencies, on possible fishery-product trade prohibitions on nations whose vessels engage in IUU and bycatch of PLMRs.
- Implement and monitor a worldwide international technical assistance program, including use of bilateral and regional workshops, invitational travel to agency facilities, and technology transfer to support agency domestic conservation and management objectives.
- Ensure the continuation of economically and ecologically sustainable fishing communities in a manner consistent with the goals of the MSA and each Council's fishery management plan objectives.

Performance Goals and Measurement Data:

Performance Measure: Fish Stock Sustainability Index (FSSI) (GPRA 17a)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With decrease	N/A	N/A	645	663	670	675	680
Without decrease	606	617	645	663	671	676	681
Description: The FSSI tracks the rebuilding and maintaining of fish stocks at sustainable levels, along with critical components of NOAA's efforts to achieve outcomes, such as managing fish harvest rates and increasing knowledge about the status of fish stocks. It is calculated by assigning a score between 0 and 4 to each of 230 stocks selected for their importance to commercial and recreational fisheries and then adding the scores together. For more information: http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm .							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: Fisheries Research and Management Programs

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(663)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(663)

Fisheries Research and Management Programs: West Coast Proposal: (Base Program: 182,496,000 and 825 FTE: Program Change: -\$1,460,000 and -5 FTE): NOAA requests a decrease of \$1,460,000 and 5 FTE for a total of \$179,923,000 and 820 FTE in the Fisheries Research and Management Program as part of the West Coast Proposal.

NOAA requests a decrease of \$5,000,000 and 27 FTE in several NOAA programs as part of the Administration's efforts to find efficiencies and savings in a constrained fiscal environment. These efficiencies will be achieved, by reducing program activities and reconfiguring the West Coast Regional Offices, closing a science lab and eliminating support for a specific survey and assessment, as well as a research program. The various budget lines affected by this proposal are identified below and will be discussed throughout the Congressional Justification in budget order.

The proposal includes reductions in following budget lines:

Protected Resources Research and Management	-\$2,591,000	page NMFS - 18
Marine Mammals	-\$ 7,000	page NMFS - 26
Pacific Salmon	-\$ 484,000	page NMFS - 44
Fisheries Research and Management	-\$1,460,000	current page
Expand Annual Stock Assessments	-\$ 8,000	page NMFS - 77
<u>Information, Analysis, and Dissemination</u>	<u>-\$ 450,000</u>	<u>page NMFS - 163</u>
Total	-\$5,000,000	

Proposed Actions

Under this part of the proposal, NOAA will: reconfigure NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office; close the Pacific Grove Laboratory in California; eliminate the Puget Sound ecosystem survey; and end the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon.

West Coast Proposal:

A reduction of \$5.0 million is requested to reduce lower value program activities and reconfigure NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office; eliminate the Puget Sound ecosystem surveys and assessments; close the Pacific Grove Laboratory in California; and end the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon. NMFS' reconfiguration of the Northwest and Southwest Regional offices will result in the elimination of up to 20 staff including one Regional Administrator and one Deputy Regional Administrator. The geographic distribution of the remaining staff will be driven by programmatic needs. As part of eliminating the Puget Sound ecosystem survey, NMFS would lay up the small vessel, R/V *Harold Streeter*, and eliminate approximately four staff. Laying up this vessel would eliminate costs in operating and maintenance of this vessel. With closure of the Pacific Grove Laboratory, programmatic functions would be maintained by relocating staff to the Santa Cruz and La Jolla Laboratories. Both Santa Cruz and La Jolla are larger and more modern facilities that can accommodate the additional programs currently conducted at Pacific Grove. Approximately three staff may be eliminated instead of transferring to Santa Cruz and La Jolla. Because the Northwest Fisheries Science Center would no longer support the Newport Seawater Research Program, staff currently working on this program would be relocated to the Manchester Laboratory in Washington State.

The reconfiguration of the West Coast regional offices will result in a leaner management structure and reduction in staff capacity, while the proposed facilities changes will reduce

NMFS's physical footprint and associated costs over time. These changes reflect NOAA's efforts to focus its limited resources on its highest priority mission functions and reduce costs to the greatest possible extent.

Base Resource Assessment:

The base resources for activities associated with these reductions are described in the Fisheries Research and Management narratives.

Schedule and Milestones:

- The Puget Sound ecosystem survey and the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon will end in FY 2014.
- The reconfiguration of the Northwest and Southwest Regional Offices will be implemented by October 2013.
- Lay up of small vessel R/V *Harold Streeter*
- The excess and disposal of the Pacific Grove Facility should begin in FY 2013, as NMFS will need to continue to pay utility costs at the vacated facility pending GSA disposal.

Deliverables:

N/A

PROGRAM CHANGE PERSONNEL DETAIL

Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: West Coast Proposal

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Director, Regional Office	TBD	SES	-0.17	170,000	(28,900)
Deputy Director, Regional Office	TBD	ZP-V	-0.17	113,735	(19,335)
Various titles	TBD	Various	-4.66	116,093	(540,993)
Subtotal			<u>-5</u>		<u>(589,228)</u>
2013 Pay Adjustment (0.5%)					<u>(2,946)</u>
Total					<u>(592,174)</u>
less Lapse		0%	<u>0</u>		<u>0.00</u>
Total full-time permanent (FTE)			<u>-5</u>		<u>(592,174)</u>
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(592,174)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-5
Other than full-time permanent	<u>0</u>
Total	-5
Authorized Positions:	
Full-time permanent	-5
Other than full-time permanent	<u>0</u>
Total	-5

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: West Coast Proposal

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	(592)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(592)
12 Civilian personnel benefits	(178)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	(592)
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(98)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(1,460)

National Catch Share Program: (Base Funding: \$28,352,000 and 17 FTE: Program Change: -\$106,000 and 0 FTE): NOAA requests a decrease of \$106,000 and 0 FTE for a total of \$28,246,000 and 17 FTE for the National Catch Share Program. The requested level is sufficient to support implementation and operation of specific catch share programs, including the Pacific Trawl Rationalization, Northeast Multispecies Sectors, Alaska Charter Halibut, and Gulf of Mexico Grouper/Tilefish programs. Funding is also sufficient to support development and implementation of new locally-supported programs currently being developed by the Councils. Continuing the requested level of funding is necessary to maximize stakeholder participation in the development of these programs and ensure these programs are designed in a way that achieves social and ecological goals. Activities supported by this budget line include analysis and evaluation of fisheries for catch share programs, the development of fishery management plans and regulations, observing and monitoring at sea and on shore for specific fisheries, and enforcement activities. It also continues to implement electronic log books, and maintains dockside data collection and management, including quota accounting and lien registry.

Catch share programs are one management option Councils can choose to meet their management objectives. Catch shares are not required or appropriate for every fishery. However, a well-designed catch share program can help to eliminate overfishing and achieve annual catch limits, produce more fish at lower costs, improve fishermen's safety and profits, and reduce the negative biological and economic effects of regulated fisheries that do not use catch share programs.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: National Catch Share Program

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	106
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	106

Expand Annual Stock Assessments: (Base Funding: \$64,356,000 and 145 FTE: Program Change: +\$4,911,000 and 0 FTE): NOAA requests an increase of \$4,911,000 and 0 FTE for a total of \$69,259,000 and 145 FTE to increase the number of stocks with adequate assessments, which help verify that overfishing is no longer occurring and safely allow optimum catch levels to support the sustainability and economic viability of fisheries.

Proposed Actions:

The requested funding will allow NMFS to increase the number of adequate assessments and enhance its capability to conduct improved and new fishery-independent surveys. NMFS will use state of the art technologies to estimate fish abundance in additional habitats. Activities in support of these new surveys will include:

- Foster expertise in advanced sampling technologies, such as acoustic and optical methods which can be used to concurrently sample multiple species;
- Implement existing advanced sampling technologies aboard NOAA's new FSVs, such as the ME70 multibeam sonar system;
- Design and implement new surveys that will use the best technologies, particularly acoustic and optical remote sensing, to measure fish abundance in currently unreachable habitats;
- Develop operational procedures to deploy sampling technologies on alternative platforms.

Statement of Need and Economic Benefits:

Fish stock assessments provide quantitative information on the abundance of fish stocks and the level of catch that can be sustained without harming the marine ecosystem. The role of fish stock assessments has been well-established. National Research Council studies and the Ocean Commission Report both found that a strong fishery stock assessment program is the foundation of successful management of commercial and recreational fisheries. Furthermore, the MSA, which mandated establishment by 2011 of annual catch limits (ACLs) in all fisheries to prevent overfishing, requires improved assessment capacity.

For many fish stocks, the incomplete scientific information from lack of adequate stock assessments forces fishery managers to set annual catch limit buffers in order to prevent overfishing, thus limiting fishing opportunity. . Smaller buffers can be implemented by increasing NMFS capabilities to conduct adequate stock assessments, thus increasing economic opportunities for fishing communities whose livelihood depends on the scientifically sound management of fisheries. The benefits of this program accrue to the American people because stock assessments are a key factor in rebuilding overfished fish stocks and maintaining them at a productive level.

Base Resource Assessment:

The base resources for this activity are described in the Fisheries Research and Management Programs base narrative.

Schedule and Milestones:

NMFS will:

- FY 2014: Conduct workshops and contract studies to evaluate advanced technologies most ready for transition to operations;
- FY 2015: Design new surveys for selected areas and target fish stocks (for example, reef fish off South Florida)
- FY 2016: Conduct surveys in the selected areas using the advanced technologies;

- FY 2017: Repeat the surveys and initiate assessment activities;
- FY 2018: Deliver initial assessment reports for stocks in the surveyed areas.

Deliverables:

- Survey design using advanced technologies;
- Stock survey results for key species found in the selected survey areas by 2017;
- Initial stock assessment reports by 2018.

Performance Goals and Measurement Data:

Performance Measure: Percentage of Fish Stocks with Adequate Assessments and Forecasts (Measure 17b)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	57.4% (132/230)	57.4% (132/230)	58.3% (134/230)	59.1% (136/230)	60.0% (138/230)
Without Increase	56.1% (129/230)	57.0% (131/230)	57.0% (131/230)	56.5% (130/230)	56.5% (130/230)	56.1% (129/230)	56.1% (129/230)
Description: This measure tracks the percentage of priority fish stocks for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as “Level III” by the Fisheries Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under different management scenarios. This measure covers the same 230 fish stocks tracked by the FSSI.							

Performance Measure: Fish Stock Sustainability Index (FSSI) (Measure 17a)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	645	663	675	684	690
Without Increase	606	617	645	663	671	676	681
Description: The FSSI tracks the rebuilding and maintaining of fish stocks at sustainable levels, along with critical components of NOAA’s efforts to achieve outcomes, such as managing fish harvest rates and increasing knowledge about the status of fish stocks. It is calculated by assigning a score between 0 and 4 to each of 230 stocks selected for their importance to commercial and recreational fisheries and then adding the scores together. For more information: http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm .							

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Fisheries Research & Management
Program Change: Expand Annual Stock Assessments

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	4,911
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<u>4,911</u>

Expand Annual Stock Assessments: West Coast Proposal: (Base Funding: \$64,356,000 and 145 FTE; Program Change: -\$8,000 and 0 FTE): NOAA requests a decrease of \$8,000 and 0 FTE for a total of \$69,259,000 and 145 FTE in the Expand Annual Stock Assessment program to reconfigure NMFS's Southwest and Northwest Regional Offices into a single West Coast Regional Office, and to close the Pacific Grove Laboratory in California.

NOAA requests a decrease of \$5,000,000 and 27 FTE in several NOAA programs as part of the Administration's efforts to find efficiencies and savings in a constrained fiscal environment. These efficiencies will be achieved, by reducing program activities and reconfiguring the West Coast Regional Offices, closing a science lab and eliminating support for a specific survey and assessment, as well as a research program. The various budget lines affected by this proposal are identified below and will be discussed throughout the Congressional Justification in budget order.

The proposal includes reductions in following budget lines:

Protected Resources Research and Management	-\$2,591,000	page NMFS - 18
Marine Mammals	-\$ 7,000	page NMFS - 26
Pacific Salmon	-\$ 484,000	page NMFS - 44
Fisheries Research and Management	-\$1,460,000	page NMFS - 68
Expand Annual Stock Assessments	-\$ 8,000	current page
<u>Information, Analysis, and Dissemination</u>	<u>-\$ 450,000</u>	<u>page NMFS - 163</u>
Total	-\$5,000,000	

Proposed Actions

The reduction in this PPA reflects the administrative savings that result from closing the Pacific Grove Laboratory. A limited amount of Expand Annual Stock Assessment funding has supported Pacific Grove lab operations for scientists developing methods and approaches for explicitly incorporating marine environmental data in fisheries assessments and ecosystem models. This work will continue to be done at other laboratories, and this reduction will not adversely impact GPRA measures; Fish Stock Sustainability Index (GPRA 17a); or Percentage of Fish Stocks with Adequate Population Assessments and Forecasts (GPRA 17b).

West Coast Proposal:

A reduction of \$5.0 million is requested to reduce lower value program activities and reconfigure NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office; eliminate the Puget Sound ecosystem surveys and assessments; close the Pacific Grove Laboratory in California; and end the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon. NMFS' reconfiguration of the Northwest and Southwest Regional offices will result in the elimination of 20 staff including one Regional Administrator and one Deputy Regional Administrator. The geographic distribution of the remaining staff will be driven by programmatic needs. As part of eliminating the Puget Sound ecosystem survey, NMFS would lay up the small vessel, R/V *Harold Streeter*, and eliminate approximately four staff. Laying up this vessel would eliminate costs in operating and maintenance of this vessel. With closure of the Pacific Grove Laboratory, programmatic functions would be maintained by relocating staff to the Santa Cruz and La Jolla Laboratories. Both Santa Cruz and La Jolla are larger and more modern facilities that can accommodate the additional programs currently conducted at Pacific Grove. Approximately three staff may be eliminated instead of transferring to Santa Cruz and La Jolla. Because the Northwest Region would no longer support the Newport Seawater Research Program, staff currently working on this program would be relocated to the Manchester Laboratory in Washington State.

The reconfiguration of the West Coast regional offices will result in a leaner management structure and reduction in staff capacity, while the proposed facilities changes will reduce NMFS's physical footprint and associated costs over time. These changes reflect NOAA's efforts to focus its limited resources on its highest priority mission functions and reduce costs to the greatest possible extent.

Base Resource Assessment:

The base resources for activities associated with these reductions are described in the Fisheries Research and Management narratives.

Schedule and Milestones:

- The excess and disposal of the Pacific Grove Facility should begin in FY 2013, as NMFS will need to continue to pay utility costs at the vacated facility pending GSA disposal.

Deliverables:

N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: West Coast Proposal

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	(8)
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(8)

Salmon Management Activities (Base Funding: \$33,623,000 and 13 FTE: Program Change: -\$6,641,000 and 0 FTE): NOAA requests a decrease of \$6,641,000 and 0 FTE for a total of \$26,982,000 and 13 FTE to Salmon Management Activities.

Proposed Actions

At the requested amount, NOAA will fund Mitchell Act hatcheries at \$15.902 million. At this level operations to support contracts with the States and U.S. Fish and Wildlife Service is reduced by \$686,000. At the requested level, NMFS will continue to meet its obligations under the Mitchell Act through continuing to support the operations and maintenance of Columbia River hatcheries. The hatcheries mitigate the loss of fish production due to hydroelectric dams. NMFS will also conduct a broad range of salmon stock assessment and fishery monitoring programs in the Snake and Columbia Rivers. These activities are associated with salmon not listed under ESA. Within the Mitchell Act hatchery request, implementation of hatchery reforms based on the Hatchery Scientific Review Group continues at \$1.704 million, a decrease of \$5.916 million.

The requested level for Salmon Management Activities will fund the Pacific Salmon Treaty implementation at \$10.569 million. This amount is sufficient to meet our obligations under the treaty providing personnel support to the Pacific Salmon Commission's technical committees and conducting a broad range of salmon stock assessment and fishery monitoring programs to produce information required to implement Pacific Salmon Treaty provisions.

Statement of Need and Economic Benefits

Projects funded under the Salmon Management Activities line are conducted for the conservation, development, and enhancement of salmon. This base funding supports research and management activities associated with salmon not listed under ESA and is composed of three main activities: the Mitchell Act–Columbia River hatcheries, Pacific Salmon Treaty, and Chinook salmon research and management. The Mitchell Act component supports the operations and maintenance of Columbia River hatcheries to mitigate the loss of fish production due to hydropower dams.

Base Resource Assessment:

The base resources for this activity are described in the Fisheries Research and Management base narrative.

Schedule and Milestones:

FY 2014-2018:

- Support the operations and maintenance of Columbia River hatcheries to mitigate the loss of fish production due to hydropower dams.
- Conduct a broad range of salmon stock assessment and fishery monitoring programs in the Snake and Columbia Rivers.

Deliverables:

FY 2014-2018:

- Maintain smolt production as required under the Mitchell Act.
- Conduct a broad range of salmon stock assessment and fishery monitoring programs in the Snake and Columbia Rivers.

Performance Goals and Measurement Data:

Performance Measure: Number of salmon smolt produced by Mitchell Act hatcheries (in millions)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	65.8	65.8	65.8	65.8	65.8
Without Decrease	70	70	70	70	70	70	70
Description: This performance measure projects the number of salmon smolt produced by the Columbia River hatcheries. .							

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: Salmon Management Activities

Object Class		2014 Decrease
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	(725)
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	(5,916)
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> (6,641)

Regional Councils and Commissions (Base Funding: \$32,739,000 and 6 FTE: Program Change: -\$731,000 and 0 FTE): NOAA requests a decrease of 0 FTE and \$731,000 for a total of \$32,008,000 and 6 FTE to Regional Councils and Commissions.

Proposed Actions

With Annual Catch Limits (ACLs) in place for all Fishery Management Plans (FMPs), NOAA proposes to reduce funding for the Regional Fishery Management Councils (Councils) and Atlantic States Marine Fisheries Commission. Fewer resources are required to update adaptive measures or pass new management measures. At the requested funding level, NMFS will apply a prorated reduction of approximately 2 percent to the (Councils and Atlantic States Marine Fisheries Commission). This Council reduction will be applied using the formula approved by the Councils to appropriately divide their funding. NMFS will also reduce funding for the Atlantic Cooperative Coastal Act by approximately 2 percent. NMFS is the sole source of funding for the Councils. The reduction for both the regional councils and the commissions is not expected to have a significant impact, or impede the prevention and ending of overfishing.

Base Resource Assessment:

The base resources for this activity are described in the Fisheries Research and Management base narrative.

Schedule and Milestones:

- Continue to revise Fishery Management Plans and amendments to address ACLs, AMs, bycatch EFH and deep-sea corals (8/yr in 2014-2018)
- Work with the Councils to revise fishery management plans using an updated or specific Optimal Yield (9/yr in 2014-2018)
- Complete socioeconomic analyses for fishery management actions (9/yr in 2014-2018)
- Work with Councils to develop regional implementation plans for deep-sea corals (8/yr in 2014 – 2018);

Deliverables:

- Draft fisheries amendments to Fishery Management Plans
- Collect and analyze socioeconomic data on the impacts of fishery management actions

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Fish Stock Sustainability Index (FSSI) (GPRA 17a)							
With decrease	NA	NA	645	663	670	675	680
Without decrease	606	617	645	663	671	676	681
Description: The FSSI tracks the rebuilding and maintaining of fish stocks at sustainable levels, along with critical components of NOAA’s efforts to achieve outcomes, such as managing fish harvest rates and increasing knowledge about the status of fish stocks. It is calculated by assigning a score between 0 and 4 to each of 230 stocks selected for their importance to commercial and recreational fisheries and then adding the scores together. For more information: http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm .							

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: Regional Councils and Commissions

Object Class		2014 Decrease
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	(731)
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> (731)

Fisheries Statistics: (Base Funding: \$23,654,000 and 108 FTE; Program Change: +\$206,000 and 0 FTE): NOAA requests an increase of \$206,000 and 0 FTE for a total of \$23,860,000 and 108 FTE to provide accurate data and reliable statistics on fishing effort and catch, which are essential for assessing impacts on fish stocks, as well as for monitoring fishing performance relative to fishery management targets. This increase will support data collection, data processing, statistical analysis, information management, and statistical reporting activities for commercial and recreational fisheries. Specifically, this increase supports the Marine Recreational Information Program (MRIP).

The MRIP continues the development of the National Saltwater Angler Registry needed for conducting more accurate and efficient future telephone and/or mail surveys of recreational fishing activities. In addition, MRIP continues the development, testing, and implementation of improved survey designs for the monitoring and assessment of marine recreational fishing participation, fishing effort, and catch. Increasing NMFS's data collection efforts for monitoring recreational fisheries impacts on stocks is important for improving relations with the recreational fishing community and improving Federal fisheries management.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: Fisheries Statistics

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	206
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	206

Survey and Monitoring Projects: (Base Funding: \$22,174,000 and 128 FTE: Program Change: +\$2,580,000 and 0 FTE): NOAA requests an increase of \$2,580,000 and 0 FTE for a total of \$24,754,000 and 128 FTE to provide funding for fishery independent survey and monitoring activities.

Proposed Actions:

The requested increase will enable NOAA to maintain the integrity of scientific data collections for fishery stock assessments that support the scientific basis for managing regional fisheries to prevent overfishing and to achieve optimum yield. Specifically, funding will support:

Red Snapper Monitoring – Funding will be used for at-sea data collections for Gulf of Mexico reef fish stock assessments. Stock assessments rely on bottom trawl, bottom longline, reef fish video, and plankton surveys - all of which collect information on red snapper to support fishery management. These are long-term activities that provide over 30 years of historical time series data. Recent expansion of the bottom longline and vertical line surveys were implemented to increase data on red snapper age composition not typically sampled by other survey methods. Funds also support reef fish ecology, including analysis of spatio-temporal distribution and patterns of essential fish habitat affiliation. This applied research informs annual survey design and data collection protocols to improve and advance the quality and utility of fishery- independent data, with direct implications for stock assessment and ecosystem-based management of southeast U.S. marine fisheries in state and federal waters.

Bycatch in regional shrimp trawl fisheries is a major mortality factor on juvenile red snapper. This increase supports bycatch reduction device innovation in several fisheries, including Gulf shrimp trawl and skimmer trawls, and annual monitoring of current Bycatch Reduction Device regulations and their efficacy. Quantification of bycatch and release mortality rates are developed through observer data collection programs to improve accuracy of stock assessments.

Alaska Groundfish Monitoring – The requested increase will provide funding for survey and assessment activities at the Alaska Fisheries Science Center. These funds will support snow crab and Tanner crab stock assessments, rockfish stock assessment in the Bering Sea and Aleutian Islands, and echo-integration trawl surveys of walleye Pollock in the Bering Sea, Shelikof Strait, Shumagin Islands and out to the Gulf of Alaska shelf break.

West Coast Groundfish – The requested program change will provide funding for at-sea data collections that provide the only biomass estimates for all West Coast groundfish stock assessments. Efforts to assess the status of groundfish stocks in population models incorporating data from the fishery, fishery-independent surveys and life-history studies are complicated by long-term shifts in the ocean climate. The funding will allow NMFS to expand coast-wide surveys of groundfish populations and ocean conditions.

The remaining funds will be used for other critical agency science activities such as Gulf of Maine Groundfish Survey and New England Stock Depletion, which provides information and analyses used in the development of stock status reports to advance the recovery of New England groundfish stocks. Funds will also be used for Bluefin Tuna Tagging, which provides biological sampling, elemental and genetic analyses, and the development and use of population models to elucidate Atlantic bluefin tuna stock structure, mixing, connectivity, movement and distribution. The resulting work will lead to improved estimates of abundance and significantly strengthen stock assessments. Finally, funds will be used for Atlantic Herring and Mackerel, to provide information on the status of the herring and mackerel resources.

Statement of Need and Economic Benefits:

The field surveys, fishery monitoring, and research supported by this increase provides the foundation for fish stock assessments needed to manage the Nation's valuable marine resources. Survey & Monitoring activities are used in conjunction with activities performed under Expand Annual Stock Assessments to produce improvements to the overall program. Data from these sources are used in stock assessments that provide the Regional Fishery Management Councils and NOAA with the scientific information needed to implement ACLs that prevent overfishing, rebuild overfished stocks, and obtain optimum yield from the fisheries. Optimum yield is the amount of fish harvest that will provide the greatest overall benefit to the national economy, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems. The surveys collect standardized observations of fish abundance over the range of the stock according to a rigorous statistical design. These data provide a direct measure of changes in stock abundance. Fishery monitoring provides direct measures of fish catch and bycatch, which are needed to estimate fishing mortality. Research provides data on fish age, growth, movement, and reproduction, and also provides direct evidence of ecosystem changes.

Base Resource Assessment:

The base resources for this activity are described in the Fisheries Research and Management Programs base narrative.

Schedule and Milestones:

FY 2014-FY 2018

- Conduct surveys of red snapper and reef fish stocks in southeast U.S. continental shelf waters and bottom trawl surveys in the Gulf of Mexico.
- Conduct eastern Bering Sea trawl surveys to estimate king crab and tanner crab abundance.
- Conduct biannual surveys of walleye Pollock, other groundfish and crabs in the Bering Sea, Aleutian Islands and Gulf of Alaska shelf.
- Conduct biannual surveys of Pacific hake off the U.S. west coast.
- Deploy observers on commercial longline vessels-of-opportunity for bluefin tuna tagging in Spring.
- Conduct Spring surveys of Atlantic herring and mackerel to monitor species biomass.

Deliverables:

FY 2014-FY 2018

- Update and provide annual stock assessments for:
 - o Gulf of Mexico Red Snapper and Reef Fish stocks
 - o West Coast Pacific hake and groundfish stocks
 - o Eastern Bering Sea and Gulf of Alaska Pollock stocks
 - o Eastern Bering Sea, Aleutian Islands, and Gulf of Alaska groundfish stocks
 - o Eastern Bering Sea snow and tanner crab stocks
 - o Southeast Alaska rockfish stocks
 - o Northeast Multispecies FMP and Gulf of Maine Fish stocks
 - o Atlantic herring and Atlantic mackerel stocks

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percentage of Fish Stocks with Adequate Assessments and Forecasts (Measure 17b)							
With Increase	N/A	N/A	57.4% (132/230)	57.4% (132/230)	58.3% (134/230)	59.1% (136/230)	60.0% (138/230)
Without Increase	56.1% (129/230)	57.0% (131/230)	57.0% (131/230)	56.5% (130/230)	56.5% (130/230)	56.1% (129/230)	56.1% (129/230)
<p>Description: This measure tracks the percentage of priority fish stocks for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as “Level III” by the Fisheries Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under different management scenarios. This measure covers the same 230 fish stocks tracked by the FSSI.</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Fisheries Research & Management
Program Change: Survey and Monitoring Projects

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	2,580
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> 2,580

American Fisheries Act (Base Funding: \$4,003,000 and 35 FTE; Program Change: +\$1,739,000 and 0 FTE): NOAA requests an increase of \$1,739,000 and 0 FTE for a total of \$5,742,000 and 35 FTE to implement the American Fisheries Act.

Proposed Actions

American Fisheries Act (AFA) funding supports NOAA's statutory requirements in Alaska fisheries management and science. These funds provide core support for research and management in the Alaska Bering Sea and Aleutian Islands (BSAI) groundfish fishery. This increase will restore the agency's ability to provide real-time in-season management of the largest volume fishery in US waters. It will also restore NOAA's ability to maintain and monitor complex IT systems essential for the management of this fishery; to make modifications to the fishery regime; and monitor and update necessary recordkeeping which supports backbone monitoring and enforcement.

Statement of Need and Economic Benefits

The American Fisheries Act (AFA) requires a suite of management measures that fall into four general categories: (1) regulations that limit access into the fishing and processing sectors of the Bering Sea and Aleutian Islands (BSAI) pollock fishery and that allocate pollock to such sectors; (2) regulations governing the formation and operation of fishery cooperatives in the BSAI pollock fishery; (3) regulations to protect other fisheries from spillover effects from the AFA; and, (4) regulations governing catch measurement and monitoring in the BSAI pollock fishery. Reduced bycatch, higher rates of catch utilization, increased economic returns, and improved safety are among the direct benefits of AFA.

Base Resource Assessment:

The base resources for this activity are described in the Fisheries Research and Management base narrative.

Schedule and Milestones:

- Update the web-based Interagency Electronic Reporting System (IERS) that enables landings and production data to be reported by shoreside processors to accommodate catch share (e.g., Limited Access Privilege Program) fisheries such as pollock, Gulf of Alaska rockfish, Bering Sea crab, Bering Sea flatfish and halibut/sablefish fisheries.
- Update the catch accounting methods used to monitor and manage target and non-target species catch in the Alaska groundfish (including Bering Sea pollock) and halibut fisheries.
- Conduct Eastern Bering Sea Crab and Groundfish Bottom Trawl survey annually to estimate the distribution and abundance of Alaska groundfish resources in the Eastern Bering Sea.
- Conduct Eastern Bering Sea Upper Continental Slope Trawl survey biennially to estimate the distribution and abundance of Alaska groundfish resources in the Eastern Bering Sea.
- Conduct a comprehensive bottom trawl survey of the Chukchi Sea to monitor effects of loss of sea ice.

Deliverables:

- Accurate information needed to assure accurate harvests of pollock, Gulf of Alaska rockfish, Bering Sea crab, Bering Sea flatfish and halibut/sablefish fisheries, consistent with allocations of total allowable catch under various catch share programs.
- Data collected on the Eastern Bering Sea Crab and Groundfish Bottom Trawl Survey is used in NMFS annual stock assessment and evaluation reports and used by the North Pacific Fishery Management Council to set catch quotas.
- Data collected on the Eastern Bering Sea Upper Continental Slope Trawl Survey is used in

NMFS stock assessment and evaluation reports and used by the North Pacific Fishery Management Council to set catch quotas.

Performance Goals and Measurement Data:

Performance Measure: The percent the ACL will be reduced to prevent over fishing in the AFA fishery	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0%	0%	0%	0%	0%
Without Increase	0%	0%	8%	8%	8%	8%	8%
Description: This performance measure quantifies the percent of allowable catch due to uncertainty if funds are not increased. In the AFA pollock fisheries, without the increase, fewer surveys will result which will mean increased scientific uncertainty. The ACL accounts for scientific uncertainty. Less uncertainty means the ACL can be set closer to the overfishing limit, so that more fish can be caught in a given year.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: American Fisheries Act

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	1,739
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> 1,739

Interjurisdictional Fisheries Grants (Base Funding: \$0 and 0 FTE: Program Change: +2,500,000 and 0 FTE): NOAA requests an increase of \$2,500,000 and 0 FTE for a total of \$2,500,000 and 0 FTE to reinstate funding for the Interjurisdictional Fisheries Grants program.

Proposed Actions:

This increase will reinstate funding for the Interjurisdictional Fisheries Grants program. The grants program under the Interjurisdictional Fisheries Act of 1986 (IFA) is a non-competitive, formula-based grant program that provides support to 38 States and Territories to aid in the State/Federal management of United States fisheries.

NOAA is working with its stakeholders to increase the quality and quantity of data and statistical analyses for both commercial and recreational fisheries nationwide. Projects supported by these grants respond to fishery research needs under the Magnuson-Stevens Act, Atlantic Coastal Fisheries Cooperative Management Act, Great Lakes Fisheries Commission's Joint Strategic Plan, and a variety of multi-jurisdictional fisheries management planning programs. Many of the projects are long term research and data collection activities which provide a stable base of information for interstate and Federal fishery management programs carried out in U.S. waters.

The IFA has three overall purposes: (1) to promote and encourage State activities in support of the management of interjurisdictional resources, (2) to promote the management of interjurisdictional fisheries resources throughout their range of habitat, and (3) to promote and encourage research used to inform ecosystem and interspecies approaches to the conservation and management of interjurisdictional fishery resources. Funds under IFA are apportioned to the states based on a formula that utilizes data on the volume and value of fish landed in each state by domestic commercial fishermen.

Any state, either directly or through an interstate fisheries commission, may submit a research proposal that supports management of fishery resources that (1) occur in waters under the jurisdiction of one or more states and in the Exclusive Economic Zone, (2) are managed under an interstate fishery management plan, or (3) migrate between the waters under the jurisdiction of two or more states bordering on the Great Lakes.

Federal share of project costs may amount to 75 percent, unless the state has adopted an interstate fishery management plan for the fishery resource, or the state has adopted regulations which are consistent with Federal fishery management plans, in which case the Federal share can be up to 90 percent.

Statement of Need and Economic Benefits:

This program supports the collection of fisheries data and the analysis needed for stock assessments essential for ensuring the sustainability of fisheries resources. Partnerships in these efforts are essential to meeting Federal fisheries conservation and management objectives, as many stocks occur in both Federal and state waters. Our state partners often rely on these grants to support salaries for state employees working on data collection and fishery management. Because data collection programs are critical to our overall stock assessment data-sets, funding to support these programs will improve the quantity and quality of catch and effort statistics and other fisheries information used to support management decisions at the state level and under the Magnuson-Stevens Act. Improvements that increase the precision of stock assessments will provide information leading to increased economic efficiencies in the stewardship of these resources.

Important fisheries resources, such as American lobster and menhaden in the Atlantic, Spanish mackerel and striped mullet in the Gulf, and abalone habitat and invasive species in the Pacific, are among the many resources addressed by the interstate commissions and supported by this program. This program allows NOAA to increase environmental stewardship efforts through a better understanding of fishery habitats and species life histories, including how coastal development pressures and fishing affect the resources.

Base Resources Assessment:

There are no base resources for this program in FY 2014.

Schedule and Milestones:

- Annually issue formula-based non-competitive grants that provide support to 38 States and Territories to aid in the management of United States interjurisdictional State/Federal fisheries.

Deliverables:

- Biennial Report on Interjurisdictional Fisheries, Anadromous, Great Lakes, and Lake Champlain fisheries

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of states and territories receiving Interjurisdictional Fisheries Grants							
With Increase	N/A	N/A	38	38	38	38	38
Without Increase	0	0	0	0	0	0	0
Description: The Interjurisdictional Fisheries Grants program, which is defined under the Interjurisdictional Fisheries Act of 1986 (IFA), is a non-competitive grant program that provides support to 38 States and Territories to aid in the State/Federal management of United States fisheries.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: Interjurisdictional Fisheries Grants

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	8
22 Transportation of things	0
23.1 Rental payments to GSA	1
23.2 Rental Payments to others	24
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	64
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	2
31 Equipment	1
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,400
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>2,500</u>

Reducing Bycatch: (Base Funding: \$3,416,000 and 9 FTE; Program Change: \$1,053,000 and 0 FTE): NOAA requests an increase of \$1,053,000 and 0 FTE for a total of \$4,469,000 and 9 FTE for Reducing Bycatch. The increase will support bycatch reduction engineering efforts including development of new fishing techniques and gear modifications designed to minimize bycatch, bycatch mortality, seabird interactions, and post-release mortality in federally managed fisheries in addition to providing competitive grants for the Bycatch Reduction Engineering Program (BREP) mandated by the Magnuson-Stevens Act.

Proposed Actions:

Historically, there were two activities funded through this budget line: 1) Bycatch Observers days at sea; and 2) NMFS Bycatch reduction engineering efforts, including support for outreach efforts to ensure compliance with turtle excluder device regulations; support for the NMFS National Seabird Program; and technical transfer efforts to promote the adoption of research findings by fishery participants and Regional Fishery Management Council bycatch reduction programs.

With this increase, NOAA proposes to provide \$1.0 million to support days at sea for observers used for targeted bycatch reduction efforts, including the collection of data on gear specifically designed to reduce bycatch; \$1.068 million for coordination of the research and development related to bycatch reduction engineering efforts including new fishing techniques and gear modifications designed to minimize bycatch, bycatch mortality, seabird interactions, and post-release mortality in federally managed fisheries; and \$2.4 million to support competitive BREP grants for researchers to create innovative gear designs and fishing techniques to minimize bycatch. Preference will be given to proposals that include collaboration with U.S. fishermen.

Statement of Need and Economic Benefits:

Bycatch of non-target species and habitat damage from fishing gear are two of the most serious impacts of fishing activities, and they represent a significant challenge to NOAA as we try to maintain sustainable fisheries and apply an ecosystem approach to marine conservation. Several major U.S. fisheries have a high level of discards and bycatch, including the Gulf of Mexico shrimp trawl fishery, Gulf of Alaska trawl fisheries, New England otter trawl fisheries, the New England large-mesh gillnet fishery, and the Hawaii-based deep-set pelagic longline fishery. Fishery interactions threaten sea turtle, seabird, fish, and marine mammal species listed under the Endangered Species Act. Bycatch also contributes significantly to overfishing in other important U.S. fisheries. Excessive bycatch can lead to the early closure of fisheries, potentially resulting in hundreds of millions of dollars in lost revenues. Testing potential gear modifications can take years to complete. The delay in incorporating results into management systems is due to testing time as well as the time to amend fishery management plans.

An example of a recent BREP accomplishment includes the development of salmon excluders to reduce Chinook salmon bycatch in the Alaska pollock fishery, which has a hard cap on Chinook salmon bycatch. If the fishery cannot avoid Chinook salmon bycatch and the fishery reaches this hard cap then the fishery will be forced to close early. An early closure of this fishery can have an economic impact of up to \$363 million. The Bering Sea pollock fishery was valued at \$1.4 billion in 2009.

Bycatch reduction is an effective way to adhere to the following policy and legislative mandates:

- The Magnuson-Stevens Act (MSA), which requires NOAA to establish a Bycatch Reduction Engineering Program and requires fishery management plan conservation and management measures to minimize bycatch.

- The Endangered Species Act, which requires the Federal government to protect and conserve species and populations that are endangered, or threatened with extinction, and to conserve ecosystems on which these species depend.
- The Marine Mammal Protection Act, which seeks to maintain marine mammal stocks at optimum sustainable population levels and protect them from incidental mortality and serious injury resulting from fishing operations, and requires the development and implementation of take reduction plans for fisheries having the greatest impact on marine mammals.
- The National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries requires NOAA and its partners to reduce seabird bycatch and continue ongoing research.

Base Resources Assessment:

The base resources for this activity are described in the Fisheries Research and Management base narrative.

Schedule and Milestones:

FY 2014 – 2018:

- Develop technological solutions and investigate changes in fishing practices designed to minimize bycatch of fish and protected species as well as minimize bycatch injury and mortality.
- Fund high-priority bycatch reduction engineering projects through a request for proposals and the recommendations of a national review panel that evaluates the projects based on several criteria.
- Produce an annual report to Congress per Section 316 of the MSA describing how BREP funds were spent and what developments in gear technology were achieved.

Deliverables

FY 2014 – 2018:

- Data necessary for management of the Nation's fisheries, including information necessary to support management of marine mammals and other protected species.
- Information on catch, bycatch, and discards, and biological data necessary for in-season quota monitoring and stock assessments.
- Improvements in fishing gear and fishing practices that allows fishermen to avoid hitting hard bycatch caps that end fishing seasons early.
- Improvements in fishing gear and fishing practices that allow fishermen to avoid protected species interactions that can close fishing seasons or entire fisheries.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of BREP projects whose results are incorporated into management systems.							
With Increase	N/A	N/A	3	3	7	7	8
Without Increase	3	3	3	3	3	3	3
<p>Description: For the purposes of this performance measure, management systems can include a final regulation based on a BREP project or a fishery in which fishermen voluntarily adopt BREP technology. Targets are determined based on an average cost of bycatch reduction projects (\$84K) and a historical average of project results incorporated into management systems.</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: Reducing Bycatch

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	1,053
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	1,053

Product Quality and Safety: (Base Funding: \$6,404,000 and 52 FTE; Program Change: +\$359,000 and 0 FTE): NOAA requests an increase of \$359,000 and 0 FTE for a total of \$6,763,000 and 52 FTE to provide support for seafood product quality and safety. The increase will help ensure that the Nation's seafood industry is economically sustainable and provide consumers with safe, healthy options for seafood. NMFS will more easily be able to address concerns related to Infectious Salmon Anemia Virus (ISAV) and consumption advisories related to mercury in seafood. Overall funding will support the National Seafood Inspection Lab (NSIL) in laboratory analysis, data management, and regulatory compliance risk analysis. In addition, NSIL can provide information transfer expertise to support the Department of Commerce's National Seafood Inspection Program, the Department of Agriculture, and the Food and Drug Administration (FDA).

NOAA has a secondary, complimentary role to the FDA regarding seafood safety focused on providing technical, regulatory, trade, and inspection services to support commerce and trade in seafood on behalf of the United States. These funds also support forensic analyses in support of enforcement investigations of economic fraud involving seafood and also provide analyses of contaminants to assess seafood safety for areas affected by episodic contamination events.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: Product Quality and Safety

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	359
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	359

The following exhibit shows the summary object class detail for Fisheries Research and Management program changes less than \$100,000. Please contact the Department of Commerce if details for any of these changes are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Marine Fisheries Service
Sub-program: Fisheries Research and Management
Program Change: Multiple

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	98
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	98

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUB- PROGRAM: ENFORCEMENT & OBSERVERS / TRAINING

ENFORCEMENT

NOAA's Office of Law Enforcement (OLE) is a Federal law enforcement agency charged with enforcing NOAA's natural resource protection laws and improving compliance with Federal regulations to conserve and protect our Nation's living marine resources and their natural habitat. OLE's jurisdiction spans more than three million square miles of ocean, more than 85,000 miles of U.S. Coastline, the country's 13 National Marine Sanctuaries and its three Marine National Monuments. OLE is responsible for carrying out more than 35 Federal statutes and international agreements related to living marine resources with primary mandates contained in the Magnuson-Stevens Fishery Conservation and Management Act (MSA), Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA), National Marine Sanctuaries Act, and the Lacey Act. OLE provides direct support for enforcement activities in the NMFS Regional Offices, NMFS headquarters' Office of Sustainable Fisheries and Office of Protected Resources, and the National Ocean Service's (NOS) Office of National Marine Sanctuaries. NOAA's Office of Law Enforcement further leverages the strength of collaboration through the operation of joint enforcement agreements with 27 coastal states and territories, and partnerships with other Federal agencies such as the U.S. Coast Guard. OLE enforcement cases that document violations are referred to NOAA's Office of General Council, Department of Justice, or the United States Attorney's Office for review and potential prosecution under their jurisdiction.

NOAA's mandate to end overfishing could not be realized without OLE's efforts to ensure that the millions of people who enjoy these resources for recreation or rely on them for their livelihood understand and comply with the regulations necessary to ensure sustainable resources for future generations. OLE supports two objectives: (1) enforce laws and regulations that govern commercial fisheries, international and interstate commerce in marine resources, human interactions with marine mammals and threatened and endangered species; and (2) protect resources within designated sanctuaries, marine monuments, and protected areas. To address these mission requirements OLE implements four primary methods: (1) traditional enforcement such as investigations and patrols, (2) partnerships with state and Federal agencies, (3) technological tools such as Vessel Monitoring Systems, and (3) outreach and education strategies designed to enhance voluntary compliance with environmental laws and regulation. OLE's goal is to increase this compliance.

Enforcement and Surveillance:

The purpose of most enforcement programs is to ensure effective compliance with the law such that the intent of the laws is met. In NOAA's case, this means ensuring compliance with a number of laws designed to protect such natural resources as fisheries, ocean ecosystems, sanctuaries, threatened and endangered species and marine mammals, through enforcement tools designed to encourage people to meet their legal obligations under these laws. NOAA's special agents and enforcement officers around the country work to deter, detect, investigate and document any violations of Federal laws and regulations to protect and conserve the marine environment and its resources. NOAA's approach to fisheries enforcement will continue to emphasize compliance assistance and increases in monitoring and inspections to assist regulated parties in understanding and complying with fishery regulations. The capabilities associated with deterring violations and investigating egregious violations will be maintained as critical elements in NOAA's enforcement approach, but will be part of an integrated approach supporting increased understanding and voluntary compliance by regulated parties. Most commercial and recreational fishers comply with conservation measures and NOAA's Office of

Law Enforcement's role is to ensure that those who follow the rules reap the benefits of fair competition and an even playing field.

Cooperative Agreements with States:

The Cooperative Enforcement Program leverages the resources of 27 coastal state and U.S. territorial marine conservation law enforcement agencies in direct support of the Federal enforcement mission. Through the execution of joint enforcement agreements, these partners are primarily involved in Federal enforcement efforts near shore, at-sea, and land-based monitoring and inspection activities. Since 2001, OLE has capitalized on this approach as a way to address some of the challenges associated with the geographic jurisdiction, breadth of laws and regulations within NOAA's stewardship responsibilities, amount of regulated commercial activity (fishing and both domestic and international trade), and amount of recreational use of the marine environment. This cooperative program affords OLE the opportunity to concentrate on the investigation and resolution of more serious violations by integrating monitoring and inspection activities for Federal requirements with the work of state/territorial enforcement partners and the U.S. Coast Guard. In 2012, these partnerships directly provided 244,064 hours of manpower increasing the amount of hours dedicated to Federal marine conservation activities by more than eight times what NOAA could have accomplished alone.

Vessel Monitoring System:

The Vessel Monitoring System (VMS) is a satellite-based technology program for remote monitoring of fishing vessels at sea. The Program supports a growing number of regulations requiring vessels to report in the VMS, and it allows NOAA's Office of Law Enforcement to monitor compliance and track violators over vast expanses of water. The VMS data is proven to be valuable evidence. VMS data is vital to NMFS's scientific community and to fisheries managers. This satellite-based communications system remotely reports vessel positions and provides an infrastructure for the communication of positional, fisheries declaration, and Days-at-Sea data. Efficiencies realized by this electronic monitoring method and the data it produces are monumental and have been a significant advance in NOAA's at-sea monitoring efforts. The data provided by VMS is a cost effective way to help enforce protected areas, fishing quotas, actual landings, and several Federal natural resource, environmental, and species conservation laws. Prior to VMS implementation the only methods used to police protected areas were surface and air patrols. These methods are costly and do not provide the round-the-clock coverage provided by VMS at lower cost.

Implementation of the High Seas Driftnet Fisheries Enforcement Act:

The High Seas Driftnet Fisheries Enforcement Act sets forth U.S. policy to enforce the United Nations' worldwide moratorium on large-scale driftnet fishing beyond the exclusive economic zone of any nation. Renegade large-scale high seas drift net fishing indiscriminately kills massive amounts of fish and other marine life such as whales and turtles by means of enormous nets suspended for miles in open water. The practice is universally condemned as it is a significant threat to ocean ecosystems and to the food and economic security of nations that rely on fishery resources. The Act provides for denial of port privileges and import sanctions against nations whose vessels and/or nationals are determined to be conducting illegal driftnet activities, and who do not take corrective action. The implementation of the Act requires a high level of coordination across multiple agencies including NOAA, the U.S. Coast Guard and the Department of State as well as international partners to continue to combat IUU fishing activities and to achieve the sustainable management of all living marine resources. OLE provides investigation and enforcement efforts required to prosecute and deter these IUU fisheries actions.

OBSERVERS/TRAINING

The goal of observer programs is to provide accurate and timely information and analyses on the biological, ecological, economic, and social aspects of the Nation's fisheries resources. The authority to place observers on commercial fishing and processing vessels operating in particular fisheries is provided by the MSA, the MMPA, and the ESA. The scientific data collected by observer programs are critical inputs for population assessments of threatened and endangered species such as sea turtles, seabirds, and marine mammals, and for effective management of the Nation's fish stocks. Observer programs also support sustainable and resilient fisheries, species, and habitats, and help protect and restore biodiversity within healthy and productive ecosystems. Without observer programs there would be insufficient data and information to monitor and adapt to changes in the ocean's environment and living marine resources. Fisheries observer programs are a proven, unbiased, and valuable source of information on the Nation's fisheries, and are considered the most reliable and cost-effective means currently available to collect fishery-dependent data.

Since 1972, NMFS has deployed fishery observers to collect catch and bycatch data from U.S. commercial fishing and processing vessels. Observers monitor fishing activities on all U.S. coasts and collect data for a range of conservation and management issues. Observers are fishery biologists that are deployed onboard commercial fishing vessels to collect data and information on fishery catch and bycatch. This includes information on fishing practices, vessel and gear characteristics, fishing locations and times, environmental conditions within the fishing grounds, compliance with fishing regulations, and socio-economic data. Observers also collect biological samples and may assist in fish tagging and tag recovery, or in special data collections for stock assessment programs.

Observer programs are implemented in each of NMFS's six regions. Approximately 47 fisheries are monitored by observer programs each year, including observer coverage in 10 catch share fisheries. The data they collect are used for a variety of purposes including quota monitoring, estimating discards, establishing and monitoring annual catch limits, and documenting target and non-target catch for management purposes. Resources are allocated to each of the regions according to the number of fisheries and sea days that are observed annually. Improvements in data collection, observer training, and the integration of observer data with other research are coordinated by the Office of Science and Technology in NMFS headquarters. Collectively, the regional programs and the headquarters office comprise the National Observer Program, which supports implementation of observer programs nationwide.

NMFS's observer program priorities include monitoring fisheries in each of the regions to meet statutory and regulatory requirements under the MSA, MMPA and ESA for observer coverage in U.S. commercial fisheries, while also addressing critical science and management needs for catch and discard estimates as well as stock assessments. A secondary priority is to expand observer coverage into fisheries with bycatch concerns, as identified in the National Bycatch Report published in September 2011, and in fisheries with pilot or baseline levels of observer coverage.

During FY 2012, NOAA implemented observer programs in each region with 982 observers and over 83,000 sea days observed in 47 fisheries nationwide. NOAA increased observer coverage in the Southeast, Northeast and Pacific Northwest regions due in part to new monitoring requirements in the Southeast and Northeast, and increased funding since FY 2012 for the Hawaii and American Samoa pelagic longline fisheries. Specific regional accomplishments during FY 2012 include:

- The Southeast Fisheries Observer Program observed over 5,633 sea days in the pelagic longline, reef fish, shrimp trawl, coastal teleost gillnet, and shark fisheries, an increase of 728 days over 2011. The Southeast pelagic longline observer program implemented enhanced observer coverage in the Gulf of Mexico from March through June 2012 to monitor landings and discards of bluefin tuna during the spawning season. The Shrimp Observer Program expanded coverage to include the shrimp skimmer trawl fishery in the northern Gulf of Mexico.
- The Northeast Fisheries Observer Program observed 16,823 sea days in the Northeast multispecies groundfish fishery, of which 5,412 sea days were in the groundfish common pool, and 6,047 were in the multispecies groundfish sectors. The program also observed 5,364 days in the Atlantic Sea Scallop dredge fishery, which was funded in large part by industry through a set-aside program. The program continued the third year of an electronic monitoring system (EMS) project to evaluate the utility of EM as a means to monitor catch on a real-time basis in the Northeast groundfish sector fleet.
- The North Pacific Groundfish Observer Program observed a total of 40,000 sea days across the groundfish fisheries in Alaska, and an additional 4,880 observer days were achieved monitoring shoreside processing plants. The North Pacific Observer Program has 100 percent coverage, or more, for vessels over 125 feet in length, which includes the Alaska pollock fishery (the largest U.S. fishery by volume), and 30 percent coverage on vessels 60 to 124 feet in length. The North Pacific Fishery Management Council has approved restructuring of the observer program starting in FY 2013 to include new observer coverage on small boats less than 60 feet in length and in the Pacific halibut fishery, funded via industry fees.
- The West Coast Groundfish Observer Program observed a total of 11,001 sea days in eight fisheries in 2012, with 9,128 days at sea observed in the West Coast trawl catch share fishery (shoreside and at-sea fleets), and 1,883 days observed in the West Coast non-catch share fisheries as well as state managed and open access fisheries such as California halibut trawl, nearshore rockfish, pink shrimp, and open access fixed gear fisheries. Observers recorded haul information, determined the official total catch, sampled hauls for species composition, collected length and age structure data, completed projects related to salmon, and recorded marine mammal and seabird sighting and interaction data. In addition to supporting fisheries management, these data are being used for fish stock and protected species population assessments.
- The Southwest Observer Program provided 338 days in the California large mesh drift gillnet fishery, the Southern California set gillnet fishery, and the California-based swordfish pelagic longline fishery to document the incidental take of marine mammals, sea turtles, seabirds, and target and non-target fish species, and to collect selected biological specimens. The program also began to observe a small pilot fishery using deep set buoy gear to target swordfish during the daytime.
- The Hawaii Fisheries Observer Program observed a total of 9,790 sea days in 2012 in the Hawaii pelagic longline and American Samoa longline fisheries, an increase of 2,071 sea days from 2011. The program continued to implement 100 percent observer coverage in the Hawaii shallow-set longline fishery and 20 percent coverage in the Hawaii deep-set longline fishery. The program also observed 965 days in the American Samoa longline fishery. Observers collected data on incidental sea turtle takes and fishing effort,

documented interactions of all protected species, and recorded species of fish kept and discarded. They also processed selected specimens for life history information.

- The National Observer Program began development of an update to the first edition of the National Bycatch Report, submitted and received approval for a Paperwork Reduction Act renewal request to the Office of Management and Budget (OMB) for all observer data collection forms, and continued planning for the 7th International Observer Monitoring Conference to be held in Vina Del Mar, Chile in 2013. The National Observer Program also helped draft a series of white papers on electronic monitoring (EM) (http://www.nmfs.noaa.gov/by_catch/bycatch_nationalreport.htm).

Schedule and Milestones:

Enforcement

OLE measures outputs in terms of incidents (documentation of possible violations) initiated, man-hours of monitoring and inspection work, and man-hours of outreach to the regulated public. OLE work performance has fluctuated based primarily on staffing levels with a general increasing trend in outputs.

During FY 2014, OLE plans to:

- Continue the transition to catch share management and appropriate enforcement strategies including the shifting of existing resources to compliance assistance and monitoring activities designed to foster voluntary compliance and deter violations.
- Refresh and maintain equipment that supports law enforcement functions.

Observers/Training

FY 2014 – 2018

- Provide coverage in approximately 47 fisheries nationwide, with a goal of expanding observer coverage in existing fisheries and implementing new observer programs in fisheries with bycatch concerns.
- Maintain the number of fisheries with adequate or near adequate observer coverage at 29, the number of sea days observed annually at 72,500, and the percentage of fish stocks with adequate population assessments and forecasts.
- Provide updated bycatch estimates for the National Bycatch Report.

FY 2014

- The Southeast Fisheries Observer Program will continue to provide observer coverage in the Southeast and Gulf of Mexico shrimp otter trawl fisheries (including rock shrimp); in the Atlantic, Gulf of Mexico, and Caribbean pelagic longline fishery, with increased coverage in the Gulf of Mexico during bluefin tuna spawning season; 100 percent observer coverage in the Southeast shark research fishery; and approximately two percent in the Gulf of Mexico reef fish fishery.
- The Northeast Fisheries Observer Program will continue to provide observer coverage in the New England groundfish sectors, the groundfish common pool fisheries; the herring fishery; mid-Atlantic coastal gillnet fishery; Northeast and mid-Atlantic small mesh trawl fisheries; mid-Atlantic Illex squid trawl fishery, Atlantic sea scallop dredge fishery, and the Northeast and Mid-Atlantic large mesh trawl fisheries.
- The North Pacific Groundfish Observer Program (NPGOP) will continue to provide observer coverage in the groundfish and halibut fisheries of Alaska. Beginning January 1st 2013, all vessels and processors in the groundfish and halibut fisheries off Alaska were placed into one of two observer coverage categories established in

regulation: the <100% coverage category and the ≥100% coverage category. Vessels and processors in the full observer coverage category are required to have at least one observer at all times. The restructured program will levy a fee of 1.25 percent of ex-vessel landings for all vessels with less than 100 percent observer coverage (i.e., vessels <125 feet in length) and implement 30 percent observer coverage in the halibut and sablefish fishery for the first time. The NPGOP will be responsible for training, briefing, debriefing, and overseeing observers who collect catch data onboard fishing vessels and at onshore processing plants and for quality control and quality assurance of the data provided by these observers.

- The Northwest Fisheries Science Center Observer Program, comprised of the West Coast Groundfish Observer Program (WCGOP) and the Catch Share Observer Program, will continue to provide observer coverage in state and federally managed West Coast fisheries. Under the Pacific trawl rationalization program, 100 percent observer coverage will continue to be required on all vessels participating in the rationalized fishery. The WCGOP will continue to provide observer coverage in state-managed fisheries (e.g., halibut trawl, nearshore shrimp, and pink shrimp).
- The Southwest Observer Program will continue to provide observer coverage in the California drift gillnet fishery and the California pelagic longline fishery. The observer program is also planning to expand observer coverage into the coastal pelagic species purse seine fishery for sardine off Oregon and Washington.
- The Pacific Islands Regional Observer Program will continue to provide 20 percent observer coverage in the Hawaii based pelagic longline deep-set fishery and 100 percent coverage in the shallow-set fishery for swordfish, and a target of approximately 12 percent coverage in the American Samoa pelagic longline fishery.
- The National Observer Program will continue to coordinate observer program activities at the national level by developing new standards, policies, and procedures to improve observer programs. The National Observer Program will complete an update to the National Bycatch Report that was first published in September, 2011. The 2013 update includes 2010 data. The next comprehensive report is planned for 2016.

Deliverables:

Enforcement

FY 2014

- Equipment re-refresh for computers, safety equipment, uniforms, and general law enforcement equipment.
- Increased compliance assistance through enhanced outreach to the regulated community.

FY 2015 -2018

- Increased compliance assistance through enhanced outreach to the regulated community.
- Increased monitoring and inspections activity while maintaining investigative capability.
- Replacement of essential law enforcement equipment as required.

Observers/Training

FY 2014

- Data necessary for management of the Nation's fisheries, including information to support management of marine mammals, sea turtles, seabirds, and other protected species.

- Information on catch, bycatch, discards, and biological data necessary for in-season monitoring and stock assessments.
- Information to increase compliance with specific regulations.
- Establishment of contracts needed to hire observers through companies providing independent observers.
- Information needed to support other specified science and management programs.
- Biological information needed for age and growth studies and genetic analyses of threatened or endangered sea turtle populations.
- Information on fishing effort, fishing gear, and specific fishing techniques that minimize bycatch.
- Marine Safety Instructor Training for all new marine safety instructors and every two years as refresher training for all other instructors who provide observer safety training.

FY 2015 – 2018

- Programs will continue to provide observer coverage and the same products and deliverables described above.
- Performance measures developed in the FY 2011 National Bycatch Report will be used to monitor bycatch trends and changes in the quality of bycatch data collection and estimation over time.

Performance Goals and Measurement Data:

Enforcement*

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Investigations	3,214	2,520	2,520	2,250	2,250	2,250	2,250
Description: Total number of investigations conducted.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Man hours of monitoring and inspections	17,642	6,300	6,300	5,850	5,850	5,850	5,850
Description: Total number of hours spent on inspections and monitoring.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Man hours of outreach	9,987	9,900	9,900	9,000	9,000	9,000	9,000
Description: Total number of hours spent on outreach.							

*Note: Office of Law Enforcement is in process of examining all performance measures. Updates expected for FY 2015.

Observers/Training

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Fisheries with adequate observer coverage	29	29	29	29	29	29	29
<p>Description: Total number of fisheries that are observed with adequate observer coverage as defined in the Fishery Management Plan. The number of fisheries with adequate or near adequate observer coverage, as well as the target observer coverage are dependent on funding, fishing effort, changes in management and/or regulations, and observer program priorities.</p>							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of Sea Days Observed	82,196	72,500	72,500	72,500	72,500	72,500	72,500
<p>Description: These values represent the total number of sea days observed. Some sea days are industry-funded; however, they still rely on Federal funding to occur, and should thus be included in performance tracking, as is the case in the NMFS Annual Operating Plan.</p> <p>Note: The sea days for FY12 are an anomaly compared to past years with similar funding levels. This is due to the timing of appropriations in FY11.</p>							

PROGRAM CHANGES FOR FY 2014:

Enforcement: Enforcement: (Base Funding: \$66.716.000 and 248 FTE: Program Change: +\$1.048.000 and 0 FTE): NOAA requests an increase of \$1,048,000 and 0 FTE for a total of \$67,764,000 and 248 FTE to expand the compliance assistance program.

Proposed Actions:

The requested increase will provide funding to expand the Office of Law Enforcement's (OLE) compliance assistance program. OLE's compliance liaisons and enforcement officers will work directly with regulated fishermen, businesses, and industry organizations to increase knowledge of and compliance with regulations. NOAA's compliance assistance efforts are intended to help fishermen and other recreational enthusiasts understand and follow regulations that support the long-term sustainability of marine resources and the economic activity that those resources support.

The expansion of this program will allow for greater education and outreach activities to inform affected parties before and for a period of time after the enactment of new regulations or changes to existing regulations. It will also allow NMFS to continue communication and collaboration with the industry and interested parties to obtain voluntary compliance and diminish the number of violations due to lack of knowledge of the regulations. This will be accomplished by working to educate affected parties regarding regulations where: (a) observed compliance appears to be low due to a lack of knowledge of the regulations, (b) there is lack of buy-in from affected parties as to the importance of complying with regulations, or (c) some other factor that may benefit from additional assistance. The program will pursue enforcement actions when intentional violations of laws and regulations occur and for violations that continue in spite of previous attempts to obtain voluntary compliance.

These funds will support education and outreach efforts to help the industry understand and comply with regulations through dock visits, compliance and safety gear guides, fishery council and interstate commission meetings, tradeshow and other industry events. NOAA will be able to continue on-demand technical assistance to answer questions from industry, such as those provided by the Vessel Monitoring System technicians and compliance assistance liaisons. Funds will also support compliance training by our agents and officers at workshops and public meetings to help industry and partners understand regulations; gear conflict mediation between different groups fishing in the same waters; patrols and visits in areas of concern; informational visits with fishermen, seafood processors, dealers, settlement offices, port agents to gather feedback; as well as broad education of the public and students on marine conservation issues and the role that enforcement plays in ensuring sustainability through events, exhibits, and the marine artifacts loan program.

Statement of Need and Economic Benefits:

Monitoring and ensuring compliance with the laws and regulations created to sustainably manage the Nation's fisheries is essential to maintaining and restoring the health of living marine resources and fisheries. Fair and effective enforcement is critical to rebuilding and sustaining fishing. Increasing voluntary compliance with regulations is essential to protect the investments of the U.S. seafood industry. Fishermen want to know that those who abide by the rules have their rights protected, and those who violate the rules will bear the consequences. The Nation's fisheries supported 1.5 million full and part-time jobs and contributed \$79 billion to the GDP and \$183 billion in sales in 2010. Further, the jobs supported by the commercial

fishing industry increased from 2009 to 2010, by 16 percent from 1 million to 1.2 million.¹ NOAA has taken and continues to take proactive and aggressive steps to improve its enforcement program, including expanding enforcement outreach and formalizing a Compliance Assistance function to provide oversight and guidance in the interpretation, application of inspection and enforcement laws, guidance, policies and procedure applicable to regulated businesses and communities. In September 2010, the Department of Commerce announced a pilot program for compliance assistance, which was crafted based on feedback received from stakeholders during NOAA’s National Enforcement Summit in August 2010. Through compliance assistance efforts, NOAA seeks to improve upon the existing enforcement program and to strengthen efforts to improve communication with and outreach to the fishing industry. Expanding the compliance assistance program will allow for the increase in efforts to better obtain voluntary compliance, and decrease the number of violations due to lack of knowledge or misunderstanding of the regulations.

Base Resource Assessment:

The base resources for this activity are described in the Enforcement and Observers base narrative.

Schedule and Milestones:

- Expand the compliance program and enhance monitoring of regulated activity designed to foster voluntary compliance and deter violations.

Deliverables:

- Expand the pilot compliance program to increase compliance assistance through enhanced outreach to the regulated community.

Performance Measures:

Performance Measure: Man Hours of Outreach	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	10,000	11,000	11,000	11,000	11,000
Without Increase	9,987	9,900	9,900	9,000	9,000	9,000	9,000
Description: Man hours of outreach conducted.							

¹ Fisheries Economics of the United States, 2010

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Enforcement and Observers
Program Change: Enforcement

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	1,048
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,048

Observers and Training: Observers and Training (Base Funding: \$40,476,000 and 137 FTE; Program Change: +\$3,095,000 and 0 FTE): NOAA requests an increase of \$3,095,000 and 0 FTE for a total of \$43,571,000 and 137 FTEs for Observers and Training to provide accurate and timely information and analyses on the biological, ecological, and socio-economic aspects of the Nation's fisheries resources.

Proposed Actions:

In FY 2014, Observer programs will provide coverage in approximately 48 fisheries nationwide, with a goal of expanding observer coverage in existing fisheries to meet management and regulatory requirements and implementing new observer programs in fisheries with bycatch concerns. Observer programs will maintain the number of fisheries with adequate or near adequate observer coverage at 29, and increase the number of sea days observed annually from 72,500 to 75,000. The number of fisheries with adequate observer coverage, as well as the target observer coverage, may vary depending on fishing effort and program priorities. Funds will also support observing and monitoring costs for programs expected to transition to catch share management in FY 2014. NMFS will continue to identify and, where practicable, implement alternative approaches for collection of fishery-dependent data such as electronic monitoring systems and/or industry-funded observer programs to meet current data collection requirements for stock assessments, quota monitoring, and bycatch estimation.

As part of this request, funding that was included for the Hawaii Longline Observer Program to supplement data collection in the American Samoa longline fishery (\$1.2 million), will be redirected toward observing and monitoring in fisheries currently under catch share management. Approximately \$4.2 million will remain for the Hawaii Longline Observer Program.

Base Resource Assessment:

The base resources for this activity are described in the Other Activities Supporting Fisheries Programs base narrative.

Schedule and Milestones:

FY 2014 – 2018:

- Implement observer programs in 48 fisheries, including 29 with adequate observer coverage, across six regions to meet statutory and regulatory requirements under the MSA, MMPA, and ESA for observer coverage in U.S. commercial fisheries, while also addressing critical science and management needs for catch and discard estimates as well as stock assessments.
- Observe approximately 75,000 sea days annually to meet these requirements.
- Provide adequate observer coverage for new and existing programs under catch share management.

Deliverables:

FY 2014:

- Update the National Bycatch Report

FY 2014 – FY 2018:

- Provide observer coverage totaling 75,000 sea days observed annually in 48 fisheries across six regions;
- Data necessary for management of the Nation's fisheries, including information necessary to support management of protected species such as sea turtles, marine mammals, and sea birds;

- Information on catch, bycatch, and biological data necessary for in-season monitoring and stock assessments;
- Information to increase compliance with specific regulations;
- Biological information needed for age and growth studies and genetic analyses of threatened or endangered sea turtle populations.
- Information on fishing effort, fishing gear, and specific fishing techniques that minimize bycatch.
- Data for incidental mortality and serious injury of sea turtles, marine mammals, and sea birds, to certify that takes of endangered species do not exceed the authorized incidental take limits.

Performance Goals and Measurement Data:

Performance Measure: Fisheries with adequate observer coverage Conducted Annually	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	29	29	29	29	29
Without Increase	29	29	29	29	29	29	29
Description: Total number of fisheries that are observed with adequate observer coverage as defined in the Fishery Management Plan. The increase will provide additional observer coverage at pilot or baseline levels in 2014, which would increase the total number of fisheries with observer coverage in U.S. fisheries to 48.							

Performance Measure: Number of Sea Days Observed Conducted Annually	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	75,000	75,000	75,000	75,000	75,000
Without Increase	82,196	72,500	72,500	72,500	72,500	72,500	72,500
Description: These values represent the total number of sea days observed. Some sea days are industry-funded; however, they still rely on federal funding to occur, and should thus be included in performance tracking, as is the case in the NMFS Annual Operating Plan.							
Note: The sea days for FY12 are an anomaly compared to past years with similar funding levels. This is due to the timing of appropriations in FY11.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service

Sub-program: Enforcement & Observers

Program Change: Observers and Training

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	3,095
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<u>3,095</u>

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUB-PROGRAM: HABITAT CONSERVATION & RESTORATION

The Habitat Conservation and Restoration Program has a critical and challenging conservation mission to protect and restore habitats that provide important societal and ecological benefits. The Program conserves habitat for living marine resources over a range of NOAA mandates benefiting commercial and recreational fisheries (Magnuson-Stevens Fishery Conservation and Management Act, Federal Power Act and the Energy Policy Act of 2005), protected species (Endangered Species Act), and NOAA trust resources injured from oil and hazardous wastes spills (Oil Pollution Act and the Comprehensive Environmental Response, Compensation and Liability Act).

The program contributes to rebuilding fisheries, recovering protected species, and improving the resiliency of coastal communities. Healthy habitats support commercial and recreational fisheries which in 2010 supported more than 1.5 million jobs and generated over \$180 billion in sales (*Fisheries Economics of the United States*, 2010). Estuaries provide habitat for more than 68 percent of America's commercial fish catch by value and for 80 percent of the recreational fish catch by weight.

The program serves an integral role in the conservation and management of fisheries, protected species, and corals. NOAA's Fisheries Management; Coral Reef Conservation; and Protected Species Programs rely on habitat conservation expertise for implementing and managing habitat restoration projects, avoiding adverse impacts to habitat, determining and implementing appropriate conservation techniques for addressing threats to habitat, and monitoring conservation success. NOAA partners with Federal and state agencies, the public, academia, non-governmental organizations, industry, and Tribes to leverage resources and implement priority conservation actions.

NMFS is leading a new approach for NOAA's habitat management, protection, and restoration activities through the NOAA Habitat Blueprint (www.habitat.noaa.gov/blueprint). The Blueprint is designed to increase the effectiveness of NOAA's efforts to improve habitat conditions for fisheries, coastal and marine life, and coastal communities. The Blueprint provides a forward-looking framework for NOAA to think and act strategically across programs and with partner organizations to address the growing challenge of habitat loss and degradation. Under the Blueprint, NOAA is implementing regional habitat initiatives, coordinating habitat science and conservation in identified habitat focus areas, implementing a systematic and strategic approach to habitat science, and strengthening policy and legislation to more effectively protect and restore habitat. Through the Blueprint, NOAA is fostering and leveraging partnerships to achieve the greatest possible benefits for fisheries, protected resources, at-risk habitats, and coastal communities.

HABITAT CONSERVATION AND RESTORATION

The Habitat Conservation and Restoration Program implements two courses of action for conserving important habitat for rebuilding fisheries and recovering protected species: 1) Sustainable Fisheries Management to protect healthy habitats from loss and degradation and 2) Fisheries Habitat Restoration to restore injured, degraded, or lost habitat. Beginning in FY 2014, NOAA proposes to consolidate the funding for habitat conservation and restoration activities in one budget line: Habitat Management and Restoration.

Sustainable Fisheries Management

Habitat management and protection is the first step and most cost-effective means for ensuring the long-term survival and health of fishery resources. Habitat management and protection is integral

to ensuring healthy regional ecosystems and the host of benefits derived from healthy and productive marine, coastal, and riverine habitats. As marine fish depend on habitat for survival and reproduction, it is important to protect and restore the habitats that sustain commercial and recreational fisheries.

Sustainable habitat management integrates sound science and technical expertise to assist private organizations and Federal agency actions in the following areas:

- Protecting Essential Fish Habitat (EFH): The program minimizes impacts to EFH in consultation with Federal agencies whose proposed actions may affect EFH of federally managed species. In coordination with the Regional Fishery Management Councils, the program describes and identifies EFH, and evaluates the effects of proposed Federal actions on EFH. This work ensures that proposed actions posing threats to marine, coastal, and riverine EFHs are undertaken in a manner that prevents, minimizes, or compensates for adverse effects.

NOAA has protected more than 100,000 acres through the EFH program each year. NOAA provides conservation recommendations for proposed construction projects, applications for dredging and filling wetlands, waste discharge permits, renewable energy proposals, and other Federal funding and permit activities that may adversely affect EFH. NOAA targets its consultations to consider highest priority projects at various scales at both the local and watershed levels. Many of the consultations are complicated and controversial in nature and thus require a high level of analysis and coordination. The program collaborates with industry sectors and regulatory agencies to establish best management practices for major activities or to expand use of programmatic consultations on recurring threats to EFH. The agency also strives to develop EFH consultation exceptions for categories of actions that usually do not have adverse impacts. In addition, NOAA works with the Regional Fishery Management Councils, the fishing industry, and environmental groups to protect habitat from detrimental fishing practices, such as bottom-tending gear. Since FY 2004, efforts focused on fishing impacts have protected more than 978,000,000 acres of habitat. Examples include restricting bottom trawling in important cod and scallop habitats in New England, prohibiting the use of bottom-tending fishing gear in several submarine canyons in the Mid-Atlantic, and prohibiting the use of dredge gear in deep-sea coral areas off the West coast and Alaska.

- Providing fish passage at hydroelectric dams: The program ensures passage for migratory fish past hydroelectric dams that block valuable river miles. Under the authority of the Federal Power Act and the Energy Policy Act of 2005, NOAA prescribes conservation measures to address the impacts of hydroelectric dams on migratory fish (such as salmon) and their habitats. This mandate is closely linked to NOAA's protected species and fishery management programs.
- Utilizing partnerships for habitat conservation: NOAA recognizes the need to leverage expertise and resources to maximize habitat conservation results and has been a leader in efforts to build Federal and state partnerships under the National Fish Habitat Action Plan. These efforts enhance habitat sustainability and support the goals of increased commercial and recreational fish populations and resilient coastal communities.

- Protecting Deep Sea Coral: The Magnuson-Stevens Fishery Conservation and Management Act (MSA) direct NOAA to implement a Deep Sea Coral Research and Technology Program. The MSA also provides regional fishery management councils with discretionary authority to designate zones to protect deep-sea corals identified by the program from physical damage from fishing gear. Since initial funding in FY 2009, NOAA has implemented a program to identify and map locations of deep sea coral as well as analyze and provide scientific information needed to protect deep sea coral habitats. NOAA implements this work in coordination with other Federal agencies and research institutions. Three major outcomes from the work include discovering new deep-sea coral habitats, providing relevant information to Council management efforts, and supporting NOAA's coastal and marine spatial planning work.

Fisheries Habitat Restoration

NOAA, as directed by the MSA, implements and supports restoration of priority coastal, marine, and riverine habitats essential for the reproduction, growth, and sustainability of commercial and recreational fisheries. NOAA's Restoration Center provides a full range of restoration expertise and services (e.g., planning and consultation for project design, engineering, environmental compliance and permitting; oversight during implementation and construction; and monitoring and evaluation of project success), and financial support for habitat restoration projects nationwide, capitalizing on the investments of partnering organizations to help us meet MSA and ESA requirements for rebuilding stocks and recovering protected species.

Habitat restoration benefits local economies through improved habitat conditions that support recreational and commercial uses of coastal resources. In addition, habitat restoration projects support a variety of job types in local communities including construction workers and project managers working directly onsite, as well as other businesses and professionals who design, engineer, provide materials, and monitor the success of these projects.

NOAA provides the base infrastructure to manage Natural Resource Damage Assessment (NRDA) and Restoration Trustee responsibilities for all active cases (e.g., Deepwater Horizon oil spill) as required by the Oil Pollution Act (OPA) and Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund Act). On behalf of NOAA, the Restoration Center leads restoration planning and implementation for cases that involve injuries to coastal and ocean trust resources (i.e., injured coral reefs, damaged sea turtle nesting sites and fishery habitat, and lost recreational opportunities). The scientific and policy expertise housed in this program is critical to NOAA's ability to respond to oil spills and hazardous waste releases, and restore habitats and resources after these events.

NOAA's Restoration Center works to ensure that restoration under NRDA is coordinated with other restoration efforts. For example, as multiple Deepwater Horizon (DWH) restoration initiatives begin, the Restoration Center will be required to coordinate between initiatives to promote efficient use of restoration funding and avoid duplicated efforts. The RESTORE Act funds and DWH NRDA funds can both be used for recovery of the Gulf Coast, but the efforts are distinct and separate and the eligible uses are different under each funding source. Total investment from these two initiatives is expected to result in an unprecedented number of restoration projects requiring a new level of coordination not previously supported—potentially billions of dollars of projects will be implemented through dozens of local, state, and Federal entities. NOAA Restoration Center staff have a critical role in coordinating NOAA's NRDA restoration planning and implementation with RESTORE Act activities in addition to their typical NRDA responsibilities.

The base infrastructure of the Restoration Center allows NOAA to provide restoration services across other NOAA programs including the Coral Reef Conservation Program, Marine Debris Program, National Marine Sanctuaries Program, Office of Response and Restoration, and the Protected Species Program, and to oversee activities for:

- Restoring injured or lost habitat: NOAA coordinates and conducts restoration planning and implementation, and monitors the success of implemented restoration projects for coastal and marine resources threatened or injured by oil spills, waste sites, or ship groundings. Through the program, injuries to habitat are repaired when possible and any lost natural resources are replaced through restoration projects that focus on revitalizing and improving coastal and marine habitats such as wetlands, coral reefs, and submerged aquatic vegetation. Although NRDA restoration projects are often supported with funding recovered from polluters, the restoration expertise and leadership required for project planning, implementation, and monitoring is provided with Habitat Management and Restoration resources. Appropriated funding is needed to pay for this expertise as well as some of the non-reimbursable labor costs associated with running an NRDA program. NRDA case work is only reimbursable when a responsible party is identified and a legal agreement is reached, and even then some of the labor costs incurred are not covered. NOAA must cover these labor costs completely when no responsible party can be identified or when that party has no ability to pay.
- Targeting restoration on priority habitats: The Community-based Restoration Program supports fishery rebuilding efforts and recovery of listed species by reversing the loss of coastal wetlands that provide spawning and rearing habitat, improving hydrological function of coastal wetlands, and restoring the ecological functions of our rivers in targeted areas (e.g., Blueprint Focus Areas or areas identified in recovery plans or fishery management plans). NOAA provides the planning, engineering and design expertise, and financial support not found in local communities for habitat restoration projects. This highly successful national effort partners with state and local governments, nonprofit organizations and local communities, and regularly leverages non-federal funding to Federal funds by factors of three-to-one.

NOAA is strategically investing in larger-scale habitat restoration to achieve larger impacts. Restoration is focused in targeted areas where NOAA can significantly affect protected species or fisheries recovery through habitat restoration. As an example, the Penobscot River Restoration Project demonstrates the success of larger scale investment in habitat restoration. Coordinated dam removals, fish passage installation, and shoreline restoration at several strategic sites along the Penobscot River will benefit multiple species—opening access to almost 1,000 miles of spawning habitat when complete. Ten species of migratory fish will directly benefit, including the endangered Atlantic salmon. Habitat restoration projects are selected through a competitive solicitation process that leverages substantial investments from partners. Larger-scale projects are more complex and tend to be multi-year projects, and only a few large scale efforts can be supported each year.

- Implementing the Estuary Restoration Act: the Estuary Restoration Act Program was created in response to the Estuary Restoration Act of 2000 (ERA) to make restoring estuaries a national priority. The Estuary Restoration Program maintains a national inventory of restoration projects, supports the work of the ERA Council, and provides

assistance for restoration project monitoring. This Budget proposes to transfer the Estuary Restoration Program from NOS to NMFS.

Schedules and Milestones:

FY 2014–2018

- Conduct priority project consultations each year to protect EFH.
- Work with 10 coastal and marine Fish Habitat Partnerships to develop and implement strategic plans.
- Conduct deep sea coral research activities in conjunction with habitat characterization cruises.
- Develop initial management options for protecting deep sea coral in partnership with Fishery Management Councils and National Marine Sanctuaries.
- Participate in the re-licensing process for an estimated 125 hydroelectric projects.
- Develop and select strategic national restoration projects (2016).
- Develop and implement restoration plans for addressing NRDA, OPA, and CERCLA injuries to NOAA trust resources.
- Develop and implement priority restoration projects critical for NOAA trust resources.
- Evaluate restoration projects to better quantify the socio-economic and ecological benefits.
- Implement habitat conservation and science actions in selected habitat focus areas and regional initiatives under the NOAA Habitat Blueprint framework.
- Develop habitat conservation targets for Habitat Blueprint focus areas.

Deliverables:

FY 2014–2018

- Leveraged and expanded local, inter-agency and NGO partnership efforts in Habitat Blueprint focus areas to achieve measurable conservation results.
- Management-driven research products to better understand how deep sea corals function as habitat for fish and invertebrates.
- Accurate deep sea coral habitat distribution maps that allow managers to better protect these biologically rich ecosystems.
- Improved assessments of potential fisheries impacts to deep sea coral habitats.
- Increased presence of target migratory fish species.
- Technical guidance and assistance provided to NOAA partners, Federal action agencies, and resource decision-makers to achieve protection and restoration of NOAA trust resources.
- Restoration Plans reviewed and approved through NRDA public process.
- Restoration requirements met as defined by specific NRDA settlements.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of Habitat Acres Restored (Annually) (Measure 17f)	58,120	60,228	53,500	49,350	46,000	46,000	46,000
<i>Habitat Acres</i>	4,033	8,170	4,000	4,000	4,000	4,000	4,000
<i>ARRA Acres</i>	4,209	58	1,500*	350	0	0	0
<i>PCSRF acres</i>	49,878	52,000	48,000	45,000	42,000	42,000	42,000
<p>Description: NOAA restores habitat areas lost or degraded as a result of development and other human activities, as well as specific pollution incidents and sources. Activities are geared toward NOAA trust resources found across the marine environment, including the Great Lakes region, and are supportive of anadromous fish species. The intent of this measure is to summarize or project the geographic area over which ecosystem function has been or will be improved as the direct result of habitat restoration efforts. This measure does not include restoration conducted through Natural Resource Damage Assessments or the Species Recovery Grants.</p> <p><i>* American Recovery and Reinvestment Act (ARRA)</i></p>							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Stream miles made accessible (Annually)	1,470	1,118	690	590	550	550	550
<i>Habitat stream miles</i>	331	519	100	100	100	100	100
<i>ARRA stream miles</i>	51	39	70*	0	0	0	0
<i>PCSRF stream miles</i>	1,088	560	520	490	450	450	450
<p>Description: This performance measure counts stream miles made accessible as a result of Habitat Program activities. Stream miles made accessible in this context will include barrier removal and fish passage projects that support recovery of listed species.</p> <p><i>* American Recovery and Reinvestment Act (ARRA)</i></p>							

PROGRAM CHANGES FOR FY 2014:

Habitat Management and Restoration: Fisheries Habitat Restoration - Implement strategic habitat restoration to improve habitat conditions for recovering protected species and rebuilding fisheries (Base Funding: \$42.910.000 and 150 FTE; Program Change: +\$4.121.000 and 0 FTE):

NOAA requests an increase of \$4,121,000 and 0 FTE for a total of \$47,031,000 and 150 FTE to implement larger-scale habitat restoration in more targeted areas that 1) help recover protected species and rebuild fisheries, and 2) leverage substantial investments from local partners. Targeting actions in priority areas will help NOAA leverage expertise and resources most effectively to advance Administration priorities and benefit local coastal economies.

Proposed Actions:

This request will increase support for large-scale restoration through competitively selected projects in targeted areas where NOAA can significantly affect protected species or fisheries recovery through habitat restoration. The NOAA Habitat Blueprint establishes NOAA habitat focus areas and serves as one of the key guiding documents for project selection along with priority areas identified in recovery plans for threatened and endangered species, and areas identified in fishery management plans for rebuilding commercially and recreationally important fisheries.

This request will build on FY 2012 and FY 2013 efforts to improve alignment of programs in support of MSA and ESA and provide support for larger scale, targeted, on-the-ground habitat restoration. Working in partnerships, NOAA can achieve multiple objectives, such as expanding recreational opportunities for the public, while also improving habitat for NOAA trust resources. Coastal and marine habitat stakeholders can supplement NOAA's investment with their own funding and technical resources. NOAA is often able to leverage restoration funds at a ratio of three non-federal dollars to one federal dollar.

Building upon NOAA's existing capability for restoring wetlands, coral reefs, shellfish, and fish passage, this request will increase on-the-ground habitat restoration that magnifies other actions being taken by resource managers to recover protected species and rebuild fisheries. The Community Based Restoration Program (CBRP) provides on the ground technical expertise nationwide to support states, tribes, and other partners' efforts to implement cost effective projects that maximize benefits to the species and their habitats. CBRP will be administered in close coordination with Species Recovery Grants (SRG) and the Pacific Coastal Salmon Recovery Fund (PCSRF) to realize efficiencies, identify strategic opportunities, and achieve significant conservation benefits on a national scale.

Statement of Need and Economic Benefits:

Healthy habitats are vital to recovering protected species, rebuilding our fisheries to sustainable levels, and more generally, contributing to vibrant coastal communities. Habitat restoration helps ensure healthy habitat is available for fish to reproduce and grow. More prime areas for spawning and rearing means greater reproduction and more fish surviving to adulthood. Commercial and recreational fishing, boating, tourism, and other coastal industries, which provide more than 28 million jobs nationwide, rely on healthy habitats. On average, habitat restoration projects create 17 jobs for each million dollars of investment, a higher rate than other sectors, like oil and gas and road infrastructure. The following are examples of expected outcomes nation-wide:

- In California, endangered salmon in newly built rearing ponds are growing up to six times larger than fish without rearing ponds, making them much more likely to survive their long trip to the ocean and back.
- In Connecticut, replacing two failing culverts that restricted the flow of water into and out of a 78-acre marsh has resulted in a tripling of the alewife run in recent years, and has surpassed the largest observed run that occurred in the 1970s. Alewife are an important forage fish for commercially important species like cod, and endangered Atlantic salmon.
- In Washington, installation of modernized agricultural drainage systems allows 16,000 more endangered salmon to migrate through Fisher Slough to Puget Sound every spring and farmers will also be helped by significantly reduced springtime floods.
- In Maine, the re-establishment of a commercial alewife fishery on the Kennebec River was made possible by dam removals and the re-engineering of a stream bed to a more natural state. The Town of Benton benefited from the \$17,000 in additional income of from harvest fees.

There is a demonstrated demand for improving the condition of coastal and marine ecosystems through habitat restoration. Since FY 2009, NOAA has received over \$3 billion in proposals for habitat restoration funding, including numerous requests from regional and state-led partnerships supporting larger-scale ecological restoration. This highlights the importance to stakeholders of having NOAA provide technical expertise and funding assistance to ensure that priority areas are conserved effectively. The implementation of these priorities would have national level impacts because of the critical ecological and economic benefits that habitat provides.

Base Resources Assessment:

The base resources for this activity are described in the Habitat Management and Restoration base narrative.

Schedule and Milestones:

- Select target areas (FY 2014).
- Compete and select strategic habitat restoration partnerships (FY 2014, FY 2017).
- Develop and implement priority habitat restoration projects in target areas (FY 2014-2018).

Deliverables:

- Technical guidance and financial assistance provided to NOAA partners, Federal action agencies, and resource decision makers to achieve restoration of NOAA trust resources. (FY 2014-2018).
- Increased presence of NOAA trust species in target areas (FY 2016-2018).

Performance Goals and Measurement Data:

Performance Measure: Number of Habitat Acres Restored (Annually) (Measure 17f) Habitat	FY 2012 Actual	FY 2013 Target*	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	4,250	4,500	4,500	4,500	4,500
Without Increase	4,033	8,170	4,000	4,000	4,000	4,000	4,000

Description: NOAA restores habitat areas lost or degraded as a result of development and other human activities, as well as specific pollution incidents and sources. Activities are geared toward NOAA trust resources found across the marine environment, including the Great Lakes region, and are supportive of anadromous fish species. The intent of this measure is to summarize or project the geographic area over which ecosystem function has been or will be improved as the direct result of habitat restoration efforts.

Note: In developing the targets NMFS assumes one year of project "ramp-up" (e.g., project selection, design, permitting, and implementation), with the performance accomplishments being achieved and reported in years 2-5. In addition, the FY 13 target is based on actual project data obtained at the end of Q4 in FY 12. The out-year targets are based on an average.

Performance Measure: Number of Stream Miles Made Accessible (Annually) Habitat Only	FY 2012 Actual*	FY 2013 Target*	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	120	130	130	130	130
Without Increase	331	519	100	100	100	100	100

Description: This performance measure counts stream miles made accessible as a result of Habitat Program activities. Stream miles made accessible in this context will include barrier removal and fish passage projects that support recovery of listed species.

Note: In developing the targets NMFS assumes one year of project "ramp-up" (e.g., project selection, design, permitting, and implementation), with the performance accomplishments being achieved and reported in years 2-5. In addition, the FY 12 actual and FY 13 target include miles from the hydropower program. For out-year targets, it is difficult to determine what the mix will be between acres restored and stream miles made accessible for our restoration projects, so the average is used in target setting.

Performance Measure: Number of Priority Habitat related Recovery Actions Being Addressed (cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	5	10	12	14	16
Without Increase	0	0	4	7	9	11	13
Description: This measure is a subset of the Protected Resource's GPRA measure "Number and Percentage of Recovery Actions Ongoing or Completed" that tracks progress of ongoing or completed recovery actions included in National Marine Fisheries Service approved recovery plans for species listed as threatened or endangered under the Endangered Species Act (ESA). Recovery actions are those actions found to be necessary to remove species from the ESA. Actions may include items that can be completed in a year or other actions, including monitoring, that may take many years to complete or be ongoing. Recovery of threatened or endangered species is a gradual process that can take decades, and completed recovery actions can show incremental progress made in achieving recovery.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Habitat Conservation and Restoration
Program Change: Habitat Management and Restoration

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	4,121
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	4,121

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUB-PROGRAM: OTHER ACTIVITIES SUPPORTING FISHERIES

Other Activities Supporting Fisheries includes items that cross multiple NMFS programs. Activities funded include Antarctic research, aquaculture, climate impacts research, computer hardware and software, cooperative research, information analysis and dissemination, the National Environmental Policy Act (NEPA), regional studies, and facilities maintenance.

ANTARCTIC RESEARCH

The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) was established by international convention in 1982 with the objective of conserving Antarctic marine life. The U.S. AMLR Convention Act requires that the Department of Commerce conduct a program of directed scientific research to “achieve the United States goal of effective implementation of the objectives of the Convention [on the Conservation of Antarctic Marine Living Resources].” NOAA is the only bureau within the Department of Commerce with the capabilities to fulfill this mandate. NOAA’s Antarctic Ecosystem Research Division (AERD) implements the ecosystem research program known as the U.S. Antarctic Marine Living Resources (AMLR) Program. This program is NOAA’s only dedicated, long-term ecological presence in the Antarctic, with observations extending over the past 25 years.

The U.S. AMLR Program conducts ecosystem-based research in support of U.S. policy interests related to Antarctic resource management. Its objective is to understand the relative impacts of fishing, climate change, and other human activities on the Antarctic marine ecosystem. The program includes research to estimate the biomass of krill and to monitor the reproductive successes (or failures) and foraging patterns of krill-dependent predators, such as penguins and seals. Further research includes studies of how the production of krill-dependent predators is, in turn, impacted by predation from higher-level predators, such as leopard seals. The research program is conducted at sea and from two field camps located in the vicinity of important krill fishing areas (to study krill-dependent predators).

Research to synthesize all field data occurs at the laboratory and includes efforts to build and implement ecosystem and stock-assessment models to advise harvest strategies for Antarctic fisheries. Outputs from the U.S. AMLR Program include biomass estimates for commercially important species; peer-reviewed articles, as well as other reports that increase knowledge about the Antarctic marine ecosystem and the impacts of fishing and climate change on that ecosystem; scientific advice to the U.S. delegation to CCAMLR; and representation of the U.S. to the CCAMLR Scientific Committee and its working groups.

AQUACULTURE

The NMFS Office of Aquaculture is guided by the objectives in the 2011 Department of Commerce and NOAA Aquaculture Policies. These policies establish a framework to allow sustainable domestic aquaculture to contribute to the U.S. seafood supply, support job creation in coastal communities, enhance important commercial and recreational fisheries, and help to restore species and habitat. NOAA sees aquaculture as a critical component to meeting increasing global demand for seafood and maintaining healthy ecosystems. The United States is a major consumer of aquaculture products, yet we are a minor producer. The U.S. imports 91 percent of its seafood, of which half is from foreign produced aquaculture, while only five percent of the seafood that Americans consume is from domestic freshwater and marine aquaculture. NOAA is focusing on the regulatory, technical and scientific barriers to domestic

marine aquaculture production. These efforts include: streamlining aquaculture permitting through the Administration's Office of Science and Technology Policy (OSTP) Joint Subcommittee on Aquaculture's Regulatory Task Force; implementing the National Shellfish Initiative; developing private-public partnerships for the Technology Transfer Initiative; and implementing the Gulf of Mexico Aquaculture Fishery Management Plan. In the current fiscal environment, the Office of Aquaculture is working to develop external partnerships with the private sector and research institutions to leverage private or university resources in order to implement the DOC and NOAA Aquaculture Policies.

Base funds support:

- Operations at the NOAA Office of Aquaculture to lead and coordinate national regulatory, research, and outreach activities for marine aquaculture.
- Regional aquaculture coordinators that are currently in place in the northeast, northwest, southeast, southwest, and Pacific Islands region.
- Aquaculture science, and research and development activities at NOAA laboratories, including work to assess and minimize environmental impacts of shellfish and finfish aquaculture; environmental modeling, hatchery research, and disease and genetics management.

Climate Regimes & Ecosystem Productivity

The Climate Regimes & Ecosystem Productivity Program (CREP) provides Federal, state, tribal and private-sector decision-makers with information on how climate variability and change is impacting U.S. marine ecosystems and the communities and economies that depend on them. This information is critical to fulfilling NOAA's core management responsibilities for marine-related fisheries, protected species, and habitats in a rapidly changing world. To provide information and projections of climate-related impacts on valuable fisheries and other marine resources, CREP works with many partners to collect data on climate, ocean and living marine resource conditions through a highly efficient, leveraged network of in situ and remote observing systems. Information from the observing systems is used to:

- Improve fishery recruitment predictions and stock assessments used in fishery management decisions;
- Track climate-related impacts on fisheries and other living marine resources;
- Anticipate and reduce the impacts of climate-related changes on living marine resources (fisheries, protected species, and habitats) and the communities that depend on them.

The North Pacific Climate Regimes and Ecosystem Productivity project (NPCREP) provides information, assessments, and projections of climate-related impacts on living marine resources of the Bering Sea and Gulf of Alaska. This area is home to some of our Nation's richest commercial fishing grounds – greater than 50 percent of the U.S. landings, by weight, occur in Alaska, with a landed value exceeding \$1 billion annually.² The area is also home to many protected species and native communities that depend on this productive marine ecosystem. These resources and the communities that depend on them are particularly vulnerable to climate-related impacts given the scale and scope of climate changes in this region.

² Fisheries of the United States (2010), <http://www.st.nmfs.noaa.gov/st1/publications.html>

The NPCREP research and observing system has provided information on climate-related impacts in the eastern Bering Sea and western Gulf of Alaska since 2004. During this time, the project has delivered observations, biophysical indicators and models to track and project changes in the marine ecosystem with changes in climate conditions. This information has been used to increase the accuracy of predictions of fish stocks in future climate conditions, and allowed the North Pacific Fisheries Management Council to take proactive steps to help sustain valuable fish stocks during changing climate conditions that threatened these valuable resources. In FY 2014, NPCREP will continue to provide the information and projections needed by fisheries and other decision-makers on the impacts of climate variability and change in the valuable and vulnerable Bering Sea marine ecosystem.

Computer Hardware and Software

The Computer Hardware and Software line item is the sole appropriated resource available to operate and maintain the NMFS Wide Area Network (WAN) and the NMFS IT security program. The WAN is the primary conduit for all mission-critical data and enterprise applications used in support of the stewardship of commercial and recreational fishing, protection of species and their habitats, and NMFS law enforcement efforts. It provides crucial security components including firewall hardware, secured router hardware, security monitoring software, and intrusion detection system software—all critical for preventing and monitoring security risks and vulnerabilities to the NMFS network.

Cooperative Research

Cooperative research enables commercial and recreational fishermen to become involved in collecting fundamental fisheries information to support the development and evaluation of management options. Through cooperative research, industry and other stakeholders can partner with NMFS and university scientists in all phases of the research program—planning the survey and statistical design, conducting research, analyzing data, and communicating results.

Current cooperative research activities complement existing NMFS monitoring programs nationwide by providing access to platforms (recreational and commercial fishing vessels) widely distributed over a variety of habitats simultaneously, including areas not accessible to NOAA vessels. The information collected through cooperative research programs assists scientists and managers by supplementing the data currently collected through Federal research programs. This information improves the information base for single species, multi-species, and ecosystem assessment models and ultimately improves the evaluation of stock status and the management of fishery resources.

Cooperative research covers a wide range of study areas, including fishery-dependent data, species life history, conservation engineering, species abundance and distribution, habitat, and socio-economic impacts. The agency's program selects high-level cooperative research projects nationwide through competitive grant and contract procurements, as well as cooperative agreements. These projects are selected in consultation with the Councils, Commissions, and stakeholders and in accordance with research areas established in Section 318 of the reauthorized Magnuson-Stevens Fishery Conservation and Management Act (MSA).

Information Analysis and Dissemination

The Magnuson Stevens Act (MSA), the Marine Mammal Protection Act, the Endangered Species Act, the Data Quality Act, and the President's Open Government Directive for Information Sharing, all include requirements and directives for data collection, data management, and data dissemination. NMFS has specific roles and responsibilities under

these mandates that require staff expertise in managing data and supporting model development for population dynamics and economic trends, statistical data analyses for stock assessments, and developing data and business models for database and management tools. In response to these directives, the information analysis and dissemination line supports NMFS staff that process, analyze and produce data and disseminate the resulting information to resource managers and other users. This is particularly important as it relates to fisheries statistics, fish and protected species stock assessments, socio economics, and other biological, ecological, and oceanographic data and analyses that resource managers need to make ecosystem-based management decisions. The information analysis and dissemination line complements research and data collection programs, as it takes information collected through research and surveys, and combines the results into meaningful information that is served back to constituents and decision makers.

The Information Analysis and Dissemination line also allows NMFS to maintain efficient data processing and integration, and ensure the timely and secure dissemination of information of critical fisheries science data sets. The tools and mechanisms produced using this line support effective decision-making and promote public awareness and education.

Marine Resources Monitoring, Assessment & Prediction Program

The Marine Resources Monitoring, Assessment, and Prediction (MARMAP) Program is a cooperative fisheries project of NMFS and the South Carolina Marine Resources Research Institute (MRRI). For 30 years, the MRRI has conducted fisheries-independent research on groundfish, reef fish, ichthyoplankton, and coastal pelagic fishes within the region between Cape Lookout, North Carolina, and Cape Canaveral, Florida. The overall mission of the program has been to determine distribution, relative abundance, and critical habitat of economically and ecologically important fishes of the South Atlantic Bight (SAB) and to relate these features to environmental factors and exploitation activities. Research toward fulfilling these goals has included trawl surveys (from 6-350 m depth), ichthyoplankton surveys, location and mapping of reef habitat, sampling of reefs throughout the SAB, life history and population studies of priority species, tagging studies of commercially important species, and special studies directed at specific management problems in the region. Survey work has also provided a monitoring program that has allowed the standardized sampling of fish populations over time, and development of a historical base for future comparisons of long-term trends.

National Environmental Policy Act (NEPA)

This funding supports NMFS's NEPA coordinators and a staff of NEPA experts who ensure the compliance of agency actions under NEPA which includes development of environmental impact studies supporting NMFS actions to manage and conserve fisheries and protected resources and their habitats. Environmental review under NEPA is an essential, legally mandated element of all agency decision making which, if not performed efficiently with the guidance of well trained professionals, can result in disruption of program and project timelines and corresponding escalations in cost. NEPA requires Federal agencies to analyze the environmental impacts of, and alternatives to, major Federal actions and to involve the public in that process so that agencies make well informed and legally defensible decisions in an open and transparent manner. In addition to conducting NEPA analyses for its actions, NMFS provides knowledge and expertise through NEPA cooperation with other Federal agencies (e.g. U.S. Navy, National Science Foundation, Department of the Interior's Bureau of Ocean Energy Management, and U.S. Fish and Wildlife Service on actions that may impact trust resources

under NOAA's jurisdiction. Base funding supports NEPA documentation for a wide range of NMFS actions including:

- fishery management plans and plan amendments
- endangered species and marine mammal research and conservation
- fisheries and bycatch reduction science
- coastal and marine habitat restoration and construction
- oil and gas exploration and development
- alternative energy exploration and development

NMFS Facilities Operations and Maintenance

The NMFS Facilities Operations and Maintenance line supports lease costs for the Kodiak Fisheries Research Center and some of the operations and maintenance costs for the Lena Point laboratory in Juneau, Alaska.

- The Kodiak Fisheries Research Center (KFRC) in Kodiak, Alaska is the primary facility for the Alaska Fisheries Science Center's Resource and Conservation Engineering Shellfish Assessment Program. The KFRC facility also provides offices and research support for other NMFS program activities, including: Groundfish Assessment Program, North Pacific Groundfish Observer Program, National Marine Mammal Laboratory, and Alaska Regional Office Sustainable Fisheries Division.
- The Lena Point laboratory in Juneau consists of 66,000 square feet of office and laboratory space and houses the Auke Bay Laboratories. This facility conducts scientific research throughout Alaska on fish stocks, fish habitats, and the chemistry of marine environments. Information from this research is widely used by commercial interests such as fishing industries and governmental agencies involved in managing natural resources.

Regional Studies

Chesapeake Bay Studies

The Regional Studies budget line supports the base funding for the NOAA Chesapeake Bay Office (NCBO). NCBO is a focal point for executing NOAA's role in the Chesapeake Bay Program and to meet the requirements of Executive Order 13508 (EO) to protect and restore the Chesapeake Bay and the mandate established under the office's authorizing legislation (PL107-372). By combining resources from the Regional Studies and Survey and Monitoring lines; NCBO carries out programs in: 1) Habitat assessment characterization and oyster restoration, 2) Fisheries research and modeling, 3) Environmental literacy and outreach; and 4) Observations.

Together, these programs constitute a place-based, ecosystem approach to protect and restore the Chesapeake Bay. In FY 2014, the Regional Studies portion of NCBO's budget will support targeted restoration and protection goals. NCBO will also provide support for the Chesapeake Bay Interpretive Buoy System (CBIBS). In addition, NCBO will maintain science communications and outreach functions through the Environmental Science Training Center.

Southeast Area Monitoring & Assessment Program (SEAMAP)

The base funding for SEAMAP supports the collection of fishery-independent data through state, Federal, and university partnerships. Partnership arrangements are set up through cooperative agreements with the states from North Carolina through Texas, as well as the U.S. Virgin Islands and Puerto Rico. SEAMAP is composed of three components: the South Atlantic (North Carolina to Florida), the Gulf of Mexico (Florida to Texas) and the Caribbean (U.S. Virgin

Islands and Puerto Rico). SEAMAP coordinates state and Federal surveys for the collection, management, and dissemination of fishery-independent data on marine resources. The data support the sustainable use of commercially and recreationally valuable fish stocks in the southeastern United States.

State, Federal, and university partners in the SEAMAP program conduct a variety of fishery-independent research surveys, including groundfish trawl surveys, plankton and larval fish surveys, shark and snapper longline surveys, and reef fish video surveys. These surveys provide a wide range of information to support regional stock assessment and management activities, including biological information on distribution, abundance, growth, mortality, and recruitment. In addition, all surveys collect environmental and habitat information that provides a broad-based ecosystem approach to survey methodology. These data are essential to support current species-specific and habitat fishery management plans, while supporting marine spatial planning and ecosystem-based management approaches.

The data provided by SEAMAP supports management activities in four Regional Fishery Management Councils: Mid-Atlantic, South Atlantic, Gulf of Mexico, and Caribbean. SEAMAP data provide the basis for the majority of stock assessments conducted for managed species in these regions and are critical to current requirements to set Annual Catch Limits (ACL) for managed stocks. Data management activities include electronic data collection on all research surveys, centralization of SEAMAP data to improve accessibility, and coordination with the National Data Centers to link SEAMAP data to additional environmental data such as satellite and buoy data. These activities will ensure that SEAMAP data are easily accessible to fishery managers, scientists, and the general public.

The majority of funding is provided to the SEAMAP partners through NOAA cooperative agreements. The Southeast Fisheries Science Center's Mississippi Laboratories receive funds to support data management activities for all components of the SEAMAP program. The remaining funds are proportionally allocated to the regional SEAMAP components and then to the individual states. Coordination of SEAMAP activities is conducted through meetings of the SEAMAP components to ensure consistency in data collection and use.

Schedule and Milestones:

NMFS will continue to conduct monitoring, assessments, and forecasts to provide resource managers with the best available science on living marine and coastal resources, their habitats, and socio-economic conditions.

Antarctic Research

FY 2014 - 2018

- Cooperate on foreign research surveys to estimate the biomasses of Antarctic krill and fishes and contribute to stock assessments for 16 targeted stocks.
- Continue annual studies and assessments of krill-dependent predators (e.g., penguins and seals) at remote field camps.
- Contract small businesses to provide personnel for field surveys.

Aquaculture

FY 2014

- Continue implementing the NOAA Aquaculture Policy and DOC Aquaculture Policy.
- Align science and best management practices (BMPs) with challenges to efficient decision-making for shellfish aquaculture.

- Based on outcomes of Joint Subcommittee Aquaculture (JSA) Regulatory Task Force, continue to develop internal and interagency strategies to streamline interagency permit reviews and better provide science to permit reviewers and industry.

FY 2014 -2015

- Report on progress of the Washington State Shellfish Initiative.
- Monitor progress on research and technology transfer projects, cooperative research with non-federal partners and/or grants.
- .

FY 2014-2018

- Implement regulations for the Gulf of Mexico Fishery Management Plan for Aquaculture and begin the permitting of offshore finfish operations in the Gulf of Mexico.
- Update and report on NOAA Science Center research on environmentally sound aquaculture practices (e.g., genetics and disease management; research on sustainable aquaculture feeds).
- Continue research on the environmental impacts of shellfish aquaculture, and support restoration and commercial shellfish initiatives that provide locally produced food and jobs, help improve water quality, and restore coastal habitat.

Cooperative Research

FY 2014–2018

- Issue annual national notice for cooperative research Request For Proposals (RFP) competitive process.
- Conduct Spring and Fall ME-NH inshore trawl survey.
- Develop and implement more effective means of identifying and tracking the use of elective fishing gears in the Northeast so that the performance of these specific gears can be better understood and communicated to industry and managers.
- Develop ways to use recreational platforms in the Northeast to support the collection of more accurate abundance information and improved discard mortality estimates for stock assessments.
- Continue to collect socioeconomic data to investigate the impacts of Northeast sector management.
- Release annual Marine Resource Education Program (MREP) course curriculum for stakeholder participation.
- Issue Northeast Cooperative Research Program (NCRP) annual request for competitive research proposals focused on conservation engineering, bycatch reduction, and the establishment of multi-institution regional networks that pursue collaborative efforts to assist the industry in reducing bycatch of critical stocks with low ACLs, and to assist in the management transition to sector based management.
- Issue Annual Federal Funding Opportunity based on annual research priorities via Grants.gov for Southeast CRP competitive grants.
- Conduct Fall Western Gulf of Alaska Cooperative Acoustic Survey.
- Conduct fishery independent survey for bottomfish in waters around Oahu and Maui
- Conduct acoustic-video survey of West Coast rockfish.

Climate Regimes and Ecosystem Productivity

FY 2014–2018

- Maintain the NPCREP climate and ecosystem observing network and distribute data to decision-makers and stakeholders.
- Conduct long-term observations of climate-related impacts on Bering Sea ecosystem using variety of observation networks and platforms for use in integrated ecosystem assessments.
- Increase information on climate-related impacts on early life history stages of key Bering Sea fisheries.
- Deliver Bering Sea Ecosystem Forecasts to help living marine resource managers incorporate climate-related impacts into management decisions.

Information Analyses and Dissemination

FY 2014–2018

- Improve data models and data analysis tools to support fisheries science programs including fisheries statistics, stock assessment, socio-economics, and ecosystem.
- Improve statistical data analyses for stock assessments.
- Disseminate geospatial maps and geographic information to internal and external partners.
- Develop models for the region's salmon database, national catch share program and observer bycatch annually collected data.
- Develop environmental data products and information for ecosystem research and management to researchers, decision-makers and the public.
- Improve statistical data analyses for stock assessments.
- Incrementally improve and expand database development and integration and data standards.
- Improve data dissemination and sharing of integrated (climatology, socio-economic, ecosystem, and fishery-dependent and -independent) data and analyses, both internally and externally.
- Develop cost-effective uses of cutting-edge technologies to facilitate data analyses and dissemination.
- Incorporate ecosystem data, including habitat and climate forcing events, into stock assessments.
- Improve data documentation and information sharing.
- Improve data standards and system interoperability.

Marine Resources Monitoring, Assessment, and Prediction (MARMAP)

FY 2014–2018

- Provide fishery-independent assessments of reef fish abundance and life history survey of shelf and upper slope waters from Cape Lookout to Cape Canaveral.

NMFS Facilities Maintenance

FY 2014 –2018

- Maintain facilities to operational standards.
- Make necessary repairs to ensure safety.

Regional Studies

Chesapeake Bay

FY 2014

- Participate in the Chesapeake Bay Program activities to establish interagency

research and assessment priorities consistent with NOAA's mission.

- Identify two target tributaries suitable for oyster restoration in partnership with Maryland, Virginia, and the U.S. Army Corps of Engineers.
- Conduct side scan, multi-beam, and patent tong survey of proposed tributaries;
- Continue identification of reef restoration sites in targeted tributaries through multi-beam surveys.
- Monitor success of FY 2013 restoration efforts.
- Link habitat assessment and characterization efforts to Chesapeake Bay fisheries and living resources.
- Develop trophic and ecosystem based model runs.
- Develop the annual blue crab advisory report.
- Engage in science communications and training activities through the Environmental Science Training Center located in Oxford, Maryland.

FY 2014–FY 2018

- Continue to survey additional tributaries for oyster restoration and evaluate the progress made during the previous year's effort.
- Develop annual blue crab advisory reports.
- Continue science communication and training activities.
- Continue CBIBS operations, maintenance, and programmatic development

SEAMAP

FY 2014–2018

- Update SEAMAP management plan to expand coordination activities and improve standardization of collected data.
- Conduct summer and fall SEAMAP groundfish surveys in state and Federal waters; conduct spring and fall SEAMAP plankton surveys in state and Federal waters; conduct SEAMAP inshore and offshore longline surveys; and conduct spring and summer reef fish surveys in offshore waters.
- Provide fishery, habitat, biological, and environmental data to Regional Fishery Management Councils for incorporation into regional species stock assessments and for development of effective fisheries and habitat management strategies.
- Continue coordination with the National Data Centers for linkage of SEAMAP data to data collected via satellites, buoys, and other mechanisms to provide integrated information to support marine spatial planning and ecosystem-based management activities.

Deliverables:

Antarctic Research

FY 2014 – 2018

- Provide advice on ecosystem-based management of fisheries that impact krill, fin fishes, krill-dependent predators, and other components of the Antarctic ecosystem.
- Contribute to stock assessments for 16 targeted stocks of krill, fishes, and crabs managed by the CCAMLR.
- Conduct land-based research on, and assessments of, key krill predators in the Antarctic Peninsula region.
- Update NOAA's only long-term data set designed both to address fisheries management and conservation issues in the Southern Ocean and to understand the ecological impacts of climate change.
- Provide opportunities for other government agencies (both domestic and international) and academic partners to collaborate on climate change research (e.g., on ocean acidification)

using AMLR's extensive long term datasets.

Aquaculture

FY 2014

- Based on outcomes of NOAA Aquaculture Regulatory Working Group, develop internal and interagency strategies to make Federal aquaculture permit reviews more efficient and better provide the best available science to permit reviewers and industry.
- Develop and implement an interagency strategy for establishing a coordinated permitting system for Federal waters that addresses NOAA, EPA, and Corps requirements and builds on existing regional frameworks.
- Report on progress of key research and technology transfer projects, including Cooperative Research and Development Agreements, restoration and commercial shellfish aquaculture initiatives.

FY 2015

- Establish an interagency aquaculture initiative that supports jobs and innovation, through the National Science and Technology Council's Interagency Working Group on Aquaculture and other partnerships.
- Issue permits for aquaculture operations in the EEZ pursuant to the Magnuson-Stevens Act.

FY 2014 – 2018

- Update and report on research and development to support environmentally sound aquaculture practices (e.g., shellfish BMPs, genetics and disease management; development of sustainable aquaculture feeds, and studies and reports on environmental impacts of aquaculture).
- Prioritize Federal research and science program funds to make aquaculture operations more sustainable and develop and disseminate outreach materials to inform regulatory agencies, resource agencies, and the public of the state of the science.

Climate Regimes and Ecosystem Productivity

FY 2014 – 2018

- Ensure NPCREP climate and ecosystem observation network is operational and delivering high-quality data and products to living marine resource managers and stakeholders of the Bering Sea Ecosystem.
- Deliver Eastern Bering Sea Ecosystem Synthesis reports to the North Pacific Fisheries Management Council that includes assessment of current and future climate-related impacts on fisheries.
- Develop and update climate and ecosystem indices for presentation to the Scientific and Statistical Committee of the North Pacific Fishery Management Council.
- Monitor commercially important fish and shellfish in the Bering Sea.

Cooperative Research

FY 2014 – 2018

- All funded projects are required to produce final reports of their results, and all associated data will be archived at the respective Science Center.

Information Analyses and Dissemination

FY 2014 – 2018

- Support IOOS (Integrated Ocean Observing System); NOAA EDM (Enterprise Data Management); NMFS FIS (Fisheries Information Systems); GeoSpatial One Stop; data.gov requirements for data collection, processing, dissemination, archiving, and data sharing.
- Use advances in modern technology to improve information analysis, sharing, dissemination and storage capabilities within NOAA Fisheries including headquarters, Science Centers, regional offices, and Fisheries Information Networks (FINs).
- Continue to develop central data repository and improved data accessibility through data management programs such as FIS.
- Continue NMFS-wide data management program documentation through InPort.
- Continue to improve NMFS scientific information management infrastructure to support NMFS scientific enterprise.
- Development of data models and data analysis tools to support fisheries science programs including fisheries statistics, stock assessment, and socio-economics.
- Disseminate geospatial maps and geographic information to internal and external partners.
- Development of models for the region's salmon database, national catch share program and observer bycatch annual collected data.
- Development of environmental data products and information for ecosystem research and management to researchers, decision-makers and the public.

Marine Resources Monitoring, Assessment, and Prediction (MARMAP)

FY2014 and 2016

- Conduct reef fish assessment from Cape Lookout, North Carolina, to Fort Pierce, Florida.

NMFS Facilities Maintenance

FY 2014 – 2018

- Maintain the effectiveness and efficiency of staff at all locations.
- Maintain safety standards and reduce risks to employees.
- Maintain operational and functional efficiency.

Regional Studies

Chesapeake Bay

- Annually develop maps and habitat assessments in furtherance of oyster restoration.
- NCBO will collate sponsored research results and report out on the implications of the work.

SEAMAP

- FY 2014 – 2018: Provide ecosystem data to support ecosystem modeling and management activities.
- FY 2014 – 2018: Conduct all SEAMAP surveys in inshore and offshore waters and provide data to Regional Fishery Management Councils.
- FY 2016: Update SEAMAP management plan to improve coordination and standardization of SEAMAP surveys.

Performance Goals and Measurement Data:

Performance Measure: Number of Antarctic Fish Assessments (<i>Antarctic Research</i>)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	26	16	16	16	16	16	16

Description: This measure tracks the number of fish assessments completed in a year. There are a total of 26 stocks of Antarctic krill, finfishes, and crabs to quantify the functional relationships between krill, finfishes, their environment and their predators.

Performance Measure: Number of Research Projects Conducted Annually (Cooperative Research)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	48	50	50	50	50	50	50

Description: This performance measure projects the number of cooperative research projects conducted annually. These cooperative research projects do not include projects funded from the National Catch Share Program.

Performance Measure: The number of SEAMAP surveys conducted annually (<i>SEAMAP</i>)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	25	25	25	25	25	25	25

Description: This performance measure projects the number of surveys conducted annually within the Southeast Area Monitoring and Assessment Program (SEAMAP).

Performance Measure: Number of web-based tools or applications developed to support NMFS Science programs (<i>Information Analysis & Dissemination</i>).	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	19	19	19	19	19	19	19

Description: This performance measure projects the number of data analysis tools and web sites produced to support NMFS science data management mission each year.

Performance Measure: Scientific and Technical publications produced by the NMFS Scientific Publications Office <i>(Information Analysis & Dissemination)</i>	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	16	16	16	16	16	16	16
Description: This performance measure projects the number of scientific and technical publications produced by the NMFS Scientific Publications Office (SPO).							

Performance Measure: Conduct pre and post restoration monitoring in 20 tributaries out of 35 to 40 candidate tributaries by 2025 (cumulative) <i>(Chesapeake Bay</i>	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	0	1	3	5	7	9	11
Description: This performance measure projects the cumulative number of tributaries monitored before and after restoration has occurred.							

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

Antarctic Research: (Base Funding: \$1,692,000 and 9 FTE; Program Change: +\$1,423,000 and 0 FTE): NOAA requests an increase of \$1,423,000 and 0 FTE for a total of \$3,115,000 and 9 FTE to support NOAA's ability to meet mandates established in the U.S. Antarctic Marine Living Resources (AMLR) Conservation Act and significantly improve NOAA's ability to make scientific recommendations regarding the management and conservation of Antarctic fisheries by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).

Proposed Actions:

The requested increase will: 1) allow NOAA to collect data needed to meet the mandates of the U.S. AMLR Convention Act and support ecosystem based management of krill and finfish fisheries in the Southern Ocean; 2) support research cruises and acoustic surveys of Antarctic krill to estimate the biomass of this critical species. Krill is the largest fishery in Antarctica and the main source of food for most of the Southern Ocean's fishes, birds, and mammals; 3) ensure that the research cruises are appropriately staffed with contractors who help to collect data on all aspects of the Antarctic marine ecosystem; and 4) will provide for additional days at sea and logistics support for two field camps, thereby allowing NOAA researchers to conduct comprehensive surveys of Antarctic krill, fishes, and krill-dependent predators. This work will result in stock assessments for 26 targeted stocks of Antarctic krill, fishes, and crabs.

Given the growing demand of krill for human consumption (in the form of Omega-3 oil) and the expanding commercial interest in the krill fishery, managing this resource will have greater relevance in the next decade than in previous years. NOAA's AMLR Program routinely provides scientific data, analyses, and expertise to the CCAMLR that are not provided by any Member of the Commission, and CCAMLR sets fishery catch limits that are based on these products and services. This requested increase supports NOAA's 20+ years of ecosystem observations in the Antarctic, which otherwise would be at risk of being insufficient to support the development of U.S. Antarctic policy.

Statement of Need and Economic Benefits:

Under the authority of the U.S. Antarctic Marine Living Resources Convention Act of 1984 (Public Law 98-623), NOAA must conduct a program of "directed scientific research" to provide the scientific basis for fisheries management in the Southern Ocean and "achieve the United States goal of effective implementation of the objectives of the Convention [on the Conservation of Antarctic Marine Living Resources]". NOAA's AMLR Program is the United States' only long-term, ecosystem-based program designed specifically to address fisheries management and conservation issues in the Southern Ocean. The United States is the world's leading consumer of Antarctic marine living resources. For example, domestic imports of Patagonian and Antarctic toothfish (Chilean seabass) during 2011 totaled \$188 million³ and Omega-3 krill oil was approximately \$30 million. In addition, U.S. companies have expressed commercial interest in the krill fishery, with one company planning to start operations in 2014.

NOAA's AMLR Program is designed to support an ecosystem approach to management and includes work to estimate the abundances of targeted (e.g., krill and finfishes), dependent and associated (e.g., penguins and seals) species; monitor the impacts that U.S. and international fishing activities have on these species; collect scientific observations of fishing operations;

³ http://www.st.nmfs.noaa.gov/pls/webpls/trade_balance_p.results?qyear=2011&qproduct=TOOTHFISH&qoutput=TABLE

and monitor environmental conditions (e.g., sea temperatures, salinities, nutrient concentrations, and other oceanographic parameters) to account for climate variation.

Base Resource Assessment:

The base resources for this activity are described in the Other Activities Supporting Fisheries Programs base narrative.

Schedule and Milestones:

FY 2014-2018:

- Complete research surveys to estimate the biomasses of Antarctic krill and fishes and provide or contribute to stock assessments for 26 targeted stocks.
- Continue annual studies and assessments of krill-dependent predators (e.g., penguins and seals) at remote field camps.
- Contract small businesses to provide personnel for field work conducted at sea and at the field camps.

Deliverables:

FY 2014-2018:

- Complete or contribute to stock assessments for 26 targeted stocks of krill, fishes, and crabs managed by the CCAMLR.
- Complete land-based research on and assessments of key krill predators in the Antarctic Peninsula region.
- Provide annual updates to the NOAA’s only long-term data set designed both to address fisheries management and conservation issues in the Southern Ocean and to understand the ecological impacts of climate change.
- Provide opportunities for other government agencies (both domestic and international) and academic partners to conduct research (e.g., on ocean acidification) at sea.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of Antarctic Fish Assessments							
With Increase	N/A	N/A	26	26	26	26	26
Without Increase	26	16	16	16	16	16	16
Description: This measure tracks the 26 stocks of Antarctic krill, finfishes, and crabs in order to quantify the functional relationships between krill, finfishes, their environment and their predators. Total fish assessments will depend on the availability of capable vessels.							

Performance Measure: Number of Days at Sea for Antarctic Research	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	40	40	40	40	40
Without Increase	17	17	17	17	17	17	17
Description: This measure tracks the number of sea days for NOAA researchers to conduct comprehensive field surveys for 26 stocks of Antarctic krill, fishes, and crabs. The numbers refer to the total number of sea days in which AMLR scientists are in the field and able to collect data designed specifically to address the management issues of the Southern ocean.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Other Activities Supporting Fisheries
Program Change: Antarctic Research

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	712
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	711
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,423

Aquaculture: (Base Funding: \$5,687,000 and 15 FTE: Program Change: +\$1,061,000 and 0 FTE): NOAA requests an increase of \$1,061,000 and 0 FTE for a total of \$6,748,000 and 15 FTE for aquaculture research and development to support the goals of the NOAA and DOC Aquaculture Policies, to create jobs and increase the supply of sustainable domestic seafood.

Proposed Actions:

NMFS will use approximately \$531,000 of the requested increase to expand research to support the National Shellfish Initiative. This initiative aims to increase domestic shellfish farming and associated jobs and restore native shellfish populations in U.S. waters. Specific actions include conducting research and development projects at NMFS laboratories to identify ways to both maximize the ecosystem benefits (e.g., nutrient filtration, carbon sequestration, fish habitat) and the commercial value of shellfish aquaculture. The initiative also supports transferring technologies developed in federal labs indirectly to shellfish farmers through federal grants awarded to research partners.

NMFS will use the remaining \$530,000 to develop tools for siting and management of finfish aquaculture operations. Specific actions will include: providing coastal managers tools to better predict, minimize, and monitor environmental effects of finfish aquaculture operations; and, developing new aquaculture feeds using ingredients such as soy and fish processing trimmings to reduce reliance on fish meal and fish oil.

Statement of Need and Economic Benefits:

The 2011 NOAA and DOC Aquaculture Policies call for development of marine aquaculture in the U.S. to create jobs and increase the supply of domestic seafood. US aquaculture production is at a very low level relative to other nations and the size of our coastline, and there is much room for sustainable growth of the sector. Independent economic studies have estimated that doubling US aquaculture could generate over 50,000 jobs and a total economic value of \$4-8 billion⁴. Investment in research and development will inform appropriate siting and management of shellfish and finfish aquaculture operations. These proposed actions are two key areas of investment that NOAA, through consultation with stakeholders, has identified as priority areas. Investment in these areas would follow the successful efforts of other governments, such as Norway, that have made significant investments to spark robust and sustainable aquaculture industries in their coastal communities.

With most fish stocks either overexploited or fully exploited, and with fishery managers reducing commercial quotas to rebuild wild stocks, any significant new domestic seafood production will likely come from aquaculture. In the absence of new domestic aquaculture production, the percentage of seafood imports to the US (91%) and the seafood trade deficit (\$10.4 billion) will continue to increase.

Base Resource Assessment:

The base resources for this activity are described in the Other Activities Supporting Fisheries base narrative.

Schedule and Milestones:

- Conduct internal competition for research and development projects and award funding (FY 2014).

⁴ Rubino, Michael (editor). 2008. Offshore Aquaculture in the United States: Economic Considerations, Implications & Opportunities. U.S. Department of Commerce; Silver Spring, MD; USA. NOAA Technical Memorandum NMFS F/SPO-103. 263 pages.

- Analyze and disseminate results from 2-3 shorter-term studies (FY 2014).
- Analyze and disseminate results from longer term studies. (FY 2015).

Deliverables:

- Disseminate results of research studies to guide sustainable development of marine shellfish and finfish aquaculture (FY 2014-FY2018).
- Produce aquaculture management tools (siting models, GIS maps, and best management practices) to foster aquaculture production annually (FY 2015 – FY 2018).

Performance Measures:

Performance Measure: Number of disseminated results from research and analysis related to marine aquaculture	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	17	20	20	20	20
Without Increase	15	15	15	15	15	15	15
Description: The increase will support five additional disseminated research products annually, with a small lag as each study typically takes 1-2 years to be completed and disseminated.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Other Activities Supporting Fisheries
Program Change: Aquaculture

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	300
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	300
31 Equipment	261
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	200
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,061

Climate Regimes & Ecosystem Productivity: (Base Funding: \$1,796,000 and 14 FTE; Program Change: + \$2,052,000 and 0 FTE): NOAA requests an increase of \$2,052,000 and 0 FTE for a total of \$3,848,000 and 14 FTE for research and development work to expand surveys, and improve ecosystem assessments and forecasts of climate-related impacts on commercial fisheries, protected species, and the communities/economies that depend on them in the Arctic marine ecosystem.

Proposed Actions:

The requested increase will provide marine resource managers with better information on past, current, and future climate impacts in the rapidly changing Arctic marine ecosystem to sustain significant fisheries, protected species, and the community economies that depend on them. The funding will support critical research and development advances in three areas: (1) increase the existing network of in situ (buoys) and remote observing systems to improve tracking and assessment of climate-related changes in the marine ecosystem; (2) expand stock surveys into un-surveyed areas to assess how the loss of sea ice and changing ocean conditions are affecting the distribution and abundance of economically important fish, shellfish, and ice-dependent marine mammals; and (3) provide fisheries managers with information and early warnings of possible future climate impacts on fisheries recruitment in the region.

Statement of Need and Economic Benefit:

Climate-related changes (i.e., loss of sea ice, changes in ocean temperature, productivity) are already impacting fish stocks and protected species in the Bering Sea and surrounding Arctic marine ecosystems. These impacts are expected to increase, with significant implications for major U.S. commercial fisheries (e.g, walleye pollock, snow crab) in the Bering Sea, which account for more than 40 percent of the total U.S. catch.⁵

From 2001-2005, average summer water temperatures were 2° to 3°C higher than during the 1990s, causing a decrease in walleye pollock recruitment, which led the North Pacific Fishery Management Council to reduce the total allowable catch by as much as 45% and resulted in an estimated \$360 million loss to the U.S. economy. Climate models project these warmer ocean temperatures will become the norm within three decades, so tracking and projecting future impacts to the structure and function of the Bering Sea marine ecosystem is critical for sustainable management of walleye pollock, other commercial fish stocks, and protected species. With changing ocean conditions and dramatic decreases in the extent of sea ice, some commercially important species have shifted to areas outside of NOAA's current surveys and thus are incompletely monitored. The increase requested will provide fisheries managers with the stock surveys and other ecosystem information they need to prepare for, and respond to, current and future climate-related impacts on commercial fish stocks in this region.

In addition, there is little information on the distribution and abundance of protected ice seals that depend on sea ice for feeding and reproduction, and the impact of changing sea ice and other climate impacts for use in design and implementation of required conservation actions. Only one abundance estimate is available for these species and there are no regular population surveys to track and assess changes over time. By allowing NOAA to conduct stock assessments for ice seals, this effort will produce the biological information needed to determine the status of each stock or population, and design effective and efficient conservation programs to promote recovery of ice seal populations per requirements of the Marine Mammal Protection

⁵ Fisheries of the United States (2011), <http://www.st.nmfs.noaa.gov/st1/publications.html>

Act and Endangered Species Act (ESA). Currently, distinct population segments (DPSs) of the Ringed Seal are listed as Endangered and different DPS of the Bearded and Spotted Seal are listed as Threatened under the ESA.

Base Resource Assessment:

The base resources for this activity are described in the Other Activities Supporting Fisheries Programs base narrative.

Schedule and Milestones:

FY 2014-2018

- Enhance the existing climate and ecosystem observing network and distribution of data to stakeholders.

FY 2014

- Stage and prepare for expanded surveys for 5 commercial fish stocks

FY 2015

- Conduct expanded surveys for 5 commercial fish stocks

FY 2016

- Stage and prepare for expanded surveys for 4 protected species stocks;
- Refine and test the ecosystem status/forecast for the eastern Bering Sea large marine ecosystem that includes climate considerations.

FY 2017

- Conduct expanded surveys for 4 protected species stocks

FY 2018

- Repeat expanded surveys for 5 commercial fish stocks, (those completed in FY14);
- Refine climate and ecosystem forecast models including climate-mediated processes affecting living marine resources in the northern and southeastern Bering Sea.

Deliverables:

FY 2014-2018

- Enhance climate and ecosystem observing network and improved distribution of data to stakeholders.
- Expand survey information for 5 commercial fish stocks and 4 protected species stocks.
- Provide climate and ecosystem indices for use by North Pacific Fishery Management Council.
- Provide ecosystem status/forecast models for the eastern Bering Sea large marine ecosystem that includes climate considerations.
- Provide climate and ecosystem forecast models that include climate-mediated processes affecting living marine resources in the northern and southeastern Bering Sea.

Performance Goals and Measurement Data:

Performance Measure: Number of climate and ecosystem assessment products for management	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	1	2	4	4	5
Without Increase	1	1	1	1	1	1	1
<p>Description: This measure tracks the number of key research, assessment, and projection products that improve manager's understanding of climate impacts on Bering Sea fisheries and protected species. Products include ecosystem condition assessments (including past and current climate impacts), ecosystem condition projections (including possible future climate impacts), stock survey reports (assess changes in distribution of fish stocks and protected species), fish stock vulnerability assessment (stock risk level in changing climate), and protected species status reports. Targets are cumulative.</p>							

Performance Measure: Number of Expanded Stock Surveys	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0	5	5	9	14
Without Increase	0	0	0	0	0	0	0
<p>Description: This measure tracks the number of expanded stock surveys into un-surveyed areas to assess how the loss of sea ice and changing ocean conditions are affecting the distribution and abundance of commercial fisheries and protected species. This includes five commercially fished stocks (snow crab, yellowfin sole, Alaska plaice, Bering flounder, Alaska skate) and four protected species stocks (ringed seals, bearded seals, ribbon seals, and spotted seals).</p> <p>Note: The targets for this measure are cumulative.</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service **Sub-**
program: Other Activities Supporting Fisheries
Program Change: Climate Regimes & Ecosystem Productivity

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	1652
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	160
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	240
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	2,052

Cooperative Research: (Base Funding: \$11,008,000 and 17 FTE; Program Change:

+\$1,029,000 and 0 FTE): NOAA requests an increase of \$1,029,000 and 0 FTE for a total of \$12,037,000 and 17 FTE to leverage cooperative partnerships and maximize agency investments in science and management nationwide.

Proposed Actions:

NOAA requests additional resources to implement the science priorities identified in the 2010-2014 Northeast Cooperative Research Strategic Plan. These additional funds will support new cooperative research projects to complement long term monitoring programs in the Northeast/Mid-Atlantic by leveraging the capacity of a widely distributed network of commercial fishermen to collect unique biological and physical observations that would be unavailable through NOAA-NMFS resources (i.e., Industry-Based Surveys (IBS)). A key example of IBS, and where partial funding support for this increase would go, is the ME-NH inshore trawl survey which provides critical data for stock assessments on Atlantic herring, haddock, American lobster, and monkfish.

Statement of Need and Economic Benefit:

There is an increasing need for the agency's current fisheries science system to adequately support the requirements of catch limit and catch shares management policies, particularly in the Northeast/Mid-Atlantic regions, which combined represent over 30 percent of total U.S. commercial landings. This increase will go to addressing a top science priority identified in the 2010-2014 Northeast Cooperative Research Strategic Plan—specifically the development and implementation of innovative monitoring tools and pilot programs to address critical data gaps through IBS. IBS provide additional abundance measures to supplement existing monitoring programs, primarily by increasing the spatial and temporal resolution of local area surveys. IBS also includes detailed biological sampling of the catch and supplemental environmental observations (e.g., temperature, salinity, etc.), and produces greater industry exposure to scientific survey methods. Some survey projects also provide platforms for special experiments (e.g., tagging, gear development). It is important to note that the emphasis on IBS as well as the prioritized cooperative research strategy overall was a collaborative product between NOAA Fisheries, the Councils, and the Atlantic States Marine Fisheries Commission with broad stakeholder input (http://www.gmri.org/community/seastate/CR_NE_StratDir2010-14Final.pdf).

Base Resource Assessment:

The base resources for this activity are described in the Other Activities Supporting Fisheries Programs base narrative.

Schedule and Milestones:

FY 2014-2018

- Conduct Spring and Fall ME-NH inshore trawl survey;
- Conduct pilot surveys to address critical data gaps in scup, black sea bass, Gulf of Maine cod, and Southern New England yellowtail flounder.
- Pilot census coverage on Northeast small fisheries (e.g., tilefish, red crab) using study fleets;
- Release annual Marine Resource Education Program (MREP) course curriculum for stakeholder participation;
- Issue Northeast Cooperative Research Program (NCRP) annual request for competitive research proposals focused on conservation engineering, bycatch reduction, and the establishment of multi-institution regional networks that pursue collaborative efforts to

assist the industry in reducing bycatch of critical stocks with low ACLs, and to assist in the management transition to sector based management.

Deliverables:

FY 2014-2018

- Produce individual project final reports of the results and archive all associated data with the NOAA Fisheries Science Centers.

Performance Goals and Measurement Data:

Performance Measure: Number of Cooperative Research Projects Conducted Annually	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	54	54	54	54	54
Without Increase	48	50	50	50	50	50	50
Description: Estimate of the number of cooperative research projects conducted annually. These cooperative research projects do not include projects funded from the National Catch Share Program in FY 2012.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service

Sub-program: Other Activities Supporting Fisheries

Program Change: Cooperative Research

		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	1,029
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> 1,029

Information Analysis and Dissemination: (Base Funding: \$15,912,000 and 63 FTE; Program Change: +\$1,097,000 and 0 FTE): NOAA requests an increase of \$1,097,000 and 0 FTE for a total of \$16,559,000 and 63 FTEs to increase support for scientific information management systems and information dissemination activities.

Proposed Actions:

NOAA requests additional resources to augment the number of critical contracts, supplies and equipment purchases to support the development and expansion of NMFS data systems that jointly analyze a wide range of fishery data sets, as well as improve the ability to enhance the quality, utility and availability of fisheries decision-support tools. This enhancement will accelerate improvements in the quality and timeliness of data delivered to Living Marine Resources (LMR) managers and the information users. In addition, NMFS will analyze new and existing data sets and model fisheries oceanography interactions. This will help to improve, streamline and better integrate data and information NOAA has already collected and continues to collect. Priorities will be given to (1) building efficient data management tools to support management decision making and improve accessibility of data from activities such as environmental surveys through the development of enterprise level data management tools; (2) developing comprehensive data analysis, dissemination and reporting capabilities such as Fisheries One Stop Shop (FOSS); (3) increasing the amount of scientific information made available to the public, resource managers and research partners; and (4) continuing high quality and timely publications of scientific research papers, articles, and journals for an informed public.

Overall, the resulting improvements will expedite NMFS's capacity to analyze, produce and disseminate population assessments, forecasts, and other biological, ecological and oceanographic data and analyses, which are critical for sustainable management of LMRs and the implementation of ecosystem-based management of all NOAA managed resources.

Statement of Need and Economic Benefits:

The Magnuson Stevens Act (MSA), the Marine Mammal Protection Act, the Endangered Species Act, the Data Quality Act, the Paper Reduction Act and the Data Documentation Procedural Directive (DDPD) all include requirements and directives for data collection, analysis, and dissemination. NMFS has specific roles and responsibilities under these mandates that require staff expertise in model development for population dynamics and economic trends, statistical data analyses for stock assessments, database development and data warehousing, and computer programming. Additionally, this line enables NMFS to maintain Data Management systems and policies that are critically needed to support IOOS (Integrated Ocean Observing System); the Open Government Directive issued by the President = in 2009; and NOAA's EDMC (Environmental Data Management Committee); and FIS (Fisheries Information Systems) requirements for data collection, processing, dissemination, archiving, and data sharing. New investments will improve the scientific data and information management process as well as the infrastructure needed to enable NMFS to improve information technology, information sharing and storage capabilities within six Fisheries Science Centers and the Office of Science and Technology. The requested increase will continue improving NMFS's capabilities to technologically support its mission-critical initiatives, such as stock and oceanographic assessments and forecasts to inform ocean resource management, including economically important fisheries. NMFS will work to maximize data usage and laboratory efficiencies across the NMFS Fisheries Science Centers. This capability will allow NMFS to manage and process information and develop data management capabilities and products to increase data accuracy and information granularity, as well as the resolution of scientific information management products for fisheries

management to make decisions that creates maximum values; minimizes ecosystem and socio-economic impacts to the marine natural resources; and promotes long-term sustainability.

Base Resource Assessment:

The base resources for this activity are described in the Other Activities Supporting Fisheries base narrative.

Schedule and Milestones:

FY 2014-2018

- Improve population dynamics/assessment/management model development to include socio-economic, ecosystem, and environmental considerations.
- Improve statistical data analyses for stock assessments.
- Incrementally improve and expand database development, integration and data warehousing.
- Improve data dissemination and sharing of integrated (climatology, socio-economic, ecosystem, and fishery dependent and independent) data and analyses both internally and externally.
- Develop cost effective uses of cutting edge technologies to facilitate data analyses and dissemination.
- Incorporate ecosystem data, including habitat and climate forcing events, into stock assessments.
- Improve data documentation and information sharing.
- Improve data standards and system interoperability.

Deliverables:

FY 2014-2018

- Support IOOS (Integrated Ocean Observing System); DMAC (Data Management and Communications); FIS (Fisheries Information Systems) and NOAA DMC (Data Management Committee) requirements for data collection, processing, dissemination, archiving, and data sharing.
- Use advances in modern technology to improve information analysis, sharing, dissemination and storage capabilities within NMFS including headquarters, science centers, regional offices, and with Fisheries Information Networks (FINs).
- Develop central and regionally integrated data repositories and tools to improve data accessibility through data management programs such as FIS, FINSS, SIS and NOAA PASS.
- Continue NMFS wide data management program documentation through InPort.
- Continue building NMFS scientific information management infrastructure to support NMFS scientific enterprise.

Performance Goals and Measurement Data

Performance Measure: Number of web-based tools or applications developed to support NMFS Science	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	19	19	19	19	19
Without Increase	19	19	19	19	19	19	19
Description: This performance measure projects the number of data analysis tools and web sites produced to support NMFS science data management mission each year. Funding increases are distributed proportionally throughout the six science centers in support of tool development but do not directly impact the number of tools being developed.							

Performance Measure: Scientific and Technical publications produced by the NMFS Scientific Publications Office	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	16	16	16	16	16
Without Increase	16	16	16	16	16	16	16
Description: This performance measure projects the number of scientific and technical publications produced by the NMFS Scientific Publications Office (SPO). Funding increases are distributed proportionally throughout the six science centers in support of publications produced but do not directly impact the final number of publications.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service **Sub-**

program: Other Activities Supporting Fisheries

Program Change: Information Analysis and Dissemination

		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	1,097
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> 1,097

Information Analysis and Dissemination: West Coast Proposal: (Program Change: - \$5,000,000 and -27 FTE: Information Analysis and Dissemination -\$450,000 and -3 FTE):

NOAA requests a decrease of \$450,000 and 3 FTE for a total of \$16,559,000 and 60 FTE in the Information Analysis and Dissemination PPA to reconfigure NMFS's Southwest and Northwest Regional Offices into a single West Coast Regional Office, and to close the Pacific Grove Laboratory in California.

NOAA requests a decrease of \$5,000,000 and 27 FTE in several NOAA programs as part of the President's efforts to find efficiencies and savings in a constrained fiscal environment. These efficiencies will be achieved, by reducing program activities and reconfiguring the West Coast Regional Offices, closing a science lab and eliminating support for a specific survey and assessment, as well as a research program. The various budget lines affected by this proposal are identified below and will be discussed throughout the Congressional Justification in budget order.

The proposal includes reductions in following budget lines:

Protected Resources Research and Management	-\$2,591,000	page NMFS - 18
Marine Mammals	-\$ 7,000	page NMFS - 26
Pacific Salmon	-\$ 484,000	page NMFS - 44
Fisheries Research and Management	-\$1,460,000	page NMFS - 68
Expand Annual Stock Assessments	-\$ 8,000	page NMFS - 77
<u>Information, Analysis, and Dissemination</u>	<u>-\$ 450,000</u>	<u>current page</u>
Total	-\$5,000,000	

Proposed Actions

Under this part of the proposal, NMFS will close the Pacific Grove Laboratory and eliminate three FTE from the Information Analysis and Dissemination PPA. The work supported at the lab to assess, understand and predict the effects of climate and environmental variability that are important to fish populations, protected species, and marine ecosystems will be maintained in the Santa Cruz and La Jolla Laboratories, which are larger and more modern facilities and can accommodate the additional programs currently conducted at Pacific Grove.

West Coast Proposal:

A reduction of \$5.0 million is requested to reduce lower value program activities and reconfigure NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office; eliminate the Puget Sound ecosystem surveys and assessments; close the Pacific Grove Laboratory in California; and end the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon. NMFS' reconfiguration of the Northwest and Southwest Regional offices will result in the elimination up to 20 staff including one Regional Administrator and one Deputy Regional Administrator. The geographic distribution of the remaining staff will be driven by programmatic needs. As part of eliminating the Puget Sound ecosystem survey, NMFS would lay up the small vessel, R/V *Harold Streeter*, and eliminate approximately four staff. Laying up this vessel would eliminate costs in operating and maintenance of this vessel. With closure of the Pacific Grove Laboratory, programmatic functions would be maintained by relocating staff to the Santa Cruz and La Jolla Laboratories. Both Santa Cruz and La Jolla are larger and more modern facilities that can accommodate the additional programs currently conducted at Pacific Grove. Approximately three staff may be eliminated instead of transferring to Santa Cruz and La Jolla. Because the Northwest Region would no longer support the Newport Seawater Research Program, staff

currently working on this program would be relocated to the Manchester Laboratory in Washington State.

The reconfiguration of the West Coast regional offices will result in a leaner management structure and reduction in staff capacity, while the proposed facilities changes will reduce NMFS's physical footprint and associated costs over time. These changes reflect NOAA's efforts to focus its limited resources on its highest priority mission functions and reduce costs to the greatest possible extent.

Base Resource Assessment:

The base resources for activities associated with these reductions are described in the Other Activities Supporting Fisheries base narratives.

Schedule and Milestones:

- The excess and disposal of the Pacific Grove Facility should begin in FY 2013, as NMFS will need to continue to pay utility costs at the vacated facility pending GSA disposal.

Deliverables:

N/A

PROGRAM CHANGE PERSONNEL DETAIL

Program: National Marine Fisheries Service
Sub-program: Other Activities Supporting Fisheries
Program Change: West Coast Proposal

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Director, Regional Office	TBD	SES	0	170,000	0
Deputy Director, Regional Office	TBD	ZP-V	0	113,735	0
Various titles	TBD	Various	-3	116,093	(348,279)
Subtotal			<u>-3</u>		<u>(348,279)</u>
2013 Pay Adjustment (0.5%)					<u>(1,741)</u>
Total					<u>(350,020)</u>
less Lapse		0%	<u>0</u>		<u>0.00</u>
Total full-time permanent (FTE)			-3		<u>(350,020)</u>
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(350,020)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-3
Other than full-time permanent	<u>0</u>
Total	-3
Authorized Positions:	
Full-time permanent	-3
Other than full-time permanent	<u>0</u>
Total	-3

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Marine Fisheries Service
Sub-program: Other Activities Supporting Fisheries
Program Change: West Coast Proposal

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$(350)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>(350)</u>
12 Civilian personnel benefits	(100)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(450)</u>

Marine Resources Monitoring, Assessment & Prediction Program (MARMAP): (Base Funding: \$505,000 and 0 FTE; Program Change: +\$337,000 and 0 FTE): NOAA requests an increase of \$337,000 and 0 FTE for a total of \$842,000 and 0 FTE to provide additional grant funding for cooperative fisheries activities with the South Carolina Marine Resources Research Institute (MRRI) and NMFS. Increase in research activities, such as surveys, reef habitat mapping, and tagging studies will be performed. These important projects are conducted to determine the distribution, relative abundance, and critical habitat of economically and ecologically important fishes of the South Atlantic Bight (SAB). This data provides critical input for the assessments of stock status conducted by NOAA Fisheries, and greatly assists federal stock assessment scientists and decision makers in the management of the snapper/grouper complex of the SAB.

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service

Sub-program: Other Activities Supporting Fisheries

Program Change: MARMAP

		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	337
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> 337

Regional Studies: Chesapeake Bay Studies and Restoration: (Base Funding: \$5,178,000 and 16 FTE; Program Change: -\$918,000 and -1 FTE): NOAA requests a decrease of \$918,000 and 1 FTE for Chesapeake Bay Studies, for a total of \$4,260,000 and 15 FTE for Chesapeake Bay Studies and Restoration.

Proposed Actions:

NOAA proposes to reduce the following activities in the NOAA Chesapeake Bay Office (NCBO):

- Administrative costs will be reduced by approximately \$123,000 through consolidating office space, reducing travel, vehicles, supplies, and equipment.
- Funding for environmental education grants will be eliminated, resulting in a savings of approximately \$300,000.
- Funding for multi-species fisheries research grants will be reduced resulting in a savings of approximately \$150,000.
- One FTE and three contractors will be eliminated from the program, resulting in savings of approximately \$345,000.

NCBO will continue to engage in fisheries research, oyster restoration, and science communication, but at reduced levels. Environmental observations will be fully supported through the Chesapeake Bay Interpretive Buoy System (CBIBS). NCBO maintains programs in all four of these areas in response to the office's authorizing legislation, Executive Order 13508, and the Chesapeake Bay Program Agreement. Collectively these drivers call for NCBO to lead fisheries, oyster, education, and observation programs in the Chesapeake Bay.

Base Resource Assessment:

The base resources for this activity are described in the Other Activities Supporting Fisheries base narrative.

Schedule and Milestones:

FY 2014

- Maintain and operate CBIBS and associated programs.
- Develop Federal Funding Opportunity calling for proposals aimed at quantifying the relationship between habitat and fisheries health.
- Participate in the Chesapeake Bay Program activities to establish interagency research and assessment priorities consistent with NOAA's mission.
- Identify two target tributaries suitable for oyster restoration in partnership with Maryland, Virginia, and the U.S. Army Corps of Engineers.
- Conduct side scan survey of proposed tributaries.
- Continue identification of reef restoration sites in targeted tributaries through multi-beam surveys.
- Monitor success of FY 2012 restoration efforts.
- Link habitat assessment and characterization efforts to Chesapeake Bay fisheries and living resources.
- Develop the annual blue crab advisory report.
- Engage in science communications and training activities through the Environmental Science Training Center at Oxford, Maryland.

FY 2014 – FY 2018

- Operate and maintain CBIBS.
- Administer multi-species grants.
- Continue to survey additional tributaries for oyster restoration and evaluate the progress made during the previous year's effort.

- Develop annual blue crab advisory reports.
- Continue science communication and training activities.

Deliverables:

- Each year NCBO will develop maps and habitat assessments in furtherance of oyster restoration.
- NCBO will collate sponsored research results and report out on the implications of the work.

Performance Goals and Measurement Data

Performance Measure: Number of students reached through environmental literacy efforts in Chesapeake Bay	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	0	0	0	0	0
Without Decrease	3,250	3,250	3,250	3,250	3,250	3,250	3,250
Description: This performance measure projects the number of ecosystem-fisheries students reached through environmental literacy programs each year. Note: There is a one year lag between funding and performance results.							

Performance Measure: Number of CBIBS buoys maintaining 90% (industry standard) 24 hr data return	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	10	10	10	10	10
Without Decrease	10	10	10	10	10	10	10
Description: Operate and maintain a system of 10 oceanographic and atmospheric buoys in the Chesapeake Bay.							

PROGRAM CHANGE PERSONNEL DETAIL

Program: National Marine Fisheries Service **Sub-**
program: Other Activities Supporting Fisheries
Program Change: Chesapeake Bay Studies and Restoration

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Fisheries Biologist	Annapolis, MD	ZA-IV	-1	89,033	(89,033)
Subtotal			<u>-1</u>		<u>(89,033)</u>
2013 Pay Adjustment (0.5%)					<u>(445)</u>
Total					<u>(89,478)</u>
less Lapse		0%	<u>0</u>		<u>0.00</u>
Total full-time permanent (FTE)			-1		<u>(89,478)</u>
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(89,478)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-1
Other than full-time permanent	<u>0</u>
Total	-1

Authorized Positions:

Full-time permanent	-1
Other than full-time permanent	<u>0</u>
Total	-1

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service **Sub-**
program: Other Activities Supporting Fisheries
Program Change: Chesapeake Bay Studies and Restoration

Object Class	2014 Decrease
Personnel compensation	
Full-time permanent	(89)
Other than full-time permanent	0
Other personnel compensation	0
Special personnel services payments	0
Total personnel compensation	(89)
Civilian personnel benefits	(27)
Benefits for former personnel	0
Travel and transportation of persons	0
Transportation of things	(100)
Rental payments to GSA	0
Rental Payments to others	0
Communications, utilities and miscellaneous charges	0
Printing and reproduction	0
Advisory and assistance services	(189)
Other services	0
Purchases of goods & services from Gov't accounts	0
Operation and maintenance of facilities	0
Research and development contracts	0
Medical care	0
Operation and maintenance of equipment	0
Subsistence and support of persons	0
Supplies and materials	0
Equipment	(63)
Lands and structures	0
Investments and loans	0
Grants, subsidies and contributions	(450)
Insurance claims and indemnities	0
Interest and dividends	0
Refunds	0
Total obligations	(918)

The following exhibit shows the summary object class detail for Other Activities Supporting Fisheries program changes less than \$100,000. Please contact the NOAA Budget Office if details for any of these changes are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: National Marine Fisheries Service
Sub-program: Other Activities Supporting Fisheries
Program Change: Multiple

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	200
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>200</u>

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: PACIFIC COASTAL SALMON RECOVERY FUND

Land-use, harvest, and hatchery practices, as well as changing ocean conditions, have increased the vulnerability of Pacific salmonid populations, contributing to their decline and the listing of many populations as threatened or endangered under the Endangered Species Act (ESA). Over the course of their life cycle, salmonids require suitable habitat in main stem rivers, tributaries, coastal estuaries, wetlands, and the Pacific Ocean. A number of environmental challenges affect the survival of salmonids, including variability in ocean conditions, destruction of nearshore and freshwater habitats, and other natural- and human-caused ecosystem changes.

The Pacific Coastal Salmon Recovery Fund (PCSRF) was established by Congress in FY 2000 to protect, restore, and conserve Pacific salmonids and their habitats. The Congressionally authorized activities that were funded under the PCSRF program included: (1) conserving salmon and steelhead populations that are listed as threatened or endangered, or identified by a state as at-risk to be so-listed; (2) maintaining populations necessary for exercise of tribal treaty fishing rights or native subsistence fishing; and (3) conserving Pacific coastal salmon and steelhead habitat. NMFS provides competitive funding to states and tribes of the Pacific Coast region (Washington, Oregon, California, Idaho, Nevada, and Alaska) to implement projects that restore and protect salmonid populations and their habitats. States are required to provide 33 percent matching funds, and PCSRF awards are supplemented further by significant private and local contributions at the project level.

Key accomplishments for PCSRF-funded activities from 2000-2012 include:

- Restoration, protection, and accessibility of more than 993,000 acres of habitat;
- Nearly 7,000 miles of stream opened; and
- More than 238 million fish marked, which has supported efforts to gather data for improved stock identification, more accurate fish abundance estimates, and more effective management of selective fisheries on hatchery fish.

Habitat restoration activities funded by PCSRF are an important component of overall salmonid recovery efforts in the Pacific Coast. Restoration projects have increased the quality and quantity of spawning and rearing habitat from stream headwaters to coastal estuaries. Upstream restoration activities have controlled erosion, enhanced in-stream flow and streambed conditions, and provided the habitat necessary for successful spawning and egg survival. Estuary and wetland restoration projects closer to the coast have protected and improved feeding and rearing habitat used by juvenile fish as they transition from freshwater to the open ocean. PCSRF restoration projects have also removed over 2,500 barriers to fish passage along small creeks and streams, restoring access to high-quality habitat. Additionally, PCSRF habitat projects provided a number of benefits to the human community, including enhanced water quality, recreation opportunities, flood control, and coastline protection. PCSRF restoration projects also provide significant benefits to local communities in terms of increased jobs and economic activity. Recent analyses suggest that up to 17 new “green” jobs² and \$1.86 million³ in additional economic activity result for each \$1 million investment of PCSRF and state-matching funds.

² Edwards, P.E.T., A.E. Sutton-Grier and C.E. Coyle. 2012. Investing in nature: Restoring coastal habitat blue infrastructure and green job creation. *Marine Policy* (2012), <http://dx.doi.org/10.1016/j.marpol.2012.05.020>

³ Nielsen-Pincus, M., and C. Moseley. 2009. A Preliminary Estimate of Economic Impact and Job Creation from the Oregon Watershed Enhancement Board’s Restoration Investments. Ecosystem Workforce Program, Briefing Paper #13. Institute for a Sustainable Environment, University of Oregon. 2pp. <http://ewp.uoregon.edu/sites/ewp.uoregon.edu/files/downloads/bp13.pdf>

Since 2000, the PCSRF has funded over 10,500 projects along the Pacific coast that contribute to preventing extinction and improving the status of ESA-listed species and their habitats, as well as supporting and protecting healthy populations. Projects range from single- site culvert replacement to hundreds of acres of habitat acquisition and restoration. As projects are completed, state and tribal grantees are required to collect and report project specific data to inform the PCSRF performance metrics. The PCSRF program ensures that funded projects are implementing the priority actions that address the identified factors limiting salmon and steelhead recovery, as specified in NOAA's ESA recovery plans.

Schedule and Milestones:

FY 2014 – 2018:

- Issue a *Federal Funding Opportunity through Grants.gov* soliciting proposals for Pacific salmon recovery from states and tribes from the Pacific Coast region.
- Review Pacific salmon recovery proposals per the NOAA program priorities and evaluation criteria detailed in the Federal Funding Opportunity.
- Competitively award Pacific salmon recovery grants to states and tribes from the Pacific region to implement habitat restoration and recovery projects focused on improving the status of salmonid population and their habitats.
- Annually review, evaluate, and assess the effectiveness of funded projects and programs to improve species recovery.
- Track progress, measure performance, and ensure accountability in the use of PCSRF funds.

Deliverables:

FY 2014 – 2018:

- Enhance availability and quality of salmonid habitat.
- Address major habitat factors limiting the recovery of ESA-listed salmonids.
- Improve the status of ESA-listed salmonids.
- Maintain healthy salmon populations.
- Recover salmonid populations to self-sustaining levels in fully functioning ecosystems.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of Habitat Acres Restored (Annually) (Measure 17f)	58,120	60,228	53,500	49,350	46,000	46,000	46,000
Habitat Acres	4,033	8,170	4,000	4,000	4,000	4,000	4,000
ARRA Acres	4,209	58	1,500*	350	0	0	0
PCSRF acres	49,878	52,000	48,000	45,000	42,000	42,000	42,000

Description: The measure above tracks the number of habitat acres made accessible through PCSRF only. The FY 2014 and outyear targets represent accomplishments with funding from prior years. The PCSRF awards 5-year grants, and in developing the targets NMFS assumes two years of project "ramp-up" (e.g., project selection, design, permitting, and implementation), with the performance accomplishments being achieved and reported in years 3-5.

Note: For PCSRF acres, the methodology for target-setting was based on average acres restored in previous years, without regard to trends in cost per acre. NMFS is now seeing a trend toward higher per-acre costs resulting in smaller more expensive projects, which impacts future targets.

**American Recovery and Reinvestment Act (ARRA)*

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Stream miles made accessible	1,470	1,118	690	590	550	550	550
Habitat stream miles	331	519	100	100	100	100	100
ARRA stream miles	51	39	70*	0	0	0	0
PCSRF stream miles	1,088	560	520	490	450	450	450

Description: The measure above tracks the number of stream miles made accessible through PCSRF only. The FY 2014 and outyear targets represent accomplishments with funding from prior years. The PCSRF awards 5-year grants, and in developing the targets NMFS assumes two years of project "ramp-up" (e.g. project selection, design, permitting, and implementation), with the performance accomplishments being achieved and reported in years 3-5.

Note: Stream miles made accessible outer-year targets have dropped due to the improvements in grantee reporting to more accurately reflect smaller more expensive projects

** American Recovery and Reinvestment Act (ARRA)*

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

Pacific Coastal Salmon Recovery Fund (PCSRF) (Base Funding: \$65,398,000 and 0 FTE; Program Change: -\$15,398,000 and 0 FTE): NOAA requests a decrease of \$15,398,000 and 0 FTE for a total of \$50,000,000 and 0 FTE.

Proposed Actions:

NOAA proposes to maintain a significant level of investment in habitat protection and restoration in support of recovering Pacific salmon populations listed under the Endangered Species Act, as well as maintaining non-listed populations necessary for the exercise of tribal treaty rights. The Pacific Coastal Salmon Recovery Fund (PCSRF) remains an essential tool for achieving these goals. PCSRF-funded efforts will be coordinated with other NOAA programs such as Mitchell Act, Pacific Salmon Treaty, NOAA Restoration Center's Community Based Restoration Program (CBRP), and Species Recovery Grants. These NOAA programs will be administered in close coordination to realize efficiencies, identify strategic opportunities, ensure complementary implementation in the furtherance of the programs' respective goals, as well as to achieve significant conservation benefits on a national scale.

PCSRF activities along the Pacific coast are part of our federal commitment to salmon and steelhead recovery and treaty Indian fishing rights, and represent a conservation effort that enables tens of billions of dollars of economic activity in these western states. Seventeen Evolutionary Significant Units of Pacific salmon and 11 Distinct Population Segments of Steelhead are listed under the Endangered Species Act. PCSRF funds are used to protect and recover habitat, assist in the planning and design of restoration projects, support research and monitoring efforts, encourage outreach and education with local communities and land owners, implement hatchery reform efforts, implement management strategies that allow for tribal harvest while being protective of at-risk populations, and maintain salmon populations necessary for the exercise of Native American treaty rights and to meet federal tribal trust obligations.

Base Resource Assessment:

The base resources for this activity are described in the Pacific Coastal Salmon Recovery Fund base narrative.

Schedule and Milestones:

FY 2014 – 2018

- Issue a *Federal Funding Opportunity through Grants.gov* soliciting proposals for Pacific salmon recovery from states and tribes from the Pacific Coast region.
- Review Pacific salmon recovery proposals per the NOAA program priorities and evaluation criteria detailed in the Federal Funding Opportunity.
- Competitively award Pacific salmon recovery grants to states and tribes from the Pacific region to implement habitat restoration and recovery projects focused on improving the status of salmonid population and their habitats.
- Annually review, evaluate, and assess the effectiveness of funded projects and programs to improve species recovery.
- Track progress, measure performance, and ensure accountability in the use of PCSRF funds.

Deliverables:

FY 2014 – 2018

- Enhance availability and quality of salmonid habitat.
- Address major factors limiting the recovery of ESA-listed salmonids.
- Improve the status of ESA-listed salmonids.
- Improve management practices.
- Maintain healthy salmon populations.

Performance Goals and Measurement Data:

Performance Measure: Number of Habitat Acres Restored (Annually) (Measure 17f) (PCSRF only)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	52,000	48,000	45,000	39,000	35,000	32,000
Without Decrease	49,878	52,000	48,000	45,000	42,000	42,000	42,000
<p>Description: The measure above tracks the number of habitat acres protected through PCSRF only. The FY 2014 and outyear targets represent accomplishments with funding from prior years. The PCSRF awards 5-year grants, and in developing the targets NMFS assumes 2 years of project "ramp-up" (e.g., project selection, design, permitting, and implementation), with the performance accomplishments being achieved and reported in years 3-5.</p> <p>Note: For PCSRF acres, the methodology for target-setting was based on average acres restored in previous years, without regard to trends in cost per acre. NMFS is now seeing a trend toward higher per-acre costs resulting in smaller more expensive projects, which impacts future targets.</p>							

Performance Measure: Number of Stream Miles Made Accessible (Annually) PCSRF Only	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	560	520	490	420	380	350
Without Decrease	1,088	560	520	490	450	450	450
<p>Description: The measure above tracks the number of stream miles made accessible through PCSRF only. The FY 2014 and outyear targets represent accomplishments with funding from prior years. The PCSRF awards 5-year grants, and in developing the targets NMFS assumes 2 years of project "ramp-up" (e.g., project selection, design, permitting, and implementation), with the performance accomplishments being achieved and reported in years 3-5.</p> <p>Note: There is a high annual variability in stream miles made accessible depending on the type of projects that are completed in that year. For example, FY 2012 was the third highest amount on record.</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Marine Fisheries Service
Sub-program: Pacific Coastal Salmon Recovery Fund
Program Change: PCSRF

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(15,398)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(15,398)

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 Pacific Coastal Salmon Recovery **SUMMARY**
OF RESOURCE REQUIREMENTS (Dollar
 amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution	0	0	65,398	65,398
less: Prior year obligations	0	0	0	0
less: Terminations	0	0	0	0
FY 2014 Base	0	0	65,398	65,398
plus: 2014 Program Changes	0	0	(15,398)	(15,398)
FY 2014 Estimate	0	0	50,000	50,000

		FY 2012		FY 2013 Annualized Continuing Resolution		FY 2014 Base Program		FY 2014 Estimate		Increase/Decrease	
		Actuals Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount		Personnel	Amount
Pacific Coastal Salmon Recovery Account	Pos/BA	0	64,935	0	65,398	0	65,398	0	50,000	0	(15,398)
	FTE/OBL	0	64,933	0	65,400	0	65,398	0	50,000	0	(15,398)
Total: Pacific Coastal Salmon Recovery Account	Pos/BA	0	64,935	0	65,398	0	65,398	0	50,000	0	(15,398)
	FTE/OBL	0	64,933	0	65,400	0	65,398	0	50,000	0	(15,398)

Department of Commerce
 National Oceanic and Atmospheric Administration
 Pacific Coastal Salmon Recovery **SUMMARY**
OF RESOURCE REQUIREMENTS (Dollar
 amounts in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/	
	Actuals		Annualized Continuing Resolution		Base Program		Estimate		Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	64,933	0	65,400	0	65,398	0	50,000	0	(15,398)
Total Obligations	0	64,933	0	65,400	0	65,398	0	50,000	0	(15,398)
Adjustments to Obligations:										
Unobligated balance, expiring	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	0	0	(2)	0	0	0	0	0	0
Unobligated balance, adj. EOY	0	2	0	0	0	0	0	0	0	0
Total Budget Authority	0	64,935	0	65,398	0	65,398	0	50,000	0	(15,398)
Financing from Transfers and Other:										
Transfer to ORF	0	65	0	0	0	0	0	0	0	0
Net Appropriation	0	65,000	0	65,398	0	65,398	0	50,000	0	(15,398)

Department of Commerce
National Oceanic and Atmospheric Administration
Pacific Coastal Salmon Recovery
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

		FY 2012	FY 2013	FY 2014	FY 2014	Increase/ (Decrease)
		Actuals	Annualized Continuing Resolution	Base	Estimate	over 2014 Base
<u>Object Class</u>						
11	Personnel compensation					
11.1	Full-time permanent	138	0	0	0	0
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	0	0	0	0	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	138	0	0	0	0
12.1	Civilian personnel benefits	38	0	0	0	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	1	0	0	0	0
22	Transportation of things	0	0	0	0	0
23.1	Rental payments to GSA	25	0	0	0	0
23.2	Rental payments to others	0	0	0	0	0
23.3	Commun., util., misc. charges	0	0	0	0	0
24	Printing and reproduction	0	0	0	0	0
25.2	Other services	286	0	0	0	0
26	Supplies and materials	0	0	0	0	0
31	Equipment	0	0	0	0	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	64,445	65,400	65,398	50,000	(15,398)
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Pacific Coastal Salmon Recovery
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

44	Refunds	0	0	0	0	0
99	Total Obligations	64,933	65,400	65,398	50,000	(15,398)
	Less prior year recoveries	0	0	0	0	0
	Less unobligated balance, SOY	0	(2)	0	0	0
	Plus unobligated balance, EOY	2	0	0	0	0
	Unobligated Balance, expiring	0	0	0	0	0
	Total Budget Authority	64,935	65,398	65,398	50,000	(15,398)

APPROPRIATION ACCOUNT: FISHERMEN'S CONTINGENCY FUND

For FY 2014, NMFS requests a total of \$350,000 for the Fishermen's Contingency Fund.

BASE JUSTIFICATION FOR FY 2014:

The Fishermen's Contingency Fund is authorized under Section 402 of Title IV of the Outer Continental Shelf Lands Act Amendments of 1978. NOAA compensates U.S. commercial fishermen for damage or loss of fishing gear, vessels, and resulting economic loss caused by obstructions related to oil and gas exploration, development, and production in any area of the Outer Continental Shelf. The funds used to provide this compensation are derived from fees collected on an annual basis by the Secretary of the Interior from the holders of leases, exploration permits, easements, or rights-of-way in areas of the Outer Continental Shelf.

This activity is funded totally through user fees. Disbursements can be made only to the extent authorized in appropriation acts.

PROPOSED LEGISLATION:

For carrying out the provisions of Title IV of Public Law 95-372, not to exceed \$350,000, to be derived from receipts collected pursuant to that Act, to remain available until expended.

PROGRAM CHANGE FOR FY 2014:

NOAA requests a decrease of \$2,000 and 0 FTE for a total of \$350,000 and 0 FTE.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fishermen's Contingency Fund **SUMMARY OF**
RESOURCE REQUIREMENTS (Dollar amounts
 in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution	1	1	352	352
plus: Obligations from prior year balances	0	0	0	0
plus: Other Adjustments-to-Base	0	0	0	0
FY 2014 Base	1	1	352	352
plus: 2014 Program Changes	0	0	(2)	(2)
FY 2014 Estimate	1	1	350	350

		FY 2012		FY 2013 Annualized Continuing Resolution		FY 2014 Base Program		FY 2014 Estimate		Increase/ Decrease Personnel Amount	
		Actuals Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount			
Fishermen's Contingency Fund	Pos/BA	1	350	1	352	1	352	1	350	0	(2)
	FTE/OBL	1	346	1	366	1	352	1	350	0	(2)
Total: Fishermen's Contingency Fund	Pos/BA	1	350	1	352	1	352	1	350	0	(2)
	FTE/OBL	1	346	1	366	1	352	1	350	0	(2)

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fishermen's Contingency Fund **SUMMARY OF**
RESOURCE REQUIREMENTS (Dollar amounts
 in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/	
	Actuals		Annualized Continuing Resolution		Base Program		Estimate		Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	1	346	1	366	1	352	1	350	0	(2)
Total Obligations	1	346	1	366	1	352	1	350	0	(2)
Adjustments to Obligations:										
Unobligated balance, adj. SOY	1	(10)	0	(14)	0	0	0	0	0	0
Unobligated balance, EOY	1	14	0	0	0	0	0	0	0	0
Total Budget Authority	1	350	1	352	1	352	1	350	0	(2)
Financing from Transfers and Other:										
Discretionary Appropriation	0	0	0	0	0	0	0	0	0	0
Net Appropriation	1	350	1	352	1	352	1	350	0	(2)

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fishermen's Contingency Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

		FY 2012	FY 2013	FY 2014	FY 2014	Increase/ (Decrease)
		Actuals	Annualized Continuing Resolution	Base	Estimate	over 2014 Base
Object Class						
42	Insurance claims and indemnities	346	366	352	350	(2)
43	Interest and dividends	0	0	0	0	0
44	Refunds	0	0	0	0	0
99	Total Obligations	346	366	352	350	(2)
	Less prior year recoveries	0	0	0	0	0
	Less unobligated balance, SOY	(10)	(14)	0	0	0
	Plus unobligated balance, EOY	14	0	0	0	0
	Total Budget Authority	350	352	352	350	(2)

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: FOREIGN FISHING OBSERVER FUND

For FY 2014, NMFS requests a total of \$0 for the Foreign Fishing Observer Fund.

BASE JUSTIFICATION FOR FY 2014:

The Foreign Fishing Observer Fund is financed through fees collected from owners and operators of foreign fishing vessels fishing within the U.S. EEZ (such fishing requires a permit issued under the Magnuson-Stevens Act). This includes longline vessels fishing in the Atlantic billfish and shark fishery and other foreign vessels fishing in the EEZ. The fund is used by NOAA to pay salaries, administrative costs, data editing and entry costs, and other costs incurred in placing observers aboard foreign fishing vessels. The observer program is conducted primarily through contracts with the private sector. NOAA/NMFS places these observers aboard foreign fishing vessels to monitor compliance with U.S. fishery laws and to collect fishery management data. Amounts available in the fund can be disbursed only to the extent and in amounts provided in appropriation acts. In FY 1985 Congress approved the establishment of a supplemental observer program. The program provided that foreign vessels without federally funded observers are required to obtain the services of private contractors certified by the Secretary of Commerce.

PROGRAM CHANGE FOR FY 2014:

No program change is requested for this account.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 Foreign Fishing Observer Fund **SUMMARY OF**
RESOURCE REQUIREMENTS (Dollar amounts
 in thousands)

		Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution		0	0	0	0
less: Obligations from prior year balances		0	0	0	0
Plus:2014 Adjustments to Base				0	
FY 2014 Base		0	0	0	0
plus: 2014 Program Changes		0	0	0	0
FY 2014 Estimate		0	0	0	0

Comparison by activity/subactivity		FY 2012	FY 2013	FY 2014	FY 2014	Increase/
		Actuals Personnel Amount	Annualized Continuing Resolution Personnel Amount	Base Program Personnel Amount	Estimate Personnel Amount	Decrease Personnel Amount
Foreign Fishing Observer Fund	Pos/BA	0 (350)	0 0	0 0	0 0	0 0
	FTE/OBL	0 0	0 0	0 0	0 0	0 0
Total: Foreign Fishing Observer Fund	Pos/BA	0 (350)	0 0	0 0	0 0	0 0
	FTE/OBL	0 0	0 0	0 0	0 0	0 0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Foreign Fishing Observer Fund **SUMMARY OF**
Financing
 (Dollar amounts in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/	
	Actuals		Annualized Continuing Resolution		Base Program		Estimate		Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	0	0	0	0	0	0	0	0	0
Total Obligations	0	0	0	0	0	0	0	0	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(522)	0	(172)	0	(172)	0	(172)	0	0
Unobligated balance, EOY	0	172	0	172	0	172	0	172	0	0
Total Budget Authority	0	(350)	0	0	0	0	0	0	0	0
Financing from Transfers and Other:										
Unobligated balance, rescission	0	350	0	0	0	0	0	0	0	0
Net Appropriation	0	0	0	0	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Foreign Fishing Observer Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

<u>Object Class</u>	FY 2012 Actuals	FY 2013 Annualized Continuing Resolution	FY 2014 Base	FY 2014 Estimate	Increase/ (Decrease) over 2014 Base
11 Personnel compensation					
11.1 Full-time permanent	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., misc. charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.2 Other services	0	0	0	0	0
26 Supplies and materials	0	0	0	0	0
31 Equipment	0	0	0	0	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	0	0	0	0
44 Refunds	0	0	0	0	0
99 Total Obligations	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Foreign Fishing Observer Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(522)	(172)	(172)	(172)	0
Plus unobligated balance, EOY	172	172	172	172	0
Unobligated balance, rescission	350	0	0	0	0
Total Budget Authority	0	0	0	0	0

APPROPRIATION ACCOUNT: FISHERIES FINANCE PROGRAM ACCOUNT

For FY 2014, NMFS requests a total of \$0 for the Fisheries Finance Program Account.

BASE JUSTIFICATION FOR FY 2014:

The Fisheries Finance Program (FFP) is a national loan program that makes long-term fixed-rate financing available to U.S. citizens who otherwise qualify for financing or refinancing of the construction, reconstruction, reconditioning, and, in some cases, the purchasing of fishing vessels, shoreside processing, aquaculture, mariculture facilities, and the purchase of individual fishing quota (IFQ). The purpose of these loans is to provide stability to at least one aspect of an otherwise volatile industry. The FFP also provides fishery-wide financing to ease the transition to sustainable fisheries through its fishing capacity reduction programs and provides financial assistance in the form of loans to fishermen who fish from small vessels and entry-level fishermen to promote stability and reduce consolidation in already rationalized fisheries. Additionally, FFP can provide loans for fisheries investments of Native American Community Development Quota (CDQ) groups.

The FFP operates under the authority of Title XI of the Merchant Marine Act of 1936, as amended (46 USC 53701); Section 303(a) of the Sustainable Fisheries Act amendments to the Magnuson-Stevens Act; and, from time to time FFP-specific legislation. FFP lending practices are guided by Title XI, general rules implementing Title XI (found at 50 CFR part 253, subpart B), NOAA's sustainable fisheries policy, and the practical considerations of a program that has continually not required an appropriation of loan loss subsidy under the Federal Credit Reform Act, as discussed below. The overriding guideline for all FFP financings is that they cannot contribute or be construed to contribute to an increase in existing fishing capacity.

All FFP authority is subject to the Federal Credit Reform Act of 1990 (FCRA) (2 U.S.C. 661) which requires the estimated loan losses (FCRA cost) be appropriated in cash at the time Congress authorizes annual credit ceilings. Some types of FFP loans require no FCRA subsidy appropriations because these types of loans have historically not required additional loan subsidy. However, specific loan ceilings for each type of loan authority must be included in appropriation language or other bill language regardless of the need for cash appropriations.

PROPOSED LEGISLATION:

Subject to section 502 of the Congressional Budget Act of 1974, during fiscal year 2014, obligations of direct loans may not exceed \$24,000,000 for Individual Fishing Quota loans and not to exceed \$59,000,000 for traditional direct loans as authorized by the Merchant Marine Act of 1936: Provided, That none of the funds made available under this heading may be used for direct loans for any new fishing vessel that will increase the harvesting capacity in any United States fishery.

PROGRAM CHANGE FOR FY 2014:

No program change is requested for this account.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Finance Program Account **SUMMARY**
OF RESOURCE REQUIREMENTS (Dollar
 amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Currently Available	0	0	9,800	9,827
less: 2014 Adjustments to Base	0	0	(9,800)	(9,827)
less: Negative Subsidy Receipts Adjustment	0	0	0	0
FY 2014 Base	0	0	0	0
plus: 2014 Program Changes	0	0	0	0
FY 2014 Estimate	0	0	0	0

Comparison by activity/subactivity		FY 2012		FY 2013		FY 2014		FY 2014		Increase/Decrease	
		Actuals Personnel Amount		Annualized Continuing Resolution Personnel Amount		Base Program Personnel Amount		Estimate Personnel Amount		Personnel Amount	Personnel Amount
Fisheries Finance Program Account	Pos/BA	0	5,788	0	9,800	0	0	0	0	0	0
	FTE/OBL	0	6,022	0	9,827	0	0	0	0	0	0
Total: Fisheries Finance Program Account	Pos/BA	0	5,788	0	9,800	0	0	0	0	0	0
	FTE/OBL	0	6,022	0	9,827	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Finance Program Account **SUMMARY**
OF RESOURCE REQUIREMENTS (Dollar
 amounts in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/	
	Actuals		Annualized Continuing Resolution		Base Program		Estimate		Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Cost Loan Subsidy	0	0	0	0	0	0	0	0	0	0
Credit Reestimates	0	6,022	0	9,827	0	0	0	0	0	0
Total Obligations	0	6,022	0	9,827	0	0	0	0	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(3,013)	0	(2,779)	0	(2,752)	0	(2,752)	0	0
Unobligated balance, EOY	0	2,779	0	2,752	0	2,752	0	2,752	0	0
Total Budget Authority	0	5,788	0	9,800	0	0	0	0	0	0
Financing from Transfers and Other:										
Less: Permanent Indefinite Authority (Mandatory)	0	0	0	0	0	0	0	0	0	0
Net Appropriation	0	5,788	0	9,800	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Finance Program Account **SUMMARY OF**
REQUIREMENTS BY OBJECT CLASS (Dollar amounts in
 thousands)

<u>Object Class</u>	FY 2012	FY 2013	FY 2014	FY 2014	Increase/
	Actuals	Annualized Continuing Resolution	Base	Estimate	(Decrease) over 2014 Base
Personnel compensation					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Other personnel compensation	0	0	0	0	0
Special personnel services payments	0	0	0	0	0
Total personnel compensation	0	0	0	0	0
Civilian personnel benefits	0	0	0	0	0
Benefits for former personnel	0	0	0	0	0
Travel and transportation of persons	0	0	0	0	0
Transportation of things	0	0	0	0	0
Rental payments to GSA	0	0	0	0	0
Rental payments to others	0	0	0	0	0
Commun., util., misc. charges	0	0	0	0	0
Printing and reproduction	0	0	0	0	0
Other services	0	0	0	0	0
Supplies and materials	0	0	0	0	0
Equipment	0	0	0	0	0
Lands and structures	0	0	0	0	0
Investments and loans	0	0	0	0	0
Grants, subsidies and contributions	6,022	9,827	0	0	0
Insurance claims and indemnities	0	0	0	0	0
Interest and dividends	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Finance Program Account **SUMMARY OF**
REQUIREMENTS BY OBJECT CLASS (Dollar amounts in
 thousands)

Refunds	0	0	0	0	0
Total Obligations	6,022	9,827	0	0	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(3,013)	(2,779)	(2,752)	(2,752)	0
Plus unobligated balance, EOY	2,779	2,752	2,752	2,752	0
Unoblig Balance, Transfer to ORF	0	0	0	0	0
Total Budget Authority	5,788	9,800	0	0	0

APPROPRIATION ACCOUNT: PROMOTE AND DEVELOP FISHERIES PRODUCTS

For FY 2014, NMFS requests a total of \$8,208,000 for the Saltonstall-Kennedy Grant Program. NMFS estimates that a total of \$131,372,000 will be transferred from the Department of Agriculture to the Promote and Develop Account and that \$123,164,000 will be transferred from the Promote and Develop account to the Operations, Research and Facilities (ORF) account.

BASE JUSTIFICATION FOR FY 2014:

The American Fisheries Promotion Act (AFPA) of 1980 amended the Saltonstall-Kennedy (S-K) Act to authorize a grants program for fisheries research and development projects to be carried out with S-K funds. S-K funds are derived from a transfer from the Department of Agriculture to NOAA from duties on imported fisheries products. An amount equal to 30 percent of these duties is made available to NOAA and, subject to appropriation, is available to carry out the purposes of the AFPA. The S-K grants program has provided substantial assistance to address impediments to the management, development, and utilization of the Nation's living marine resources. Each year a *Federal Register* notice is published announcing the program. The annual notice outlines priority areas, such as research on the reduction and/or elimination of bycatch, and aquaculture. The remainder of the Promote and Develop funds transferred is used to offset the appropriation requirements of the ORF account. At the President's Budget request, a transfer to ORF of \$123,164,000 will be allocated to the following activities at the specified level:

Expand Annual Stock Assessments (all)	\$ 69,259,000
Fish Information Networks (partial)	\$ 14,614,000
Survey and Monitoring Projects (all)	\$ 24,754,000
Interjurisdictional Fisheries Grants (all)	\$ 2,500,000
Cooperative Research (all)	<u>\$ 12,037,000</u>
Total	\$123,164,000

PROGRAM CHANGE FOR FY 2014:

No program change is requested for this account.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 Promote and Develop Fisheries Products
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Currently Available	0	0	22,274	22,693
less: Obligations from prior year balances	0	0	0	(419)
plus: 2014 Adjustments to Base	0	0	(14,066)	(14,066)
FY 2014 Base	0	0	8,208	8,208
plus: 2014 Program Changes	0	0	0	0
FY 2014 Estimate	0	0	8,208	8,208

Comparison by activity/subactivity		FY 2012		FY 2013		FY 2014		FY 2014		Increase/Decrease	
		Actuals Personnel Amount	Actuals Personnel Amount	Annualized Resolution Personnel Amount	Annualized Resolution Personnel Amount	Base Program Personnel	Base Program Amount	Estimate Personnel Amount	Estimate Personnel Amount	Personnel Amount	Personnel Amount
Promote and Develop Fisheries Products	Pos/BA	0	0	0	22,274	0	8,208	0	8,208	0	0
	FTE/OBL	0	0	0	22,693	0	8,208	0	8,208	0	0
Total: Promote and Develop Fisheries Products	Pos/BA	0	0	0	22,274	0	8,208	0	8,208	0	0
	FTE/OBL	0	0	0	22,693	0	8,208	0	8,208	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Promote and Develop Fisheries Products
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	0	0	22,693	0	8,208	0	8,208	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(78)	0	(419)	0	0	0	0	0	0
Recoveries	0	(341)	0	0	0	0	0	0	0	0
Transfer of unobligated balances	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. EOY	0	419	0	0	0	0	0	0	0	0
Total Budget Authority	0	0	0	22,274	0	8,208	0	8,208	0	0
Financing from Transfers and Other:										
Transfer from USDA	0	(109,098)	0	(131,372)	0	(131,372)	0	(131,372)	0	0
Transfer to ORF	0	109,098	0	109,098	0	123,164	0	123,164	0	0
Net Appropriation	0	0	0	0	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Promote and Develop Fisheries Products **SUMMARY**
OF REQUIREMENTS BY OBJECT CLASS (Dollar
 amounts in thousands)

Object Class	FY 2012	FY 2013	FY 2014	FY 2014	Increase/ (Decrease)
	Actuals	Annualized Continuing Resolution	Base	Estimate	over 2014 Base
Personnel compensation					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Other personnel compensation	0	0	0	0	0
Special personnel services payments	0	0	0	0	0
Total personnel compensation	0	0	0	0	0
Civilian personnel benefits	0	0	0	0	0
Benefits for former personnel	0	0	0	0	0
Travel and transportation of persons	0	0	0	0	0
Transportation of things	0	0	0	0	0
Rental payments to GSA	0	0	0	0	0
Rental payments to others	0	0	0	0	0
Commun., util., misc. charges	0	0	0	0	0
Printing and reproduction	0	0	0	0	0
Other services	0	0	0	0	0
Supplies and materials	0	0	0	0	0
Equipment	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Promote and Develop Fisheries Products **SUMMARY**
OF REQUIREMENTS BY OBJECT CLASS (Dollar
 amounts in thousands)

Lands and structures	0	0	0	0	0
Investments and loans	0	0	0	0	0
Grants, subsidies and contributions	0	22,693	8,208	8,208	0
Insurance claims and indemnities	0	0	0	0	0
Interest and dividends	0	0	0	0	0
Refunds	0	0	0	0	0
Total Obligations	0	22,693	8,208	8,208	0
Less prior year recoveries	(341)	0	0	0	0
Less unobligated balance, SOY	(78)	(419)	0	0	0
Plus unobligated balance, EOY	419	0	0	0	0
Unobligated balance, transferred	0	0	0	0	0
Total Budget Authority	0	22,274	8,208	8,208	0

APPROPRIATION ACCOUNT: FEDERAL SHIP FINANCING FUND

For FY 2014, NMFS estimates a total of \$0 for the Federal Ship Financing Fund Account.

BASE JUSTIFICATION FOR FY 2014:

The Federal Ship Financing Fund is the liquidating account necessary for the collection of premiums and fees of the loan guarantee portfolio that existed prior to FY 1992. Administrative expenses for management of the loan guarantee portfolio were charged to the Federal Ship Financing Fund prior to the enactment of the Federal Credit Reform Act of 1990. Currently administrative expenses are charged to the Operations, Research, and Facilities (ORF) account.

PROGRAM CHANGE FOR FY 2014:

No program change is requested for this account.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 Federal Ship Financing Fund **SUMMARY OF**
RESOURCE REQUIREMENTS (Dollar amounts
 in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution	0	0	0	0
FY 2014 Base	0	0	0	0
plus: 2014 Program Changes	0	0	0	0
FY 2014 Estimate	0	0	0	0

Comparison by activity/subactivity		FY 2012		FY 2013 Annualized Continuing Resolution		FY 2014 Base Program		FY 2014 Estimate		Increase/Decrease Personnel Amount	
		Actuals Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount	
Federal Ship Financing Fund	Pos/BA	0	(257)	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Total: Federal Ship Financing Fund	Pos/BA	0	(257)	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Federal Ship Financing Fund **SUMMARY OF**
RESOURCE REQUIREMENTS (Dollar amounts
 in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/		
	Currently Available		Annualized Continuing Resolution		Base Program		Estimate		Decrease		
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	
Transfer to Treasury (Mandatory)	0	257	0	0	0	0	0	0	0	0	0
Offsetting collections, mandatory	0	(257)	0	0	0	0	0	0	0	0	0
Total Obligations	0	0	0	0	0	0	0	0	0	0	0
Adjustments to Obligations:											
Offsetting Collections	0	(257)	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. EOY	0	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	0	(257)	0	0	0	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Federal Ship Financing Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Object Class	FY 2012 Actuals	FY 2013 Annualized Continuing Resolution	FY 2014 Base Program	FY 2014 Estimate	Increase/ (Decrease) over 2014 Base
Investments and loans	0	0	0	0	0
Total Obligations	0	0	0	0	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Mandatory Appropriation	0	0	0	0	0
Less Offsetting Collections	(257)	0	0	0	0
Total Budget Authority	(257)	0	0	0	0

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: ENVIRONMENTAL IMPROVEMENT & RESTORATION FUND

For FY 2014, NMFS estimates obligating \$1,414,000 in the Environmental Improvement and Restoration Fund.

BASE JUSTIFICATION FOR FY 2014:

The Environmental Improvement & Restoration Fund (EIRF) was created by the Department of Interior and Related Agencies Appropriations Act of 1998 for the purpose of carrying out marine research activities in the North Pacific. These funds will provide grants to Federal, State, private or foreign organizations or individuals to conduct research activities on or relating to the fisheries or marine ecosystems in the North Pacific Ocean, Bering Sea, and Arctic Ocean.

PROGRAM CHANGE FOR FY 2014:

No program change is requested for this account.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 Environmental Improvement Restoration Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution			1,414	9,752
less: obligations from prior year balances	0	0	0	0
plus: 2014 Adjustments to Base	0	0	388	(8,338)
FY 2014 Base	0	0	1,802	1,414
plus: 2014 Program Changes	0	0	0	0
FY 2014 Estimate	0	0	1,802	1,414

Comparison by activity/subactivity		FY 2012		FY 2013 Annualized Continuing Resolution		FY 2014 Base Program		FY 2014 Estimate		Increase/ Decrease Personnel Amount	
		Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount
Environmental Improvement & Restoration Fund	Pos/BA	0	9,737	0	1,414	0	1,802	0	1,802	0	0
	FTE/OBL	0	9,900	0	9,752	0	1,414	0	1,414	0	0
Total: Environmental Improvement & Restoration Fund	Pos/BA	0	9,737	0	1,414	0	1,802	0	1,802	0	0
	FTE/OBL	0	9,900	0	9,752	0	1,414	0	1,414	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Environmental Improvement Restoration Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/	
	Actuals		Annualized Continuing Resolution		Base Program		Estimate		Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	9,900	0	9,752	0	1,414	0	1,414	0	0
Total Obligations	0	9,900	0	9,752	0	1,414	0	1,414	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(9,915)	0	(9,752)	0	(1,414)	0	(1,414)	0	0
Unobligated balance, EOY	0	9,752	0	1,414	0	1,802	0	1,802	0	0
Total Budget Authority	0	9,737	0	1,414	0	1,802	0	1,802	0	0
Financing from Transfers and Other:										
Appropriation (special fund)	0	0	0	0	0	0	0	0	0	0
Net Mandatory Appropriation	0	9,737	0	1,414	0	1,802	0	1,802	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Environmental Improvement Restoration Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Object Class	FY 2012 Actuals	FY 2013 Annualized Continuing Resolution	FY 2014 Base Program	FY 2014 Estimate	Increase/ (Decrease) over 2014 Base
Personnel compensation					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Other personnel compensation	0	0	0	0	0
Special personnel services payments	0	0	0	0	0
Total personnel compensation	0	0	0	0	0
Civilian personnel benefits	0	0	0	0	0
Benefits for former personnel	0	0	0	0	0
Travel and transportation of persons	0	0	0	0	0
Transportation of things	0	0	0	0	0
Rental payments to GSA	0	0	0	0	0
Rental payments to others	0	0	0	0	0
Commun., util., misc. charges	0	0	0	0	0
Printing and reproduction	0	0	0	0	0
Other	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Environmental Improvement Restoration Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

services					
Supplies and materials	0	0	0	0	0
Equipment	0	0	0	0	0
Lands and structures	0	0	0	0	0
Investments and loans	0	0	0	0	0
Grants, subsidies and contributions	9,900	9,752	1,414	1,414	0
Insurance claims and indemnities	0	0	0	0	0
Interest and dividends	0	0	0	0	0
Refunds	0	0	0	0	0
Total Obligations	9,900	9,752	1,414	1,414	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(9,915)	(9,752)	(1,414)	(1,414)	0
Plus unobligated balance, EOY	9,752	1,414	1,802	1,802	0
Total Budget Authority	9,737	1,414	1,802	1,802	0

APPROPRIATION ACCOUNT: LIMITED ACCESS SYSTEM ADMINISTRATION

For FY 2014, NMFS estimates obligating \$12,072,000 in the Limited Access System Administration account.

BASE JUSTIFICATION FOR FY 2014:

Under the authority of the Magnuson-Stevens Act Section 304(d)(2)(A), NMFS must collect a fee to recover the incremental costs of management, data collection, and enforcement of Limited Privilege (LAP) programs. Funds collected under this authority are deposited into the "Limited Access System Administrative Fund" (LASAF). Fees shall not exceed three percent of the ex-vessel value of fish harvested under any such program, and shall be collected at either the time of the landing, filing of a landing report, or sale of such fish during a fishing season or in the last quarter of the calendar year in which the fish is harvested. The LASAF shall be available, without appropriation or fiscal year limitation, only for the purposes of administering the central registry system; and administering and implementing the Magnuson-Stevens Act in the fishery in which the fees were collected. Sums in the fund that are not currently needed for these purposes shall be kept on deposit or invested in obligations of, or guaranteed by the U.S. Also, in establishing a LAP program, a Regional Council can consider, and may provide, if appropriate, an auction system or other program to collect royalties for the initial or any subsequent distribution of allocations. If an auction system is developed, revenues from these royalties are deposited in the Limited Access System Administration Fund.

PROGRAM CHANGE FOR FY 2014:

No program change is requested for this account.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 Limited Access System Administration Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Currently Available	0	0	14,591	9,390
Adjustments to Base			(5,427)	2,682
less: Obligations from Prior Year Balances	0	0	0	0
FY 2014 Base	0	0	9,164	12,072
plus: 2014 Program Changes	0	0	0	0
FY 2014 Estimate	0	0	9,164	12,072

Comparison by activity/subactivity		FY 2012		FY 2013 Annualized Continuing Resolution		FY 2014 Base Program		FY 2014 Estimate		Increase/Decrease Personnel Amount	
		Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount		
Limited Access System Administration Fund	Pos/BA	0	9,992	0	14,591	0	9,164	0	9,164	0	0
	FTE/OBL	0	9,947	0	9,390	0	12,072	0	12,072	0	0
Total: Limited Access System Administration Fund	Pos/BA	0	9,992	0	14,591	0	9,164	0	9,164	0	0
	FTE/OBL	0	9,947	0	9,390	0	12,072	0	12,072	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Limited Access System Administration Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
	Actuals		Annualized Continuing Resolution		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	9,947	0	9,390	0	12,072	0	12,072	0	0
Total Obligations	0	9,947	0	9,390	0	12,072	0	12,072	0	0
Adjustments to Obligations:										
Recoveries	0	(8)	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(13,812)	0	(13,865)	0	(19,066)	0	(19,066)	0	0
Unobligated balance, EOY	0	13,865	0	19,066	0	16,158	0	16,158	0	0
Total Budget Authority	0	9,992	0	14,591	0	9,164	0	9,164	0	0
Financing from Transfers and Other:										
Net Appropriation	0	9,992	0	14,591	0	9,164	0	9,164	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Limited Access System Administration Fund **SUMMARY**
OF REQUIREMENTS BY OBJECT CLASS (Dollar
 amounts in thousands)

<u>Object Class</u>	FY 2012	FY 2013	FY 2014	FY 2014	Increase/ (Decrease)
	Actuals	Annualized Continuing Resolution	Base Program	Estimate	over 2014 Base
Personnel compensation					
Full-time permanent	3,064	3,064	3,064	3,064	0
Other than full-time permanent	5	5	5	5	0
Other personnel compensation	367	367	367	367	0
Special personnel services payments	0	0	0	0	0
Total personnel compensation	3,435	3,435	3,435	3,435	0
Civilian personnel benefits	1,390	1,390	1,390	1,390	0
Benefits for former personnel	0	0	0	0	0
Travel and transportation of persons	171	171	171	171	0
Transportation of things	2	2	2	2	0
Rental payments to GSA	388	388	0388	388	0
Rental payments to others	40	40	40	40	0
Commun., util., misc. charges	50	50	50	50	0
Printing and reproduction	4	4	4	4	0
Other services	2,520	1,963	4,645	4,645	0
Purchases of goods & svcs from Govt accounts	0	0	0	0	0
Supplies and materials	44	44	44	44	0
Equipment	7	7	7	7	0
Lands and structures	0	0	0	0	0
Investments and loans	0	0	0	0	0
Grants, subsidies and contributions	1,896	1,896	1,896	1,896	0
Insurance claims and indemnities	0	0	0	0	0
Interest and dividends	0	0	0	0	0
Refunds	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Limited Access System Administration Fund **SUMMARY**
OF REQUIREMENTS BY OBJECT CLASS (Dollar
 amounts in thousands)

Total Obligations	9,947	9,390	12,072	12,072	0
Less prior year recoveries	(8)	0	0	0	0
Less unobligated balance, SOY	(13,813)	(13,865)	(19,066)	(19,066)	0
Plus unobligated balance, EOY	13,865	19,066	16,158	16,158	0
Total Budget Authority	9,991	14,591	9,164	9,164	0

APPROPRIATION ACCOUNT: MARINE MAMMAL UNUSUAL MORTALITY EVENT FUND

For FY 2014, NMFS estimates obligating \$50,000 to \$100,000 from the Marine Mammal Unusual Event Fund (current balance = \$111,900).

BASE JUSTIFICATION FOR FY 2014:

An unusual mortality event (UME) is defined under the Marine Mammal Protection Act (MMPA) as "a stranding that is unexpected; involves a significant die-off of any marine mammal population; and demands immediate response." In recent years, increased efforts to examine carcasses and live stranded animals have improved the knowledge of mortality rates and causes, allowing a better understanding of population threats and stressors and the ability to determine when a situation is "unusual." Understanding and investigating marine mammal UMEs is important because they can serve as indicators of ocean health, giving insight into larger environmental issues, which may also have implications for human health and welfare.

The Marine Mammal Protection Act Section 405 (16 USC 1421d) establishes the Marine Mammal Unusual Mortality Event Fund and describes its purposes and how donations can be made to the Fund. The fund: "shall be available only for use by the Secretary of Commerce, in consultation with the Secretary of the Interior:

- to compensate persons for special costs incurred in acting in accordance with the contingency plan issued under section 1421c(b) of this title or under the direction of an Onsite Coordinator for an unusual mortality event;
- for reimbursing any stranding network participant for costs incurred in preparing and transporting tissues collected with respect to an unusual mortality event for the Tissue Bank; and,
- for care and maintenance of marine mammal seized under section 1374(c)(2)(D) of this title."

According to the MMPA, deposits can be made into Fund by the following:

- "amounts appropriated to the Fund;
- other amounts appropriated to the Secretary for use with respect to unusual mortality events; and
- amounts received by the United States in the form of gifts, devises, and bequests under subsection (d) of this section."

The Marine Mammal Unusual Mortality Event Fund is an emergency response fund used to help cover expenses incurred by the volunteer Marine Mammal Stranding Network during a UME. Since UMEs are unpredictable emergency events caused by any number of circumstances (natural or human), it is impossible to predict how many UMEs may occur in a given year or how much funding will be needed. From 1991-2012 (past 21 years) NOAA has declared 56 UMEs, which averages to 2.7 UMEs per year. The most UMEs declared in a year were 5 (in both 2006 and 2007). The costs associated with UMEs are highly variable and depend on the species involved, location and equipment/laboratory needs. For example, a UME involving large whales offshore can cost well over \$100K in expenses because of the considerable logistical challenges and needs (e.g., ship time or aerial support, number of personnel, safety equipment, etc.). Based on previous experience, NOAA expects to obligate between \$50K and \$100K in FY 2014 depending on the severity of the emergencies that year.

To date, Congress has appropriated funding for UMEs on one occasion (in 2005); there is \$111,900 remaining in the account from that appropriation.

PROGRAM CHANGE FOR FY 2014:

No program change is requested for this account.

Department of Commerce
 National Oceanic and Atmospheric Administration
 Marine Mammal Unusual Mortality Event Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution	0	0	0	0
Adjustments to Base	0	0	0	0
FY 2014 Base	0	0	0	0
plus: 2014 Program Changes	0	0	0	0
FY 2014 Estimate	0	0	0	0

		FY 2012		FY 2013 Annualized Continuing Resolution		FY 2014 Base Program		FY 2014 Estimate		Increase/ Decrease Personnel Amount	
Comparison by activity/subactivity		Actuals Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount			
Marine Mammal Unusual Mortality Event Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	111	0	112	0	0	0	0	0	0
Total: Marine Mammal Unusual Mortality Event Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	111	0	112	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Marine Mammal Unusual Mortality Event Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/	
	Actuals		Annualized Continuing Resolution		Base Program		Estimate		Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	111	0	112	0	0	0	0	0	0
Total Obligations	0	111	0	112	0	0	0	0	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(223)	0	(112)	0	0	0	0	0	0
Unobligated balance, EOY	0	112	0	0	0	0	0	0	0	0
Total Budget Authority	0	0	0	0	0	0	0	0	0	0
Financing from Transfers and Other:										
Net Appropriation	0	0	0	0	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration Marine
 Mammal Unusual Mortality Event Fund **SUMMARY OF**
REQUIREMENTS BY OBJECT CLASS (Dollar amounts
 in thousands)

Object Class	FY 2012	FY 2013	FY 2014	FY 2014	Increase/
	Actuals	Annualized Continuing Resolution	Base Program	Estimate	(Decrease) over 2014 Base
Personnel compensation					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Other personnel compensation	0	0	0	0	0
Special personnel services payments	0	0	0	0	0
Total personnel compensation	0	0	0	0	0
Civilian personnel benefits	0	0	0	0	0
Benefits for former personnel	0	0	0	0	0
Travel and transportation of persons	0	0	0	0	0
Transportation of things	0	0	0	0	0
Other services	3	0	0	0	0
Supplies and materials	7	0	0	0	0
Grants, subsidies and contributions	100	112	0	0	0
Total Obligations	111	112	0	0	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(223)	(112)	0	0	0
Plus unobligated balance, EOY	112	0	0	0	0
Total Budget Authority	0	0	0	0	0

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: WESTERN PACIFIC SUSTAINABLE FISHERIES FUND

For FY 2014, NMFS estimates obligating \$1,000,000 in the Western Pacific Sustainable Fisheries Fund.

BASE JUSTIFICATION FOR FY 2014:

Section 204(e) of the 2006 amendments to the Magnuson-Stevens Fishery Conservation and Management Act authorizes the establishment of the Western Pacific Sustainable Fisheries Fund. The purpose of this Fund is to allow foreign fishing within the U.S. Exclusive Economic Zone (EEZ) in the Western Pacific through a Pacific Insular Area Fishery Agreement. Before entering into such an Agreement, the Western Pacific Fishery Management Council must develop a Marine Conservation Plan that provides details on uses for any funds collected by the Secretary of Commerce. Marine Conservation Plans must also be developed by the Governors of the Territories of Guam and American Samoa and of the Commonwealth of the Northern Mariana Islands and approved by the Secretary or designee.

The Western Pacific Sustainable Fisheries Fund serves as a repository for any permit payments received by the Secretary for foreign fishing within the U.S. EEZ around Johnston Atoll, Kingman Reef, Palmyra Atoll, and Jarvis, Howland, Baker and Wake Islands, sometimes known as the Pacific remote island areas (PRIA). Also, in the case of violations by foreign vessels occurring in these areas, amounts received by the Secretary attributable to fines and penalties shall be deposited into the Western Pacific Sustainable Fisheries Fund. Additionally, any funds or contributions received in support of conservation and management objectives under a Marine Conservation Plan for any Pacific Insular Area other than American Samoa, Guam, or the Northern Mariana Islands shall be deposited in the Western Pacific Sustainable Fisheries Fund.

PROGRAM CHANGE FOR FY 2014:

No program change is requested for this account.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 Western Pacific Sustainability Fisheries Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Currently Available	0	0	1,000	1,146
Adjustments to Base	0	0	0	(146)
FY 2014 Base	0	0	1,000	1,000
plus: 2014 Program Changes	0	0	0	0
FY 2014 Estimate	0	0	1,000	1,000

Comparison by activity/subactivity		FY 2012		FY 2013 Annualized Continuing Resolution		FY 2014 Base Program		FY 2014 Estimate		Increase/ Decrease Personnel Amount	
		Actuals Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount	
Western Pacific Sustainability Fisheries Fund	Pos/BA	0	1,145	0	1,000	0	1,000	0	1,000	0	0
	FTE/OBL	0	1,029	0	1,146	0	1,000	0	1,000	0	0
Total: Western Pacific Sustainability Fisheries Fund	Pos/BA	0	1,145	0	1,000	0	1,000	0	1,000	0	0
	FTE/OBL	0	1,029	0	1,146	0	1,000	0	1,000	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Western Pacific Sustainability Fisheries Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/	
	Actuals		Annualized Continuing Resolution		Base Program		Estimate		Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	1,029	0	1,146	0	1,000	0	1,000	0	0
Total Obligations	0	1,029	0	1,146	0	1,000	0	1,000	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(1,030)	0	(1,146)	0	(1,000)	0	(1,000)	0	0
Unobligated balance, EOY	0	1,146	0	1,000	0	1,000	0	1,000	0	0
Total Budget Authority	0	1,145	0	1,000	0	1,000	0	1,000	0	0
Financing from Transfers and Other:										
Net Appropriation	0	1,145	0	1,000	0	1,000	0	1,000	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Western Pacific Sustainability Fisheries Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	FY 2012 Actuals	FY 2013 Annualized Continuing Resolution	FY 2014 Base Program	FY 2014 Estimate	Increase/ (Decrease) over 2014 Base
Personnel compensation					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Other personnel compensation	0	0	0	0	0
Special personnel services payments	0	0	0	0	0
Total personnel compensation	0	0	0	0	0
Civilian personnel benefits	0	0	0	0	0
Benefits for former personnel	0	0	0	0	0
Travel and transportation of persons	0	0	0	0	0
Transportation of things	0	0	0	0	0
Other services	0	0	0	0	0
Grants, subsidies and contributions	1,029	1,146	1,000	1,000	0
Total Obligations	1,029	1,146	1,000	1,000	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(1,030)	(1,146)	(1,000)	(1,000)	0
Plus unobligated balance, EOY	1,146	1,000	1,000	1,000	0
Total Budget Authority	1,145	1,000	1,000	1,000	0

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: FISHERIES ASSET FORFEITURE FUND

For FY 2014, NMFS estimates it will collect \$5,000,000 in fines, penalties, and forfeitures proceeds. NOAA will obligate this amount to support the activities described below.

BASE JUSTIFICATION FOR FY 2014:

Section 311(e)(1) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) authorizes the Secretary of Commerce (Secretary) to pay certain enforcement-related expenses from fines, penalties and forfeiture proceeds received for violations of the Magnuson-Stevens Act, Marine Mammal Protection Act, National Marine Sanctuaries Act, or any other marine resource law enforced by the Secretary. Pursuant to this authority, the NOAA has established a Civil Monetary Penalty/Asset Forfeiture Fund (AFF). Certain fines, penalties and forfeiture proceeds received by NOAA are deposited into this Fund, and subsequently used to pay for certain enforcement-related expenses. When Congress established the AFF it was deemed appropriate to use these proceeds to offset in part the costs of administering the Enforcement program. Expenses funded through this source include: costs directly related to the storage, maintenance, and care of seized fish, vessels, or other property during a civil or criminal proceeding; expenditures related directly to specific investigations and enforcement proceedings such as travel for interviewing witnesses; enforcement-unique information technology infrastructure; and annual interagency agreement and contract costs for the administrative adjudication process, including Administrative Law Judges hired by the Coast Guard.

PROGRAM CHANGE FOR FY 2014:

No program change is requested for this account.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Asset Forfeiture Fund **SUMMARY OF**
RESOURCE REQUIREMENTS (Dollar amounts
 in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution	0	0	5,000	4,263
FY 2014 Base	0	0	5,000	5,000
plus: 2014 Program Changes	0	0	0	0
FY 2014 Estimate	0	0	5,000	5,000

Comparison by activity/subactivity		FY 2012		FY 2013 Annualized Continuing Resolution		FY 2014 Base Program		FY 2014 Estimate		Increase/ Decrease Personnel Amount	
		Actuals Personnel Amount	Pos/BA Amount	Actuals Personnel Amount	Pos/BA Amount	Actuals Personnel Amount	Pos/BA Amount	Actuals Personnel Amount	Pos/BA Amount	Increase/ Decrease Personnel Amount	Increase/ Decrease Personnel Amount
Asset Forfeiture Fund	Pos/BA	0	14,164	0	5,000	0	5,000	0	5,000	0	0
	FTE/OBL	0	3,641	0	4,263	0	5,000	0	5,000	0	0
Total: Asset Forfeiture Fund	Pos/BA	0	14,164	0	5,000	0	5,000	0	5,000	0	0
	FTE/OBL	0	3,641	0	4,263	0	5,000	0	5,000	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Asset Forfeiture Fund **SUMMARY OF**
RESOURCE REQUIREMENTS (Dollar amounts
 in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/	
	Actuals		Annualized Continuing Resolution		Base Program		Estimate		Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	3,641	0	4,263	0	5,000	0	5,000	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	0	0	(10,523)	0	(11,260)	0	(11,260)	0	0
Unobligated balance, EOY	0	10,523	0	11,260	0	11,260	0	11,260	0	0
Total Budget Authority	0	14,164	0	5,000	0	5,000	0	5,000	0	0
Financing from Transfers and Other:										
Mandatory Appropriation										
Transfer from Other Accounts	0	(3,776)	0	0	0	0	0	0	0	0
Net Appropriation	0	10,388	0	5,000	0	5,000	0	5,000	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Asset Forfeiture Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Object Class	FY 2012 Actuals	FY 2013 Annualized Continuing Resolution	FY 2014 Base Program	FY 2014 Estimate	Increase/ (Decrease) over 2014 Base
Travel and transportation of persons	660	660	660	660	0
Transportation of things	1	1	1	1	0
Rental payments to others	25	25	25	25	0
Printing and reproduction	2	2	2	2	0
Other services	2,637	3,259	3,996	3,996	0
Supplies and materials	66	66	66	66	0
Equipment	0	0	0	0	0
Grants, subsidies and contributions	250	250	250	250	0
Total Obligations	3,641	4,263	5,000	5,000	0
Non-Federal Sources	0	0	0	0	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	(10,523)	(11,260)	(11,260)	0
Plus unobligated balance, EOY	10,523	11,260	11,260	11,260	0
Less unobligated balance, transferred	0	0	0	0	0
Total Budget Authority	14,164	5,000	5,000	5,000	0

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: NORTH PACIFIC OBSERVER FUND

For FY 2014, NMFS estimates obligating \$4,800,000 for the North Pacific Observer Fund.

BASE JUSTIFICATION FOR FY 2014:

On January 1, 2013, the restructured North Pacific Groundfish Observer Program (NPGOP) went into effect and made important changes to how observers are deployed, how observer coverage is funded, and the vessels and processors that must have some or all of their operations observed. Coverage levels are no longer based on vessel length and processing volume; rather, NMFS now has the flexibility to decide when and where to deploy observers based on a scientifically defensible deployment plan. The new observer program places all vessels and processors in the groundfish and halibut fisheries off Alaska into one of two observer coverage categories: (1) a full coverage category, and (2) a partial coverage category.

Vessels and processors in the full coverage category ($\geq 100\%$ observer coverage) will obtain observers by contracting directly with observer providers. Vessels and processors in the full observer coverage category are required to have at least one observer at all times. This will represent no change from the status quo for participants in the full coverage category.

Vessels and processors in the partial coverage category ($< 100\%$ observer coverage) will no longer contract independently with an observer provider, and will be required to carry an observer when they are selected through the Observer Declare and Deploy System (ODDS). Additionally, landings from all vessels in the partial coverage category will be assessed a 1.25 percent fee on standard ex-vessel prices of the landed catch weight of groundfish and halibut. The fee percentage is set in regulation and will be reviewed periodically by the Council after the second year of the program. The money generated by this fee will be used to pay for observer coverage on the vessels and processors in the partial coverage category in the following year. NMFS expects approximately \$4.8M to be collected in fees from the FY2013 season, to be used in FY 2014 for observer coverage.

PROGRAM CHANGE FOR FY 2014:

No program change is requested for this account.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 North Pacific Observer Fund **SUMMARY OF**
RESOURCE REQUIREMENTS (Dollar amounts
 in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution	0	0	0	0
FY 2014 Base	0	0	0	4,800
plus: 2014 Program Changes	0	0	0	0
FY 2014 Estimate	0	0	0	4,800

Comparison by activity/subactivity		FY 2012		FY 2013 Annualized Continuing Resolution		FY 2014 Base Program		FY 2014 Estimate		Increase/Decrease Personnel Amount	
		Actuals Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount	
North Pacific Observer Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	4,800	0	4,800	0	0
Total: North Pacific Observer Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	4,800	0	4,800	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 North Pacific Observer Fund **SUMMARY OF**
RESOURCE REQUIREMENTS (Dollar amounts
 in thousands)

	FY 2012		FY 2013 Annualized Continuing Resolution		FY 2014 Base Program		FY 2014 Estimate		Increase/ Decrease	
	Actuals									
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	0	0	0	0	4,800	0	4,800	0	0
Adjustments to Obligations:										
Offsetting Collections from Non-Federal Sources	0	0	0	(4,800)	0	(4,800)	0	(4,800)	0	0
Unobligated balance, adj. SOY	0	0	0	0	0	(4,800)	0	(4,800)	0	0
Unobligated balance, EOY	0	0	0	4,800	0	4,800	0	4,800	0	0
Total Budget Authority	0	0	0	0	0	0	0	0	0	0
Financing from Transfers and Other:										
Mandatory Appropriation										
Transfer from Other Accounts	0	0	0	0	0	0	0	0	0	0
Net Appropriation	0	0	0	0	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 North Pacific Observer Fund **SUMMARY OF**
RESOURCE REQUIREMENTS (Dollar amounts
 in thousands)

	FY 2012	FY 2013 Annualized Continuing Resolution	FY 2014 Base Program	FY 2014 Estimate	Increase/ (Decrease) over 2014 Base
Object Class					
Travel and transportation of persons	0	0	0	0	0
Transportation of things	0	0	0	0	0
Rental payments to others	0	0	0	0	0
Printing and reproduction	0	0	0	0	0
Other services	0	0	4,800	4,800	0
Supplies and materials	0	0	0	0	0
Equipment	0	0	0	0	0
Grants, subsidies and contributions	0	0	0	0	0
Total Obligations	0	0	4,800	4,800	0
Less prior year recoveries	0	0	0	0	0
Less offsetting collections	0	(4,800)	(4,800)	(4,800)	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	0	4,800	4,800	4,800	0
Less unobligated balance, transferred	0	0	0	0	0
Total Budget Authority	0	0	0	0	0

THIS PAGE INTENTIONALLY LEFT BLANK

BUDGET PROGRAM: OCEANIC AND ATMOSPHERIC RESEARCH

For FY 2014, NOAA requests a net increase of \$82,474,000 and 14 FTE from the FY 2014 base level for a total of \$472,435,000 and 769 FTE for the Office of Oceanic and Atmospheric Research (OAR) after an increase of \$1,934,000 and 0 FTE to restore programs affected by the reprogramming of the FY 2012 Spend Plan. This total includes \$3,537,000 and 0 FTE in inflationary adjustments and \$610,000 in IT savings for reinvestment in DOC Working Capital Fund IT initiatives.

OAR is NOAA's central research Line Office. It provides the Nation with critical environmental information through climate, weather, ocean, coastal, and Great Lakes research, technology development, and related services that support informed decision-making and promote healthy, productive, and resilient ecosystems, communities, and economies. NOAA looks to OAR to meet key NOAA science challenges; to lead advances in Earth system research using observations, analysis, and modeling; and to play an expanded role as the innovator, incubator, and integrator of science and technology across NOAA.

OAR's innovative science improves NOAA operational products and services. OAR conducts weather and climate research necessary to provide society with useful information to help decision makers manage regional water resources and plan for extreme events in a variable and changing climate. NOAA relies on OAR to coordinate and develop research and technology for such emerging and integrative subjects as ocean acidification, warn on forecast, climate and weather testbeds, diagnosis and forecast of the behavior of the Earth system, ocean exploration, unmanned aircraft systems, and autonomous underwater vehicles. OAR also serves as the programmatic lead for environmental modeling, moving to truly integrated modeling that spans the full domain of physical, chemical, and biological systems. When mature, the products and the information produced will inform a broad range of users, sectoral interests, and transition appropriate advances to another Line Office for operation or application.

Office of Oceanic and Atmospheric Research Base Overview

The OAR base budget (\$389,961,000 and 755 FTE) is organized into four sub-programs under the Operations, Research, and Facilities account:

- **Climate Research** (\$143,503,000 and 317 FTE) includes Laboratories and Cooperative Institutes and competitive research that seek to establish a greater understanding of and ability to predict climate variability and change to enhance society's ability to plan and respond.
- **Weather and Air Chemistry Research** (\$69,725,000 and 217 FTE) includes Laboratories and Cooperative Institutes as well as research programs that develop improved understanding and forecast capabilities for atmospheric events that endanger lives and property.
- **Ocean, Coastal, and Great Lakes Research** (\$157,291,000 and 208 FTE) includes Laboratories and Cooperative Institutes, the National Sea Grant College Program, Office of Ocean Exploration and Research, Other Ecosystem Programs (Ocean Acidification Program), and Sustained Ocean Observations and Monitoring. Collectively, activities funded seek to better understand habitats, processes, and resources in the oceanic, coastal, and Great Lakes environments and lead to innovative and useful management tools that help NOAA meet its mission.

- **Innovative Research and Technology** (\$9,092,000 and 13 FTE) includes High Performance Computing Initiatives, which seeks to accelerate the adoption of advanced computing, communications, and information technology throughout NOAA.

The Procurement, Acquisition, and Construction (PAC) account (\$10,350,000 and 0 FTE) includes the following sub-program:

- **System Acquisition**, which includes NOAA's investments in Research High Performance Computing. OAR supports the management of a high-performance computing system, which provides a key platform to characterize and quantify climate variations and change at a range of temporal and spatial scales.

NOAA recognizes the need to better characterize activities across research programs in OAR so the balance of the research portfolio is more clearly articulated. To this end, OAR is proposing to reorganize the existing Climate Competitive Research, Sustained Observations, and Regional Information PPA and Climate Data and Information PPA into three new PPAs: 1) Climate Competitive Research; 2) Regional Climate Data and Information; and 3) Sustained Ocean Observations and Monitoring. The Sustained Ocean Observations and Monitoring PPA satisfies a multitude of research and operational requirements extending beyond climate needs and therefore it more appropriately falls under the Ocean, Coastal, and Great Lakes Research sub-program. The other two PPAs will remain in the Climate Research sub-program. Funding in all three PPAs will support both internal (NOAA) and external research, the distribution of which is determined through competitive peer review processes. Information on these proposed PPAs is below, accompanied by details in the Sub-Program Narrative section and a crosswalk of funding in Exhibits 18 and 19.

Climate Competitive Research

Climate Competitive Research will fund high-priority climate research within NOAA and by our academic partners to advance our understanding of Earth's climate system, including its atmospheric, oceanic, land, snow, and ice components, as well as the impacts of climate variability and change on society. Activities supported under this PPA will be based on their scientific merit and will span aspects of Earth system science and modeling and their application to decision support relevant to NOAA's mission.

Regional Climate Data and Information

With user demand for regional-scale information about climate variability and change constantly growing, Regional Climate Data and Information will respond through a number of programs and projects, including the National Integrated Drought Information System (NIDIS) and Regional Integrated Sciences and Assessments (RISA) programs. Additionally, assessments, like the inter-agency U.S. National Climate Assessment, will be produced to inform decision makers about the state of scientific understanding and associated uncertainties they need to consider. Websites like NOAA's climate portal and related educational activities help ensure the public and decision makers are equipped to make the best use of the large amount of climate information available to them. Managing the vast amount of existing and future climate data and reducing it to usable information are important challenges and will be addressed under this PPA.

Sustained Ocean Observations and Monitoring

Sustained Ocean Observations and Monitoring will support an integrated and international network of ocean observing systems that are critical to ocean, climate, weather research and forecasts, and satellite enterprises. Activities under this PPA include designing, deploying, and sustaining this integrated global ocean observing network to produce continuous measurements, high-quality climate records, as well as value-added products, of a number of essential ocean parameters. This

PPA includes funding for a portion of OAR's work to support the Global Ocean Observing System (GOOS), an international program to observe the global oceans that coordinates and leverages contributions by dozens of countries. The activities contribute unique and essential global measurements and capabilities to the Integrated Ocean Observing System (IOOS). Ocean measurements and products from this PPA serve many purposes, including initializing extended range weather and seasonal forecasts; validating satellite observations; and, supporting research on marine ecosystems, weather extremes, drought, and climate variability and change.

OAR's Organizational Components:

OAR operates through a national network of laboratories and other university-based research programs. OAR manages its budget through seven organizational components: Laboratories and Cooperative Institutes, Climate Program Office, National Sea Grant College Program, Office of Ocean Exploration and Research (OER), Other Ecosystem Programs (Ocean Acidification Program), Office of Weather and Air Quality (OWAQ), and the NOAA High-Performance Computing and Communications (HPCC) Program.

OAR Laboratories and Cooperative Institutes

OAR has seven laboratories across the United States that conduct innovative research and development to support NOAA's mission of understanding and predicting changes in climate, weather, oceans, and coasts. These laboratories collaborate with numerous external partners, including NOAA-funded cooperative institutes. A primary objective of the Laboratories and Cooperative Institutes is improvement of NOAA products and services to facilitate decision making by policy makers and the public.



Research Laboratories

- **Air Resources Laboratory (ARL)**, headquartered in College Park, Maryland, and with offices in Oak Ridge, Tennessee, Idaho Falls, Idaho and Las Vegas, Nevada, carries out research on air chemistry, atmospheric dispersion, and climate, with a focus on conditions near the Earth's surface that affect people and ecosystems. More information about ARL is available at <http://www.arl.noaa.gov/>.
- **Atlantic Oceanographic and Meteorological Laboratory (AOML)** in Miami, Florida, conducts scientific research focused on understanding the physical, chemical, and biological characteristics and processes of the ocean and atmosphere, both separately and as a coupled system. The laboratory's research themes of oceans and climate, coastal ecosystems, and hurricanes and tropical meteorology each employ a cross-disciplinary approach, conducted through collaborative interactions with national and international research and environmental forecasting institutions. More information about AOML is available at <http://www.aoml.noaa.gov/>.
- **Earth System Research Laboratory (ESRL)** in Boulder, Colorado, represents a combination of climate and weather research capabilities aimed at observing and understanding the Earth system and developing environmental information products and services on global to local scales. ESRL primarily works to understand the roles of gases and particles that contribute to climate change, provides weather and climate information related to water management decisions, improves weather prediction, studies the recovery of the stratospheric ozone layer, and develops air quality forecast models. ESRL has four divisions: Chemical Sciences Division (CSD), Global Monitoring Division (GMD), Global Systems Division (GSD), and Physical Sciences Division (PSD). More information about ESRL is available at <http://www.esrl.noaa.gov>.
- **Geophysical Fluid Dynamics Laboratory (GFDL)** in Princeton, New Jersey, conducts the cutting-edge research necessary to understand, project, and predict Earth's climate on a range of space and timescales. Research at GFDL addresses many topics through advanced mathematical modeling of the climate and Earth system, including natural climate variability, anthropogenic climate change, weather and hurricane forecasts, El Niño prediction, and stratospheric ozone depletion. More information about GFDL is available at: <http://www.gfdl.noaa.gov/>.
- **Great Lakes Environmental Research Laboratory (GLERL)** in Ann Arbor, Michigan, conducts integrated interdisciplinary environmental research in support of resource management and environmental services in coastal and estuarine waters, with a primary emphasis on the Great Lakes. More information about GLERL is available at: <http://www.glerl.noaa.gov/>.
- **National Severe Storms Laboratory (NSSL)** in Norman, Oklahoma, conducts weather research aimed at improving the accuracy and timeliness of forecasts and warnings of hazardous weather events such as thunderstorms, blizzards, ice storms, flash floods, tornadoes, and lightning. More information about NSSL is available at: <http://www.nssl.noaa.gov/>.

- **Pacific Marine Environmental Laboratory (PMEL)** in Seattle, Washington, carries out interdisciplinary scientific investigations in oceanography, marine meteorology, and related subjects. PMEL also supports an undersea observation and research program in Newport, Oregon. More information about PMEL is available at: <http://www.pmel.noaa.gov/>.

Cooperative Institutes (<http://www.ci.noaa.gov/>)

OAR has Cooperative Institute partnerships with academic and scientific institutions to foster long-term collaborations dedicated to advancing oceanic and atmospheric research. These Cooperative Institutes are usually co-located with one or more NOAA facilities to promote scientific exchange and technology transfer, and provide valuable capabilities and expertise to supplement OAR laboratory work. The primary purpose of each institute is to create a mechanism to bring together the resources of a research-oriented university or institution, OAR, and other branches of NOAA in order to develop and maintain a center of excellence in research. The institutes are:

- The **Cooperative Institute for Climate Applications and Research (CICAR)**, located at the Lamont-Doherty Earth Observatory Campus of Columbia University in Palisades, New York, conducts research on Earth system modeling, modern and paleo-climate observations, and climate variability and change applications.
- The **Cooperative Institute for Climate and Satellites (CICS-M)** is a national consortium of academic, non-profit, and community organizations with leadership from the University of Maryland and North Carolina State University. CICS-M conducts climate and satellite research and applications, climate and satellite observations and monitoring, and climate research and modeling. CICS-M collaborates with NOAA's National Environmental Satellite, Data, and Information Service (NESDIS) and National Weather Service (NWS) in addition to OAR.
- The **Cooperative Institute for Climate Science (CICS-P)**, located at Princeton University's Forrestal Campus in Princeton, New Jersey, conducts research on Earth system modeling development and analysis, Earth system modeling applications, and data assimilation.
- The **Cooperative Institute for Alaska Research (CIFAR)**, located at the University of Alaska-Fairbanks, Alaska, conducts research on ecosystem function, coastal hazards, and climate change and variability.
- The **Cooperative Institute for Limnology and Ecosystems Research (CILER)** is a ten-member consortium of academic institutions in the Great Lakes region. CILER is administratively housed at the University of Michigan in Ann Arbor, Michigan. CILER conducts research on Great Lakes ecosystem processes and forecasting, invasive species, observing systems, protection and restoration of resources, and integrated assessment.
- The **Cooperative Institute for Marine and Atmospheric Studies (CIMAS)** is a nine-member consortium of academic institutions in Florida and the Caribbean which is administratively housed at the University of Miami in Miami, Florida. CIMAS member institutions conduct research on climate and impacts, tropical weather, sustained ocean and coastal observations, ocean modeling, ecosystem modeling and forecasting, ecosystem management, and protection and restoration of resources. CIMAS collaborates primarily with three NOAA facilities located in Miami: the Atlantic Oceanographic and Meteorological Laboratory (AOML), the Southeast Fisheries Science Center, and the National Hurricane Center.

- The **Cooperative Institute on Marine Ecosystems and Climate (CIMEC)**, located at Scripps Institution of Oceanography at the University of California-San Diego, conducts research on climate and coastal observations, analysis, and prediction, research on biological systems, research in extreme environments, and research and development on observations systems. CIMEC collaborates with NOAA's National Marine Fisheries Service (NMFS) in addition to OAR. (Formerly titled the Joint Institute for Marine Operations).
- The **Cooperative Institute for Mesoscale Meteorological Studies (CIMMS)**, located at the University of Oklahoma in Norman, Oklahoma, concentrates its research efforts and resources on basic convective and mesoscale research, forecast improvements, climatic effects of and controls on mesoscale processes, socioeconomic impacts of mesoscale weather systems and regional-scale climate variations, Doppler weather radar research and development, and climate change monitoring and detection. CIMMS collaborates with NWS in addition to OAR.
- The **Cooperative Institute for Marine Resource Studies (CIMRS)**, located at Oregon State University, Corvallis, Oregon, conducts research on West Coast fisheries, the ocean environment, and marine mammal acoustics. CIMRS collaborates with NMFS in addition to OAR.
- The **Cooperative Institute for the North Atlantic Region (CINAR)**, located at Woods Hole Oceanographic Institution, Woods Hole, Massachusetts, conducts research on ecosystem forecasting, ecosystem monitoring and management, protection and restoration of resources, and sustained ocean observations and climate research. CINAR collaborates with NMFS in addition to OAR.
- The **Cooperative Institute for Ocean Exploration, Research, and Technology (CIOERT)**, located at Florida Atlantic University's Harbor Branch Oceanographic Institution in Boca Raton, Florida, conducts research on the development of advanced underwater technologies, exploration and research in the frontier regions of the eastern U.S. continental shelf, and vulnerable deep and shallow coral reefs.
- The **Cooperative Institute for Research in the Atmosphere (CIRA)**, located at the Colorado State University in Fort Collins, Colorado, conducts research on satellite algorithm development training and education, regional to global scale modeling systems, data assimilation, climate-weather processes, and data distribution. CIRA collaborates with NESDIS in addition to OAR.
- The **Cooperative Institute for Research in Environmental Sciences (CIRES)**, at the University of Colorado, in Boulder, Colorado, conducts research on advanced modeling and observing systems, climate system variability, geodynamics, integrative activities, planetary metabolism, and regional processes.
- The **Joint Institute for Marine and Atmospheric Research (JIMAR)**, located at the University of Hawaii in Honolulu, Hawaii, conducts research on ecosystem forecasting and monitoring, ecosystem-based management, protection and restoration of natural resources, equatorial oceanography, climate impacts, tropical meteorology and long-period ocean waves, including tsunamis. JIMAR collaborates with NMFS in addition to OAR.
- The **Joint Institute for the Study of the Atmosphere and Ocean (JISAO)**, located at the University of Washington in Seattle, Washington, conducts research on climate, environmental chemistry, seafloor processes, marine ecosystems, protection and restoration of marine

resources, tsunami observations and modeling, and ocean and coastal oceanography. JISAO collaborates with NMFS in addition to OAR.

- The **Northern Gulf Institute (NGI)** is a consortium of universities, led by Mississippi State University, which includes the University of Southern Mississippi, Louisiana State University, Florida State University, and the Dauphin Island Sea Lab, at Stennis Space Center, Mississippi. NGI conducts research on ecosystem management, geospatial data integration and visualization in environmental science, climate change and climate variability effects on regional ecosystems, and coastal hazards.

NOAA Climate Program Office

The NOAA Climate Program Office (CPO) manages the OAR Climate Competitive Research and Regional Climate Data and Information PPAs under the OAR Climate Research sub-program, the Sustained Ocean Observations and Monitoring PPA, and coordinates with the climate programs in the OAR laboratories. CPO coordinates climate activities with other Line Offices (including NESDIS, NWS, NMFS, and NOS) and works with many external partners. CPO manages competitive grant programs and seeks to understand climate variability and change to enhance society's ability to plan and respond. CPO implements and maintains nearly half of NOAA's Global Ocean Observing System (GOOS), sponsors research into the forcings and feedbacks contributing to changes in the Earth's climate, improves climate predictive capability from weeks to decades, and develops climate products and services to enhance decision making capabilities across all sectors of society. Among other things, CPO serves as the NOAA focal point for such national and international climate efforts as maintaining the National Integrated Drought Information System, facilitating the U.S. National Climate Assessment, and leading U.S. involvement in the Sustaining Arctic Observing Networks and the Circumpolar Marine Biodiversity Monitoring Plan. More information about CPO can be found at <http://www.climate.noaa.gov>.

Office of Weather & Air Quality

The Office of Weather and Air Quality (OWAQ) has two major missions. The first is to provide research and development that supports more accurate and timely warnings and forecasts of: (a) high-impact weather that causes loss of life and property and (b) air quality parameters, including ozone and aerosols/particulate matter which impact human health, cause crop damage, and affect private-sector power-generation planning. The second is to support research that provides the scientific basis for air-quality decision makers to develop policies and plans that effectively protect public health while also maintaining a vital economy. OWAQ manages the U.S. Weather Research Program.

National Sea Grant College Program

Congress established the National Sea Grant College Program in 1966 to enhance the development, use, and conservation of the Nation's coastal, marine, and Great Lakes resources. The legislation establishes a network of Sea Grant Colleges to conduct education, training, and research in all fields of marine study. The National Sea Grant College Program Office is located in Silver Spring, Maryland. Currently, there are 32 university-based Sea Grant programs located in every U.S. coastal and Great Lakes state, Vermont, and Puerto Rico. These programs have aligned their efforts around the NOAA National Sea Grant College Program Strategic Action Agenda, which focuses on four critical areas: Safe and Sustainable Seafood Supply, Sustainable Coastal Development, Healthy Coastal Ecosystems and Hazard Resilience in Coastal Communities. More information about the National Sea Grant College Program can be found at <http://www.seagrant.noaa.gov>.

Office of Ocean Exploration and Research

The Office of Ocean Exploration and Research (OER) has the following two primary functions:

- *Exploration:* This program supports: (1) exploring unknown and poorly known ocean areas; (2) mapping the physical, geological, biological, chemical, and archaeological aspects of the oceans; (3) utilizing new sensors and systems for ocean exploration; and (4) engaging a wide variety of audiences by innovative means, including new telepresence technologies. OER operates the *Okeanos Explorer*, a NOAA ship dedicated to the ocean exploration missions.
- *Research:* OER operates a network of regional centers and two institutes to focus on the following areas: (1) core research based on national and regional undersea priorities, (2) development, testing, and transition for advanced technologies associated with ocean observatories, submersibles, advanced diving technologies, remotely operated vehicles, autonomous underwater vehicles, and new sampling and sensing technologies; (3) discovery, study, and development of natural resources and products from ocean, coastal, and aquatic systems; and (4) undersea science-based education and outreach.

More information about the Office of Ocean Exploration and Research can be found at <http://explore.noaa.gov>.

Other Ecosystem Programs

Other Ecosystem Programs is comprised of the Ocean Acidification Program (OAP). OAP was established by section 12406 of the 2009 Federal Ocean Acidification Research and Monitoring Act to coordinate research, monitoring, and other activities to improve understanding of ocean acidification (OA). The OAP maintains long-term OA monitoring; conducts research designed to enhance conserving marine ecosystems sensitive to OA; promotes OA educational opportunities; engages national public outreach activities related to OA and its impacts; and coordinates OA activities across other agencies and appropriate international ocean science bodies. As part of its responsibilities, the OAP provides grants for critical research projects that explore the effects on ecosystems and the socioeconomic impacts leading to potential adaptive strategies.

NOAA High Performance Computing and Communications Program

The High Performance Computing and Communications Program (HPCC) supports many NOAA Strategic Plan objectives utilizing information technology research targeted at improving NOAA's mission, services, and science education. HPCC seeks to make major improvements in the ability to forecast weather and climate, and to disseminate environmental information by stimulating modernization of NOAA's computationally-intensive services. HPCC represents NOAA, the lead agency, in the Networking and Information Technology Research and Development (NITRD) program.

Research and Development (R&D) Investments:

The NOAA FY 2014 Budget estimates for R&D investments are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. OAR requests \$372,211,000 for investments in R&D in the FY 2014 budget.

NOAA's R&D planning is tied to the goals, enterprises, and associated objectives outlined in NOAA's Next Generation Strategic Plan. Specifically, NOAA's Science and Technology Enterprise and underlying objectives include a holistic understanding of the Earth system through research; accurate and reliable data from observing systems; and an integrated environmental modeling system. These provide the basis for a set of internal implementation plans covering a 7-year period which guide NOAA's research and development activities. The NOAA Research Council - an internal body

composed of senior scientific personnel from every Line Office in the agency - informs the annual updates to these implementation plans, and is developing the next 5-Year Research and Development Plan for NOAA (FY 2013-2017). This new plan will reflect NOAA's strategic objectives, provide a single guiding document for our scientists, the public, and NOAA partners, and inform future internal planning efforts.

Significant Adjustments-to-Base (ATBs):

NOAA requests an increase of \$3,537,000 for FY 2014 and 0 FTE to fund adjustments to current programs for OAR activities. This increase will fund the estimated 2014 Federal pay raise of 1.0 percent. The increase will also provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NOAA requests technical adjustments of \$610,000 and 0 FTE from three OAR PPAs to reflect IT savings. These funds will be reinvested in the DOC Working Capital Fund in order to support three new Department level Initiatives: the Enterprise Security Operations Center (ESOC), the new Financial System (BAS), and the Personal Identity Verification (PIV) program.

These savings are applied to the following PPAs:

Climate Research – Laboratories and Cooperative Institutes	\$204,000/0FTE
Weather and Air Chemistry Research – Laboratories & Cooperative Institutes	\$203,000/FTE
Ocean, Coastal, and Great Lakes Laboratories and Cooperative Institutes	\$203,000/FTE

NOAA also requests the following transfers for a net change of \$0 and 0 FTE to the agency:

From Office	PPA	To Office	PPA	Amount/FTE
OAR	Weather and Air Chemistry Research - U.S. Weather Research Program	OAR	Weather and Air Chemistry – Laboratories and Cooperative Institutes	\$0/12 FTE
OAR	Climate Operations	OAR	Regional Climate Data and Information	\$914,000/0 FTE
OAR	Climate Research – Laboratories and Cooperative Institutes	OAR	Weather and Air Chemistry – Laboratories and Cooperative Institutes	\$1,098,000/7 FTE

NOAA requests a transfer of \$0 and 12 FTE from U.S. Weather Research Program (USWRP) to the Weather and Air Chemistry Research Laboratories and Cooperative Institutes line item to clarify the funding source for the FTE working on the USWRP program.

NOAA requests a transfer of \$914,000 and 0 FTE to transfer the funding and functions of the small Climate Operations line to the Regional Climate Data and Information PPA. These programs work interactively, and managing them together will provide greater flexibility for efficient program management.

NOAA requests a transfer of \$1,098,000 and 7 FTE Climate Research - Laboratories and Cooperative Institutes to Weather and Air Chemistry – Laboratories and Cooperative Institutes for

Atmospheric Dispersion Measurement and Modeling. The ongoing atmospheric dispersion work is more closely related to work conducted in the Weather and Air Chemistry Laboratories and Cooperative Institutes line item. This change will improve the ability to describe the work as part of an integrated program, but will not change the work that is performed.

Headquarters Administrative Costs:

In FY 2014, OAR Line Office headquarters will use \$12,101,000 in funds and 62 FTE to support general management activities, financial, and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, OAR will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2014 Amount	FY 2014 FTE associated with OAR HQ
General Management & Direction/Executive Management	Includes Assistant Administrator's office, public affairs, information services	\$4,090,000	23.2
Budget & Finance	Includes Budget, Finance and Accounting	\$2,882,000	15.5
Information Technology	Includes IT-related expenses and other CIO related activities	\$1,204,000	6.7
Facilities/Other Administrative (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$1,489,000	0
Human Resources	All HR services, including EEO	\$2,069,000	9.5
Acquisitions and Grants		\$367,000	3.5
Total		\$12,101,000	58.4

Narrative Information:

Following this section are base justification materials and program change narratives by sub-program for this line office. Please note that no program change narrative is provided for program changes of less than \$100,000, however, a summary exhibit is provided at the end of each sub-program showing the object class detail for the small program changes. Please contact the Department of Commerce if details for any of these changes are required.

ADJUSTMENTS RELATED TO THE REPROGRAMMING OF THE FY 2012 SPEND PLAN

Adjustments to the FY 2014 Base are required in order to restore programs affected by reprogrammings made to the FY 2012 Spend Plan. In FY 2012, funds were reprogrammed to sustain the warning and forecast capabilities of the National Weather Service and to delay future improvements to services. These reprogrammings are carried forward into the FY 2013 Annualized Continuing Resolution. NOAA seeks to restore these funds to the FY 2014 base funds.

NOAA requests the following technical adjustments in FY 2014 to restore programs affected by the Reprogramming of the FY 2012 Spend Plan:

Line Office	Account	Page	Program, Project, or Activity	Reprogramming Adjustment
NWS	ORF	NWS-8	Local Warnings and Forecasts Base	(\$24,660,000)
NWS	PAC	NWS-8	Next Generation Weather Radar (NEXRAD)	(\$9,400,000)
NWS	ORF	NWS-8	Air Quality Forecasting	\$2,282,000
NWS	ORF	NWS-8	Sustain Cooperative Observer Network	\$800,000
NWS	ORF	NWS-8	Aviation Weather	\$9,773,000
NWS	ORF	NWS-8	Weather Forecast Office (WFO) Maintenance	\$2,006,000
NWS	ORF	NWS-8	Weather Radio Transmitters Base	\$100,000
NWS	ORF	NWS-8	Central Forecast Guidance	\$1,305,000
NWS	ORF	NWS-8	Next Generation Weather Radar (NEXRAD)	\$347,000
NWS	ORF	NWS-8	Automated Surface Observing System (ASOS)	\$988,000
NWS	ORF	NWS-9	Advanced Weather Interactive Processing System (AWIPS)	\$2,500,000
NWS	PAC	NWS-9	Advanced Weather Interactive Processing System (AWIPS)	\$5,944,000
NWS	PAC	NWS-9	Weather and Climate Supercomputing	\$100,000
NWS	PAC	NWS-9	Cooperative Observer Network-Modernization	\$2,174,000
NWS	PAC	NWS-9	Complete and Sustain NOAA Weather Radio	\$100,000
NWS	PAC	NWS-9	Weather Forecast Construction	\$1,500,000
OAR	ORF	OAR-12	Climate Competitive Research	\$1,934,000
NESDIS	ORF	NESDIS-6	Product Processing & Distribution	\$500,000
NESDIS	ORF	NESDIS-6	Archive, Access, and Assessment	\$1,157,000
OMAO	ORF	OMAO-6	Aircraft Services	\$550,000
Total				-

OAR Climate Competitive Research

NOAA will restore \$1,934,000 to Climate Competitive Research. OAR will restore the International Research Assistance Project \$1,000,000, which was terminated as part of the reprogramming of the FY 2012 Spend Plan. This project provides grants to link climate research and assessments to risk management, development, and adaptation. The Earth System Science activity will also be restored at \$934,000, which will increase the number of extramural awards made for modeling and climate prediction activities.

**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES
SUB-PROGRAM: MULTIPLE OAR SUB-PROGRAMS**

PROGRAM CHANGES FOR FY 2014:

Multiple PPAs: IT Services (Base Funding: \$42,384,000 and 47 FTE: Program Change: -\$1,734,000 and 0 FTE): NOAA requests a decrease of \$1,734,000 and 0 FTE for a total of \$40,650,000 and 47 FTE.

Proposed Actions:

This program change will achieve IT efficiencies through use of consolidated support services and the adjusted hardware and software procurement practices. The table below shows the allocation of the funding decreases for this program change.

Line item	Efficiency Savings in IT Infrastructure and HPC
IT Infrastructure - Climate Research	(\$756,000)
IT Infrastructure - Water and Air Quality Research	(\$189,000)
IT Infrastructure - Ocean, Coastal, and Great Lakes Research	(\$189,000)
HPCC - Information Technology Research and Development	(\$600,000)
Total	(\$1,734,000)

This proposed efficiency savings in the IT Infrastructure and HPCC budget will impact OAR operations and mission in the following ways:

IT Service: With this proposed reduction, NOAA proposes to reduce the amount of helpdesk and technical support services. There is a minor risk of longer response time for computer, server, and network support services.

Hardware/Software Procurement: With the proposed reduction, NOAA will extend technology refresh rates from 3-4 years to 4-6 years. In addition, NOAA may reduce software upgrades potentially reducing access to cutting edge technology and applications. There is a potential minor increased risk to IT security due to longer use of legacy systems.

Base Resource Assessment:

OAR periodically performs technical refresh of IT computing resources and associated IT maintenance and support services used to conduct short-, mid-, and long-term research. These IT investments are needed to sustain the research environment in a steady state, operations and maintenance mode and include desktop systems, servers, shared networking and security, commercial off-the-shelf scientific software licensing, and maintenance and support contracting services. These computing resources are needed to meet and achieve research and development goal outcomes for the NOAA mission.

IT expenditures are divided into four major categories including FTE, hardware, software, and contracting services. All IT functions and services must abide by all Federal laws and regulations including the Federal Information Security Management Act which ensures IT Security compliance. Funding sources are either from various OAR programs, through overhead, or through

reimbursables. Senior IT managers at the OAR laboratories provide oversight on these expenditures. All IT expenditures directly support the scientific research mission of OAR.

Schedule and Milestones:

- Complete annual continuous monitoring activities on OAR IT systems
- Complete annual contingency plan updates and testing
- Conduct annual IT Security Awareness Training Course

Deliverables:

- Four-year technology refresh of desktops and laptops as appropriate
- Five-year technology refresh of servers, routers and switches (or any network device) as appropriate
- Documented achievement of expected response time for all help desk ticket requests submitted (specified in contracts)
- Documented achievement of expected up-time for all servers and infrastructure services (specified in contracts)

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Multiple PPAs
Program Change: Information Technology Services

Object Class		2014 Decrease
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	(113)
24	Printing and reproduction	0
25.1	Advisory and assistance services	(454)
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	(600)
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	(114)
26	Supplies and materials	(453)
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> \$(1,734)

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES
SUB-PROGRAM: CLIMATE RESEARCH

The objectives of the Climate Research sub-program are to:

- Describe and understand the state of the climate through sustained atmospheric and oceanic observations and research related to global distributions, trends, sources, and sinks of atmospheric constituents that are capable of forcing change in the climate of the Earth;
- Understand, predict, and project climate variability and change from weeks to decades to centennial timescales;
- Conduct advanced modeling of the climate and Earth systems, including natural climate variability, anthropogenic climate change, weather and hurricane forecasts, El Niño prediction, and stratospheric ozone depletion to increase fundamental understanding and to improve the prediction of climate phenomena;
- Sustain the observing systems essential for climate, oceanographic, monitoring, and data management;
- Conduct physical process research to advance a seamless suite of information and forecast products, ranging from short-term weather forecasts to longer-term climate forecasts and assessments; and
- Understand how decision makers use climate information to improve the ability of society to plan for and respond to climate variability and change.

The mission of the Climate Research sub-program is to monitor and understand Earth's climate system to predict both the potential long-term changes in global climate as well as shorter-term climate variations that are of societal and economic importance. More information on OAR's climate research is available at: <http://www.oar.noaa.gov/climate/>.

To accomplish the above sub-program objectives, Climate Research across OAR is structured to support the long-term goal of Climate Adaptation and Mitigation described in NOAA's Next-Generation Strategic Plan (NGSP). The NGSP identifies four Objectives under the Goal: (1) Improved scientific understanding of the changing climate system and its impacts; (2) Assessments of current and future states of the climate system that identify potential impacts and inform science, service, and stewardship decisions; (3) Mitigation and adaptation efforts supported by sustained, reliable, and timely climate services; and (4) A climate-literate public that understands its vulnerabilities to a changing climate and makes informed decisions.

OAR's Climate Program Office (CPO) is the strategy lead for the NGSP Climate Goal, and it provides resources, programmatic oversight, and coordination to ensure NOAA's Climate Research objectives are met in an integrated and cost-effective manner. In this role, CPO brings together and maintains relationships across NOAA Laboratories, Cooperative Institutes, and university-based partners to execute research in support of these objectives. OAR's Laboratories and Cooperative Institutes contribute, both directly and indirectly, to all four Objectives and work in partnership with the CPO to ensure NOAA meets its aim of an informed society anticipating and responding to climate and its impacts. The sections below describe these relationships in more detail.

LABORATORIES AND COOPERATIVE INSTITUTES

A central objective of Climate Research is to predict, to the extent possible, the future evolution of the Earth system in order to provide a basis for informed decision making. Such predictions require a comprehensive understanding of the physical, chemical, and dynamical processes that shape our climate. OAR's Laboratories and Cooperative Institutes are central to the climate research community's effort to improve that understanding, to test our understanding through the development of state-of-the-art Earth System Models, and then to use those models to predict the future state of the climate. Observations of the Earth system and their analysis underpin the efforts that form the scientific basis for Climate Research. This section describes the activities of OAR's Laboratories and Cooperative Institutes in advancing all four NGSP Objectives of NOAA's Climate Adaptation and Mitigation goal.

Earth System Research Laboratory (ESRL)

ESRL was formed to pursue a broad and comprehensive understanding of the Earth system. At ESRL, three divisions are working toward a greater understanding of the changing climate system and its impacts through a number of areas aimed at understanding Earth system processes and changes, as follows:

Physical Sciences Division (PSD)/ESRL

The Physical Sciences Division core mission is to conduct physical science research to advance NOAA's capacity to observe, understand, critically evaluate, and advance prediction of the behavior of the atmosphere, ocean, cryosphere, hydrosphere, land, and related impacts on global-to-local scales over periods of time from days to decades. The Physical Sciences research activities have five strategic goals: (1) to improve understanding of Earth-system processes and maintain world-class capabilities in water resource research and boundary layer science through comprehensive observational studies and analyses; (2) to integrate climate, weather, and water research to support decision making; (3) to diagnose, understand, explain, and improve the prediction of extremes; (4) to advance understanding of regional processes and critically assess the skill of associated predictive tools; and (5) to conduct research and develop prototypes to improve NOAA's regional environmental information and services. To meet needs for science-based information, the program works closely with its internal partners and a broad external user community.

Chemical Sciences Division (CSD)/ESRL

The Chemical Sciences Division, in partnership with the Cooperative Institute for Research in Environmental Sciences (CIRES), conducts studies that are fundamental to our understanding and prediction of Earth's climate, U.S. air quality, and the stratospheric ozone layer. Related meteorological, dynamical, and radiative processes also are addressed when necessary. These goals are met through studies in the laboratory, extensive measurements in the atmosphere in focused field studies, diagnostic analyses, representation of these processes in models (in collaboration with others in NOAA and the extramural community), and interpreting the results to elucidate the roles of these processes. Research is focused on understanding and quantifying man-made and natural emissions of gases and particles to the atmosphere, chemical and physical processes that alter the composition of the atmosphere, and transport and mixing that redistribute pollutants throughout the atmosphere. NOAA provides this information to its customers in government, industry, and the public through the preparation of assessments and evaluations of the current and future states of Earth's stratosphere (ozone layer), climate, and air quality, as well as the processes that link them. These evaluations inform decisions regarding mitigation options.

Global Monitoring Division (GMD)/ESRL

The Global Monitoring Division, in partnership with CIRES, conducts sustained observations and research toward understanding the global distributions, trends, sources, and sinks of atmospheric constituents that are capable of forcing change in Earth's climate and environment. This research advances climate projections and provides scientific policy-relevant, decision support information to enhance society's ability to plan and respond by providing the best possible information on atmospheric constituents that drive climate change, stratospheric ozone depletion, and baseline air quality. Sustained observations are conducted through globally distributed observing networks which include six manned Global Atmospheric Baseline Observatories, and as many as 250 different atmospheric parameters are measured. GMD supports and provides leadership in several components of the U.S. Global Change Research Program (USGCRP), much of the World Meteorological Organization's Global Atmospheric Watch program, and other international programs, including the Global Climate Observing System, the Baseline Surface Radiation Network, and the Global Earth Observing System of Systems. The U.S. scientific community coordinates its carbon cycle activities through the USGCRP North American Carbon Program, which aims to quantify, understand, and project the evolution of global carbon sources and sinks to better predict future climate. With input from other agencies, the Carbon Tracker analysis tool forms the foundation for routine spatial carbon maps and is essential for other USGCRP reports and products, such as periodic -State of the Carbon Cycle reports and assessments that keep scientists and policy-makers abreast of progress in understanding the North American carbon cycle.

Geophysical Fluid Dynamics Laboratory (GFDL)

The Geophysical Fluid Dynamics Laboratory is engaged in comprehensive, long lead-time research on climate and Earth system sciences to better understand natural climate variability and anthropogenic climate change. Based on fundamental principles of meteorology, oceanography, hydrology, physics, chemistry, fluid dynamics, applied mathematics and numerical analysis, GFDL develops and uses mathematical models and high-performance computer simulations to advance understanding of the behavior of the atmosphere, ocean, biosphere, and cryosphere, and produce a range of projections about the future global climate, terrestrial and marine ecosystems, atmospheric composition, and air quality. GFDL research includes the predictability of weather and climate, including the hydrologic cycle, from global to regional scales; the structure, variability, and dynamics of the oceans; atmosphere-ocean interactions; role of land and cryospheric processes; global transport of chemical species and pollutants, and their forcing of climate change; biogeochemical cycles; Earth's atmospheric circulation; and the sensitivity of global and regional climate. GFDL's principal research products are peer-reviewed publications on the state and dynamics of the climate and Earth system, natural climate variations, and anthropogenic climate change. GFDL provides numerical models and model simulation datasets to its collaborators and the public. The Laboratory engages in national and international assessments such as those of the U.S. Global Change Research Program, Intergovernmental Panel on Climate Change, and World Meteorological Organization, providing information and data for decision making processes. GFDL has research partnerships within NOAA and with other Federal agencies, and other governmental and nongovernmental organizations. The latter include an active partnership with Princeton University through the Cooperative Institute for Climate Science and additional collaborations through Columbia University with its Cooperative Institute for Climate Applications and Research.

Atlantic Oceanographic and Meteorological Laboratory (AOML)

AOML conducts research based on models and observations to understand and characterize the role of the oceans in climate variability and change. Techniques vary from shipboard-conducted process studies, models, long-term continuous time series, and satellite-derived products. In support of these studies, AOML presently manages significant portions of the following NOAA contributions to the internationally coordinated Global Ocean Observing System activities: the Global Drifter Program,

U.S. Argo Consortium, Global Ship of Opportunity Program (for deployment of XBTs and underway surface ocean observations), CLIVAR Repeat Hydrography Program, Prediction and Research Moored Array in the Tropical Atlantic (PIRATA) Program, and Western Boundary Time Series Program. These activities include the design, implementation, maintenance, and enhancement of the observational network, real time quality control of the data for use by operational forecast agencies, delayed mode quality control of the data for use in scientific projects, and the production and provision of ocean products used by operational and research communities in their ocean activities. AOML also develops new instrumentation for observing the ocean. AOML's research related to ocean dynamics includes the Meridional Overturning Circulation, western boundary currents, and Gulf of Mexico and Caribbean Sea oceanography. In addition to global *in situ* and hydrographic observations, satellite observations and numerical modeling also complement and augment AOML's research. AOML participates in international research projects directed at developing new methods to observe the ocean for climate studies. In addition, AOML collaborates with NOAA's Pacific Marine Environmental Laboratory (PMEL) to augment and maintain the PIRATA array (the Atlantic's counterpart to the very successful Tropical Atmosphere Ocean array in the Pacific). The magnitude of carbon dioxide exchange and the quantification of uptake of carbon dioxide by the ocean are two key processes that are studied at AOML in collaboration with academic and NOAA partners, in particular, the Ocean Carbon Group at PMEL. The Ocean Carbon Group at PMEL addresses key issues pertaining to the global carbon cycle through observations, analysis, and interpretation.

Pacific Marine Environmental Laboratory (PMEL)

The Pacific Marine Environmental Laboratory improves scientific understanding of the changing climate system and its impacts by providing the core capabilities of research, technology development, and observing system implementation that are central to meeting NOAA's climate goals. PMEL has a strong history of innovation to meet the challenge of fielding a robust, accurate observation activity. PMEL climate activities include: (1) establishing and maintaining moored buoys in the Atlantic (PIRATA) and Indian (RAMA) Oceans as part of the Global Tropical Moored Buoy Array (GTMB); (2) supplying NWS-funded instrumentation to support the third leg of the GTMB, the Tropical Atmosphere Ocean (TAO) Array in the Pacific; (3) conducting Argo float deployment and research activities; (4) monitoring ocean carbon uptake and storage through moored and underway carbon dioxide measurements; (5) conducting NOAA/NSF operations in support of the global CLIVAR Repeat Hydrography program; (6) maintaining global ocean reference station time series moored arrays; (7) conducting marine aerosol, atmospheric chemistry, and air quality research cruises; (8) conducting autonomous glider sections of western boundary currents in the Solomon Sea; (9) observing ocean modeling system adequacy studies; (10) participating in ocean data management and information technology activities; (11) conducting Arctic climate research, focusing on the causes of rapid changes in Arctic climate over the past decade as compared to the more gradual temperature changes over the rest of the globe; and (12) supporting climate observations critical to international assessments, such as the Intergovernmental Panel on Climate Change (IPCC).

While most of these activities are conducted in partnership with OAR's Climate Program Office, PMEL also engages in two climate and ecosystem research activities that are more broadly focused: PMEL's Ocean Acidification (OA) and Ecosystems-Fisheries Oceanography Coordinated Investigations (EcoFOCI) research programs. Both programs work with other NOAA Line Offices to study the impacts of changing climate conditions on marine ecosystems. OA research focuses on the impacts of increased carbon dioxide concentrations in oceanic waters, while EcoFOCI studies the impacts of changing ocean and climate conditions on marine ecosystems in the Gulf of Alaska, Bering Sea, and Chukchi Sea, and contributes to operational Fishery Management Council products.

For further information on both of these research programs, see the Other Ocean Programs/Ocean Acidification and Ocean Coastal and Great Lakes Research sub-activities in this document.

Air Resources Laboratory (ARL)

ARL's Climate Research and Development program concentrates on developing reference observing systems to meet climate requirements and analyzing long-term observational datasets to understand climate variability and change over periods of time from days to decades. ARL also collaborates on the development and evaluation of modeling tools to assess regional climate impacts. ARL conducts studies that develop high quality observations of climate variability and change, as well as key physical and chemical processes that influence climate and are being used to establish an international network to better understand the atmosphere above Earth's surface. ARL is responsible for designing and developing new technology for NOAA's climate observing systems. The research component analyzes climate observations to determine what natural climate variability and what climate trends have occurred in the past. This includes understanding the water cycle and land cover/land use changes. This research provides a better understanding of how climate affects agriculture and drought and supports calibration of remotely sensed soil moisture and land surface temperatures. These analyses are also used to evaluate and improve climate models and to inform national and international climate assessments.

ARL's modeling effort investigates how regional climate models and observations can be effectively combined to improve projections of the future, thereby improving the Nation's ability to understand localized impacts of climate change.

Schedule and Milestones:

FY 2014 – FY 2018

Geophysical Fluid Dynamics Laboratory (GFDL)

• **Modeling**

Schedule/ Milestones	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Earth System Modeling (ESM)	Perform initial integrations of new ESMs Publish results of process studies	Simulate 20 th and 21 st century sea level rise using prototype next-generation models of ice sheet dynamics and other physics	Report on Arctic climate change assessment	Communicate ESM research findings through assessments, publications, and climate services	Experiments completed for International Assessment on Climate Change
National and International Assessment Products	Use ESM to conduct suite of regional climate change projections	Develop quarter degree model for reduction in tropical uncertainties of climate projections	Continuing ESM development	Continuing ESM development National Assessment released	Continuing ESM development

Experimental Decadal Forecasts	Extend decadal predictions to applications: drought and hurricanes	Decadal projections using higher resolution coupled model	Decadal Predictability studies continue	Decadal Predictability studies continue	Decadal Predictability studies continue
--------------------------------	--	---	---	---	---

- Improved understanding of decadal-to-centennial climate change, variability and predictability, and increasing confidence in climate projections, using coupled-climate model (CM2.5) at 4 times the resolution of recent IPCC-class coupled climate models.
- Robust simulations of regional climate change around the world (including tropical storms) using 25-km resolution global atmospheric model.
- Improved realism of the NOAA Earth System Models and reduced uncertainty in future carbon cycle feedbacks by closing the nitrogen cycle and improving the representation of the terrestrial biosphere. Major feedbacks on the global carbon cycle.
- Reduction in percentage of uncertainty in possible twenty-first century sea level rise.
- Development of initial physical formulations to incorporate soot and dust aerosol impacts on snow and ice albedo in climate models, and improved sea ice models essential to developing a predictive understanding of Arctic climate change.
- A decadal climate prediction system, including an assessment of the level of predictability realizable from the system, in terms of sea surface temperature predictions, and predictions of related changes in extreme events (hurricane activity, drought, heat waves, flooding, etc.).
- Enhanced contributions to assessments of human impacts on climate through inclusion of more realistic physical processes & important feedbacks in climate models, and analysis of causes of past climate change; greater confidence in projections of regional climate impacts.

Physical Sciences Division / Earth System Research Laboratory (PSD/ESRL)

• **Earth System Analysis**

Schedule/Milestones	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Cumulative field projects advancing water resources	2	3	4	5	6
Cumulative assessments of extreme weather and climate events, anomalies, and trends	2	2	3	3	4
Increase utilization of Earth system observations in the Russian Arctic as measured by cumulative publications	3	4	5	6	6
Carry out analysis of oceanic weather-climate observations in the tropics as measured by cumulative publications	2	2	3	4	5

- Co-lead and complete data processing and analysis of the DYNAMO experiment in the Indian Ocean to better understand the dynamics of the Madden-Julian Oscillation which may improve sub-seasonal weather and climate prediction over the United States.

- Assess the improvement in boundary layer wind forecasting at successive time scales using real-time assimilation of radar wind profiler data drawing from resources from the Wind Forecast Improvement Project sponsored by the Department of Energy (DOE).
- Assess the causes for recent variations in U.S. national and regional seasonal temperature, precipitation and drought.
- Complete analysis of hydrometeorology testbed and CalWater experiments in terms of understanding the role of atmospheric rivers and aerosols in water supply and extreme precipitation.
- Quantify baseline performance on NOAA extreme precipitation forecasts over previous 10 years.

Chemical Sciences Division / Earth System Research Laboratory (CSD/ESRL)

• **Chemical Sciences**

Schedule/ Milestones	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Climate-Air Chemistry field campaigns	To be based on earlier findings	Climate and air chemistry study in the U.S.	To be based on earlier findings	Climate and air chemistry study in the U.S.	To be based on earlier findings
Field campaigns on aerosol-cloud interactions	To be based on earlier findings	To be based on earlier findings	To be based on earlier findings	To be based on earlier findings	To be based on earlier findings
Field campaigns on upper tropospheric water vapor and cirrus	To be based on earlier findings	To be based on earlier findings	To be based on earlier findings	To be based on earlier findings	To be based on earlier findings
Climate research on upper tropospheric water vapor to improve models that provide a predictive understanding of the physical processes	Continue analyses	To be based on earlier findings	Continue analyses	To be based on earlier findings	To be based on earlier findings
Laboratory study of climate agents	Continuing	Initiate study of compound #3 to address key uncertainties	Continuing	Initiate study of compound #4 to address key uncertainties	Continuing
Modeling study of climate processes and agents	Continuing	Initiate study #3 to address key uncertainties	Continuing	Initiate study #4 to address key uncertainties	Continuing
Laboratory studies related to air chemistry	Continuing	Initiate kinetic study of reaction #3 to address key	Continuing	Initiate kinetic study of reaction #4 to address key	Continuing

		uncertainties		uncertainties	
Evaluation of emission inventories	Continuing	Top-down evaluations of greenhouse emission inventories using data from southeastern U.S. field campaign	Continuing	Top-down evaluations of greenhouse emission inventories using data from intensive field campaign	Continuing
Black carbon studies	Continuing	To be based on earlier findings	Continuing	To be based on earlier findings	Continuing

Global Monitoring Division / Earth System Research Laboratory (GMD/ESRL)

• **Global Monitoring and Research**

Schedule/Milestones	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
High quality, calibrated, traceable measurements of ~250 atmospheric, climate, & radiatively important species at each of the 6 Atmospheric Baseline Observatories (Total number/yr/site)	250	250	250	250	250
Cumulative number of updates to NOAA Annual Greenhouse Gas Index	10	11	12	13	14
Cumulative number of updates to NOAA Ozone Depleting Gas Index	9	10	11	12	13

- Continue to conduct sustained observations and research related to global distributions, trends, sources and sinks of atmospheric constituents that are capable of forcing change in the climate of the Earth. Continue to advance climate projections and provide scientific policy-relevant, decision support information to enhance society's ability to plan and respond. Continue research of improving instruments, reducing uncertainty values, economies of scale, calibration techniques, and statistical analysis of data.
- Updates to Daily/Monthly/Annual Products suite as appropriate (<http://www.esrl.noaa.gov/gmd/dv/>).
- Publish Annual Greenhouse Gas Index (<http://www.esrl.noaa.gov/gmd/aggi/>) and Ozone Depleting Gas Index Update (<http://www.esrl.noaa.gov/gmd/odgi/>).
- Updates and refinement to Carbon Tracker (<http://www.esrl.noaa.gov/gmd/ccgg/carbontracker/>).
- Maintain current Arctic observation capability in support of Arctic science as directed by NOAA's Annual Guidance Memorandum/Next Generation Strategic Plan.
- Provide timely South Pole Ozone hole updates (http://www.esrl.noaa.gov/gmd/dv/spo_oz/)
- Continue suite of radiation budget products including GMD's Solar Calculator (<http://www.esrl.noaa.gov/gmd/grad/>).

Atlantic Oceanographic and Meteorological Laboratory (AOML)

- Oceanic Heat Transport Analysis: Complete eight new reports using observations from ocean temperature and salinity profiles that describe the state of the ocean's meridional heat transport.
- Ship of Opportunity Program: Collect Upper layer temperature data and meteorological weather data.
- Surface Drifter Program: Provide the workforce to deploy and maintain an array of 1200 surface drifters, some equipped with pressure and wind sensors. AOML maintains the U.S. Data Acquisition Center.
- Ocean Observations Analysis: Continue to evaluate observing systems, monitoring and analysis of critical climate-related parameters such as ocean heat content, meridional heat transport, sea level trends, ocean acidification, and ocean currents.

Pacific Marine Environmental Laboratory (PMEL)

- Atmospheric Chemistry Program: Conduct a major survey cruise to monitor marine aerosols and air quality approximately every other year.
- Tropical Moored Arrays for Climate: RAMA array in the tropical Indian Ocean is planned for completion in 2014, although the schedule of completion could slip due to uncertainties in international partnerships.
- Autonomous Glider Sections in the Solomon Sea: Complete two sections per year across the Solomon Sea, and conduct numerical modeling studies to help interpret the observations.

AOML and PMEL

- Argo Floats: Collectively, AOML and PMEL deploy approximately 50 Argo floats per year to replace older floats that have reached the end of their useful lives. The global array consists of 3000 floats, each with an expected life span of four years.
- Ocean Climate Stations: Maintain OceanSITES moorings in the Deep Western Boundary Current, the Subtropical South Atlantic Ocean, the Kuroshio Extension region, and at station PAPA. Moorings are visited and refreshed at least once each year.
 - Tropical Moored Arrays for Climate:
 - PIRATA array maintained in the tropical Atlantic.
 - Deploy and maintain moorings, and visit and refresh each mooring at least annually.
 - Ocean Carbon Uptake and Storage: Repeat hydrography cruises are carried out approximately every year. These are repeats of sections originally conducted more than ten years ago, during other international ocean monitoring programs, and show the long-term changes in ocean temperature, salinity, carbon dioxide, and other chemical concentrations, and other water properties. Ocean heat content can be inferred from the data.
 - Air-Sea Carbon Dioxide Exchange:
 - Maintain instruments that collect carbon dioxide underway measurements by three ships in the equatorial Pacific and three ships off the Pacific coast of North America. This is a very cost-effective way to monitor the oceans, requiring no funded research ship time and little intervention by scientists.
 - Complete four reports or publications describing carbon dioxide exchange at the ocean surface globally based on underway observations of carbon dioxide from ships of opportunity and research vessels.
 - Carbon Dioxide Time Series: PMEL will maintain 15 existing moorings and deploy an average of 5 additional moorings each year (FY 2014 – FY 2018), provided adequate funding support from the Climate and Ocean Acidification program offices.

Air Resources Laboratory (ARL)

- Climate Assessments: Contribute to national/international climate assessments (e.g., Intergovernmental Panel on Climate Change) to inform climate mitigation and adaptation (ongoing).
- Climate Observing Systems: Conduct studies on the design and evaluation of a highly accurate international observation system for the atmosphere above the surface, which will provide essential information for understanding and predicting climate change (ongoing).
- Spatial Variability: Perform studies of spatial variability around surface climate stations to improve interpretation of regional climate variability and change and to support evaluation of models (ongoing).
- Snow Measurement Technology: Participate in a World Meteorological Organization study on snow measurement technologies to improve characterization of snowfall variability and change—an important influence on water resources in cold and mountainous regions.
- Surface Energy Fluxes: Initiate evaluation studies of physical energy fluxes in different regions of the continental United States to improve land service model parameterizations and to improve seasonal predictions of water resources (ongoing).
- Low-Level Wind Study: Report on efforts to improve the prediction of low-level winds that will translate into more efficient wind energy production.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of new regional scale projections for assessments and decision support (per year)	N/A	2	2	2	2	2	2
Description: This is a new performance measure for the FY 2014 request. Regional scale projections will contribute to international assessments (e.g. IPCC AR5, scheduled for 2013), national assessments under the U.S. Global Climate Research Program, and other assessments as requested. The number of meaningful regional projections possible will increase as NOAA's Earth System Model increases in realism and complexity. Examples of regional scale projections include: regional sea level rise projections that require explicit representation of the global eddy field in the ocean models; projections of parameters essential to ocean and coastal ecosystem forecasting; assessment of regional carbon budgets; and projections of climate change in the Arctic region that require improved sea ice models.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percentage uncertainty in possible 21st century sea level rise (0-1m = 100% uncertainty)	75%	75%	74%	73%	72%	71%	70%
Description: This is a new performance measure for the FY 2014 request. This metric is calculated using the IPCC 4th Assessment Report estimates for the range of 21st century global-mean sea level rise. Completion of the proposed effort will reduce the uncertainties by almost half as a result of modeling that better captures the more accurate measurements of ice-sheet discharge, thermal expansion, and regional anomalies due to ocean circulation and heat storage. Reducing the uncertainty in sea level rise will allow government and industry to have better information on projected sea level rise and therefore tailor their planning and actions to address the impacts.							

Performance Measure: Percent of labs that have had formal expert peer reviews in the past 5 years and were rated effective in terms of quality, mission relevance, and performance	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	100%	100%	100%	100%	100%	100%	100%
Description: This performance measure is recognized by the National Academy of Sciences report <i>Evaluating Federal Research Programs</i> , which states —The most effective means of evaluating Federally-funded research programs is expert review.							

Performance Measure: Percent certainty associated with the carbon dioxide exchange at the ocean surface globally	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	51%	51.5%	52%	52.5%	53%	53.5%	54%
Description: Based on observations, studies, and publications quantifying the exchange of carbon dioxide at the ocean surface, there will be improvement in the understanding of the oceans' capacity to sequester carbon dioxide. This in turn controls the atmospheric carbon dioxide that is the major greenhouse gas. The resulting changes in ocean chemistry (ocean acidification) will also be better described, providing a framework for determining the impacts of ocean acidification on ecosystems.							

Performance Measure: Number of journal articles published in peer-reviewed literature	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	129*	75	75	75	75	75	75
Description: PMEL conducts basic research and reports the results in peer-reviewed journal articles. The annual publication total is a measure of the laboratory climate research output. Past research papers have addressed such topics as describing the predictability of El Niño and La Niña events and describing the negative impacts on marine ecosystems of ocean acidification. These publications document advances in scientific understanding that lead to improved capabilities (analyses, forecasts, etc.) or identify -next stepsll for research. *NOAA's actual number of publications can exceed targets based on the ability of data to be used for more than their original intended purpose.							

REGIONAL CLIMATE DATA AND INFORMATION

NOAA's Regional Climate Data and Information Program, overseen by the Climate Program Office, supports *in situ* and remotely-sensed global climate data and information to: promote environmental stewardship; describe, monitor and assess the climate; and support efforts to predict changes in the Earth's environment. This program helps address the Next Generation Strategic Plan Objectives related to climate information services and a climate-literate public. Through information collected by our climate observing networks, we can assemble, develop, and communicate data and information about the trends and predictions of climate and weather events to decision makers. NOAA supports the following under the Regional Climate Data and Information Program:

- The **U.S. Climate Reference Network** (USCRN) provides baseline, high-quality surface observations of air temperature and precipitation to detect long-term changes in climate through a robust climate record. The USCRN also supports the National Integrated Drought Information

System (NIDIS)¹ through the inclusion of soil moisture sensors, which provide data critical to understanding drought.

- The **U.S. Drought Portal** is part of NIDIS, and it provides users with the ability to determine the potential impacts of drought and their associated risks, while also providing needed decision support tools. More information is available at: <http://www.drought.gov>.
- NOAA's **Observing System Monitoring Program** provides early detection and remediation of network problems that can adversely affect the quality of data records and diminish the ability to evaluate climate variability and change.
- NOAA's **Assessment Services Program** delivers climate information to support decision-making by providing authoritative, relevant, accessible and useful scientific information in a timely, sustained, and repeatable manner for a wide range of audiences and key stakeholders. The program supports three types of climate assessment: national and international science assessments, problem-focused assessments, and needs assessments.
 - As part of the Assessment Services program, in coordination with the U.S. Global Change Research Program, NOAA participates in the co-development of the Global Change information System (GCIS), which is a comprehensive web-based information system including information for different audiences and transparent access to data and sources. The initial focus of GCIS will be on meeting the needs of the National Climate Assessment.
- The **Climate Model Data Archive** will generate and house model-based data records and implement an operational archive and access capability for the next generation high resolution weather and climate reanalysis datasets. The Archive also addresses the recommendation of the NOAA Science Advisory Board that NOAA develop products from climate model outputs. The Climate Model Data Archive provides a single point of access to several new NOAA datasets and will improve linkages between research findings and the transfer of those findings into operational capabilities.
- In FY 2012, NOAA transitioned the **Climate Portal Prototype** to a phase of active development, which will represent the full breadth of NOAA's climate sciences and available services and serve as the public's primary online point of entry. Existing data and new products in formats that are readily usable by decision makers in government agencies and businesses will be available. These geospatial tools enable resource managers to place information on impacts and affected resources in a place-based context relevant to planning or permitting.
- OAR's **Climate Operations** program provides useful and timely climate information and operational forecasts. Public and private users need this information on a broad range of timescales from sub-seasonal through interannual and beyond.
- The NOAA **Communications and Education Program** is actively working to build NOAA's and partners' capacity for climate communication, education, and engagement, while also working to integrate NOAA's and its partners' climate data and information into a coordinated portfolio of projects, products, and partnerships to promote climate literacy and enhance climate-related decision making.
- The **Arctic Research Program** focuses on sustained observations and retrospective analysis of key variables in the Arctic region's atmosphere, ocean, and sea ice cover to document variability, detect change, and evaluate impacts of climate change on marine ecosystems. The Arctic Research Program (ARP) and its partners have been leaders in documenting the changing state of the Arctic region and reporting the changes to the public and policy officials. The ARP also works collaboratively with national and international agencies.

¹ The NIDIS program is funded through the Regional Climate Data and Information program and the Climate Competitive Research program.

- The mission of the **National Climate Predictions and Projections (NCP) Platform** is to accelerate the application of knowledge about climate variability and change at regional and local spatial scales to adaptation and preparedness planning efforts. NOAA also conducts a Communication and Education Program that has aims to improve public climate science literacy and to raise public awareness, understanding of, and engagement with NOAA's climate science and services programs.
- NOAA provides funding for both internal and external research and development programs through CPO's **Climate and Societal Interactions (CSI)** activity. CSI provides national leadership in developing interdisciplinary science and services, including assessments, for application in climate-sensitive sectors and regions. The goals of CSI are: (1) identification and articulation of user-community requirements in multiple sectors, initially with regard to water resources and the coastal zone, then branching to related sectors; (2) Research and development of innovative and broadly applicable approaches to support decision-making, especially for risk characterization; and (3) promotion of the transfer of knowledge, tools, and products across climate research efforts within NOAA, across the Federal government, nationally, and internationally. In addition, several of CSI's initiatives support the Coping with Drought Initiative of NIDIS.
 - As part of CSI, the **Regional Integrated Sciences and Assessments (RISA)** program supports research teams that help build the Nation's capacity to prepare for and adapt to climate variability and change. Core research objectives of RISA include: understand decision contexts for using climate information; perform interdisciplinary science and research; maintain diverse, flexible user networks for sharing knowledge; and innovate climate services to enhance the use of science in decision-making.

Schedule and Milestones:

National Integrated Drought Information System (NIDIS)

Schedule/Milestones	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Number of soil moisture sensors reporting in real-time	114	114	114	114	114
Number of interoperable drought systems accessible through the U.S. Drought Portal	28	32	36	40	40

Assessment Services

- FY 2014: Completion and delivery of a National Climate Assessment synthesis report.
- FY 2014: Public deployment of the prototype Global Change Information System (GCIS).
- FY 2014 - 2015: Updates of regional projections from new model results. Draft of two new sectoral assessments (oceans and coasts).
- FY 2015 - 2016: Improve and update GCIS (particularly with -indicatorsll updates).
- FY 2015 - 2016: Complete updates of existing regional and sectoral assessments.
- FY 2016: Reviewable draft of the National Climate Assessment, update of assessment content online.
- FY 2017: Completion and publication of National Climate Assessment synthesis.
- FY 2018: Produce draft of two assessment products (extremes and water). Improve and update the GCIS.

NOAA Climate Portal

- FY 2014: Expand the scope of the -Data section to include maps showing climate conditions in the U.S. and globally.
- FY 2014: Increase the size, accessibility, and usability of reviewed climate education resource collections and ensure connectivity to other related portals.
- FY 2014: Make user-driven refinements in the Portal's interface design and functionality.

Communication and Education

- FY 2013-2015: Build out geospatial tools that enable resource managers to place information on impacts and affected resources in a place-based context relevant to planning or permitting.
- FY 2013-2015: Sustain an annotated collection of thoroughly reviewed existing digital educational resources.
- FY 2013-2015: Publish narratives and data visualizations that show how NOAA advances climate science understanding, and how those advances benefit society.
- FY 2014-2015: Courses, workshops, and trainings on climate science and adaptation offered for NOAA's and partners' staff and the international community.

Arctic Research Program

- FY 2014-2015: Complete the Annual Arctic Report Card
- FY 2014-2015: Maintain five ice buoys/stations.

Deliverables:

National Integrated Drought Information System (NIDIS)

- Develop monitoring gaps analysis, develop improvements in monitoring (e.g., stream flow and snow), and perform spatial analysis of water demand for the pilot basins.
- Develop and improve drought indicators and indices, such as: (1) the Natural Resources Conservation Services update to the Surface Water Supply Index; (2) improve and utilize low flow impacts database; (3) custom drought index server; and (4) water demand projections and revised triggering criteria (threshold for making management decisions).
- Develop state, Federal, tribal and private partnerships through workshops to sustain early warning systems after the pilot stage, including development of drought coordinator capacities (NIDIS Implementation Plan, 2007). For example, develop communities through the Drought Portal that can develop drought early warning processes and can provide input to the Drought Monitor.

NOAA Climate Portal

Improved access to NOAA's climate data and information via a single, comprehensive Web portal with four audience-focused sections and conduct a comprehensive assessment and evaluation of the Portal's overall impacts on its target audiences.

Arctic Research Program

- Contribute annually to the following Arctic Observing activities pending the outcome of a Program Review in 2013:
 - Three Moorings in the western Bering Strait, on the Chukchi Plateau, and in a transit pathway for Pacific water as it enters the Arctic Basin to monitor variability in the flux of heat, salt, nutrients, marine life, and sea ice thickness.
 - One repeat hydrographic, sea ice, and ecosystem expedition in the Pacific Arctic with continued monitoring of the U.S. Distributed Biological Observatory and its counterpart in the western Chukchi Sea.

- One to three international Arctic Climate-Atmospheric Observatories with our Canadian, Russian, and other international partners.
- Sea ice thickness observations from ice mass balance instrumentation.
- Annual support for the Arctic Report Card.

Performance Goals and Measurement Data:

NIDIS Early Warning Systems (to support Regional Services delivery)

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of states and territories working with NIDIS to incorporate drought early warning information into their drought adaptation and mitigation plans (Cumulative)	4	5	7	10	15	22	22
<p>Description: The performance measure is based on the number of states and territories that partner with NIDIS to incorporate drought early warning information into their drought planning activities. Activities that count toward this measure include: local or regional drought planning/management groups; use of tailored information from the U.S. Drought Portal to establish drought indicators and set management triggers in state and territory drought adaptation and mitigation plans; and incorporation of information from basin specific drought monitors developed through the drought early warning information systems into either state and territory drought adaptation and mitigation plans or as part of state and territory drought planning and management groups.</p>							

Assessment Services

Performance Measure: Annual number of climate change related impacts, vulnerability, adaptation, or mitigation information topics addressed in the Assessments	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	8	8	8	8	8	8	8
Description: This performance measure will demonstrate the role of formal climate change assessments in decisions to address climate change impacts by identifying the number of topics addressed in the assessments that are considered by business, government, or the public that affected decisions related to improved climate resilience. Information topics are based on the U.S. Global Change Research Program report, -Global Climate Change Impacts in the U.S. This measure will track the extent to which the USGCRP topical information items are used by industry, etc., to inform their key decisions on how to mitigate or adapt to climate change.							

NOAA Climate Portal

Performance Measure: Percentage growth in number of visits to NOAA's Climate Portal over the preceding year's measure	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	63%	5%	5%	5%	5%	5%	5%
Description: This performance measure will show the ongoing increase in the average number of visits to the Portal among the four target audiences the Climate Services Portal serves. The 2012 actual reflects the first year of operational use of the portal following the completion of the Climate Portal Prototype.							

Communication and Education

Performance Measure: Percentage improvement in the Quality of Relationship between engagement personnel and the public they serve (Quality of relationship is a formal method of measuring indicators like trust, satisfaction and reliability) (Measure 16f).	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	72.6%	N/A	75%	N/A	77%	N/A	79%
The Quality of Relationship (QoR) instrument measures, are comprised of, the following five elements: awareness, trust, satisfaction, use/usability, and control mutuality. Like the American Customer Satisfaction Index, the QoR instrument produces an index score from 0-100. The goal is to capture the increasing Quality of Relationship for each of our priority publics as they access, understand, and integrate climate information, products, and services into the tools and algorithms they use for decision-making, ultimately resulting in an increase in the frequency and proficiency with which they use NOAA climate data and services in their lives and livelihoods. The measure will be a combination of surveys and focus groups to establish a baseline measurement and perform annual follow-up measurements to determine the annual percentage improvement in the Quality of Relationship as climate services are increased and improved.							

Regional Information Applications

Performance Measure: Number of regionally and sectorally focused climate impacts and adaptation studies communicated to decision makers (per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	27	27	27	27	27	27	27
Description: Number of peer-reviewed publications and reports published and released in one fiscal year. The publications/reports are developed through interaction with and/or communication to stakeholders. Publications and reports are collected from investigators conducting climate impacts and adaptation research in cooperation with stakeholders. The goal of this research is to better understand and enhance the use of NOAA products and information to meet user requirements for natural resource management information in various sectors (e.g. drought and water resources, fire risk, ecosystem and coastal impacts, sea-level rise, human health, agriculture, etc.)							

Climate & Societal Interactions

Performance Measure: Number of U.S. coastal states and territories demonstrating 20% in annual improvement in resilience capacity to climate hazards (Each Year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	12	14	16	18	20	22	22
Description: As an indicator for this measure, data is used from the existing hazards resilience GPRA Measure 18e -Percentage of U.S. coastal states and territories demonstrating 20 percent or more annual improvement in resilience capacity to weather and climate hazards. To meet the 20 percent or more improvement in resilience capacity, coastal counties representing at least 20 percent of the state's coastal population must meet or exceed predefined performance targets for each of the contributing areas of training, technical assistance, and outcomes.							

Performance Measure: Number of states or territories using new or tailored climate services (tools, information, technical assistance, or products) as a result of regional, state and local interaction with decision makers (Each Year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	N/A	4	5	7	8	9	10
Description: The number of products and services, provided or existing products and services that are modified/expanded for new user groups or regions. 'Products and services' includes technical assistance, training, and guidance documents to enable planning and decision making. [This measure is partially based on the current GPRA: Number of regionally and sectorally focused climate impacts and adaptation studies communicated to decision makers.]							

Performance Measure: Annual percentage of U.S. states and territories that use NOAA climate information and services to improve decision making in the face of a changing climate (Measure 16d)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	22%	22%	24%	25%	27%	29%	29%
Description: Number of states and territories where climate information is integrated into state and territory planning and decision making (e.g., changes in policies, plans, and actions), as well as indicators of success such as training and technical assistance. Percentage of improvement in state and territory resilience to climate hazards. This measure is an indicator of societal benefit derived from the use of NOAA climate information in public decision making in states and territories. This performance measure will track the numbers of states and territories that are benefiting from the inclusion of NOAA climate information in their decision making processes. It will also show how these decisions will lead to better results or improved decisions based on inclusion of this climate information. The measure accounts for all 50 states and five U.S. territories.							

CLIMATE COMPETITIVE RESEARCH

Climate Competitive Research funds high-priority mission-critical climate science through a competitive selection process within NOAA and with our academic partners to advance our understanding of Earth's climate system, including its atmospheric, oceanic, land, and snow and ice components, as well as the impacts of climate on society. The program supports research that is conducted in regions across the United States, at national and international scales, and globally. Outcomes from the Climate Competitive Research program have directly benefited NOAA's operational climate products. The program also provides strategic guidance and oversight for the agency's climate science and services programs.

Competitive grant efforts within Climate Competitive Research are organized under two activities:

Earth System Science

The Earth System Science (ESS) activity provides the process-level understanding of the climate system through observation, modeling, research analysis, and field studies to support the development of improved climate models and predictions in support of NOAA's mission. Major activities include:

1. Understanding and improving the prediction of tropical convection, with a focus on identifying the key processes involved in linking convection with environmental moisture and responsibility for the dynamic evolution of cloud populations on intra-seasonal time scales;
2. Identifying the location, magnitude, dynamics, and variability of global carbon sources and sinks; understanding how ocean ecosystems are impacted by changes in carbon cycling and the role of these ecosystems in regulating the ocean's carbon uptake; and
3. Improving understanding of the role of aerosols and chemically-active greenhouse gases in the global climate system.

ESS-sponsored research is carried out at NOAA and other Federal laboratories, NOAA Cooperative Institutes, academic institutions, and private research companies, and is coordinated with major national and international scientific bodies including the World Climate Research Programme, the International Geosphere-Biosphere Programme, and the U.S. Global Change Research Program.

Modeling, Analysis, Predictions, and Projections

The mission of the Modeling, Analysis, Predictions, and Projections (MAPP) activity is to enhance the Nation's capability to predict variability and changes in Earth's climate system, to improve the representation of Earth system processes in models, and to test the limits of model capabilities towards the goal of producing model output on scales relevant to decision makers. MAPP focuses on the coupling, integration, and application of Earth System Models and analyses across NOAA, among partner agencies, and with the external research community. Primary objectives include:

1. Improving Earth System Models;
2. Developing a national multi-model ensemble prediction system for intra-seasonal to inter-annual time scales; and
3. Advancing decadal climate predictions and projections.

MAPP focuses on targeted infrastructure support, operates a competitive grants program, encourages community interaction through task forces and webinars, and supports mechanisms that enable the transference of research findings into NOAA's operations.

Climate Monitoring, Analyses, and Diagnostics

CMAD contributes to the development of continuous records, analyses, and diagnostics of a range of ocean, atmosphere, and land surface parameters based on observational information. CMAD ensures that high-quality data sets needed to understand the climate system are available to the research community for further analysis and supports projects that document and study observed variations in climate. Analysis products support other program efforts in modeling of the climate system and developing targeted services to better inform society about potential climate impacts and possible response options.

More information on the wide variety of climate research programs is available at:

http://www.climate.noaa.gov/cpo_pa/.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Cumulative number of new decadal prototype forecasts and predictions made with high-resolution coupled climate models	1	2	3	4	5	6	7
Description: One of the goals of this activity is to develop new prototype forecasts and predictions on decade time-scales for climate changes and impacts such as sea level rise, Arctic climate impacts, and rapid climate change. These forecasts and predictions are dependent on the development of state-of-the-art climate models.							

Performance Measure: Number of new regional scale projections for assessments and decision support (per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	N/A	2	2	2	2	2	2
Description: This is a new performance measure for the FY 2014 request. Regional scale projections will contribute to international assessments (e.g. IPCC AR5, scheduled for 2013), national assessments under the U.S. Global Climate Research Program, and other assessments as requested. The number of meaningful regional projections possible will increase as NOAA's Earth System Model increases in realism and complexity. Examples of regional scale projections include: regional sea level rise projections that require explicit representation of the global eddy field in the ocean models; projections of parameters essential to ocean and coastal ecosystem forecasting; assessment of regional carbon budgets; and projections of climate change in the Arctic region that require improved sea ice models.							

Performance Measure: Cumulative site-years of data collection for cryospheric, boundary layer mean and turbulent properties, hydrometeorological, and oceanic process studies	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	10	20	30	40	50	60	65
Description: Process studies in the polar regions, over the ocean, in coastal watersheds, and mountainous terrain depend on precise, robust, routine, and relevant observations of the Earth system at time and space scales to diagnose its behavior and to assess the skill of predictive tools used to forecast its future.							

Performance Measure: Number of physical science related articles published in the peer-reviewed literature	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	108	90	95	100	105	110	115
Description: These publications are a measure of the credibility of information, tools, and diagnoses of the Earth system provided to other NOAA partners, other agencies, states, private sector, and various sectoral, societal, and economic interests.							

Performance Measure: Cumulative number of climate-related articles published in the peer-reviewed literature.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	123	114	140	175	210	245	280
Description: The information in these publications provided the information needed by stakeholders and decision makers to develop effective policies and adaptation strategies for a changing climate.							

Performance Measure: Cumulative number of reports to stakeholders and decision makers that provide a policy-relevant scientific synthesis of results from intensive field studies, process studies, and analyses.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	1	2	2	3	3	4	4
Description: This is a new performance measure for the FY 2014 request. Reports to stakeholders provide a distillation of key scientific findings on emissions, transport, atmospheric processing, and impacts of climate forcing agents, their precursors and species related to air quality degradation to inform policy development and emission management strategies for climate and air quality. Stakeholders include the Texas Commission on Environmental Quality (TCEQ) and the California Air Resources Board (CARB).							

Performance Measure: Cumulative number of substances, proposed as replacements for stratospheric ozone depleting industrial compounds (e.g., solvents; refrigerants) whose ozone depleting potential and greenhouse-warming potential have been evaluated	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	1	2	2	3	3	4	4
Description: Provides to industry stakeholders critical information on climate impacts of proposed replacement stratospheric ozone depleting chemicals prior to manufacture.							

Performance Measure: Cumulative number of individual emission sources and source regions relevant to climate and air quality whose inventories have been evaluated for accuracy via top-down analyses	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	New Baseline established	1	2	3	3	4	4
Description: Provides verification of critical inputs to climate models resulting in reduced uncertainty in model outputs, which provides decision makers greater confidence in establishing policies and emission management strategies.							

Performance Measure: Uncertainty of the North American carbon sink to better understand the contribution of human activities toward increasing atmospheric carbon dioxide and methane (million tons carbon/year) (Measure 16b)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	400	405	415	425	435	445	450
Description: The provision of NOAA scientific guidance to policymakers concerned with managing emissions of carbon dioxide requires NOAA to assess and quantify the sources of carbon variability. This GPRA measure demonstrates the scientifically accepted level of confidence in carbon measurement that is needed to accurately evaluate levels of carbon emissions in North America. The uptake of atmospheric carbon (mainly as carbon dioxide) by the biosphere across North America is of the order of one billion tons (one petagram) per year.							

Performance Measure: Cumulative number of studies on the design and evaluation of an international climate-quality observation system for the atmosphere above the surface	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	2	2	2	2	3	3	4
Description: Sustained observations of Essential Climate Variables will (1) ensure that climate scientists will be able to more confidently identify upper-air climate change signals and (2) provide essential calibration data for satellite observing systems so that significant progress can be made in the generation of global climate products and derived information to manage the Nation's response to the climate and climate change. This measure refers to publication of studies to optimize the design and implementation of a reference upper-air observing network.							

Performance Measure: Cumulative number of regions for which a surface flux study has been conducted	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	0	1	2	3	4	5	6
Description: -Surface fluxll refers to the exchange of energy (e.g., heat) and substances (e.g., water) between the land surface and the atmosphere. These fluxes are critical drivers of climate change because they affect air and land temperatures and other important aspects of the climate. These fluxes also drive important climate-related phenomena such as droughts and such weather-related phenomena as the development of storms. Surface fluxes vary significantly with surface and weather conditions. The measurements taken in this work and the related analyses will provide essential information for improving the representation of the fluxes in climate and weather models, improving the accuracy of both weather and climate forecasts.							

PROGRAM CHANGES FOR FY 2014:

Climate Research Laboratories and Cooperative Institutes (Base Funding: \$51,569,000 and 242 FTE; Program Change: +\$5,285,000 and 0 FTE): NOAA requests \$5,285,000 and 0 FTE for a total of \$56,854,000 and 242 FTE to fund external (grant and contract-based) climate research with its Cooperative Institutes partners. The research will target Deep Argo research, Carbon Observation and Analysis System/Carbon Tracker, and the development of hydroclimate models for drought prediction.

Proposed Actions:

Deep Argo Measurements (\$1,225,000)

This funding will support the enhancement of the U.S. Argo Program toward its objective of sustained and regular monitoring of the physical state of the global ocean. Funding will increase the pilot deployment from eight Deep Argo floats in one ocean basin to 68 floats in four ocean basins by 2018. The increase in deployment of deep floats will allow NOAA to better observe sea level variability, understand its subsurface causes and to resolve patterns in deep ocean warming signals. This work will be accomplished by partnering with Cooperative Institutes, including CIMEC, JISAO, and CINAR.

Carbon Tracker (\$2,710,000)

Carbon Tracker is a module driven model that can incorporate a variety of trusted data sources to enhance its product output or provide input into other models. This work, in partnership with CIRES, will help determine the origin of carbon sources and sinks, and better quantify uncertainties in carbon transport calculations. Weather forecasts can be significantly improved by increasing transport resolution using carbon dioxide and methane (CO₂ and CH₄), the two most important greenhouse gases, into a state-of-the-art weather model. This is a first step toward a next generation assimilation system that will significantly improve weather and transport modeling. Carbon Tracker will use data from National Weather Service (NWS), including high resolution wind fields, and the European partnership as inputs for global coverage. The use of multiple transport models offers the best approximation of reality by encompassing a fuller range of potential atmospheric states.

Funding will also allow for incorporation of a Carbon-14 isotope (¹⁴CO₂) module to discriminate between natural and anthropogenic sources of CO₂. This model enhancement would cleanly separate the observation of CO₂ emitted by fossil fuel combustion from natural CO₂ sources and sinks. This would provide an independent verification of reported fossil fuel CO₂ emission inventories, especially needed in times where greenhouse gas emissions have an economic cost attached. Additionally, unbiased, observationally based estimates of fossil fuel CO₂ would minimize bias in estimates of natural sources and sinks in models like Carbon Tracker, further reducing uncertainty values in the North American Carbon sink.

Drought Research and Predictions (\$1,350,000)

With guidance from the National Integrated Drought Information System (NIDIS) program and in coordination with the Modeling, Analysis, Predictions, and Projections (MAPP) Drought Task Force, NOAA will work with its Cooperative Institutes, including JISAO, CICS, and CIRES and its research laboratories, as appropriate, to develop and evaluate a drought prediction and assessment system. The underlying system will utilize quantitative and objective assessments of regional drought conditions. Modeling and analysis efforts will focus on:

- (1) Improving our understanding of how sea surface temperatures and land surface conditions are related to regional precipitation and temperature anomalies associated with drought conditions;
- (2) Improving the depiction of the physical processes, antecedent conditions, and ameliorating events affecting regional variability of drought including initiation and termination;

(3) Developing and evaluating a probabilistic prediction system based on the optimal combination of dynamical models and statistical methods to improve the reliability and skill of drought forecasts and the depiction of associated uncertainties.

NOAA will use historic data to validate results. Research will consider, leverage, and expand upon current systems and research efforts. These include: the Climate Forecast System and other experimental drought prediction systems at NCEP including the National Multi-Model Ensemble and models within the Community Hydrologic Prediction System (CHPS), and Hydrologic Ensemble Forecast System (HEFS) at the NWS Office of Hydrologic Development (OHD); and Drought Task Force predictability and prediction research activities. OAR will work with OHD and NCEP to facilitate eventual transition into NWS operations.

Statement of Need and Economic Benefits:

Deep Argo Measurements

Complementary measurements of sea surface height (from satellite altimetry and tide gauges), ocean mass (from gravity satellites), and ocean density changes (from Argo temperature and salinity) together now make it possible to observe sea level variability and to understand its subsurface causes. The present Argo array provides observations of the upper 2,000 meters of the world's oceans; however, this is only one-half of the total oceanic volume. Extending Argo to the ocean bottom will close the global sea level and energy budgets, and resolve the pattern and rates of deep ocean multi-decadal warming signals identified in a number of the ocean's deep basins.

Carbon Tracker

Carbon Tracker, part of the Carbon Observation and Analysis System (COAS), provides the scientific community with a quantification and understanding of regional carbon dioxide fluxes, including those due to fossil fuel emissions. Existing and emerging satellite systems including the Atmospheric Infrared Sounder, NASA's Orbiting Carbon Observatory, and the European Science Agency's ENVISAT (and its SCHIAMACHY component) require NOAA's Carbon Tracker output. Intensive quality control of the Carbon Tracker data ensures the accuracy and comparability of all measurements with the above satellite systems. With extensive international cooperation and support, NOAA's COAS is the world standard for global efforts and the backbone of the World Meteorological Organization program for monitoring greenhouse gases (Global Atmospheric Watch).

Carbon Tracker is a scientific tool that, together with long-term monitoring of atmospheric carbon dioxide, calculates CO₂ uptake and release at the Earth's surface over time. Tracking CO₂ sources and sinks in land and ocean ecosystems improves understanding of how it behaves in a changing climate (higher CO₂ may enhance plant growth) and how the management of land and oceans influences CO₂ dynamics.

Using CO₂ and CH₄ as conservative tracers is one of the first steps toward a joint data assimilation system for meteorological variables and GHGs. This is expected to lead to better weather forecasts and to objective verification of GHG emissions, and to improved quantification of natural sources and sinks. Incorporating long-term records of conservative tracers like CO₂ and CH₄ offers a unique opportunity for improving understanding of atmospheric transport, and is one that has not been used to date. Further, these increased observations and model improvements will substantially improve the ability of the United States and other nations to evaluate policies addressing atmospheric GHG concentrations².

² Pacala, et al., 2010, Natl. Acad. Sci. Report, ISBN 978-0-390-15211-2.

Drought Research and Predictions

Economic, environmental, and societal drought impacts are severe. The 1988 drought cost the U.S. \$40 billion in that year alone (The Geological Society of America, 2006: Managing Drought and Water Scarcity in Vulnerable Environments-- Creating a Roadmap for Change in the United States). As of February 2013, over 54 percent of the contiguous U.S. was in moderate or greater drought conditions. Factors that exacerbate the issue include: population growth and shifts into areas at risk from severe drought impacts (especially in the west, mid-west, and southeast); land use change; increased water resource demand from sectors such as agriculture, energy, and recreation; and increasing aridity in specific regions. Since 2000, the percent of the U.S. in moderate or stronger drought has risen to 25 percent annually (from a previous average of about 15 percent). Developing the ability to forecast a drought will allow more time for drought planning and risk reduction efforts at the Federal, State, and local levels. This effort is consistent with the goals of NIDIS and will complement existing -Coping With Droughtll services within the Climate Program Office.

Base Resource Assessment:

The base resources for this activity are described in the Climate Research base narrative.

Deep Argo Measurements

No base resources are designated for this activity from the Climate Laboratories and Cooperative Institutes budget line. Funding for the eight Deep Argo floats currently under development was provided through the Sustained Ocean Observations and Monitoring PPA and administered by the Climate Program Office.

Schedule and Milestones:

Deep Argo Measurements

- Increase deployment of Deep Argo floats (capable of profiling to 6,000-meter depth. (See performance measure below). The proposed deployment rate is in line with the original rate agreed to by the U.S. Argo float consortium in FY 2012.

Carbon Tracker

Carbon Tracker will be using an ensemble of four transport models to calculate carbon dioxide and other greenhouse gas uptakes and releases at Earth's surface over time.

Drought Predictions and Research

- FY 2014 – FY2016: Award and monitor targeted research and contracts supporting research to: 1) improve understanding of the causes and predictability of regional drought forecasts on seasonal to interannual timescales, taking into account decadal scale variability and forcings; 2) develop improved monitoring approaches for regional drought; and 3) develop and evaluate improved drought prediction methods, including regional forecasts appropriate for drought impacted regions.
- FY 2017 – FY 2018: Incorporate results of grants and prototype drought prediction system.

Deliverables

Carbon Tracker

- FY 2014: Improve accuracy and applicability of 65 carbon dioxide flux maps per year and improve estimates of the North American sink for atmospheric carbon dioxide. Other products that emanate from this effort are the NOAA Annual Greenhouse Gas Index, Interactive Data Visualization, and monthly updates of global carbon dioxide trends.

- FY 2015: Scientifically evaluate and quantify the contribution of each incorporated transport model toward the improved uncertainty reduction. This will form the basis of increasing model accuracy.
- FY 2016: Develop land biosphere modeling with the explicit aim of linking carbon dioxide, methane (CH₄), and carbon monoxide (CO) fluxes from terrestrial ecosystems as a function of common weather and climate drivers, including wildfire.
- FY 2017: Develop estimation of fossil fuel emissions using the suite of tracers measured in Carbon Cycle Greenhouse Gases CCGG flasks, most notably simple hydrocarbons and halocarbon species associated with fossil fuel use via emissions ratios.
- FY 2018: Increase aircraft flights and flask network observations and density to provide the framework for regional Carbon Tracker outputs.

Performance Goals and Measurement Data:

Performance Measure: Number of Deep Argo profiling floats deployed (Cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0	20	36	56	68
Without Increase	N/A	0	0	8	12	20	28

Description: Complementary measurements of sea surface height (from satellite altimetry and tide gauges), ocean mass (from gravity satellites), and ocean density changes (from Argo temperature and salinity) together now make it possible to observe sea level variability and to understand its subsurface causes. Extension of Argo to the ocean bottom is a compelling objective needed to close the global sea level and energy budgets, and to resolve the pattern and rates of deep ocean multi-decadal warming signals that have been identified in a number of the ocean's deep basins. Because of the time to award contracts, performance increases lag behind funding.

Performance Measure: Uncertainty of the North American carbon sink to better understand the contribution of human activities toward increasing atmospheric carbon dioxide and methane (million tons carbon/year) (Measure 16b)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	410	410	400	400	390
Without Increase	400	405	415	425	435	445	450

Description: The provision of NOAA scientific guidance to policymakers concerned with managing emissions of carbon dioxide requires NOAA to assess and quantify the sources of carbon variability. This GPRA measure demonstrates the scientifically accepted level of confidence in carbon measurement that is needed to accurately evaluate levels of carbon emissions in North America. The uptake of atmospheric carbon (mainly as carbon dioxide) by the biosphere across North America is of the order of one billion tons (one petagram) per year.

Performance Measure: Number of major past U.S. drought events for which mechanisms and predictability have been fully assessed.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	2	3	4	5	6
Without Increase	N/A	1	1	1	2	2	2
Description: This measure indicates the extent to which improved understanding of the causes of drought may be achieved by studying past events, which will be used to assess the ability of current observing and modeling systems to skillfully predict drought.							

Performance Measure: Increased skill in seasonal precipitation forecasts from a probabilistic multi-model/multi-methodology system, as compared to the current operational single dynamical model system	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	53%	57%	60%	62%	65%
Without Increase	N/A	50%	50%	50%	52%	52%	52%
Description: Increase in the percentage of skillful forecasts (Continuous Ranked Probability Skill Score at four-month lead) for seasonal mean precipitation anomalies over global land areas based on an improved multi-model system compared to the current operational NOAA system (CFSv2). This will measure progress in forecasting seasonal precipitation a season ahead, information of critical importance to agriculture and other sectors. Progress is expected to come from developing a drought prediction system that uses input from multiple models and statistical methodologies, improved initial conditions for prediction, and improved methodologies to post-process the forecasts.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: Laboratories and Cooperative Institutes Base

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	540
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	330
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	4,415
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$5,285

Climate Research Laboratories and Cooperative Institutes: U.S. Global Change Research - Improved Understanding of Earth Systems and Extremes, Thresholds, and Tipping Points (Base Funding: \$51,569,000 and 242 FTE; Program Change: + \$9,000,000 and 2 FTE): NOAA requests an increase of \$9,000,000 and 2 FTE for a total of \$60,569,000 and 244 FTE to implement research and other activities in support of the U.S. Global Change Research Program's priority research areas. This work will focus on expanding NOAA's capabilities for improved understanding of carbon, extremes, and marine ecosystem tipping points.

Improved observations, understanding, and anticipation of the risks (and their confidence intervals) to human and natural systems from emissions, extremes, and tipping points are critical for the U.S. to improve its capacity for environmental and community resilience in a changing climate.

Proposed Actions:

Carbon Research: NOAA will enhance the Carbon Observation and Analysis System (COAS) within the North American Carbon Program, which focuses on quantifying, understanding, and assessing the dynamics of carbon sources and sinks in North America. This effort will build upon current efforts to operationally monitor greenhouse gases with the COAS of tall towers, AirCore, and vertical aircraft profiling. The output and modeling from these observations are shown in Carbon Tracker and will be leveraged to improve fundamental understanding of interactions between the human and natural components of the carbon cycle, and validate and improve emission estimates at scales from regional to continental by defining emissions of greenhouse gases. Specifically, this effort will: substantially increase the number of locations and frequency of NOAA's greenhouse gas observations in the atmosphere; improve weather and Carbon Tracker modeling by increasing transport resolution, including carbon dioxide and methane in an advanced weather model; and provide the vertical distribution of carbon dioxide and methane from approximately 30 km altitude to the surface with measurements made using AirCore technology.

Extremes Research: Extreme climate and weather events such as heat waves, droughts, and floods can profoundly affect society and the environment, resulting in loss of life, property, and natural habitat. NOAA will use this funding to improve the detection, understanding, explanation, and prediction of weather and climate extreme events, and of trends in these events, providing new information products to support adaptation and prepare society to anticipate and respond to climate and weather extremes. Products will be made available to support policy development, decision-making, and resource management. Research will include climate attribution assessments, climate predictability assessments, atmospheric reanalysis, and the development of advanced methods utilizing global high-resolution climate models.

Marine Ecosystem Tipping Point Research:

Climate variability and change have major effects on marine ecosystems, living marine resources, and the people and economies that depend on them. These climate-driven effects, in combination with non-climatic stressors, such as pollution, over-use, and habitat destruction, can lead to abrupt changes in structure, function, and valuable services of marine ecosystems on which the Nation depends. NOAA will use this funding to develop and apply Earth System Models (ESMs) and other tools necessary for understanding where, when, and how marine ecosystems may reach critical-tipping points or abrupt major changes in structure, function, and services that could significantly affect the millions of jobs, billions of dollars, and thousands of communities involved in the seafood industry, coastal tourism and recreation, and other ocean-dependent industries. Some specific target areas for these efforts include: applying high-resolution ESMs to assess past and future marine ecosystem variability at regional scales; better understanding of potentially abrupt shifts in U.S. marine ecosystem productivity, structure, and function; developing indices of marine ecosystem conditions to better track, assess, and provide early-warning of possible tipping points in U.S. marine

ecosystems; developing metrics to evaluate potential for increased harmful algal bloom frequency and severity; and enhanced ESM capabilities for understanding, predicting, and projecting ocean acidification.

Statement of Need and Economic Benefits

Carbon Research - The ability of the U.S. and other nations to effectively implement policies that address atmospheric greenhouse gas concentrations will depend upon their ability to monitor the effectiveness of these policies (Pacala, et al., 2010, Natl. Acad. Sci. Report, ISBN 978-0-390-15211-2). The COAS quantifies and assesses the dynamics of carbon sources and sinks in North America providing critical data for independent verification of greenhouse gas emissions.

Extremes Research - Without knowledge of the background conditions and processes leading to extreme climate and weather events, policy and decision makers cannot make informed decisions concerning how society should invest in critical infrastructure in risk-prone areas. In 2011 the U.S. experienced a dozen billion-dollar extreme climate and weather events (e.g., heat waves, droughts, wildfire, and floods), resulting in approximately \$60.6 billion in aggregated damages.³ Preliminary analyses for 2012 suggest the U.S. experienced eleven billion-dollar extreme events last year, with economic losses from Sandy and the yearlong drought accounting for much of the approximately \$60 billion in damages.

Marine Ecosystem Tipping Point Research - An estimated 5 million metric tons of fish and shellfish are harvested in the U.S. each year. The commercial catch, valued at \$5 billion, supports 1 million jobs and yields over \$148 billion in industry-wide sales and income. These marine ecosystems also support recreational fisheries estimated to have a total economic impact of \$73 billion and supporting over 300,000 additional jobs.⁴ Healthy ecosystems also play a key role in sustaining broader coastal tourism activities. In contrast, the global costs to society of degraded ocean conditions and inadequate management of marine resources are significant. The potential for rapid ecosystem state changes or -tipping points presents a threat to sustainable management of marine resources. Stakeholders - such as regional fisheries managers, fishermen, and others within the seafood industry - are demanding improved information on the causes of observed changes to living marine resources. These stakeholders want to know whether past changes are indicative of future conditions and what, where, when, and how -tipping points might be experienced in these systems. This research effort leverages NOAA's capabilities and collaborations with academia to better understand, anticipate, prepare for, and respond to possible marine ecosystem -tipping points in a changing climate. Among NOAA's capabilities are high-resolution modeling, pelagic ecosystem modeling, data assimilation, observation systems for ocean physical and biological conditions (e.g., fish stock surveys) and numerous interdisciplinary skills from partners and academia.

Base Resource Assessment:

The base resources for this activity are described in the Climate Laboratories and Cooperative Institutes base narrative.

Schedule and Milestones:

Carbon Research:

FY 2014 – 2018

- Increase total number of operational aircraft sites and increase frequency of flights.
- Increase number of AirCore soundings.

³ <http://www.ncdc.noaa.gov/billions/overview>

⁴ National Marine Fisheries Service. 2010. Fisheries Economics of the United States, 2009. U.S. Dept. Commerce, NOAA Tech. Memo. NOAA Fisheries F/SPO-118, p. 172.

Extremes Research:

FY 2014: Develop high-resolution (less than 100km scale), global modeling ability to resolve high-impact extreme events: heat wave, droughts, floods, and extreme precipitation.

FY 2015: Develop large (greater than 100-member) ensemble simulation ability to resolve high-impact extreme events to address full frequency distribution with statistical robustness, such as 100-year events.

Marine Ecosystem Tipping Point Research:

FY 2014: Develop global high-resolution prototype ocean simulation of historical multidecadal marine ecosystem variability.

FY 2015

- Hold a workshop with marine scientists and managers to assess the state of the science on climate impacts and tipping points in global estuarine, coastal, and benthic ecosystems, develop applications of earth system models to tipping point prediction, and identify priority modeling and observational developments.
- Assess historical observed variations in ocean carbon, nutrient, oxygen, phytoplankton, and zooplankton for targeted U.S. regional marine ecosystems.

FY 2017: Assess climate impacts on U.S. marine ecosystems and impacts of mesoscale and coastal processes for global climate.

FY 2018: Develop global high-resolution prototype seasonal-to-interannual prediction system of future marine ecosystem variability, including estuarine, coastal, and benthic ecosystems.

Deliverables:

Carbon Research:

FY 2014 – 2018: Install a total of 12 tall towers

Extremes Research:

FY 2016: Produce timely and credible explanations of evolving extreme weather events.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Uncertainty of the North American carbon sink to better understand the contribution of human activities toward increasing atmospheric carbon dioxide and methane (million tons carbon/year) (Measure 16b)							
With Increase	N/A	N/A	410	410	400	400	390
Without Increase	400	405	415	425	435	445	450

Description: The provision of NOAA scientific guidance to policymakers concerned with managing emissions of carbon dioxide requires NOAA to assess and quantify the sources of carbon variability. This GPRA measure demonstrates the scientifically accepted level of confidence in carbon measurement that is needed to accurately evaluate levels of carbon emissions in North America. The uptake of atmospheric carbon (mainly as carbon dioxide) by the biosphere across North America is of the order of one billion tons (one petagram) per year.

Extremes Research:

Performance Measure: Reduce the lag time between climate and weather extreme events and the assessment of their causes in order to improve the timeliness of the climate intelligence that can inform decision-making and risk management (months).	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With increase	N/A	N/A	10	8	6	3	2
Without increase	12	12	9-12	9-12	9-12	9-12	9-12
Description: Increasingly timely scientific explanations for the causes of climate and weather extreme events, which clarify which aspects of high-impact extreme events are: attributable to natural or human causes; and needed to meet decision making timeframes for risk management, adaptation, and policy responses.							

Performance Measure: Number of climate model simulations used to assess extremes (cumulative number)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With increase	N/A	N/A	60	122	186	252	256
Without increase	0	0	10	60	61	62	64
Description: A super-ensemble diagnostic modeling capability for climate assessments will advance NOAA's mission to develop scientific capabilities in order to provide a continuous delivery of knowledge and information for climate attribution and predictability assessments.							

Performance Measure: Number of seasonal or interannual outlooks of high impact climate and weather extreme events (annual number)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With increase	N/A	N/A	3	3	4	4	5
Without increase	2	2	2	2	3	3	3
Description: Outlooks on seasonal to interannual timescales of high-impact climate and weather extreme events for droughts, floods, heat waves, and cold outbreaks that are comparable to the existing NOAA hurricane season outlook annual and midseason update.							

Marine Ecosystem Tipping Point Research:

Performance Measure: Publically available marine ecosystem retrospective simulations, predictions and projections (Terabytes of data) (cumulative number)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	200	350	500	650	800
Without Increase	128	128	200	200	200	300	300
Description: Predictions and projections of marine ecosystem change, including potential tipping points, can provide insight and early warning to inform resource management. Ensuring that the information, products, models, and services developed are made widely available and usable will enhance the integration of best-available science into decision-making processes.							

Performance Measure: Peer-reviewed journal articles (cumulative number)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	12	22	32	42	52
Without Increase	4	8	12	16	20	24	28
Description: These publications provide the information needed by stakeholders, resource managers, and decision makers to develop effective policies and adaptation strategies for climate impacts on marine ecosystems.							

Performance Measure: Contributions to assessments relevant to regional ecosystem-based management activities in the U.S. (annual number)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	6	6	6	8	8
Without Increase	1	2	2	2	2	2	2
Description: Information from retrospective simulations, predictions and projections created through this work will be incorporated into regional (e.g., regional ecosystem status reports developed by NOAA fisheries), national (e.g., U.S. National Climate Assessment) and global (e.g., IPCC assessment reports) ecosystem assessments aimed at quantifying the impact of climate on ecosystems. New capacity developed under this program will allow greater contributions to regional assessments and meaningful assessments of tipping point risks.							

PROGRAM CHANGE PERSONNEL DETAIL

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: U.S. Global Change Research - Improved Understanding of Earth Systems and Extremes, Thresholds, and Tipping Points

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Boulder, CO	ZP-IV	1	87,815	87,815
Physical Scientist	Princeton, NJ	ZP-IV	1	92,259	92,259
Physical Scientist	Princeton, NJ	ZP-III	1	64,729	64,729
Subtotal			<u>3</u>		
2013 Pay Adjustment (0.5%)					
Total					246,027
less Lapse		25%	<u>1</u>		<u>(61,507)</u>
Total full-time permanent (FTE)			2		184,520
2014 Pay Adjustment (1.0%)					<u>1,845</u>
TOTAL					186,365

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	2
Other than full-time permanent	<u>0</u>
Total	2
Authorized Positions:	
Full-time permanent	3
Other than full-time permanent	<u>0</u>
Total	3

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: U.S. Global Change Research - Improved Understanding of Earth Systems and Extremes, Thresholds, and Tipping Points

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$186
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	186
12 Civilian personnel benefits	59
13 Benefits for former personnel	0
21 Travel and transportation of persons	30
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	702
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	150
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	7,873
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$9,000

Regional Climate Data and Information: National Integrated Drought Information System's Regional Drought Early Warning Information Systems (Base Funding: \$12,116,000 and 1 FTE: Program Change: +\$1,500,000 and 0 FTE): NOAA requests an increase of \$1,500,000 and 0 FTE for a total of \$13,616,000 and 1 FTE to develop Regional Drought Early Warning Information

Systems (RDEWS) by providing focused drought impacts research and applications development to underserved regions of the country. Extending products, tools, and knowledge to areas outside of the NIDIS Pilots is the final stage of implementing a national early warning information system for drought.

Proposed Actions:

This funding will support additional competitive research grants and contracts to develop and expand the Regional Drought Early Warning Information System (RDEWS) to the Pacific Northwest, the Mid-west agricultural belt, and the Carolinas. The Pacific Northwest was identified as a priority area by NOAA partners, including the Western Governors Association, through a Memorandum of Understanding with NOAA. Work in the Mid-west agricultural belt will focus on closer engagement and efforts to reduce drought vulnerability in the Great Plains for constituents, including farmers and tribes. In collaboration with the NOAA Coastal Services Center, NIDIS will develop early warning of low flow conditions from major rivers in the Carolinas, such as the Catawba and Yadkin Pee-Dee, into the near-shore environment. This low flow condition affects water supply in large population centers, and increases salinity intrusion into near-shore coastal ecosystems with important economic value to those states. With the new resources, NOAA will further develop ongoing drought information outlook products. These products include information sheets on local drought conditions that improve on the national drought monitor, impacts assessments, and inputs into Federal, state, and tribal plans.

Statement of Need and Economic Benefits:

Economic, environmental, and societal drought impacts are severe. The 1988 drought cost the United States \$40 billion in that year alone (in 1988 dollars) (The Geological Society of America, 2006)⁵. Factors that will continue to increase this kind of cost include: population growth and shifts into areas at risk from severe drought impacts (especially in the west, mid-west, and southeast); land use changes; increased water resource demands from sectors such as agriculture, energy, recreation, and ecosystems; and increasing aridity in specific regions. Implementing a national drought early warning system (DEWS) is particularly critical now because of the recent severe drought in California and the continued drought in southwestern U.S. and other regions. In addition, the requirements of the 2006 NIDIS Act, the 2007 NIDIS Implementation Plan, and the 2004 Western Governors' report, *Creating a Drought Early Warning System for the 21st Century* call for a DEWS. This research supports: planning activities in anticipation of impacts of El Niño Southern Oscillation; early warning system design; development of decision support tools; and evaluation to meet demands from constituents, including watershed managers, partner states, and agencies.

NIDIS will create a network of Federal and non-Federal partners to assess and adopt innovations in drought warning and planning including, Regional Integrated Science and Assessments (RISAs), Regional Climate Centers, State Climatologists, USDA Extension Offices, and others. It will increase the Nation's capacity to use climate forecasts and data in decision making in key regions and within prime socioeconomic sectors. This funding will provide new tools, models and methodologies to enhance decision makers' abilities to plan for climate variability and change. The results from these studies will be key inputs into early warning systems that will serve NIDIS partners in Federal, state, tribal and private sectors.

⁵ The Geological Society of America, 2006. -Managing Drought and Water Scarcity in Vulnerable Environments: Creating a Roadmap for Change in the United Statesll.

Base Resource Assessment:

The base resources for NIDIS are described in both the Regional Climate Data and Information and the Climate Competitive Research base narratives.

Schedule and Milestones:

Research must be conducted before outputs can be quantified, which creates a lag between research and product delivery.

FY 2014:

- Produce and deliver drought impacts research to regionally specific information products on the U.S. Drought Portal.
- Use products to develop regionally specific drought monitors and early warning system indicators and triggers.
- Identify research gaps and further user communication and awareness of drought information and its integration into drought planning processes in support of NIDIS.
- Identify drought decision support tools to assess impacts and conduct drought research, including forecasts that contribute towards preparedness and coordination methods developed and tested in pilots and other regions.
- Transition drought decision support tools to the U.S. Drought Portal and to these new regions.
- Integrate modeling, forecasting and GIS-based products from the Climate Prediction Center and the Climate Test-beds into NOAA River Forecast Centers and promote governmental drought training and scenario development.

FY 2014-2015:

- Evaluate value of drought impacts research undertaken and revisit priorities in light of progress made on NIDIS implementation.
- Continue transition of drought decision support tools and methodologies to the U.S. Drought Portal. Test application of tools in new areas.
- Assimilate drought impacts data and information into a database for use with different types of drought conditions across climate timescales into drought and water management plans.

FY 2014 – FY 2016: Award grants and or contracts for regional and sectoral drought impacts research and transition drought decision support tools, methodologies and related research and products to the U.S. Drought Portal (e.g., socio-economic, agriculture, urban, and water resource management).

FY 2015 – FY 2016: Award new grants and or contracts to address research gaps and user needs identified in FY 2014. Continue transition of drought decision support tools, methodologies and related research and products to the U.S. Drought Portal and to new regions.

Deliverables:

Drought products (assessments, forecasts, tools, and scenarios) incorporated into stakeholder drought planning and decision making for new geographic regions (the Pacific Northwest, the upper mid-west and the Carolinas). These will be conducted in direct coordination with existing NIDIS pilots and incorporated into the drought portals (as subset of the U.S. Drought Portal) at region-specific scales.

Additional funding may support: dynamic drought indices; fire outlooks; paleo-climate web-tools for water managers; guidance tools for planning and management of urban drainage systems (such as the Carolina coasts); closer engagement and efforts to reduce vulnerability of the tribes in the Great Plains; development of a decision support system specifically designed to help forage producers; forecasts and GIS products from the Climate Prediction Center and the Climate Test-beds used by NOAA River Forecast Centers, U.S. Geological Survey (USGS), U.S. Army Corps of Engineers, and Bureau of Reclamation. Funding will also allow for the integration of the regional Drought Early Warning Systems into the RISAs, Regional Climate Centers, and NWS field and State Climatologist offices in order to expand the system into a fully sustainable national drought early warning system.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of states and territories working with NIDIS to incorporate drought early warning information into their drought adaptation and mitigation plans. (Cumulative)							
With Increase	N/A	N/A	6	8	12	17	24
Without Increase	N/A	4	5	7	10	15	22
<p>Description: The performance measure is based on the number of states and territories that partner with NIDIS to incorporate drought early warning information into their drought planning activities. Activities that count toward this measure include: local or regional drought planning/management groups; use of tailored information from the U.S. Drought Portal to establish drought indicators and set management triggers in state, watershed, and territory drought adaptation and mitigation plans; incorporation of information from basin-specific drought monitors developed through the drought early warning information systems into either state and territory drought adaptation and mitigation plans or as part of state and territory drought planning/management groups.</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: National Integrated Drought Information System's Regional Drought Early Warning Information Systems

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	250
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	25
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	1,225
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> \$1,500

Regional Climate Data and Information: Assessment Services (Base Funding: \$5,081,000 and 0 FTE; Program Change +\$2,354,000 and 0 FTE): NOAA requests an increase of \$2,354,000 and 0 FTE for a total of \$7,435,000 and 0 FTE to support a permanent capability to produce climate assessments at national and regional scales. In particular, this increase will support ongoing regional assessment activities and the development of regional model and scenario resources from a new Global Climate Model output. In addition, this funding will help to increase access and usability of the National Climate Assessment through the Global Change Information System.

Proposed Actions:

As part of a sustained assessment process, NOAA requests funding for ongoing regional and sectoral activities leading to the development of relevant and authoritative regional assessments targeted to stakeholders. Funding will also support coastal and nascent ocean sectoral assessment activities that will build on the initial work done in FY 2011 and FY 2012 analyses using new observed and modeled data.

NOAA, in conjunction with its partners, will develop regional, national and sectoral-focused model and scenario output. In particular, the availability of new model results through the international Coupled Model Intercomparison Project Phase 5 (CMIP5) program will need to be analyzed for regional assessments and decision support. A key aspect of this effort will be to assess model validity at the coastal margin and ocean regions of interest to the U.S. economy. This output will constitute core data in the development of the regional assessments discussed above, and NOAA's regional partners will be heavily engaged in the production of appropriate climatologies and scenarios as well as regional data and information access associated with the regional assessments.

In addition, to support access to the National Climate Assessment and its data and source information, NOAA will lead and further contribute to the interagency Global Change Information System. Investments in FY 2014 will build on work from FY 2011 and FY 2012 to support the development of a robust data access infrastructure for assessment datasets, prototyping the NCA's commitment to transparency and traceability for assessment data and conclusions. In addition, a user-focused interface is planned for linking foundational assessment information with other tools and applications across the Government.

Statement of Need and Economic Benefits:

The Global Change Research Act of 1990 (GCRA) calls for the President (through a Federal interagency body) to prepare and submit to the Congress, on a periodic basis (at least every 4 years), an assessment which: 1) integrates, evaluates, and interprets the findings of the Federal interagency research effort and discusses the scientific uncertainties associated with such findings; 2) analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and 3) analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years. NOAA is taking the lead role through the U.S. Global Change Research Program in the next National Climate Assessment, which is due in 2014. More information about the National Climate Assessment, including a list of participating Federal agencies, can be found at: <http://www.globalchange.gov/what-we-do/assessment>.

Regional and national assessments will meet an increasing range of demands for climate change decision support across the Nation. Building on the past two decades of experience, and pairing existing expertise with emerging capacity, NOAA will support a collaborative,

participatory assessment process that engages scientists, government officials, businesses, and communities in the investigation of climate impacts and effective mitigation and adaptation.

Cumulatively, the assessments will contribute to ongoing efforts to understand what climate change means for the U.S. and what services are necessary to allow for informed decision making. This information will provide an objective basis for adaptation and mitigation strategies on a variety of temporal and spatial scales. These assessments will also contribute to the legislatively mandated National Climate Assessment and future international assessments, including those of the Intergovernmental Panel on Climate Change.

Climate assessments will involve both operational and research elements of NOAA, and will build upon many existing NOAA resources and functions including research in the physical, biological, and social sciences, observing, data management, modeling and forecasting, education, and outreach. NOAA will also enhance its capabilities and tailor its products through partnerships with other Federal agencies, and the academic, public and private sectors.

Base Resource Assessment:

The base resources for this activity are described in the Regional Climate Data and Information base narrative.

Schedule and Milestones:

FY 2013 – 2014: Produce regional scale projections for key climate variables from existing projections. Begin to develop regional analysis of new CMIP5 projections.

FY 2014 – 2015: Public deployment of the prototype Global Change Information System.

FY 2015: Update regional projections from new model results.

FY 2015 – 2016: Improve and update Global Change Information System.

FY 2016 – 2017: Complete updates of existing regional and sectoral assessments.

FY 2017: Complete regional assessments.

Deliverables:

FY 2013 – FY 2014: First reviewable draft of approximately 2 additional regional assessments for a total of 8 and one sectoral assessment.

FY 2014: Complete two additional regional chapters, for a total of eight and one sectoral chapter. (First reviewable draft of the National Climate Assessment.) Prototype version of the Global Change Information System.

FY 2014 – FY 2015: Complete and deliver a National Climate Assessment synthesis report.

FY 2015 – FY 2016: Draft updates of two additional regional assessments for a total of eight and one sectoral chapter.

FY 2017: Produce reviewable draft of the National Climate Assessment and update assessment content online.

FY 2018: Completion and publication of National Climate Assessment synthesis.

Performance Goals and Measurement Data:

Performance Measure: Annual number of climate change related impacts, vulnerability, adaptation, or mitigation information topics addressed in the Assessments	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	14	14	14	14	14
Without Increase	8	8	8	8	8	8	8
<p>Description: This performance measure will demonstrate the role of formal climate change assessments in decisions to address climate change impacts by identifying the number of topics addressed in the assessments that are considered by business, government, or the public that affected decisions related to improved climate resilience. Information topics are based on the U.S. Global Change Research Program report, -Global Climate Change Impacts in the U.S. This measure will track the extent to which the USGCRP topical information items are used by industry, etc., to inform their key decisions on how to mitigate or adapt to climate change.</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: Assessment Services

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	235
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	2,119
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> \$2,354

Regional Climate Data and Information: Climate Model Data Archive (Base Funding: \$617,000 and 0 FTE; Program Change: +\$1,586,000 and 0 FTE): NOAA requests an increase of \$1,586,000 and 0 FTE for a total of \$2,203,000 and 0 FTE to generate and safely store model based data records and support an adequate operational archive and access capability for the next generation, high-resolution weather and climate reanalysis datasets.

Proposed Actions:

This project will further develop and implement a Climate Model Data Archive capability for the next generation climate analyses currently running on supercomputers across NOAA and its collaborators (National Science Foundation, Department of Energy, and others). NOAA will provide an operational data stewardship and user access capability for the next generation of climate reanalysis products. These products are derived for the utilization of major advancements in model physics and coupling across the ocean, air, and land interfaces. The Climate Model Data Archive leverages existing supercomputer resources to provide a unified and consistent suite of climate information to users at all levels so they can make better decisions about their specific management needs. Information will be provided on time scales from days (weather), to months (El Nino), to years and decades (climate variability and change).

These climate model reanalysis products will total over two PetaBytes (2,000 TeraBytes) of data and include:

- Coupled Climate Forecast System Reanalysis and Reforecast (CFSRR) dataset, a modern era reanalysis.
 - The first coupled 30-year global reanalysis of the atmosphere, ocean, land, and cryosphere (sea ice) ever developed by NOAA.
- Climate Prediction Center Reanalysis (CPCR), a long time series historical upper-air reanalysis (1850 to present).
- Surface Pressure historical reanalysis currently underway at NOAA's Earth System Research Laboratory (ESRL).

The architecture is based on three main components: the Portal, the Catalog Node, and the Data Repository. The Portal is the users' interface to the system where they can manage requests, download data, receive user input, and browse the catalog. The Catalog Node is the heart of the system and concentrates on connecting partners, metadata, search and discovery, and peer-to-peer connectivity. It will integrate fully with the existing NOAA Climate Portal (www.climate.gov) and remove barriers to data format and system incompatibilities. Efforts fully align with the Open Government Initiative and data.gov.

Statement of Need and Economic Benefits:

Decision makers are increasingly seeking information that will help their communities plan and respond to climate variability and change. The Climate Model Data Archive will develop an operational archive and access capability for the next generation, high-resolution weather and climate reanalysis datasets derived from model outputs. Reanalysis outputs and products will improve our understanding of various climate phenomena, including: verification, detection, and determination of drought severity and location; verification and improvements to forecasts of El Niño occurrence and persistence; and verification and improvements to our understanding of the hydrologic cycle and water resources. The Climate Model Data Archive will be designed to provide critical data to the scientific community while also conveying key aspects of complex scientific data in a manner accessible to non-specialists and NOAA's climate information user communities.

Base Resource Assessment:

The base resources for this activity are described in the Regional Climate Data and Information base narrative.

Schedule and Milestones:

FY 2014

- Ingest, archive, and provide access to reanalysis data leading to an ongoing analysis of the climate system.
- Expand capabilities and products from reanalysis datasets, including toolsets for data intercomparisons, to better understand and evaluate the climate system.

FY 2015: Implementation of access capabilities for new reanalysis datasets and products.

FY 2016 – 2018: Ongoing implementation of data access and user capabilities for new reanalysis datasets and products, which will continue to be developed during this period.

Deliverables:

- NOAA Reanalysis Web Page for collection of user requirements and input.
- Data Stewardship and Access for the next generation reanalysis datasets, along with other reanalyses, which are generated as follow-on development.
- Customer service support capability and a research quality help desk supporting users of Climate Model Data Archive.
- Re-analysis clearinghouse to provide access to consensus (satellite, *in situ*, and radar) datasets for the next series of NOAA reanalysis.
- Toolsets and user capabilities to better utilize and inter-compare model output, *in situ* data, etc.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Increased reanalysis data available 24x7 to operational and research users, from the next suite of NOAA's climate weather reanalysis and reforecast datasets in an interoperable Web Service architecture (Increase in TB/year)							
With Increase	N/A	N/A	1,250	1,500	1,750	2,000	2,000
Without Increase	500	500	500	500	500	500	500
Description: One of the goals of this activity is to increase the terabytes of data made available to users for the next generation climate analyses by developing and implementing an operational archive and user access capability and interoperable Portal. Data records will be produced from three main current and planned reanalysis projects and will be uploaded to the Portal as they are completed.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: Climate Model Data Archive

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	16
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	1,010
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	410
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	150
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$1,586

Regional Climate Data and Information: NOAA Climate Portal (Base Funding: \$958,000 and 0 FTE: Program Change: +\$542,000 and +2 FTE: NOAA requests an increase of \$542,000 and 2 FTE for a total of \$1,500,000 and 2 FTE to continue supporting development of the NOAA Climate Portal that will facilitate public online access to NOAA's climate data, information, and services.

Proposed Actions:

OAR will work with partners across NOAA to accelerate the development of a comprehensive web-based Climate Portal. The Portal will be a central component of NOAA's commitment to integration and delivery of services by enhancing public access to useful climate data and information. In addition to climate science, information and data, and decision support tools, the Portal will offer a broad array of climate communications, outreach, and educational materials.

As the public's primary online point of entry into NOAA's climate science and services, the Portal will have audience-focused sections designed to serve four key segments of society: (1) climate science decision makers and policy leaders; (2) scientists and applications-oriented data users (e.g., resource managers and business leaders); (3) educators; and (4) members of the public. Recent developments in web-based technologies make it possible for NOAA to present both existing data and new products in formats that are readily usable by decision makers in government agencies and businesses (e.g., geospatial tools that enable resource managers to place information on impacts and affected resources in a place-based context relevant to planning or permitting).

With the funds requested, NOAA will: improve the Portal's interface; add a new section, called -Climate Conditions, which presents a data-driven digest of recent and near-future climate trends of interest and relevance to society; and hire full-time administrative personnel to manage the system. Additionally, the agency will create an overarching Portal home page that integrates timely and topical content from each of the Portal's sections.

NOAA will work with the authors of such reports as the State of the Climate, the Seasonal Climate Outlooks, the Arctic Report Card, the National Climate Assessment, and others to provide easy access for the Portal's audiences. NOAA will also work with the National Science Foundation, NASA, and NOAA grant projects to build an online library of climate science education resources of the highest quality.

The Portal's scope, product content, and functionality will evolve based on user needs and expectations for climate data and information. User feedback on products and services available through the Portal will also provide important insights into user applications and climate information needs.

Statement of Need and Economic Benefits:

Societal interest in climate is growing, as indicated by the rising number and complexity of the questions and requests for climate data and services submitted to NOAA in recent years. From 2009 to 2010, NOAA saw an 86 percent increase in climate-related data provided from its data centers, a 57 percent increase in climate-related website hits, and an 11 percent increase in individual customer requests for climate information via phone calls, emails, and other direct correspondence. Individuals and organizations are seeking easy access to credible climate science information from NOAA at finer geographic and time scales to help them manage climate-related risks and opportunities in their lives, businesses, and communities.

However, users report having difficulty locating and using NOAA's online data products and services. Thus, resolving this online accessibility issue will be one of the Climate Portal's main benefits. The use of portal technology and emerging data integration and visualization tools

provide an opportunity for NOAA to bring together multiple datasets from diverse disciplines and sources to deliver a more comprehensive picture of affected resources, communities, and businesses.

Base Resource Assessment:

Base resources for this activity are described in the base narrative for Regional Climate Data and Information.

Schedules and Milestones:

FY 2014

- Implement global redesign of portal interface.
- Add new -Climate Conditions section.

FY 2015

- Expand the scope and refine the functionality of Climate Conditions section.
- Increase the size, accessibility, and usability of reviewed climate education resource collections and ensure connectivity to other related portals.

FY 2016-2017: Launch new social media tools for science-based problem solving, designed to foster and facilitate interdisciplinary communities of practice that collaborate to address NOAA’s and its partners’ climate-related societal challenges.

FY 2017-2018: Make user-driven refinements in the Portal’s interface design and functionality.

Deliverables:

Improved access to NOAA’s climate data and information via a single, comprehensive Web portal with four audience-focused interfaces and a comprehensive assessment and evaluation of the Portal’s overall impacts on our target audiences.

Performance Goals and Measurement Data:

Performance Measure: Percentage growth in number of visits to NOAA’s Climate Portal over the preceding year’s measure.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	10%	10%	10%	10%	10%
Without Increase	63%	5%	5%	5%	5%	5%	5%
Description: This performance measure will show the ongoing increase in the average number of visits to the Portal among the four target audiences the Climate Services Portal serves. The 2012 actual reflects the first year of operational use of the portal following the completion of the Climate Portal Prototype.							

PROGRAM CHANGE PERSONNEL DETAIL

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: NOAA Climate Portal

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
IT Specialist	Silver Spring, MD	ZP-IV	1	89,033	89,033
IT Specialist	Asheville, NC	ZP-IV	1	84,317	84,317
Physical Scientist	Camp Springs, MD	ZP-IV	1	89,033	89,033
Subtotal			<u>3</u>		<u>262,383</u>
2013 Pay Adjustment (0.5%)					<u>1,312</u>
Total					263,695
less Lapse			25%	<u>1</u>	<u>(65,924)</u>
Total full-time permanent (FTE)			2		197,771
2014 Pay Adjustment (1.0%)					<u>1,978</u>
TOTAL					199,749

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	2
Other than full-time permanent	<u>0</u>
Total	2
Authorized Positions:	
Full-time permanent	3
Other than full-time permanent	<u>0</u>
Total	3

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: NOAA Climate Portal

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$200
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	200
12 Civilian personnel benefits	60
13 Benefits for former personnel	0
21 Travel and transportation of persons	16
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	266
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$542

Regional Climate Data and Information: Climate Operations (Base Funding: \$908,000 and 0 FTE: Program Change: - \$695,000 and 0 FTE): NOAA requests a decrease of \$695,000 and 0 FTE for a total of \$213,000 and 0 FTE to maintain support for the transition of regional information applications to operational production and dissemination capabilities.

Proposed Actions:

With the remaining funding, NOAA will maintain support for the transition of regional information applications to operational production and dissemination capabilities. As part of that effort, NOAA will focus on development of new seasonal ice prediction products. NOAA will no longer develop the Local Climate Analysis Tool. NOAA will also cease associated training for staff and technical users for these products.

Societal impacts from climate variability and change extend down to sub-seasonal time scales. NOAA will focus remaining resources on establishing connections between climate and extreme weather events to improve the forecast timing and location of extreme weather events, thereby minimizing impacts on lives and property.

Base Resource Assessment:

The base resources for this activity are described in the Regional Climate Data and Information sub-program base narrative.

Schedules and Milestones:

FY 2014: Develop a new seasonal sea-ice prediction product.

Deliberables:

N/A

Performance Goals and Measurement Data:

N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: Climate Operations

Object Class		2014 Decrease
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	(35)
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	(5)
25.1	Advisory and assistance services	0
25.2	Other services	(650)
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	(5)
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> \$(695)

Regional Climate Data and Information: Regional Integrated Sciences and Assessments (RISA) (Base Funding: \$6,512,000 and 2 FTE; Program Change: +\$3,000,000 and +1 FTE):

NOAA requests an increase of \$3,000,000 and 1 FTE for a total of \$9,512,000 and 3 FTE to expand capability for regional research and information services.

Proposed Actions:

OAR will increase its support of external research teams who work with resource managers and planners to develop and utilize new information about the impacts of climate on communities, natural and managed resources, infrastructure, transportation, and health. A new region, adding to the current number of 11, would be competitively awarded funding under this augmentation.

Furthermore, funds will be used to augment and ensure explicit collaborative partnering with NOAA's regional information system components (e.g., NIDIS, NESDIS Regional Climate Service Directors, NOS Coastal Services Centers, NWS Regional offices, NMFS regional offices) as well as other Federal, state, and private providers. RISAs will develop a new suite of applied research products specifically to inform regional networks of information providers, assess the extent to which the regional network is providing -actionable sciencell for use in practical decision making, and provide research-based decision support for adaptation (e.g., understanding economic costs and benefits).

Statement of Need and Economic Benefits:

With each passing year, the impacts of climate variability and change on water availability, wildfire regimes, public health, agriculture, energy issues, and coastal communities become more acute. At the same time, climate sciences are making great strides in producing knowledge that could aid decision makers dealing with these issues.

RISA scientists provide information that decision makers use to cope with drought, understand climatic influences on wildfire, and assess climate impacts on the transportation sector, coastal communities and human health. Stakeholders use such information to evaluate potential climate change impacts on water supplies and hydroelectric power, and support disaster management planning. RISAs are helping farmers, ranchers, and fishermen use climate information to produce the Nation's foods and fibers; and Pacific Islanders, to figure out how to weave climate information into their quest for sustainability.

As climate prediction skills improve, much of the Nation stands to benefit from regional RISA activities. The RISA goal is to conduct the kinds of research and product development needed to help society make decisions in the face of climate variability and change, using experts from NOAA and other partner institutions.

Base Resource Assessment:

The base resources for this activity are described in the Regional Climate Data and Information base narrative.

Schedules and Milestones:

FY 2014:

- Request for Proposals (RFP) to develop research products that will contribute to and deepen partnerships with regional information providers.
- RFP for a new RISA in partnership with USDA in an area of major agricultural productivity and climate sensitivity.

FY 2015: Launch new RISA.

FY 2015 - FY 2016: Initiate 1-2 new research partnerships between RISA and NOAA information providers.

FY 2017 - FY 2018: Initiate 1-2 new research partnerships between RISA and NOAA information providers

Deliverables:

- In four or five new states located in the Midwest and Great Plains, expand applied research support of local, state, and regional decision makers (e.g., state and city governments, coastal managers, farmers, private and public water utilities, etc.) with two new five-year cooperative agreement centers, which focus on:
 - Development of new and/or enhancement of existing climate science for use in risk management (e.g., records of past climate and projections of seasonal, interannual, and decadal climate variability).
 - New approaches for analyzing and assessing environmental change, risk, impacts, and for developing response options (per the U.S. Global Change Research Act).
 - Socio-economic research on human impacts from climate variability and change.
 - Scenarios of environmental change integrating climate, land use, water, sea level and vegetation.
 - Tools (including trainings, guidebooks, websites, etc.) to support ongoing decision making to manage and respond to climate risks.
 - Develop innovations in drought early warning systems in priority areas of the National Integrated Drought Information System.
- In partnership with the U.S. Department of Agriculture and the Department of the Interior, develop or enhance research priorities for regional climate science and services.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of regionally and sectorally focused climate impacts and adaptation studies communicated to decision makers (per year)							
With Increase	N/A	N/A	27	28	29	29	30
Without Increase	27	27	27	27	27	27	27
Description: Number of peer-reviewed publications and reports published and released annually. The publications/reports are developed through interaction with and/or are communicated to stakeholders. Publications and reports are collected from investigators conducting climate impacts and adaptation research in cooperation with stakeholders. The goal of this research is to better understand and enhance the use of NOAA products and information to meet user requirements for natural resource management information in various sectors (e.g. drought and water resources, fire risk, ecosystem and coastal impacts, sea-level rise, human health, agriculture, etc.							

Performance Measure: Number of states or territories using new or tailored climate services (tools, information, technical assistance, or products) as a result of regional, state, and local interaction with decision makers (each year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	5	8	9	11	12
Without Increase	N/A	4	5	7	8	9	10
Description: The number of products and services, including provided or existing products and services that are modified/expanded for new user groups or regions. 'Products and services' include technical assistance, training, and guidance documents to enable planning and decision making. (This measure is partially based on the current GPRA: Number of regionally and sectorally focused climate impacts and adaptation studies communicated to decision makers.)							

PROGRAM CHANGE PERSONNEL DETAIL

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: Regional Integrated Sciences and Assessments

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Silver Spring, MD	ZP-IV	1	89,033	89,033
Subtotal			<u>1</u>		<u>89,033</u>
2013 Pay Adjustment (0.5%)					<u>445</u>
Total					<u>89,478</u>
less Lapse			25%	<u>0</u>	<u>(22,370)</u>
Total full-time permanent (FTE)			1		67,108
2014 Pay Adjustment (1.0%)					<u>671</u>
TOTAL					<u>67,779</u>

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1
Authorized Positions:	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: Regional Integrated Sciences and Assessments

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$68
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	68
12 Civilian personnel benefits	27
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	305
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,600
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$3,000

Climate Competitive Research: Climate Science on the Global Carbon Cycle, Aerosols, and Atmospheric Chemistry to Improve Climate Models and Predictions (Base Funding: \$28,709,000 and 2 FTE; Program Change: +\$6,521,000 and 0 FTE): NOAA requests an increase of \$6,521,000 and 0 FTE for a total of \$35,230,000 and 2 FTE to provide a process-level understanding of the climate system through observation, modeling, analysis, and field studies to support the development of improved climate models for use in climate assessments.

Proposed Actions:

NOAA, in collaboration with its academic partners - including Cooperative Institutes - will advance the understanding of the global carbon cycle and the role of aerosols and chemically-active greenhouse gases in the global climate system. The NOAA Earth System Research Laboratory (ESRL) Carbon Tracker team and the Geophysical Fluid Dynamics Laboratory (GFDL) Climate and Ecosystems group will incorporate new models into Carbon Tracker and improve the ocean component of Earth System Models. NOAA will also analyze measurements from past field campaigns and prepare for future field campaigns to improve the understanding of atmospheric composition and climate. Efforts will include elements of the nitrogen cycle that are relevant to stratospheric ozone and climate, aerosol-cloud interactions, as well as monitoring and verification of greenhouse gas emissions.

Statement of Need and Economic Benefits:

Understanding the processes that govern the carbon cycle and its variability is vital for decision makers, who are increasingly seeking information that will help their communities plan for and respond to climate variability and change. The products of this research will improve society's ability to understand and anticipate the global and regional impacts of climate variability and change.

In addition, man-made chemicals are depleting the stratospheric ozone layer, allowing more ultra-violet radiation to reach the ground and leading to more cases of skin cancer, cataracts, and other health and environmental problems. This research will measure and quantify atmospheric species that destroy the stratospheric ozone, as well as monitor its recovery. This research is critical to efforts to monitor, report, and verify regional emissions, including those from fossil fuel use, to provide an independent check on emissions accounting based on economic inventories. Without this research, the success of efforts to reduce carbon dioxide and other greenhouse gas emissions in North America could not be properly quantified.

In addition, this research will address the connection between air quality and climate, informing stakeholders and decision makers of the co-benefits of air pollution mitigation on climate and air quality.

Base Resource Assessment:

The base resources for this activity are described in the Climate Competitive Research narrative.

Schedule and Milestones:

FY 2014

- Employ measurements from past NOAA field campaigns to improve realism of the nitrogen cycle in NOAA Earth System Models, including major feedback on the global carbon cycle.
- Participate (measurements and analysis) in the field campaign in southeastern U.S. where emissions of natural and anthropogenic aerosols are high.
- Complete model evaluation of response of the ocean carbon sink to changes in ocean ventilation under increasing atmospheric carbon dioxide concentrations.

- Complete development and analysis of a new "self-assembling" model of marine microbial communities for simulations and sensitivity studies of the changing marine carbon cycle

FY 2015

- Analyze measurements taken during the southeastern U.S. field campaign.
- Complete development of Lagrangian optimization module for Carbon Tracker.
- Complete expansion of a prototype regional observing system in the northwest U.S. based on a ground-based network of carbon dioxide sites.
- Complete provision of new model estimates of the ocean carbon uptake over 1990-present, constrained by World Ocean Circulation Experiment (WOCE) and climate variability and predictability (CLIVAR) data.
- Complete an evaluation of the uncertainties in modeled carbon uptake.

FY 2016 - 2018

- Continue supporting studies focusing on air quality – climate interactions that utilize NOAA measurements from recent field campaigns.
- Plan and prepare for future NOAA field campaigns.
- Complete coupling of a permafrost and soil carbon model, a wetland scheme and simple methane emission model, and a fire module into the present terrestrial biosphere model in Carbon Tracker.
- Complete development of diagnostic tools to evaluate the performance of global ocean biogeochemical models used in IPCC assessments.
- Complete inter-comparison of ocean heat and carbon uptake in Earth System Model simulations conducted for the Coupled Model Inter-comparison Project Phase 5.
- Assess the impact of internal variability on estimates of anthropogenic heat and carbon uptake in Earth System Model simulations conducted for the Coupled Model Inter-comparison Project Phase 5.

Deliverables:

- Complete the design, construction, and evaluation of a novel, *in situ* carbonate-ion sensor.
- Complete development of a robust and cost effective Dissolved Inorganic Carbon sensor that can be deployed in combination with the robust moored pCO₂ sensor (MAPCO₂) previously developed by PMEL.
- Peer-review publications from extramural and internal research.
- Improved emissions estimates of aerosols precursors, nitrous oxide, methane, and other greenhouse gases over California.
- Improved understanding of climate-relevant properties of aerosols in southeastern U.S. in present and future climate.
- Improved estimates of regional carbon dioxide fluxes over continental U.S., including the Central Rocky Mountains and southwestern U.S.
- Explanation of trends in increasing carbon sequestration in northeastern U.S.
- Refined estimates of land and ocean carbon sinks.
- Reduced uncertainty in the data sets of carbon dioxide emissions.
- Improved estimation of methane emission and uptake in dry Arctic soils and their response to climate variability.
- Improved predictions of the responses of the terrestrial ecosystem to changing temperature and precipitation.

Performance Goals and Measurement Data:

Performance Measure: Uncertainty of the North American carbon sink to better understand the contribution of human activities toward increasing atmospheric carbon dioxide and methane (million tons carbon/year) (Measure 16b)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	410	410	400	400	390
Without Increase	400	405	415	425	435	445	450
Description: The provision of NOAA scientific guidance to policymakers concerned with managing emissions of carbon dioxide requires NOAA to assess and quantify the sources of carbon variability. This GPRA measure demonstrates the scientifically accepted level of confidence in carbon measurement that is needed to accurately evaluate levels of carbon emissions in North America. The uptake of atmospheric carbon (mainly as carbon dioxide) by the biosphere across North America is of the order of one billion tons (one petagram) per year.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: Climate Science on the Global Carbon Cycle, Aerosols, and Atmospheric Chemistry to Improve Climate Models and Predictions

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	10
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	50
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	600
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	25
31 Equipment	25
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	5,811
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$6,521

Climate Competitive Research: Earth System Modeling for Urgent Climate Issues (Base Funding: \$2,600,000 and 4 FTE; Program Change: +\$7,000,000 and +10 FTE): NOAA requests an increase of \$7,000,000 and 10 FTE for a total of \$9,600,000 and 14 FTE to enable continued development and use of state-of-the-art Earth System Models to address urgent climate issues, including sea level rise and Arctic climate change.

Proposed Actions:

NOAA will use this funding to expand capacity with a combination of 10 FTE, post-doctoral researchers, contracts, and grants. These are managed by NOAA's Climate Program Office, Geophysical Fluid Dynamics Laboratory, and Earth System Research Laboratory, in partnership with Cooperative Institutes and the broader U.S. academic community. This will enable NOAA to continue development of Earth System Models to:

Reduce uncertainties in sea level rise projections (\$2,600,000) by incorporating the following into NOAA's Earth System Models: ice sheet dynamics, ocean-ice shelf and ocean-iceberg interactions, and ice shelf cavity circulations and processes driving regional variations in sea level rise and inundation. These models will include routine global ocean data assimilation capabilities linked to Global Ocean Observing System observations and innovative approaches to achieving high resolution in regions of interest including coasts, shelves, and marginal seas.

Reduce uncertainties in the terrestrial carbon cycle and future biogeochemical feedbacks on climate (\$2,150,000) through more realistic model treatment of the terrestrial biosphere including: modeling the nitrogen and phosphorous cycles; biomass burning; wetland and freshwater biogeochemistry; land-use management; and data assimilation.

Address gaps in the understanding of the Arctic climate system, including rapid changes and future projections (\$900,000). The sea ice component of NOAA's Earth System Model will be enhanced to include ridging of ice sheets and improved radiation treatment. Influences of soot and dust aerosol on ice albedo will be examined. A new modeling framework for Arctic climate change will be developed for assessing various causes of past Arctic changes.

Augment decadal climate predictions and abrupt change (\$1,350,000) to: complete decadal prediction model evaluation; assess predictability of high-impact climate extremes (heat waves, flooding, etc.) and of ocean ecosystem responses; and assess the causes of past/ongoing decadal climate changes.

This effort will be supported by NOAA's recent investments in high performance computing resources for climate modeling.

Statement of Need and Economic Benefits:

Devastating storm surges during Sandy and 2012's record-low summer sea ice cover in the Arctic make improving NOAA's Earth System Modeling capabilities more urgent than ever. Numerical models that simulate the Earth System are the Nation's principal tools for understanding fluctuations in past climate and predicting future climate change. The increased demand for projections of climate change at regional scales, and understanding of potential climate impacts requires greater resolution and realism in models, as well as improved scientific understanding of the reliability of models. Societal benefits include:

- Improved models to help narrow uncertainty on future global sea level rise, as well as its regional variations, to help decision makers form mitigation and adaptation responses to minimize costs to

society and harm to near-shore ecosystems. Sea level rise has the potential to be among the most costly consequences of climate change. The homes and livelihoods of millions of Americans and infrastructure worth billions would be imperiled by sea level rise of a few feet.

- Developing Earth System Models with ocean data assimilation capability and ocean resolutions sufficient to represent shelf, estuarine, and coastal processes to greatly enhance NOAA's ability to manage marine ecosystems. The models will serve ecosystem managers because many marine ecosystems are sensitive to changes in ocean conditions associated with climate change.
- Reduced uncertainty in climate predictions and projections to help decision makers consider strategies to mitigate or adapt to the impacts of climate variability and change. For example, the absence of an interactive carbon cycle was a serious limitation in the global climate models used for the Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC AR4). This will be addressed through improved representation of the terrestrial biosphere to better understand how the carbon cycle and its feedbacks could reduce or amplify anticipated global warming by several degrees by 2100.
- Better understanding and possible prediction of rapid changes in the Arctic to help decision-makers address key impacts on: Arctic citizens and their livelihoods; Arctic ecosystems; shipping; homeland security; fisheries; and strategic energy resources.
- Developing decadal climate predictions of sea surface temperature to lead to skillful decadal predictions of several phenomena of great economic importance, including hurricanes, drought, heat waves, and ecosystems.

Base Resource Assessment:

The base resources for this activity are described in the Climate Competitive Research base narrative.

Schedule and Milestones:

FY 2014: Develop new modeling capabilities and initiate synthesis efforts for application to Earth System Models.

FY 2015

- Further develop and implement new Earth System Modeling capabilities for use in climate change assessments.
- Perform initial integrations of new Earth System Models.
- Continue process studies and report results in peer-reviewed publications.

FY 2016 – FY 2018

- Continue long-term development and refinement of Earth System Modeling capabilities for use in future national and international climate change assessments.
- Simulate 20th and 21st century sea level rise using prototype next generation models of ice sheet dynamics and other physics.
- Report on Arctic climate change assessment.
- Communicate Earth System Modeling research findings to policymakers and other stakeholders through assessments, publications, and climate services.

Deliverables:

- Sea level rise projections with improved model physics, representation of physical processes, and reduced uncertainty relative to current projections.
- Global ocean models with data assimilation capabilities that can be run at resolutions sufficient to fundamentally improve our understanding of important ecosystem processes and their responses to climate changes.

- State-of-the-art Earth System Models with improved representation of the terrestrial biosphere and reduced uncertainty in future carbon cycle feedbacks.
- Assessments of the causes of recent and ongoing Arctic climate changes through improvements to sea ice modeling and Arctic climate process models. More confident projections of future climate changes in the Arctic.
- A decadal climate prediction system, including an assessment of the level of predictability realizable from the system, in terms of sea surface temperature predictions, and predictions of related changes in extreme events (hurricane activity, drought, heat waves, flooding, etc.).
- Enhanced contributions to assessments of human impacts on climate through inclusion of more realistic physical processes and important feedbacks in climate models; greater confidence in projections of regional climate impacts.

Performance Goals and Measurement Data:

Performance Measure: Number of new regional scale projections for assessments and decision support (per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	3	4	6	7	8
Without Increase	N/A	2	2	2	2	2	2
Description: This is a new performance measure for the FY 2014 request. Regional scale projections will contribute to international assessments (e.g., IPCC AR5, scheduled for 2013), national assessments under the U.S. Global Climate Research Program, and other assessments as requested. The number of meaningful regional projections possible will increase as NOAA's Earth System Model increases in realism and complexity. Examples of regional scale projections include: regional sea level rise projections that require explicit representation of the global eddy field in the ocean models; projections of parameters essential to ocean and coastal ecosystem forecasting; assessment of regional carbon budgets; and projections of climate change in the Arctic region that require improved sea ice models.							

Performance Measure: Percentage uncertainty in possible 21 st century sea level rise (0-1m = 100% uncertainty)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	74%	65%	55%	50%	40%
Without Increase	75%	75%	74%	73%	72%	71%	70%
Description: This is a new performance measure for the FY 2014 request. This metric is calculated using the IPCC 4 th Assessment Report estimates for the range of 21 st century global-mean sea level rise. Completion of the proposed effort will reduce the uncertainties by almost half as a result of modeling that better captures the more accurate measurements of ice-sheet discharge, thermal expansion, and regional anomalies due to ocean circulation and heat storage. Reducing the uncertainty in sea level rise will allow government and industry to have better information on projected sea level rise and therefore tailor their planning and actions to address the impacts.							

PROGRAM CHANGE PERSONNEL DETAIL

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: Earth System Modeling for Urgent Climate Issues

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Princeton, NJ	ZP-IV	10	92,259	922,590
Oceanographer	Princeton, NJ	ZP-III	1	64,729	64,729
Physical Scientist	Boulder, CO	ZP-IV	2	87,815	175,630
Subtotal			<u>13</u>		
2013 Pay Adjustment (0.5%)					
Total					1,168,764
less Lapse			25%	<u>3</u>	<u>(292,191)</u>
Total full-time permanent (FTE)			10		876,573
2014 Pay Adjustment (1.0%)					<u>8,766</u>
TOTAL					885,339

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	10
Other than full-time permanent	<u>0</u>
Total	10
Authorized Positions:	
Full-time permanent	13
Other than full-time permanent	<u>0</u>
Total	13

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: Earth System Modeling for Urgent Climate Issues

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$885
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	885
12 Civilian personnel benefits	263
13 Benefits for former personnel	0
21 Travel and transportation of persons	21
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	374
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	467
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	4,990
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$7,000

Climate Competitive Research: Impacts of Climate on Fish Stocks (Base Funding: \$0 and 0 FTE; Program Change: +\$10,000,000 and + 1 FTE): NOAA requests an increase of \$10,000,000 and 1 FTE to fund research on the impacts of climate on fisheries, with a focus on the Northeast groundfish region.

Proposed Actions:

NOAA will support extramural research to improve understanding of climate impacts on fish stocks, prey availability, and habitat, with a focus on the Northeast groundfish region. Funds will be competitively awarded as extramural grants through NOAA's Climate Competitive Research line, as well as through partnerships between NOAA and the external scientific community. Grantees will be encouraged to collaborate with NOAA Laboratories, Fisheries Science Centers, Cooperative Institutes, and Sea Grant to enhance the effectiveness of the research and ensure that outcomes inform sustainable fisheries management.

An FY 2014 request for proposals (RFP) will address specific information needs related to the application and integration of climate information into fisheries management. The RFP will include a combination of smaller 2- to 3-year awards and larger 5-year interdisciplinary, multi-institution awards. All proposals will be reviewed through a rigorous panel review process and selected to ensure strong alignment with the RFP. Funded projects will engage in an ongoing dialogue with program managers to report on project progress and ensure the development of useful information and products.

These projects will improve understanding and projection of the impacts of climate variability and change on fish stocks, prey availability, and habitat. Work supported through this funding may include direct improvements to critical scientific tools, such as coupled climate-ecosystem models, as well as the development of products that will directly inform decision making (e.g., assessments of stock vulnerability). This research investment will enhance early warning and management of the impacts of climate variability and change, which will help minimize economic disruption for the many communities, citizens, and livelihoods across the Nation that depend on healthy fisheries.

Statement of Need and Economic Benefits:

Healthy and productive fisheries are an essential component of U.S. economies and societies. Americans consume about 5 billion pounds of seafood each year.⁶ In 2009, U.S. marine commercial and recreational fisheries contributed approximately \$167 billion in sales impacts and 1.3 million jobs to the national economy.⁷ Sustainable fisheries create and sustain jobs, stabilize economies in coastal working waterfronts, provide opportunities for commerce, and help to meet the growing demand for seafood across the U.S. and the world.

This proposed action is a timely response to a high-priority need. Fisheries managers in the Northeast and other U.S. regions have recently expressed concern about the impacts of climate variability and change on fish stocks. Climate-related impacts (e.g., extreme events, and warmer-than-normal water temperatures) can have significant effects on the abundance, distribution, and productivity of fish stocks. For example, the Northeast has been experiencing groundfish declines, likely due, in part, to recent changes in ocean conditions. During the first six months of 2012, sea surface temperatures in the Northeast Shelf Large Marine Ecosystem were the highest ever recorded, and above-average temperatures were found from the ocean bottom to the surface across

⁶ National Marine Fisheries Service. 2012. Fisheries of the United States, 2011. U.S. Department of Commerce, Current Fisheries Statistics No. 2011.

⁷ National Marine Fisheries Service. 2010. Fisheries Economics of the United States, 2009. U.S. Department of Commerce, NOAA Technical Memorandum. NOAA Fisheries-F/SPO-118, 172p.

the region. The annual spring plankton bloom was intense, starting earlier and lasting longer than normal, and Atlantic cod continued to shift northeastward in distribution. These changes have economic consequences for the fisheries and communities that depend on them.

This investment in research would provide critical advances in understanding and projecting climate-related impacts to inform sustainable management of the Nation's fisheries. U.S. fisheries provide an important source of food, income, jobs, and recreation for the Nation. Maintaining healthy fisheries is critical to ensure this resource is available for current and future generations. This research topic addresses key information needs for fisheries management and stewardship, while advancing and leveraging NOAA's core capabilities in climate and ecosystem science.

Base Resource Assessment:

This research provides a new opportunity to advance understanding and management of the impacts of climate variability and change on U.S. fish stocks, their prey, and habitat, with a focus on the Northeast groundfish region. This work will build off of and leverage existing capabilities advanced through: NOAA's Competitive Climate Research line (e.g., through the Coastal and Ocean Climate Applications program); NOAA's National Marine Fisheries Service (NMFS) (e.g., Fisheries Science Centers, NMFS Office of Science and Technology); Sea Grant; and research underway and in development at NOAA Laboratories and Cooperative Institutes. In addition, this research would provide new opportunities for collaboration across Federal partners, such as NASA and the Department of the Interior, that have capabilities and programs in climate and ecosystem science.

Schedule and Milestones:

FY 2014: Solicit letters of intent and proposals; conduct panel review process; select projects for funding.

FY 2014 – 2016: Support the implementation of three-year projects to address the impacts of climate on fish, their prey, and habitat.

FY 2014 – 2018: Support the implementation of five-year projects to build understanding, institutional capacity, and management of the impacts of climate variability and change on fish, their prey, and habitat.

Deliverables:

- Assessment of the needs of marine resource managers and constituencies for climate products and services to inform the development of research and services.
- Integration, synthesis, and analysis of existing climate and ecological, observational, and monitoring data.
- Development and advancement of coupled climate-ocean-ecosystem models to foster understanding and projection of climate impacts on fish stocks.
- Innovative research to determine the impacts of extreme events, climate variability, and climate change on fish, their prey, and habitat.
- New, interdisciplinary partnerships (between physical, ecological, social, and economic scientists) and partnerships between scientists and decision makers.
- Climate vulnerability assessments for commercially and recreationally important fish species.
- State-of-the-art, user-friendly, science-based tools (including trainings, guidebooks, websites, etc.) to support ongoing decision making to prepare for, manage, and respond to climate risks on fish and fisheries.
- Integration of climate information into fisheries stock assessments, management plans, and practices.

- Tools for enhanced public awareness of climate risks and impacts to fish, their prey, and habitats.

Performance Goals and Measurement Data:

Performance Measure: Cumulative number of marine resource managers integrating climate data and information to improve decision making in the face of a changing climate.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0	50	125	200	275
Without Increase	N/A	N/A	0	0	0	0	0
Description: Number of marine resource managers who have access to and use climate information to inform planning and management. This includes participation in capacity-building and training activities.							

Performance Measure: Number of regional-scale projections and assessments to inform fisheries planning and management. (cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0	1	3	5	7
Without Increase	N/A	N/A	0	0	0	0	0
Description: Regional-scale projections and assessments will contribute to improved understanding of current and future climate (e.g., changes in temperature, and pH) and ecosystem (e.g., changes in prey availability, habitat) conditions and associated consequences for marine fisheries. Knowledge gained through these efforts will inform planning and management.							

Performance Measure: Cumulative number of science-based adaptation tools and technologies that are used by NOAA partners and stakeholders to improve ecosystem-based management of fisheries.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0	5	10	15	20
Without Increase	N/A	N/A	0	0	0	0	0
Description: This measure tracks success in translating research findings into adaptation tools and technologies used by the fisheries management community. The use of these products will improve sustainable management to enhance ecological and economic resilience in the face of change.							

Performance Measure: Annual number of fisheries management plans that integrate climate information.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0	1	5	7	10
Without Increase	N/A	N/A	0	0	0	0	0
Description: Marine resource managers and scientists conduct regular assessments of fish stocks and ecosystem status to advance understanding and inform management. This metric describes the number of fisheries management plans that integrate climate information to help ensure long-term sustainability of fisheries in a changing climate.							

PROGRAM CHANGE PERSONNEL DETAIL

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: Impacts of Climate on Fish Stocks

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Silver Spring, MD	ZP-IV	2	89,033	178,066
Subtotal			<u>2</u>		<u>178,066</u>
2013 Pay Adjustment (0.5%)					<u>890</u>
Total					178,956
less Lapse			25%	<u>1</u>	<u>(44,739)</u>
Total full-time permanent (FTE)					134,217
2014 Pay Adjustment (1.0%)					<u>1,342</u>
TOTAL					<u>135,560</u>

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1
Authorized Positions:	
Full-time permanent	2
Other than full-time permanent	<u>0</u>
Total	2

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Climate Research
Program Change: Impacts of Climate on Fish Stocks

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$136
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	136
12 Civilian personnel benefits	42
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	9,822
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$10,000

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES
SUB-PROGRAM: WEATHER AND AIR CHEMISTRY RESEARCH

The objectives of the Weather and Air Chemistry Research sub-program are to support:

- Research and development that provides the Nation with more accurate and timely warnings and forecasts of high-impact weather events and their broader impact on issues of societal concern such as weather and air quality; and
- Research that provides the scientific basis for informed management decisions about weather, water, and air quality.

Researchers at OAR Laboratories and Cooperative Institutes have been key contributors to the modernization of the NWS by providing the research to better understand severe weather events and through technological advancements in weather modeling and observing. OAR scientists strive to continually improve NOAA's capabilities as well as other Federal agencies' capabilities to provide more accurate and timely warnings and forecasts of various high-impact weather, water, and air quality events. Examples of these high-impact events includes, floods, droughts, heat waves, severe storms, hurricanes, tsunamis, and the deposition of nutrients, heavy metals, and toxic organic substances to the surface of the earth. More information on this sub-activity is available at <http://www.research.noaa.gov/weather/>.

LABORATORIES AND COOPERATIVE INSTITUTES

Hurricane Research

OAR's Hurricane Research, within the Atlantic Oceanographic and Meteorological Laboratory (AOML), focuses on improving the understanding and prediction of hurricane track and intensity change through directed research with the goal of transferring these improved capabilities to NOAA's operational hurricane forecast components. AOML's hurricane research supports NOAA's long-term goal of a weather-ready nation by reducing forecast uncertainty and unnecessary evacuations that result in economic impacts to communities. NOAA research and transition efforts include:

- Coordination of NOAA's annual hurricane field program - the Intensity Forecast Experiment (IFEX) – which is a partnership among AOML, NWS Environmental Prediction and Tropical Prediction Centers, and NESDIS, with support from NOAA's Aircraft Operation Center's research/reconnaissance aircraft;
- Theoretical and numerical modeling research to improve hurricane forecast guidance, including the preparations of storm surge atlases and wind field diagrams;
- Analysis of data from models and field programs to improve understanding of physical processes that effect hurricane track and intensity changes;
- Providing leadership and critical assistance to the NOAA Hurricane Forecast Improvement Project; and
- Active participation in and support of the Joint Hurricane Testbed.

Severe Storms Research

OAR's National Severe Storms Laboratory (NSSL) seeks to improve the accuracy and timeliness of forecasts and warnings of hazardous weather events such as thunderstorms, tornadoes, flash floods, lightning, and winter weather. NSSL accomplishes this goal through a balanced research program that conducts research in three general areas, including severe and hazardous weather research, storm-scale hydrometeorology research, and weather radar research development. These programs aim to:

- Advance the understanding of weather processes;
- Improve and develop new forecast and warning techniques and applications (such as warn-on-forecast), and evaluate them for operational use in the Hazardous Weather Testbed;
- Transfer knowledge, techniques, and applications to NWS and other agencies;
- Develop enhancements for the NEXRAD Doppler weather radar, the cornerstone of the radar network now operated by NWS offices across the United States;
- Develop new radar technologies (e.g., dual-polarization and phased-array radar); and
- Conduct field programs that use mobile, *in situ*, and remote observational capabilities to collect data that support theoretical research.

Physical Sciences Division (PSD)/ESRL provides NOAA with the essential core capability to conduct physical science research across time and space scales with an emphasis on extreme events in the Earth system that lead to floods, droughts, and heat waves. Examples include: (1) the role of the Hydrometeorological Testbed in elucidating the role that Atmospheric Rivers play in creating flood conditions in U.S. coastal areas and inland basins; and (2) improving surface parameterizations in hurricane models to better represent the role of surface process such as sea spray in hurricane intensity changes. In conducting this research, the program advances NOAA's abilities to observe, understand, and improve the credible prediction of the behavior of the atmosphere, ocean, cryosphere, hydrosphere, land, and related impacts on global-to-local and days-to-decades timescales.

Air Chemistry Research

OAR's air chemistry activities respond to significant societal needs. Air pollutants are a primary cause or significant contributor to a number of pressing societal issues. These include health impacts such as illness and/or premature death due to respiratory effects, permanent neurological damage (affecting tens of thousands of newborns annually), and environmental degradation caused by exposure to air pollutants and deposition of nutrients, mercury, and other toxic substances.

The Air Resources Laboratory (ARL) conducts field studies and long-term measurements, and develops numerical models to address a wide range of critical air chemistry and deposition issues. ARL addresses multiple important pollutants including mercury, nitrogen oxides, smoke, volcanic ash, and radioactive materials, which can have significant impacts on and implications for human and ecosystem health and for industrial and transportation activities. Field activities include development and evaluation of new measurement approaches, short-term field experiments to characterize key chemical and physical processes, and long-term monitoring of selected chemical air concentration and deposition trends. ARL develops numerical models to forecast selected pollutants, such as smoke and volcanic ash, and to better understand sources and receptors of pollution, such as mercury compounds. Information from ARL's work supports avoidance of health impacts, safe operation of aircraft, and well informed, effective management of ecosystems.

ARL also oversees OAR's Monitoring/Plume Dispersion research in which it tracks, characterizes, and predicts dispersion of airborne hazardous materials, including smoke, harmful chemicals, radioactive materials, and biological agents (released either accidentally or intentionally). These

plume dispersion activities provide essential information for first responders and emergency management in the government, as well as industrial, agricultural, and transportation sectors to minimize risks to health, safety, and economic activities. Knowledge of where hazardous materials will spread enables emergency managers to effectively evacuate people from harm's way and helps industrial and transportation companies to take protective measures for a wide range of situations, including oil drilling platform disasters, chemical plant explosions, containment failures at nuclear reactors, and the spread of plant pathogens.

The Chemical Sciences Division (CSD)/ESRL conducts research to understand and quantify the chemical emissions of gaseous and particle (aerosol) pollutants, their precursors, and the processes responsible for their transport and transformation in the atmosphere. This contributes to better understanding the impacts of pollutants on U.S. air quality and our climate. To reach these goals, CSD maintains an integrated program of laboratory studies, intensive field experiments, and analyses to study the linkages between emissions, air quality, and climate impacts. In addition, CSD develops new sensors to quantify key atmospheric constituents and their properties (optical and physical) when that information is lacking. The information developed provides the scientific underpinning for policy development and management decisions related to air quality. CSD is leading a series of regional assessments designed to provide new insights into, and potential cures for, poor air quality throughout the U.S. Collectively, these assessments provide a holistic understanding of the root causes of poor air quality across the country while contributing new science that improves predictive tools and provides the scientific basis for more effective environmental policies and emission management strategies. Recent efforts have focused on Houston and Southern California, where local air quality managers are challenged by difficult air quality problems and concerns relating to climate change.

The Global Monitoring Division (GMD)/ESRL conducts long term observations by balloon-borne, cryogenic frost point hygrometers launched from Boulder, Colorado; Hilo, Hawaii; and Lauder, New Zealand to obtain vertical profiles of water vapor in the upper troposphere and lower stratosphere (to ~30 km). Water vapor soundings over Boulder (since 1980) provide a unique long-term data record that may reveal changes in atmospheric dynamics resulting from climate change. Water vapor is a natural and very important component of the Earth's atmosphere. Its distribution influences many physical and chemical properties of the atmosphere, including weather, clouds, precipitation, lightning generation, convective uplift, and the Antarctic ozone hole.

Weather Models and Advanced Technologies Research

The Global Systems Division (GSD)/ESRL conducts next-generation weather model development. GSD's efforts lead to improved forecasts of hurricanes and other tropical phenomena. Collaborators in this effort include research organizations and operational services such as the National Weather Service, the Air Force, and the Navy. GSD's global modeling capability is also designed to provide an improved research tool for dynamical-chemical-hydrological-ocean-land-surface interactions. For regional and local domains, GSD leads in the development of very short-range, storm-resolving modeling and advanced data assimilation capabilities for severe weather watches and warnings, heavy precipitation events, water management, renewable energy production, aviation safety, transportation efficiency, and wildfire management.

GSD also investigates, develops, and applies advanced technologies to optimize the computing of models, to allow faster and more comprehensive access to critical weather information, to assess the forecast impact of meteorological observations and observing systems, and to educate current and future generations about Earth system science. GSD is also exploring alternative high-performance computing architecture options for the future to increase both computing capability and cost efficiencies. To promote efficiency and effectiveness, high-resolution models are being developed to

serve multiple purposes and users, providing significant value to commercial aviation, civilian, and military weather forecasting, energy generation, regional air and global pollution prediction, and emergency preparedness.

As part of its weather research activities, modeling activities centered at Geophysical Fluid Dynamics Laboratory (GFDL) focus on long lead-time research to understand the predictability of weather on both large and small scales and to translate this understanding into improved numerical weather prediction models. These activities improve our understanding of atmospheric circulations ranging in scale from general circulation to hurricanes, with an emphasis on extreme weather events. These activities also focus on the interplay between weather phenomena and climate variability and change, using high resolution atmospheric modeling as the central tool. This effort is augmented by research to improve our understanding of the interactive three-dimensional structure of the climate system from the surface and troposphere to the upper stratosphere and mesosphere on various time and space scales. GFDL works to understand the relationship between the physical climate and the Earth's biogeochemical cycles, as well as assessing the impact of natural variability and past, present, and future human activities, including the interplay of sea-level rise, coastal physical processes, and ecological processes and the Earth System's hydrologic cycle. This research is a key aspect of developing comprehensive Earth System Models that extend current climate predictive capability to land and ocean ecosystems.

Tsunami Research

The Pacific Marine Environmental Laboratory (PMEL) develops tools and cost-effective observing systems to improve the accuracy and timeliness of NOAA's tsunami forecasting capabilities. This research is conducted through PMEL's NOAA Center for Tsunami Research which works closely with the rest of NOAA, including NWS (which has operational responsibility for warnings and observations) and NESDIS. The NOAA Tsunami Forecast System operated by NWS and supported by research at PMEL has been effective in seventeen tsunami events since inception. During the Honshu, Japan tsunami in March 2011, the system provided accurate forecasts of wave amplitude when compared to coastal tide gauge observations. This catastrophic event highlighted the need for faster local tsunami forecasts and quickly disseminated graphical flooding forecast products.

PMEL has worked to accelerate development of engineering technology and modeling capabilities for more cost-effective observing technology and tsunami forecast coverage to additional communities. For example, in FY 2012 PMEL took part in a pilot venture positioning several pressure sensors along a trans-oceanic submarine cable. This effort used new, industry-developed technology, which provides a potential cost-saving option due to dual use by industry and the scientific community.

The Tsunami Research Program is linked to stakeholders in coastal states through the National Tsunami Hazard Mitigation Program (NTHMP), created in 1995 to provide improved tsunami warning services to coastal communities. All coastal states and territories, NOAA, FEMA, and the U.S. Geological Survey are members of the NTHMP.

Unmanned Aircraft Systems

NOAA's Unmanned Aircraft Systems (UAS) program is an initiative that accelerates the research, development, and transition of innovative new observational platforms and forecast tools to advance NOAA's Earth-system product, service, and information enterprise. UAS platforms represent a collaborative effort of several organizations within NOAA, including NOAA Laboratories and Cooperative Institutes, NWS, NOS, and OMAO. Outside partners include NASA, DOE, and other agencies. This initiative is linked closely to the needs of multiple Federal, state, and local agencies. Specific UAS applications in weather research are: hurricane reconnaissance and research to help

improve hurricane track and intensity forecasts; and monitoring of Pacific atmospheric river moisture transport and characteristics to help improve West Coast winter precipitation and flood forecasts.

Schedule and Milestones:

FY 2014

- High quality observations from a yearly Intensity Forecast Experiment in partnership with NWS, NESDIS, and AOC to improve hurricane track and intensity forecasts. Continue development of new instrumentation. (FY 2013 – FY 2018)
- Develop and conduct two tests of observing system sensitivity analysis in each active storm using ensemble Kalman filter data assimilation system and NOAA's operational Hurricane Weather Research and Forecasting (HWRF) model. Focus will be on developing synthetic airborne Doppler radar and Lidar observations from high-resolution nature runs of hurricanes. (FY 2013 – FY 2015)
- Maintain current hydrometeorological testbeds in meteorologically distinct regions of the Nation. (FY 2013 – FY 2016)
- Continue development and evaluation of High Resolution Rapid Refresh (HRRR) weather model using advanced data assimilation methods. (FY 2013-FY 2017)
- Upgrade GFDL Hurricane Prediction System. (FY 2013 – FY 2015)
- Integrate long-term records to understand changes in the distributions and trends of atmospheric gases affecting climate, ozone depletion, and atmospheric composition. (FY 2014-FY 2017)
- Provide interpretations for supporting development and analyses of annual updates of Annual Greenhouse Gas Index and Ozone Depleting Gas Index (FY 2014-FY 2017)
- Complete a demonstration within the Hazardous Weather Testbed of a warn-on-forecast (WoF) component during the severe weather season that uses input from the HRRR model. WoF is a research program tasked to increase tornado, severe thunderstorm, and flash flood warning lead times. The new research uses probabilistic hazard guidance provided by an ensemble of forecasts from convection-resolving numerical weather prediction models.
- Test one component in the Hazardous Weather Testbed. (FY 2014-FY 2018)
- Continue development of HRRR weather model using advanced data assimilation methods. (FY 2014-FY 2018)
- Complete report documenting major findings from VORTEX2.
- Develop a statistically-based algorithm from the WSR-88D historical reanalysis severe weather detections to identify uncertainty parameters and produce a probabilistic warning guidance prototype for severe weather.
- Continue evaluation of the operational dual polarization WSR-88D single radar quantitative precipitation estimates (QPE) from different seasons and different geographical regions.
- Begin development of an advanced dual polarization radar QPE for warm season using a multi-radar and multi-sensor approach.
- Perform radar data analysis to improve understanding of convective weather systems through comparisons among various radar systems and partnering with data assimilation experts.
- Provide to stakeholders a scientific synthesis report of results from CalNex field study.
- Incorporate surface hydrometeor types and their liquid equivalents from dual polarization radar and modify prototype flash flood system to account for different precipitation phases and their interaction with surface conditions (e.g., rain-on-snow events).
- Develop and test new instrumentation, in particular a Doppler Wind Lidar in partnership with NASA.

- Tests of advanced physics packages in each active storm for possible implementation into a HWRF to enable simulations at resolutions down to 1 km. Focus will be on air-sea fluxes and boundary layer.
- Development of initial physical formulations to incorporate soot and dust aerosol impacts on snow and ice albedo in climate models, and improved sea ice models essential to developing a predictive understanding of Arctic climate change.

FY 2015

- Complete a report documenting the readiness of WoF technology and utility of transitioning WoF functionality to operations.
- Assess the use of frequently updated national scale and local ensembles for probabilistic forecasts in the WoF context and determine methods for best communicating uncertainty in warnings to both forecasters and non-NOAA customers with help from social scientists. Test and evaluate a Probabilistic Hazard Information grid in the Hazardous Weather Testbed based on the results of the historical reanalysis of WSR-88D and other sensor data.
- Expand HL-RDHM and QPE testbeds to other seasons/regions.
- Conduct intensive field study to advance understanding of climate-air chemistry interconnections - region TBD.
- Validate and improve emission inventory for species important for climate and air chemistry using data from southeastern U.S. study.
- Provide scientific assessment of the impact of aerosols on cloud systems.
- Perform radar data analysis to improve data quality and usability through signal processing improvements. Signal processing improvements may be used to identify and mitigate Wind-farm clutter and to detect tornado signatures using spectral analysis.
- Evaluate the impact of dual polarization radar data on flash flood forecasts.
- Demonstrate improved QPE accuracy for flash flood events in warm season.
- Collect ground truth data for cool season precipitation events.
- Begin integration of space-borne radar data from Global Precipitation Mission into the Multi-Radar Multi-Sensor (MRMS) system to improve QPE accuracy for the U.S. mountainous west.
- Integrate environmental data into the advanced MRMS DP radar QPE system for improved segregation of different precipitation regimes.
- Continue development of the advanced dual polarization radar QPE in the MRMS system using adaptive relationships between the rainfall rate and dual polarization radar variables based on segregations of precipitation regimes.
- Tests of advanced physics packages in each active storm for possible implementation into HWRF to enable simulations at resolutions down to 1 km. Focus will be on microphysics and aerosol.
- Testing of HRRR Ensemble model and data assimilation system.
- Testing of an hourly-updated global Rapid Refresh data assimilation and model in preparation for NextGen mid-operational capability.
- Expand number of scientific dataset visualizations for NOAA Science On a Sphere for use by government and museum partners.
- Complete a field study of ammonia exchange between the air and agricultural land in a coastal region.
- Complete HYSPLIT-Hg simulations of the atmospheric fate and transport of mercury from global sources.
- Continue analyses of climate-stratospheric chemistry interactions.

- Improved realism of the NOAA Earth System Models by closing the nitrogen cycle, and major feedback on the global carbon cycle.

FY 2016

- Develop the initial data mining applications to identify severe weather signatures in model analyses.
- Demonstrate and test a probabilistic warning system using model assimilation analyses as a prototype for WoF.
- Improve temporal/spatial resolution of MARMS/QPE.
- Continue to maintain and develop research radar systems (NO-XP, KOUN, mobile radars) to support scientific inquiry. Maintenance and development activities include the hardware and software required to collect data, as well as the software needed to perform data analysis and display.
- Utilize storm-scale precipitation forecasts from high-resolution NWP models that assimilate radar data into flash flood forecast systems to increase lead-time.
- Transfer to operations the advanced multi-sensor dual polarization radar QPE techniques for warm season.
- Continue integration of space-borne radar data from GPM into the MRMS QPE.
- Begin development of advanced MRMS dual polarization radar QPE for cool season using ground radar, space-borne radar, and atmospheric environmental data.
- Coordinate and conduct yearly Intensity Forecast Experiment in partnership with NWS, NESDIS, and AOC to collect high quality observations in support of operations and Hurricane Forecast Improvement Project needed to improve hurricane track and intensity forecasts. Continue development and testing of new instrumentation.
- Continue tests of ensemble Kalman filter data assimilation system for possible implementation in NOAA's operational HWRF. Test impact of assimilation of satellite microwave radiance data using OSSE and OSE approaches.
- Develop and test advanced physics packages for possible implementation into HWRF to enable simulations at resolutions down to 1 km. Focus will be on microphysics and aerosol.
- Complete source-receptor analysis, GIS analysis, model evaluation ("ground-truthing") for a source-receptor model of atmospheric mercury.
- High-quality hurricane observations from airborne experiments for use in hurricane regional model data assimilation and evaluation, in particular dropsondes, Doppler radar, *in situ*, and stepped frequency microwave radiometer. (FY 2016 – FY 2017)

FY 2017

- Expand the number of stations feeding observations data to the Meteorological Assimilation Data Ingest System (MADIS) to 100,000.
- Determine which data assimilation methods are most accurate and cost-effective when applied to radar data at convection-resolving scales.
- Evaluate accuracy and lead-time improvements through the use of inputs from quantitative precipitation forecasts.
- Continue development of advanced multi-sensor dual polarization radar QPEs for cool season precipitation.
- Demonstrate improved QPE accuracy for flash flood events in cool season. .
- Evaluation of the real-time MRMS dual polarization radar QPE performance from different seasons and different geographical regions. (FY 2017-FY 2018)
- Continue development of the space-borne and ground radar merged QPE in the MRMS system.

- Complete biennial regional field studies of ammonia exchange between the air and agricultural land.
- Conduct intensive field study to advance understanding of climate-air chemistry interconnections - region TBD.
- Conduct laboratory evaluation of ozone-depletion and greenhouse-warming potentials of an industry-proposed replacement compound.
- Validate and improve emission inventory for species important for climate and air chemistry using data from intensive field study.

FY 2018 and Beyond

- Provide NOAA management with information needed to decide whether to make WoF operational, including the total costs of going forward. (FY 2018)
- Address fundamental science questions that may limit WoF utility, including effects of model error on thunderstorm evolution, needed accuracy of storm environmental conditions, and errors in conversions from model data to observational data. VORTEX2 data will assist this evaluation. (FY 2018)
- Conduct real-time tests of WoF system in Hazardous Weather Testbed in collaboration with NWS forecasters and collect data needed to verify WoF predictions. Collaborate with NWS forecasters to evaluate WoF and develop new display capabilities for use in warning operations. Evaluate WoF predictions using rigorous verification measures and use knowledge gained to further improve WoF system. (FY 2020)
- Transfer to operations the advanced multi-sensor dual-polarization radar QPE techniques for cool season precipitation.
- Transfer to operations the MRMS space-borne and ground radar merged QPE.
- Address fundamental science questions that may limit WoF utility, including effects of model error on thunderstorm evolution, needed accuracy of storm environmental conditions, and errors in conversions from model data to observational data. VORTEX2 data will assist this evaluation.
- Provide scientific synthesis report from intensive field study.
- Evaluate the HRRR Ensemble model and data assimilation system in preparation for NextGen mid-operational capability.
- Assess the advanced nesting capability of the HWRF model coupled with an ocean/wave model.

Water Cycle (FY 2014 – FY 2018)

- Assess and document the ability of gap filling radars to augment legacy observing systems (e.g. NEXRAD) in the west to provide better precipitation and water supply information.
- Conduct field experiments (Hydrometeorology Testbed & CalWater) focused on extreme precipitation events and their role in the water cycle - required for better climate projections and forecasts for flood and water supply.
- Couple ensemble precipitation forcing to hydrological models for two key watersheds.
- Deliver a preliminary report on quality of precipitation and runoff forecasts.
- Document and coordinate model development and operations plan to increase number of communities served by stream and river forecasts for the CERIS region.

Weather and Climate Physics (FY 2014 – FY 2018)

- Bring Tiksi observatory to 30 percent capacity and maintain Alert Baseline Surface Radiation Network (BSRN)/Aerosol with GMD.
- Make public version 10 of the PSD/ESRL hurricane flux algorithm.

- Generate data archive of ship and aircraft observations from participation in the NOAA/National Science Foundation DYNAMO field program in the Indian Ocean.
- Repackage W-band radar for future installation on NOAA P-3.

Deliverables:

- Hold a major workshop on future directions in flash flood warnings research.
- Recommendations for improvements to address seasonal biases in particulate matter forecasts.
- High-quality hurricane observations from airborne experiments for use in hurricane regional model data assimilation and evaluation, in particular dropsondes, Doppler radar, *in situ*, and stepped frequency microwave radiometer.
- Observing system sensitivity analysis capability utilizing the ensemble Kalman filter data assimilation system and the improved nesting for HWRF.
- Fully coupled advanced nesting capability for testing and evaluation in the operational HWRF model system.
- Report documenting the assessment of flash flood warnings effectiveness and future directions using high-resolution (<1km) and rapid update (<5min) grid of CONUS (Continental United States) mosaic QPE.
- Report documenting the impact of improved physics for air-sea fluxes and boundary layer on hurricane track and intensity forecasts using regional HWRF model system.
- Report documenting the impact of assimilating Doppler Wind Lidar and radar on hurricane track and intensity forecasts using the regional HWRF model system.
- Deliver code for the Flow-following finite-volume Icosahedral Model to NWS National Centers for Environmental Prediction (NCEP) as a member of a global ensemble model
- Preliminary development of a tornado debris signature algorithm using Dual Polarization radar data.
- Report documenting the impact of improved physics for microphysics and aerosol on hurricane track and intensity forecasts using the regional HWRF model system.
- Deliver code for HRRR model at NWS/NCEP depending on availability of necessary high performance computing resources.
- Urban Meteorology: Improve dispersion predictions in urban environments (ongoing).
- Dispersion Forecast System: Provide annual updates to dispersion forecast system, used for local to international incidents.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percent of labs that have had formal expert peer reviews in the past 5 years & were rated effective in terms of quality, mission relevance, & performance	100%	100%	100%	100%	100%	100%	100%
Description: This performance measure is recognized by the National Academy of Sciences report <i>Evaluating Federal Research Programs</i> , which states -The most effective means of evaluating Federally funded research programs is expert review.¶							

Hurricane Research

Performance Measure: Reduction in uncertainty of hurricane processes that drive track and intensity change based on high-quality observations from airborne experiments (cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	4%	6%	9%	11%	13%	15%	17%
Description: Data collected in and about the hurricane environment from hurricane hunter flights during the annual field program is invaluable to increasing knowledge of how hurricanes develop, move, and intensify. As a result of research and publications based on these observations, there will be increased knowledge that will be incorporated by the hurricane modeling community, resulting in increased accuracy in hurricane models. This observation program serves as the foundation for meeting NOAA's weather-ready nation goal of reducing forecast uncertainty and unnecessary evacuations that result in economic impacts to communities.							

Performance Measure: Cumulative percent reduction in error of track and intensity guidance of the HWRF model system	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	20%	20%	27%	32%	37%	42%	47%
Description: As a result of new hurricane observing systems, improved nesting capability, and advanced physics packages applicable at 1-km horizontal resolution, hurricane track and intensity forecasts using regional HWRF model system will see a reduction in forecast error. Incorporating this improved hurricane data directly addresses NOAA's weather-ready nation goal of reducing forecast uncertainty and unnecessary evacuations that result in economic impacts to communities.							

Severe Storms Research

Performance Measure: Cumulative number of severe weather events for which Warn-on-Forecast numerical predictions of tornado lead time exceeds 20 minutes	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	1	1	2	3	3	4	5
Description: The Warn-on-Forecast program is working to combine high resolution models with high resolution data (from radars and other observations), advanced data assimilation and quality control techniques, and high-end computing to produce a forecast of a tornado that would effectively extend tornado warning lead times well beyond the current national average of 13-14 minutes. This NWS GPRA goal shows the amount of warning the public is given for tornadoes (national average, in minutes) by NWS. NSSL conducts research that leads to improved warning skill scores (higher probability of detection, increased lead times, and reduced false alarms) through the Hazardous Weather Testbed experiments.							

Performance Measure: Cumulative number of years completed in historical re-analysis of CONUS WSR-88D data	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	6	10	14	18	20	21	22
Description: This performance measure shows the cumulative number of years of the CONUS WSR-88D network that have been processed and analyzed with the MRMS system (WRDD). The re-analysis of WSR-88D data will provide storm statistics (probabilistic guidance) that can be used to better inform the public. The probabilistic guidance available from the re-analysis will also set the baseline performance measure for evaluation of Warn-on-Forecast guidance products. Archive begins in 1996.							

Performance Measure: Improvement of flash flood warning skill scores of a prototype national flash flood guidance tool	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	0.39	0.36	0.38	0.40	0.42	0.46	0.50
Description: This performance measure shows the improvement of the Critical Success Index (CSI) skill score (higher CSI scores show a combined higher probability of detection and reduced number of false alarms) of the prototype flash flood guidance tool compared to the operational flash flood guidance during a demonstration and evaluation in the Hazardous Weather Testbed. Improved flash flood guidance will result in more precise and timely Flash Flood warnings and benefit the public.							

Air Chemistry Research

Performance Measure: Cumulative number of regional assessments of atmospheric mercury source-receptor relationships	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	1	1	1	1	2	2	2
Description: This provides key information for air quality and environmental policy-makers and managers and for negotiators for international agreements—enabling them to effectively target mercury emissions reductions.							

Performance Measure: Cumulative number of completed field studies of ammonia exchange between the air and land	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	1	1	2	2	3	3	3
Description: Ammonia is a key atmospheric pollutant affecting ecosystems, such as estuaries. These studies provide essential information for air quality, agriculture, and environmental policy-makers and managers to inform Federal and state decisions regarding coastal water quality and habitat. It also addresses a key uncertainty in air quality models. Each study addresses different regions/land uses (e.g., fertilized farm fields, concentrated animal feeding operation) and contributes to the scientific understanding of ammonia exchange in peer-reviewed journal publications. Publications are a measure of program depth, quality, and credibility.							

Performance Measure: Cumulative number of updates provided to NWS for the volcanic ash forecast system	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	8	9	10	11	12	13	14
Description: This provides improvements to a forecast system used to inform pilots where volcanic ash is located, enabling them to avoid in-flight catastrophes. Examples of improvements include better use of satellite observations to estimate volcano source strength and improved flexibility for configuring simulations for various types of eruptions.							

Performance Measure: Cumulative number of dispersion prediction system updates provided to NWS	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	3	4	5	6	7	8	9
Description: The updates of the HYSPLIT dispersion model provided to NWS for operational implementation will contribute to improved outcomes by improving the accuracy and usefulness of NWS dispersion prediction products. The updates will also improve the ease of use and flexibility of the software for meeting NWS needs. NWS uses HYSPLIT for dispersion predictions for applications ranging from local chemical releases to international radiological incidents, providing information to customers ranging from local emergency managers to the World Meteorological Organization.							

Performance Measure: Cumulative number of reports to stakeholders and decision makers that provide a policy-relevant scientific synthesis of results from intensive field studies, process studies, and analyses.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	1	2	2	3	3	4	4
Description: This is a new performance measure for the FY 2014 request. Reports provide a distillation of key scientific findings on emissions, transport, atmospheric processing, and impacts of climate forcing agents, their precursors and species related to air quality degradation to inform policy development and emission management strategies for climate and air quality.							

Weather Models and Advanced Technologies

Performance Measure: Cumulative percentage improvement in accuracy (probability of detection of ceiling <1000 ft.) of the 3-hour cloud ceiling for aviation forecasts	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	2%	3%	4%	5%	6%	7%	8%
Description: Better awareness of expected cloud ceiling over the next 3-hour period is critical to airline safety and aircraft take-offs and landings. Cumulative percentage improvements (approx. 1% per year) will be derived from operational implementation of a new short-range, rapidly updated model called the Rapid Refresh at NWS/National Centers for Environmental Prediction and continuous updates.							

Performance Measure: Cumulative number of major tests and evaluations of numerical weather prediction forecast system component improvements for transitioning to operational numerical weather prediction systems	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	10	20	30	40	50	60	70
Description: The multi-agency Developmental Testbed Center conducts major tests and evaluations of improvements to NWP forecast system components provided by the Numerical Weather Prediction research and operational communities. These tests and evaluations are critical for selecting proposed changes that need to be transitioned to operational centers. For example, DTC evaluations will be critical for selection of the optimal physics package used for the Weather Research and Forecast (WRF) model and the Hurricane WRF in particular.							

Performance Measure: Cumulative number of formal expert peer-reviewed publications related to tsunami research (from FY 2011 baseline)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	26	27	28	29	30	31	32
Description: The number of peer-reviewed publications is widely recognized as being critically important to the advancement of science. It reflects success in conducting research with recognized value and quality and the transfer of scientific information to the public.							

Performance Measure: Conduct Unmanned Aircraft Systems (UAS) field tests – number of field tests: number of operational transition plans	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	2:0	2:1	2:1	2:1	2:1	2:1	2:1
Description: This measure reflects the ratio of the number of field tests conducted to the number that are transitioned to operational applications. Field tests (with NASA, DOE, & other agencies) focus on data collection over vast, remote areas, including the Gulf of Mexico & Atlantic (e.g., hurricane tests), Central Pacific (e.g., endangered species at the Papahānaumokuākea Marine National Monument), and Arctic (e.g., measuring changes in pack ice).							

Performance Measure: UAS observing systems transitioned into operations	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	0	0	1	1	1	1	1
Description: The number of UAS technology applications formally transitioned into operations after final acceptance of system requirements, concept of operations, and resource allocation by the appropriate Line Office stakeholders and OMAO.							

WEATHER & AIR CHEMISTRY RESEARCH PROGRAMS

Research Programs encourage cooperation with external experts in critical fields of research. NOAA's external partners include Federal, state, and local government entities, universities, and industry. Currently two primary research programs are supported under this line.

Tornado/Severe Storm Research (Multi-Function Phased-Array Radar)

NOAA develops new technologies for detecting and forecasting severe and hazardous weather, including thunderstorms, tornadoes, flash floods, lightning, and winter storms, and for disseminating this information to emergency managers, the media, and the general public for appropriate action. Multi-function Phased-Array Radar (MPAR) has the potential to significantly extend lead times for detecting tornadoes and other forms of severe and hazardous weather. Electronically steered beams and faster scan rates can reduce the time it takes to make a complete Doppler radar observation from 4.5 minutes to less than one minute. Coupled with artificial-intelligence-based decision-support systems, tornado lead times could be increased from the current 14 minutes to over 20 minutes. By 2020, more than 350 Federal Aviation Administration (FAA) radars and by 2025 nearly 150 weather radars will either need to be replaced or have their service life extended. If MPAR is successful and implemented as a replacement radar, estimated multi-agency savings could total \$4.8 billion in acquisition costs (\$1.8 billion if replacing all existing radars with similar technology) and life cycle cost savings over 30 years (\$3.0 billion due to fewer radars) (Federal Research and Development Needs and Priorities for Phased Array Radar FCM-R25-2006).

The MPAR program is jointly funded by NOAA and the FAA, and both agencies are coordinating their budget requests. Polarization is not currently available on phased array radars, but is a requirement for NWS to ensure no degradation of service. FAA contributes funding to the joint effort to fulfill its requirement for airport terminal weather and aircraft tracking. It is important that the leading agencies continue a joint risk-reduction R&D program given the potential for savings, complexity of the mission, the technology involved, agency go/no-go decision points, and the long lead times required for interagency acquisition times. Congress established a joint R&D program for NOAA, DOD, and FAA to investigate the feasibility and benefits of using military phased- array radars for improving severe weather forecast and warning systems.

U.S. Weather Research Program (USWRP)

Through its U.S. Weather Research Program (USWRP), NOAA seeks to improve weather and air chemistry forecast and warning information and products by funding, facilitating, and coordinating cutting-edge research to improve high-impact weather and air chemistry predictions and warnings to protect lives and property of the American public and inform weather sensitive U.S. industries. USWRP collaborates closely with NOAA scientists and academic partners to transition this research into useful applications that help forecasters provide more accurate and reliable weather forecasts and warnings. The USWRP also supports societal impact studies in weather and a set of related program projects to provide outreach and coordination among NOAA, other government agencies, academia, and industry. Within NOAA/OAR, the Office of Weather and Air Quality (OWAQ) Program manages the overall USWRP effort in support of research, societal benefits, and related weather research through projects with internal and external partners, including NOAA's cooperative institutes and other academic partners. USWRP project activities include weather testbeds, environmental modeling research, weather research partnership projects, and socioeconomic research.

- **Testbeds** provide an infrastructure where the latest research findings and techniques are continuously tested by scientists and evaluated by operational weather forecasters. Testbed funding provides support for managing the activities at weather-related NOAA testbeds as well as research conducted with academic partners within the testbed. Testbeds serve as an effective means of demonstrating the value of research results to operational forecasters at the

NWS by providing an environment in which the computer hardware and software used by forecasters is used in evaluating the utility of research results. These testbeds allow for an accelerated transfer of research results into operations, as described in two recent articles that were published in the *Bulletin of the American Meteorological Society*⁸.

- **Environmental Modeling Research** is required for better weather and flash flood warnings and forecasts. OWAQ supports Federal and university partnerships to improve computer models and develop techniques to quickly incorporate observations from radar (both operational and experimental), satellite, and other sources into models. USWRP will support scientists to improve existing computer models and the methods for incorporating environmental observations into these models. In collaboration with other NOAA Line Offices, additional research will develop techniques that produce detailed, probabilistic forecasts so users understand the uncertainty associated with the forecast and can make more informed decisions.
- **Partnership Projects** focus on research that cannot be easily evaluated in a testbed. The USWRP funds competitive academic-NOAA research partnership projects. The projects usually take place outside of the testbed environment because of geographical limitations of the NOAA scientist and/or the academic researcher or the nature of the research. This research usually involves an academic-NOAA forecaster partnership to ensure that the project will benefit from the expertise of both the academic community and NOAA forecasters to ease transition into NOAA forecast and warning operations.
- **Socioeconomic Research** incorporates the societal needs for weather forecasts and warnings in the USWRP. This research provides information about the economic value of weather research and contributes to understanding how society uses and interprets weather information. Socioeconomic research also provides information about improving the communication of weather information to the public, particularly during severe weather events like those that occurred in 2011 and 2012.

Schedule and Milestones:

FY 2014

- Complete FY 2014 weather data collection with the National Weather Radar Testbed phased-array radar (NVRT PAR) to increase the sample size of tornadic and non-tornadic storms in support of PAR research. (FY 2014-FY 2016)
- Complete fabrication, testing, and connection of two-dimensional array of dual pol panels or complete simulation of two-dimensional multi-panel array (up for negotiation with FAA).
- Issue announcement and complete selection of USWRP competitive awards. (FY 2014-FY 2018)
- Host scientific seminars to discuss USWRP research results with NOAA and academic scientists. (FY 2014-FY 2018)
- Evaluate transfer of USWRP-supported research into operations. (FY 2014-FY 2018)

FY 2015

- Participate in FAA's Investment Analysis Readiness Decision review.
- Begin MPAR Investment Analysis with FAA.
- Complete study indicating the MPAR can support both weather surveillance and aircraft tracking functions (Multi-function) simultaneously.

⁸ <http://www.nhc.noaa.gov/pdf/rappaport-et-al-bams2012.pdf> and <http://www.goes-r.gov/resources/Scipubs/docs/2012/BAMS-D-11-00040.pdf>.

FY 2016

- Complete research with social scientist on the Phased-array Radar Innovative Sensing Experiment in the NOAA Hazardous Weather Testbed. Complete submission of findings for publication in refereed journal.
- Complete observational case studies of tornadic storms to investigate the importance of sampling time on understanding storm evolution to be submitted for publication.

FY 2017

- Simulation of full array using computer-based models.
- Prepare for MPAR Final Investment Decision.

FY 2018

- Begin development of MPAR production prototype in coordination with FAA.

Deliverables:

- Communication of research results to NOAA forecasters and other scientists at national conferences.
- Computer algorithms developed during testbed evaluations.
- Environmental model data and observations obtained during USWRP projects.
- Prototype products available for transfer into NOAA operations.
- Computer code for improved numerical weather models.
- Test/evaluation of dual-polarization panel characteristics and performance [Note: BCI panel should be tested/evaluated in FY 2012. MIT/LL Gen 2+ panel tested/evaluated in FY 2013]
- Report summarizing MPAR’s potential service improvements.
- Contract out design and fabrication of dual-polarized PAR sub-array antenna with FAA.
- Test/evaluation of dual-polarization sub-array antenna characteristics and performance.
- Participate in FAA’s Investment Analysis Readiness Decision (IARD).
- Coordinate with NWS and FAA to define initial requirements for joint FAA/NOAA MPAR prior to IARD.
- Publication in FY 2016 of research results demonstrating improved tornado warning decision performance produced in collaboration with NWS forecasters within the NOAA hazardous weather testbed (HWT).
- Studies completed to assess MPAR dual-polarized antenna array configurations for both weather (NOAA weather and FAA airport terminal weather mission) and air surveillance operations (FAA mission). Design (paper) studies completed in FY 2015. Prototype based results completed in FY 2018.

Performance Goals and Measurement Data:

Tornado/Severe Storm Research (Multi-Function Phased-Array Radar (MPAR))

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of major milestones completed to support NOAA and FAA decision point. (cumulative)	2	7	9	11	14	15	16
Description: Cumulative number of successfully completed major milestones within Phased Array Radar Risk Reduction Activity such that NOAA and FAA have the information needed to make a Go/No-Go decision on whether to replace existing radar systems with MPAR.							

Performance Measure: Cumulative number of events demonstrating improved tornado warning decision performance	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	2	3	3	5	5	7	7
Description: Cumulative number of events demonstrating improved tornado warning decision performance (e.g. longer lead-times, fewer missed events, fewer false alarms, etc.) using the NWRT Phased Array Radar data compared to the WSR-88D-like data in matched studies within the Hazardous Weather Testbed.							

U.S. Weather Research Program (USWRP)

Performance Measure: Research results that are transferred into operations through Testbed Evaluations (per/year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	24	10	10	10	10	10	10
Description: Evaluation of new scientific findings or development of forecaster tools for potential use in operations that will lead to improved weather forecasts and warnings. The evaluation of research that is targeted for transfer into operations also is informed by the socioeconomic research that is funded within USWRP. Annually, university and Federal scientists receive competitive funding to conduct research that will improve forecasts and warnings of high-impact weather, including tornados and hurricanes. In collaboration with NOAA scientists, the knowledge and tools obtained from these studies are tested and transitioned into NOAA forecast operations.							

Performance Measure: High-Resolution Numerical Model Changes or Tests	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	1	2	2	2	2	2	2
Description: Make changes to the physical parameterization or data assimilation processes of experimental forecast models and address the uncertainties in numerical weather predictions. This contributes to the improvement of the 1-5 day weather forecasts for the U.S.							

Performance Measure: Number of peer reviewed publications funded by the Office of Weather and Air Quality	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	45*	10	10	10	10	10	10
Description: This is a new performance measure for the FY 2014 request. Communicate critical knowledge obtained through research evaluated in testbeds, implemented in numerical models and obtained through partnership projects on high-impact weather events with U.S. agencies and the broader scientific community through peer-reviewed publications. *NOAA's actual number of publications can exceed targets based on the ability of data to be used for more than their original intended purpose.							

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

Weather and Air Chemistry Research Laboratories and Cooperative Institutes (Base Funding: \$55,317,000 and 208 FTE; Program Change: +\$4,376,000 and 0 FTE): NOAA requests an increase of \$4,376,000 and 0 FTE for a total of \$59,693,000 and 208 FTE to fund grant opportunities for Cooperative Institutes to conduct research to better understand severe weather events and to make technological advancements in weather modeling and observing.

Proposed Actions:

NOAA will fund additional grant opportunities for Cooperative Institutes to support research in the following subject areas: hurricanes, severe storms, air chemistry, weather models, and advanced observing technologies. This research will provide the Nation with more accurate and timely warnings and forecasts of high-impact weather events and their broader impact on issues of societal concern. This research will also provide the scientific basis for informed management decisions about weather, water, and air quality.

Quantitative Observing System Assessments (\$1,476,000)

With this funding, NOAA will provide additional grant opportunities to Cooperative Institute partners (CIMAS, CIRES, and CIRA) to conduct research and support development of objective, quantitative observing system assessment methodologies, and contribute to the objectives of the nascent Quantitative Observing System Assessment Program (QOSAP). This funding will support a NOAA research program and infrastructure responsive to internal and external drivers using objective scientific and economic assessments. This activity will provide: 1) a quantitative/rational basis for observing system design decisions, data assimilation, and forecast modeling decisions; 2) risk reduction for significant observing system investments; and 3) optimization of NOAA's observing system portfolio within resource and time constraints.

Earth System Prediction Capability (\$1,100,000)

NOAA will assist national resource, infrastructure, and emergency planners by extending numerical weather prediction (NWP) forecast periods out to one-year time scales. The primary goal of Earth System Prediction Capability (ESPC) is to develop a national capability to predict hazards on intraseasonal to interannual scales using high resolution, extended range, seamless global earth system models (atmosphere, ocean, waves, land, cryosphere, and stratosphere). These predictions will allow for public warning of high-impact environmental events as well as the ability to contribute important environmental information for resource and infrastructure planning prior to and during these events.

ESPC is a partnership between five Federal agencies: NOAA, the Department of Defense (Navy, Air Force), NASA, the Department of Energy, and the National Science Foundation. ESPC will work collaboratively and with academic partners to promote the open exchange of models and data via the Earth System Modeling Framework Common Modeling Architecture.

In particular ESPC will develop a 0 to 100 day pilot project, which will combine existing capabilities to run models that show improved forecasts. ESPC will study predictability for five specific focus projects of societal need:

- *Extreme Weather Events:* Predictability of Blocking Events and Related High Impact Weather
- *Seasonal Tropical Cyclone Threat:* Tropical Cyclone Likelihood, Mean Track, and Intensity
- *Arctic Sea Ice Extent and Seasonal Ice Free Dates:* Weekly to Seasonal Timescales
- *Coastal Seas:* Predictability of Circulation, Hypoxia, and Harmful Algal Blooms (HABs)
- *Open Ocean:* Predictability of the Atlantic Meridional Overturning Circulation (AMOC)

These projects direct efforts toward improving forecast capabilities that will be valid across seasonal transitions and from year to year, intended for ultimate transition to operational use.

Attain MADIS Final Operating Capability at NWS (\$500,000)

NOAA proposes to sustain and enhance the Meteorological Assimilation Data Ingest System (MADIS), and facilitate MADIS achieving Final Operating Capability (FOC) at NWS. MADIS leverages partnerships to integrate observations from NOAA with partners' meteorological stations for a finer density, higher frequency observational database used by the greater meteorological community. These observations are quality controlled and converted into standardized formats to ensure their utilization by NOAA and the greater meteorological community. MADIS observations are used throughout the weather research and operational communities in the data assimilation phase and verification of weather forecast models. MADIS partners include the Cooperative Institutes CIRES and CIRA; international agencies; Federal, state, and local agencies (e.g., state Departments of Transportation); universities; volunteer networks; and the private sector (e.g., airlines and railroads).

Inland Flood Observing Strategies (\$700,000)

With this funding, the NOAA Unmanned Aircraft Systems (UAS) Program will work with Northern Gulf Institute (NGI) and CIFAR to develop and test an UAS observing strategy for regional river flood monitoring suitable to address the real-time observing needs of the 13 NOAA River Forecast Centers within the National Weather Service. The science focus will emphasize improved observing strategies for real-time observations and forecasting of river flooding. The results of a 2012 NOAA River Forecast Center workshop identified observing requirements which could benefit from the use of UAS technology. NGI and CIFAR are using the workshop results to outline an UAS observing strategy feasible for operational implementation. Funding will accelerate the testing and potential transition of an UAS solution into operations in a single year time frame. The one year study will provide NOAA a path forward on the use of this technology.

Dual Polarization Radar Optimization (\$600,000)

NOAA will fund additional grant opportunities for Cooperative Institutes (e.g., CIMMS) to work with the National Severe Storms Laboratory (NSSL) in support of the Nation's investment in the weather radar research enterprise. The funding will enable NWS forecasters to optimize the powerful new dual polarization capability currently being installed on the NEXRAD radars. The advancements in radar systems performance and improved data quality will help NOAA achieve its performance goals for: reduced false alarm rates for hail warnings; improved precipitation estimation accuracy (rainfall and snowfall); and improved flash flood and severe weather warning performance. The research will also improve the quality of data for all government and private sector consumers and winter weather assessments to help identify icing and other aviation hazards of interest to the Federal Aviation Administration.

This research directly supports the next generation of algorithms that use the new polarimetric data designed to significantly improve hurricane/tropical and continental precipitation estimation and hydrometeor classification, as well as winter weather events. As each of the Nation's 160 NEXRAD radars are upgraded to dual polarization, unique patterns in the data (polarimetric signatures) are showing promising improvements in detection and short-term forecasting of significant severe weather and winter weather events. NOAA will develop techniques to automatically detect these patterns, and information to guide training material for NWS forecasters in recognizing and understanding these patterns.

This research will also address the need to improve polarimetric data quality which is imperative for downstream applications such as estimating precipitation and the assimilation into numerical models to improve forecasts. NOAA identified the following areas of polarimetric data quality improvements as critical to forecasters, algorithm developers, and numerical modelers: improved techniques to remove ground clutter targets, better estimation of winds, improved polarimetric algorithms, and better automated calibration of the radar.

Statement of Need and Economic Benefits:

Quantitative Observing System Assessments

NOAA devotes approximately \$2 billion to the deployment, operation, and maintenance of observing systems, as well as the research and technology development of those systems and their operational improvement. The assessments developed by this activity will be used to improve NOAA's ability to build the integrated capability and capacity in a cost effective manner to inform key future observing system decisions.

Earth System Prediction Capability (ESPC)

As identified in NOAA's Next Generation Strategic Plan, the societal need for predicting hazardous weather on regional spatial scales and annual time scales is currently largely unmet. Assessments of potential cost savings to society due to improved knowledge of earth system conditions are limited and uncertain. However, the NOAA document *Value of a Weather-Ready Nation* (2011) collects assessments of weather savings and costs from numerous sources, with dollar amounts ranging from \$166 million saved by more efficient electricity generation, up to \$50-60 billion lost to catastrophic storms. This effort is consistent with recommendations from the National Academy of Science reports *When Weather Matters* (2010) and *Completing the Forecast* (2006), as well as recommendations described in a recent article in the *Bulletin of the American Meteorological Society* (*Unified Modeling and Prediction of Weather and Climate*, Brown et al., BAMS 2012).

Attain MADIS Final Operating Capability at NWS

MADIS is used to improve weather forecast and forecasting services provided not only by the National Weather Service but also over 1000 other public and commercial sector forecast providers and users. MADIS improves the forecast by creating and making available to the national weather enterprise a very high-density observation network composed of data collected from hundreds of state, local, and private sector services. MADIS leverages this otherwise unavailable data and enables its incorporation into weather prediction models. These models produce forecast products and provide verification and validation of forecast quality of the weather prediction models. This is of critical value in increasing forecast accuracy and lead times that support the health and safety of the American people. Data provided through MADIS are also used extensively in supporting the greater efficiency and effectiveness in operations ranging from wild land firefighting and prevention to over-the-road trucking, road maintenance, snow removal, rail transportation and commerce planning.

Inland Flood Observing Strategy

The 13 NOAA River Forecast Centers are continuously working to exploit any technological advancement that will allow them to more accurately and precisely predict river, lake, and levee conditions. Timely information is critical for accurate situational awareness of rapidly changing flood conditions. Unmanned Aircraft System (UAS) observations may be suitable to fill observational gaps in the United States Geological Survey (USGS) stream gauge network. Also, as NWS hydrologic capabilities improve, UAS observations could be used for input to validate and verify areal flood inundation models. The UAS Program demonstrated that a low altitude Puma UAS increases the observing range of a NOAA ship or boat by 20 km for the cost of \$15 per hour. The goal is to pursue similar performance capabilities for the NOAA River Forecast Centers.

Dual Polarization Radar Optimization

The primary tool for issuing local storm warnings for flash floods, tornadoes, severe thunderstorms, and hazards associated with landfalling hurricanes is Doppler weather radar. The new NEXRAD radar upgrade called Dual Polarization allows NEXRAD to transmit and receive signals in two planes (instead of the current single plane) enabling collection of a second dimension of atmospheric data. This modification has been shown to greatly improve the radar's accuracy in precipitation estimation and differentiation of types of weather phenomena (e.g., rain, hail, snow, freezing rain, etc.). The outcome will improve: warnings to the public for flash floods; identification of and warnings for tornadoes, severe hail, dangerous freezing rain, and snow; and water management capability.

Dual polarization optimization will ensure that NOAA fully takes advantage of the expected benefits from this new radar technology, which include:

- Improvements in flash flood warnings and water management.
- Greatly improved probability of hail detection, hail size estimation, and reduction of the false alarm rate will all contribute to improved severe weather warnings.
- Identification of specific tornado debris clouds, a capability which will support greater areal specificity in tornado warnings for rain-wrapped and nighttime tornadoes. This improved accuracy will increase public confidence in tornado warnings.
- Improved capability to distinguish between non-meteorological scatterers (i.e., birds) and meteorological scatterers (i.e., precipitation) resulting in higher quality data used across the NWS enterprise and more accurate weather products.
- Improved NWS training material and automated detection tools of unique polarimetric signatures that will aid NWS forecasters in better interpreting rapidly developing severe and winter weather situations, thereby improving warnings and short term forecasts for the public.

Base Resource Assessment:

The base resources for this activity are described in the Weather and Air Chemistry Research base narrative.

Schedule and Milestones:

Earth System Prediction Capability

FY 2014

- Identify global model candidates for an earth system forecast suite and create a system to begin running fully developed numerical models regularly for specific case studies to evaluate model performance for ESPC focus area case studies.

FY 2015

- Begin running models regularly that have met standard ESPC criteria for evaluation and improvement and use results from the analysis of case studies to identify and formulate model improvements for the ESPC focus areas. Begin sharing model data and results with operational offices within the National Weather Service.

FY 2016

- Implement proposed model improvements and evaluate impact on predictions of case studies and current high-impact weather events.

Inland Flood Observing Strategy

FY 2014

- Finalize field mission test plans for the Lower Mississippi and Alaska river regions (Quarter 1).
- Conduct field missions and prepare observation impact, cost benefit and operational effectiveness analysis (Quarter 4)

FY 2015

- Transition UAS observing strategy into operations

Dual Polarization Radar Optimization

FY 2014

- Provide training material on unique, polarimetric signature/patterns useful for severe and winter weather situations to the NWS Warning Decision Training Branch (Quarter 1).
- Support NWS Radar Operations Center (ROC) in operational implementation of radar data quality algorithms (Quarter 3).
- Deliver improvements to QPE and HCA; work closely with NWS ROC and NWS Office of Science and Technology to assure operational implementation (Quarter 4).
- Deliver algorithms for the automated detection of Tornadic Debris Signature, work closely with NWS ROC and NWS OST to assure operational implementation (Quarter 4).

Deliverables:

Earth System Prediction Capability

FY 2014 – FY 2018

- Improved 0 to 100 day predictions
- Model upgrades, re-evaluation against diagnostics

MADIS

- Complete MADIS Final Operating Capability (FOC) on primary and backup operational systems running at NWS (FY 2015, Q4).
- After MADIS FOC, double the number of observations provided through MADIS every three years to support high resolution models of 3km and less (FY 2018, Q4).

Inland Flooding Observing Strategy

- Transition of UAS inland flooding observing strategy into operations at a minimum of two NOAA River Forecast Centers (FY 2014)

Dual Polarization Radar Optimization

FY 2014

- Successful delivery of training material to the NWS Warning Decision Training Branch
- Successful completion of TDS algorithm development, testing and delivery to the NWS ROC
- Successful delivery of QPE and HCA improvements to the NWS ROC
- Successful operational deployment of CLEAN-AP and SPRT to the NEXRAD WSR-88D's (dependent upon NWS ROC's ability to integrate)

Performance Goals and Measurement Data:

Performance Measure: Number of case studies of specific meteorological/oceanic events related to the five ESPC focus areas (cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	0	0	2	5	8	11	14
Without Increase	0	0	0	0	0	0	0
Description: The cumulative number of in-depth case studies pursued each year to diagnose model deficiencies at representing physical processes and prescribe model improvements.							

Performance Measure: Number of model upgrades and improvements (cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	0	0	1	2	3	4	5
Without Increase	0	0	0	0	0	0	0
Description: The cumulative number of numerical model improvements to the models being tested in Earth System Prediction Capability leading to better representation of physical processes and hence better forecasts of high-impact weather phenomena.							

Performance Measure: Number of scores showing improvement over baseline (cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	0	0	0	0	1	2	3
Without Increase	0	0	0	0	0	0	0
Description: The cumulative number of numerical model skill scores showing improvement over an established baseline.							

Performance Measure: Number of publications (cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	0	0	0	5	10	15	20
Without Increase	0	0	0	0	0	0	0
Description: The cumulative number of peer-reviewed publications documenting model improvements.							

Performance Measure: Cumulative percentage increase in number of daily observations ingested by MADIS	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	0%	0%	0%	0%	33%	66%	100%
Without Increase	0%	0%	0%	0%	10%	20%	30%
Description: Increasing the number of quality-controlled atmospheric observations to create a high-density observation database for assimilation into weather prediction models is key to improving the accuracy of the models and operational forecasting services, particularly at finer resolutions of 3km and less. With the increase, MADIS will be able to accelerate the number of new observation datasets into the system.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Weather and Air Chemistry Research
Program Change: Laboratories and Cooperative Institutes Base

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	976
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	3,400
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> \$4,376

Weather and Air Chemistry Research Laboratories and Cooperative Institutes: Wind Boundary Layer Research to Support Improved Forecasts (Base Funding: \$0 and 0 FTE; Program Change: +\$2,855,000 and 0 FTE): NOAA requests an increase of \$2,855,000 and 0 FTE for a total of \$2,855,000 and 0 FTE for wind boundary layer research to advance weather forecast quality and accuracy, and to provide essential information to the clean energy industry.

Proposed Actions:

NOAA proposes to improve the Nation's understanding of the atmospheric phenomena driving and determining boundary layer winds. Current knowledge of wind is focused on the area very low to the ground and at altitudes where aircraft fly and storms occur. Very little is known about the wind at mid-altitudes, the height at which we deploy wind turbines. A better understanding of those mid-level altitudes will allow us to advance weather forecast quality and accuracy and allow for more accurate predictions of wind power production. To achieve this, the following two actions are proposed:

1. *Deploy wind testbeds.* To improve short-term operational predictions, NOAA will deploy wind testbeds in different regions of the Nation. Regional testbeds are needed because different factors that influence weather, including wind speeds and wind direction, can vary by region. NOAA will deploy testbeds in two of the following regions, to be determined based on priority and lease availability: the Pacific Northwest, offshore along the Atlantic Coast, the Appalachian region, the inter-mountain west, and California. These testbeds will help determine the optimal mix of instrumentation needed for wind resource characterization and forecast improvement. NOAA will perform scientific analyses and develop Numerical Weather Prediction (NWP) models using the data collected at the testbeds.

These testbeds will be comprised of standard instruments for obtaining wind measurements, such as wind profiling radars and sodars (sound detection and ranging to measure wind profiles). In addition, a pulsed Doppler-LIDAR (light detection and ranging technology) system will be purchased and adapted for remote operation and read-out. The LIDAR data will be especially valuable in the post-project analysis of times when the forecasts were wrong, for model initialization during research model runs to diagnose and improve model performance, and for verification of model output.

2. *Improve the HRRR weather model.* Additional operational observations will be obtained and assimilated into the High-Resolution Rapid Refresh (HRRR) weather model. NOAA will leverage high performance computing investments that the agency has already made to facilitate improved NWP forecasts. NOAA will use the additional observations collected at the testbeds to initialize the HRRR model and equip it with more accurate initial values of weather parameters to produce a more accurate forecast of wind speeds and direction. Even a small improvement in wind *speed and direction* forecast accuracy will result in a very large improvement in the accuracy of our wind *power* prediction because an increase in wind speed increases the amount of wind power produced that is equal to the cube of the wind speed.

Funding in FY 2014 will go toward: Cooperative Institute research; leases for the wind testbeds; deploying, maintaining, and operating the instruments; modeling, data analysis, and forecast verification; and high performance computing. NOAA will continue analysis of data collected during the Department of Energy-funded Wind Forecast Improvement Project (WFIP), the 12-month field campaign which ended in September 2012 to improve upon data assimilation of private sector observations and model physics.

NOAA will provide key information to assess the operational observations needed for wind resource characterization and forecast improvement. Recognizing that advances are being made in observing

system simulation experiments (OSSEs), NOAA will review the state of the art in OSSEs and will assess the viability of using OSSEs to inform our assessment of an adequate observing system.

Statement of Need and Economic Benefits:

Improved wind predictions will allow the Nation to obtain larger amounts of energy from renewable resources, use current energy sources more efficiently (i.e., fossil fuels and nuclear energy), reduce the cost of renewable energy, and improve grid stability. There are two main reasons that more accurate forecasts of winds will save money. First, improved wind predictions will reduce the -wind-integration cost levied on wind energy that is based primarily on the fact that wind is a variable energy source (not dispatchable) and there are inaccuracies in predictions of wind energy across given time periods. Improved forecasts of winds and the resulting increases in accuracy of predicting wind energy production will lower wind-integration charges. Second, improved forecasts of winds will allow grid operators to use smaller amounts of fossil fuel reserves. Once grid operators have more confidence that wind farm operators can deliver the amount of wind energy they schedule (promise) to provide in the next few hours and in the next 24 hours, operators will not have to keep as many spinning and operational reserves on-line and ready to compensate for errors in wind energy forecasts. These improvements in observations and predictions are necessary before renewable energy can provide a significant portion of the total U.S. energy supply.

Additionally, this initiative will contribute to improvements in other boundary layer weather applications, such as aviation forecasts, fire weather, air quality, severe weather, and dispersion predictions for the release of hazardous materials into the atmosphere.

Base Resource Assessment:

Currently no base resources are dedicated to this effort.

Schedule and Milestones:

FY 2014

- Purchase a pulsed Doppler-lidar (light detection and ranging technology) system and adapt for remote operation and read-out.
- Continue analysis of WFIP data.

FY 2014 – FY 2018

- Improve HRRR weather models.
- Perform model analysis and evaluate the meteorological models. This work continues in FY 2015 and FY 2017 without additional testbeds in those years.
- Ingest and assimilate additional observations, e.g., from wind farms, to improve weather forecast model output.

FY 2014, FY 2016, and FY 2018

- Deploy and operate testbed in meteorologically distinct regions of the Nation. Each testbed would remain in operation for one year.

Deliverables:

- Improved research-grade weather forecast capability designed for transition to operations.
- An assessment of the optimal mix of instrumentation needed for wind resource characterization and forecast improvement possibly using observing system simulation experiments (OSSEs).

Performance Goals and Measurement Data:

Performance Measure: Number of Wind Testbeds Established (yearly). Each testbed would remain in operation for one year.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	1	0	1	0	1
Without Increase	N/A	N/A	0	0	0	0	0
Description: Deploying a testbed refers to the installation of meteorological equipment, such as wind profiling radars and sodars, which collect meteorological observations for use in weather models to provide better weather forecasts. Observations are also used to determine forecast quality and understand forecasting error for later improvements.							

Performance Measure: Cumulative improvement in accuracy of forecasted wind speed and direction and accuracy of forecasted timing, amplitude, and duration of wind-ramp events (in testbed regions)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0%	3%	4%	5%	6%
Without Increase	N/A	N/A	0	0	0	0	0
Description: The skill of a forecast is measured by the error, most often by the root mean square error (RMSE). The RMSE is a standard term in statistics that measures the differences between values predicted by a model and the values actually observed.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Weather and Air Chemistry Research
Program Change: Wind Boundary Layer Research to Support Improved Forecasts

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	15
22 Transportation of things	5
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	12
23.3 Communications, utilities and miscellaneous charges	10
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	270
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	300
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,243
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$2,855

Weather and Air Chemistry Laboratories and Cooperative Institutes: Unmanned Aircraft Systems: (Base Funding: \$3,023,000 and 4 FTE; Program Change: +\$2,000,000 and 0 FTE):

NOAA requests an increase of \$2,000,000 and 0 FTE for a total of \$5,023,000 and 4 FTE to accelerate the next-generation weather observing platforms. Specifically, the funds will be used to fly 10 NOAA-dedicated Global Hawk missions using NASA's Hurricane Severe Storm Sentinel (HS3) payload sensors, facilities, science team, and aviation personnel to evaluate the feasibility and benefit of real-time HS3 data to NOAA operational forecast improvements of tropical cyclone track and intensity UAS Program.

Proposed Actions:

The requested \$2 million will support a Memorandum of Understanding with NASA to fly 10 NOAA-dedicated Global Hawk missions using NASA-funded Hurricane Severe Storm Sentinel (HS3) payload sensors, facilities, and science team and aviation personnel. UAS Program base funds will support NOAA science and aviation personnel participation in the HS3 field phase to evaluate the feasibility and benefit of real-time HS3 data to NOAA operational forecast improvements of tropical cyclone track. In addition, hurricane intensity UAS Program funding will be used to accelerate the development of UAS weather observing systems for transition into operations.

The focus of this effort to improve operational forecasts of high impact weather will directly contribute to the objective of the NOAA Weather-Ready Mission Goal -to reduce loss of life, property, and disruption from high impact events. This work will build upon NWS and NOAA Hurricane Forecast Improvement Project efforts which have demonstrated advancements in numerical weather prediction of hurricanes and Pacific winter storms using targeted observations from manned aircraft with shorter range, endurance, and flight altitude. The results of this effort will also include a cost and operational effectiveness analysis of high altitude UAS to address the NOAA Science and Technology Enterprise objective for -accurate and reliable data from sustained and integrated Earth observing systems. In the future, NOAA will collaborate with NASA on studies of Pacific weather systems which may contribute to severe weather in the western, central, and eastern United States as the weather systems move across sea and land. These efforts will provide a thorough understanding of the feasibility of high altitude Global Hawk UAS to deliver measureable forecast improvements and inform a NOAA Go/No Go decision to either halt or continue to acquisition planning of operational Global Hawk platforms, payloads and services in FY 2018.

Background:

NOAA and NASA's Office of Marine and Aviation Operations (OMAO) have worked with the NASA Earth Science Program Office and Dryden Flight Research Facility since 2005 to advance the capabilities of Unmanned Aircraft Systems (UAS) for the Earth science observing needs of both agencies. NASA and NOAA are both interested in developing UAS observing capabilities for weather research and operations and have successfully demonstrated the feasibility of the high altitude Global Hawk UAS to deliver real-time meteorological information to weather researchers and forecasters. NOAA reached a significant milestone during the 2012 field phase of the NASA Hurricane Severe Storm Sentinel (HS3) experiment when vertical atmospheric profiles of tropical cyclone temperature, humidity, and winds were delivered to the National Hurricane Center in real-time for forecaster situational awareness.

NASA intends to fly two Global Hawks from Wallops Island, VA during one month each of the 2013 and 2014 hurricane seasons in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico. The two UAS will collect tropical cyclone information with one aircraft focusing on the inner core of a tropical cyclone while the other samples the surrounding environment. HS3 is a research experiment that could be expanded with additional NOAA resources to serve as an operational testbed for real-time assimilation of Global Hawk observations for numerical weather prediction.

Statement of Need and Economic Benefits:

The National Hurricane Center estimates reconnaissance aircraft flying 8-9 hours per mission are only able to observe 30% of the lifetime of tropical cyclones in the Atlantic and even less in the eastern North Pacific (~5%). Satellite assets may only be able to provide information once or twice a day. UAS such as the Global Hawk flying 24 hours per mission could significantly increase information needed to better understand and predict tropical cyclone lifecycle development. The Office of Naval Research results show a 10-30% improvement of hurricane track and intensity in the 3 – 5 day forecast of a hurricane research model using Global Hawk HS3 dropsondes along with other traditional data sources. These early results cannot confirm operational forecast improvements will be achieved but they are very encouraging and suggest Global Hawk performance capabilities should be seriously explored. Cost benefit analysis of Global Hawk concept of operations will be conducted annually with NASA to determine the accuracy of the costing information and to identify economy of scale savings for operational weather missions.

Base Resource Assessment:

The base resources for UAS are described in the Weather and Air Chemistry Laboratories and Cooperative Institutes base narrative.

Schedule and Milestones:

FY 2014

- First Quarter – Select and assemble NOAA science and aviation teams.
- Second Quarter – Procure dropsonde supplies and coordinate mission plans with NASA.
- Third Quarter – Finalize data assimilation strategy for numerical weather prediction
- Fourth Quarter – Conduct field missions and prepare observation impact, cost benefit and operational effectiveness analysis

FY 2015 – FY2017: Collaborate with NASA to conduct additional impact studies for other weather systems such as Pacific and Alaska storms based on aircraft availability.

FY 2018: Prepare final observation impact, cost benefit and operational effectiveness analysis to inform NOAA Go/No Go acquisition decision.

Deliverables:

- Annual report of observation impact, cost benefit, and operational effectiveness analysis.
- Annual submission of research results to peer-reviewed journal.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Number of NOAA-dedicated Global Hawk missions conducted per year for real-time data assimilation	Actual	Target	Target	Target	Target	Target	Target
With Increase	N/A	N/A	10	10	10	10	10
Without Increase	0	0	0	0	0	0	0

Description: The NOAA UAS Program will collaborate with the NASA Earth Science Office to plan and execute 10 Global Hawk missions per year with a combined NASA and NOAA payload to determine the effectiveness of targeted observations from a high altitude, long range, and long endurance UAS for real-time data assimilation into weather forecast models and improved prediction of high impact weather events. These missions and this evaluation cannot be conducted without the funding increase.

Performance Measure: Percentage of numerical weather forecast improvement attributed to Global Hawk observations in a research setting	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	10%	10%	10%	10%	10%
Without Increase	0	0	0	0	0	0	0

Description: This funding increase is requested to test the hypothesis that a high altitude, long range, and long endurance UAS will provide unique high spatial and temporal resolution information capable of improving weather prediction skill by 10% or more for high impact weather events.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Weather and Air Chemistry Research
Program Change: Next Generation Weather Observing Platforms: Unmanned Aircraft Systems

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	500
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	1,500
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> \$2,000

Weather and Air Chemistry Research Programs: Tornado and Severe Storm Research/Multi-Function Phased Array Radar: (Base Funding: \$10,104,000 and 4 FTE; Program Change:

+\$2,920,000 and 0 FTE): NOAA requests an increase of \$2,920,000 and 0 FTE for a total of \$13,024,000 and 4 FTE to accelerate the development of next-generation weather observing platforms. Specifically, these funds will be used to develop and operate a demonstrator phased array radar capable of simultaneously performing weather surveillance and aircraft tracking, as called for in the MPAR program plans.

Proposed Actions:

Numerous studies have demonstrated the importance of observing the state of the lower atmosphere (a region that is not particularly well-sampled by satellites) in addition to the environment surrounding storms, and the storms themselves, for the accurate prediction of severe weather. This new funding will focus on observations research for severe storms to help accelerate the development of next-generation weather observing platforms to benefit NOAA's operational mission. This is consistent with the advice provided in the National Academy of Science report, "Observing Weather and Climate From the Ground Up" (2009). The results from this research will benefit NOAA's modeling activities as well as provide information to inform decisions on the development and adoption of future observing platforms.

Initially, the primary focus will be on Multifunction Phased Array Radar (MPAR). The funding will develop and operate a demonstrator phased array radar capable of simultaneously performing weather surveillance and aircraft tracking, as called for in the MPAR program plans. This demonstrator will enable the program to bring all of the MPAR components together into an operating radar system to demonstrate the full capabilities of the system.

The Federal Aviation Administration (FAA) has recently decided to commit additional funding beginning in FY 2014 toward this MPAR demonstration, so the proposed NOAA increase will help fund NOAA's participation in this important activity by building a larger antenna array, demonstrating the weather surveillance mission requiring dual polarization technology, as well as the development of software to control the scanning strategies and signal processing for the multi-mission function.

As pressing MPAR needs are satisfied, other candidate advanced observing technologies will be evaluated for their ability to address high priority NOAA data requirements for modeling and obtaining situational awareness of severe storm environments.

NOAA will periodically assess new observing technologies and its modeling and observing requirements to identify observing technologies that have the potential for significantly improving NOAA's severe storm warnings and predictions and/or significantly reduce costs.

Statement of Need and Economic Benefits:

The assimilation of lower atmospheric data, as well as data from future radar systems, is expected to improve predictions and significantly reduce injuries and loss of life due to severe weather events. Along with major advances in supercomputers, the ability to use environmental observations (assimilation), global computer models that resolve down to thunderstorm scales, and ensembles of models and model runs all enable revolutionary advances in predictions of severe storms. The NOAA document Value of a Weather-Ready Nation (2011) collects assessments of weather savings and costs from numerous sources, with dollar amounts ranging from \$166 million saved by more efficient electricity generation, up to \$50-60 billion lost to catastrophic storms.

With regard to MPAR, Congress established a joint R&D program for NOAA, DOD, and FAA to investigate the feasibility and benefits of using phased array radars for improving severe weather forecast and warning systems. By 2020, more than 350 FAA radars and by 2025 nearly 150 NEXRAD weather radars will either need to be replaced or have their service life extended. If MPAR is successful and implemented as a replacement radar, estimated multi-agency savings could total \$4.8 billion in acquisition costs (\$1.8 billion if replacing all existing radars with similar technology) and life cycle costs over 30 years (\$3.0 billion due to fewer radars and decreased operations and maintenance costs) as documented in the *Federal Research and Development Needs and Priorities for Phased Array Radar (FCM-R25-2006)*. These potential savings to the U.S. taxpayer will only be realized if the MPAR program can successfully demonstrate, through the work proposed here, that phased array radar can perform weather surveillance and aircraft tracking missions simultaneously

Base Resource Assessment:

The base resources for MPAR are described in the Weather and Air Chemistry Research Programs base narrative.

Schedule and Milestones:

FY 2014

- Develop plans in collaboration with the FAA for a full scale MPAR demonstrator.
- Begin design of software interface for radar control and signal processing of MPAR demonstrator leveraging work being done on the existing NWRT.

FY 2015

- Identify additional candidate ground-based observation platforms to study.
- Engage industry to begin fabrication of MPAR demonstrator.

FY 2016

- Begin field testing selected ground-based observation platforms.
- Test radar control and signal processing software.

FY 2017

- Begin assimilation of observing system data into numerical models and analyze effect on model predictions and determine feasibility of operational implementation along with future operational requirements.
- Demonstration of MPAR prototype and multi-function software.

FY 2018

- Use test results from MPAR prototype to inform Go/No Go decision.
- Identify candidate ground-based observation platforms to study.
- Assess results of prior-year evaluations

Deliverables:

- Prepare for and participate in FAA's Investment Analysis Readiness Decision (IARD) in December 2014.
- Prepare for and participate in FAA's Initial Investment Decision (IID) in fall of 2016.
- Prepare for and participate in FAA's Final Investment Decision (FID) in late December 2017.
- Observational data for inclusion in NOAA's research and operational models.
- Information to inform future development and procurement of ground-based observing systems.

Performance Goals and Measurement Data:

Performance Measure: Number of major milestones completed to support NOAA and FAA decision point. (cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	11	14	18	20	22
Without Increase	2	7	9	11	14	15	16
Description: Cumulative number of successfully completed major milestones within Phased Array Radar Risk Reduction Activity such that NOAA and FAA have the information needed to make a Go / No-Go decision on whether to replace existing radar systems with MPAR.							

Performance Measure: Number of observing platforms evaluated in a year.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	1	1	2	2	3
Without Increase	N/A	N/A	0	0	0	0	0
Description: The number of observing systems evaluated each year for their ability to improve the detection and/or prediction of severe weather.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Weather and Air Chemistry Research
Program Change: Tornado and Severe Storm Research/Multi-Function Phased Array Radar:
Next Generation Weather Observing Platforms

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<hr/> 0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	1,460
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	1,460
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<hr/> \$2,920

The following exhibit shows the summary object class detail for U.S. Weather Research Program changes less than \$100,000. Please contact the Department of Commerce if details for any of these changes are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Weather and Air Chemistry Research
Program Change: U.S. Weather Research Program

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(63)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$(63)

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES
SUB-PROGRAM: OCEAN, COASTAL, AND GREAT LAKES RESEARCH

The objectives of the Ocean, Coastal, and Great Lakes Research sub-program are to:

- Improve understanding of the physics, chemistry, and ecology of oceanic, coastal, and Great Lakes systems, including changes in these environments and the impacts of stressors such as changes in temperature, changes in ocean and Great Lakes chemistry, pollution, and invasive species;
- Improve predictive capability for oceanic, coastal, and Great Lakes processes, including developing predictive models for ecosystems, and coupling these with physical and biogeochemical models to create comprehensive Earth System Models for these environments;
- Translate ocean, coastal, and Great Lakes science into services through tools developed for resource managers, policy makers and the public, and through increased education and outreach;
- Develop and use cutting edge technology for understanding and exploring the ocean, coasts and Great Lakes.

The ocean, coasts, and Great Lakes are closely tied to the Earth's weather and climate, and a sound understanding of these environments is essential to NOAA's research portfolio as a whole. OAR addresses this activity through core programs, which include the National Sea Grant College Program, the Office of Ocean Exploration and Research, NOAA's Ocean Acidification Program, Sustained Ocean Observations managed by the Climate Program Office, as well as through research conducted at OAR Laboratories and Cooperative Institutes. OAR's ocean, coastal, and Great Lakes programs are diverse, unique and essential to NOAA's mission. They provide science to coastal communities from a wide network of university partners, develop and use cutting edge technology to explore the depths of the ocean and share that world with scientists and the public, and accelerate our understanding of changes in our oceans and Great Lakes. More information on research in this sub-activity is available at <http://www.research.noaa.gov/oceans/>.

LABORATORIES AND COOPERATIVE INSTITUTES

Great Lakes Environmental Research Laboratory (GLERL)

Research conducted at GLERL advances understanding of the physical, chemical, and biological processes in the lakes, and how they affect ecosystem dynamics. This knowledge leads to the development of information and tools for coastal constituents and Federal, state, and international decision and policy makers. GLERL's three main areas of research include: observing systems and advanced technology, ecosystem dynamics, and ecological modeling and forecasting. They track changes in the lakes through long-term observations of biological, chemical, and physical variables in the lakes, conduct laboratory and field experiments to define and understand the ecological processes that drive and connect these variables, and develop, test, and implement ecological models to predict the impacts of changes (e.g., invasive species, climate change, nutrient loading, and overfishing) on Great Lakes ecosystems.

GLERL has collected over 30 years of biological, chemical, and physical data from targeted sites in the Great Lakes. These databases and active observation networks provide a means to understand changes in the physical environment, and to evaluate biological trends in the context of natural variation. In addition, GLERL develops models used for ecological forecasting which predicts the

effects of biological, chemical, physical, and human-induced changes on ecosystems and their components. The models can inform decisions about how to respond to extreme natural events like storms, how to deal with human impacts from such things as storm water runoff and oil spills, and how best to manage resources such as recreational fisheries. GLERL is developing new remote sensing products, observing platforms, and instrumentation to continuously improve NOAA's observational capabilities in the Great Lakes region. New and innovative sensors, sensor deployment systems, and data management techniques are providing data and information needed to improve our understanding of regional ecosystems in all of the Great Lakes, in order to provide decision support for regional resource managers. The observation systems also contribute to forecast model research and support NOAA goals under the U.S. Integrated Ocean Observing System.

Pacific Marine Environmental Laboratory (PMEL)

PMEL conducts interdisciplinary scientific investigations in oceanography and atmospheric science. The major research programs at PMEL that fall under the sub-program of Ocean, Coastal, and Great Lakes Research include the Vents Program, Ecosystems and Fisheries Oceanography Coordinated Investigations (Eco-FOCI) and ocean acidification research (details below under Other Ecosystem Programs.)

The **Vents Program** at PMEL focuses primarily on interdisciplinary exploration and research within the deep, or inner, ocean. The inner ocean constitutes the largest biome on Earth, yet remains poorly explored and poorly understood. A firmer understanding of the inner ocean is thus essential to NOAA's goal of a holistic understanding of marine ecosystems. Within NOAA, only the Vents Program holds the capability for discovering, understanding, and predicting the interactions between the ocean and the solid earth, which include submarine volcanoes and hydrothermal vents. The Program's exploration and research activities reveal the importance and diversity of these continuous interactions, which affect the cycles and fate of ocean nutrients and marine carbon. These processes create and sustain mineral and biological (macro- and micro-) resources that may lead to new classes of pharmaceuticals. Continuing discoveries reveal that submarine vents create highly-acidic, animal-rich habitats that provide a broad array of natural laboratories to study the effects of ocean acidification. The Vents program also uses ocean acoustics for global-ocean detection of earthquakes and magmatic events, quantifying ambient ocean sound and noise, and detection of threatened and endangered cetacean species.

The **Ecosystems and Fisheries Oceanography Coordinated Investigations (Eco-FOCI)** is a collaborative research effort by scientists at PMEL and the Alaska Fisheries Science Center to improve the understanding of the productive ecosystems in the Gulf of Alaska, Bering Sea, and Arctic waters, which support economically valuable fisheries (e.g., pollock, shellfish, and salmon). This research provides predictions and forecasts to the North Pacific Fishery Management Council (NPFMC) which is responsible for allocating fish landings by commercial fishermen. Additionally, EcoFOCI is part of the team that provides an annual ecosystem assessment report card for the Bering Sea to the NPFMC. EcoFOCI research supports integrated ecosystem research programs in the Bering Sea and Gulf of Alaska that form the basis for two Integrated Ecosystem Assessments. EcoFOCI also supports other NOAA missions by including equipment such as carbon dioxide sensors and passive listening devices for marine mammals on their existing moorings.

Atlantic Oceanographic and Meteorological Laboratory (AOML)

AOML is a multi-disciplinary laboratory, with research spanning the topics of hurricanes, coastal ecosystems, oceans and human health, climate studies, global carbon systems, and ocean observations. AOML's research programs are augmented by the Cooperative Institute for Marine and Atmospheric Studies (CIMAS), a joint enterprise with the University of Miami's Rosenstiel School

of Marine and Atmospheric Science. Some of the research programs at AOML that fall under the subactivity of Ocean, Coastal, and Great Lakes Research are detailed below.

The **Integrated Coral Observing Network Program** at AOML acquires and integrates near real-time data from *in situ*, satellite, radar and other data sources from more than 120 sites associated with important U.S. and international coral reef ecosystems. Much of the data collection for this program is accomplished through meteorological and oceanographic monitoring stations, which measure physical, chemical, and biological parameters above and below the surface of the ocean. The data collection and processing system has been successfully used in modeling and alerts of coral bleaching conditions in the Florida Keys and the Great Barrier Reef. NOAA intends to expand this alerting capability to other coral reef areas, and to better refine and enhance its alerting capabilities. Ecological forecasts help Marine Protected Area managers and researchers understand and predict coral reef ecosystem responses to environmental changes. The observing network also creates a long-term record of conditions at each of these sites, essential to understanding the impact of global climate change, as well as providing information for sound management decisions and long-term planning.

Coastal Ocean and Ecosystem Research Modeling and Technology conducts observational research and modeling, and develop and transfer tools and technologies to improve the capability to measure and understand the sources of degradation in coastal ecosystems and the resulting impact on ecosystem health and resilience, including implications to human health. This work seeks to enhance the incorporation of science into ecosystem restoration and ecosystem-based management decisions to facilitate improved management of coastal ecosystems, thereby maximizing ecosystem health and economic yield. Scientists work in cooperation with other NOAA Line Offices, other Federal, state, and local authorities, and academia to maximize research capability and results.

Schedule and Milestones:

FY 2014

- Establish and maintain long-term complementary data sets coincident with each reef-based ocean acidification observing platform (annually through 2018).
- Conduct regular cruises and sampling for monitoring of nutrients, microbes, Colored Dissolved Organic Matter (CDOM), and other anthropogenic source material that threaten the sustainability of coastal ecosystems, particularly those resulting from increasing urbanization and human use of the coastal zone (annually through 2018).
- Conduct research cruises to assess and evaluate the impact of Everglades restoration on Essential Fish Habitat in Florida Bay.
- Deploy molecular and microbial assays for measuring and tracking microbial pollution in coastal ecosystems, including recreational waters.
Develop a watershed-coupled Great Lakes Ice-circulation Model that includes all five lakes, and both biological and nutrient components.
- Develop and test community and food web models to assess the potential future biological invaders on Great Lakes ecosystems.
- Conclude synthesis phase of the Bering Sea Integrated Ecosystem Research Program and begin development of an integrated ecosystem assessment.
- Perform data analysis and evaluation of models for IPCC Assessment Report on Arctic (including Bering Sea) sea ice and temperature, and complete Fifth Assessment Report (Intergovernmental Panel on Climate Change AR5) (annually through 2017).
- Initiate collaboration to acquire time series, *in situ* data from carbon dioxide venting systems at Eifuku Volcano, Mariana Arc using the site as a natural laboratory for ocean acidification research.

- Complete field work, analysis and synthesis of work in the Chukchi Sea (sponsored by DOI/BOEM) consisting of moorings and hydrographic surveys of the water column to determine the relationships among climate change, ice thickness, and biological productivity (annually through 2016).
- Complete second year of field work, analysis and synthesis of Gulf of Alaska Integrated Ecosystem Research Program in coordination with the North Pacific Research Board and State of Alaska.
- Maintain observation network including biophysical moorings at two stations for the Distributed Biological Observatory. (FY 2014 – FY 2018)
- Incorporation of New Millennium Observatory (NeMO) seafloor observatory sensors and systems into the NSF-sponsored Ocean Observatories Initiative (OOI) cabled observatory.
- Conduct expedition to the New Millennium Observatory/Ocean Observatories Initiative (NeMO/OOI) cabled observatory on Axial Seamount to acquire data for eruption forecasting and maintaining time series of chemical and microbiological sampling to understand deep-sea ecosystems and the impacts and fate of volcanically produced ocean nutrients and carbon dioxide. Data will be made available to users in real time. (FY 2014 – FY 2018)
- Test and evaluate an acoustic real-time sensor in the Bering or Chukchi Sea in collaboration with EcoFoci and the National Marine Mammal Laboratory.

FY 2015

- Conduct ecosystem assessment for the Gulf of Alaska synthesis phase.
- Conduct ecosystem Assessment for the Gulf of Mexico.
- Produce a synthesis of deep volcanic eruption results to provide NOAA and the ocean science community with a quantitative global perspective of both short- and long-term marine ecosystem impacts of deep volcanic, and associated hydrothermal, activity.

Deliverables:

- Quality-controlled data acquisition and process studies to characterize carbonate chemistry dynamics within coral reef environments.
- Automated and validated ecological forecasts of coral bleaching as a result of data integration through the ICON program. Historical field observations and ecosystem forecast models will be used to develop web-based products that forecast coral bleaching events.
- An integrated conceptual ecosystem model and indicator set for south Florida coastal waters.
- Technical Report to describe current and chemical (nutrient) distributions in coastal waters in relation to known point sources (inlets and waste-water outfalls), to assist in assessing relative strengths of land-based sources of pollution over southeast Florida reef tracks.
- Use of molecular assays by NOAA partners/customers.
- Low-oxygen warning systems will be deployed and real-time results provided to water intake managers, protecting the drinking water quality of over two million coastal Lake Erie residents.
- Vessel-based measurements and other observing systems in the Great Lakes will provide data for satellite ground-truthing.
- Data and results from numerical models from the Ecosystem Observations in the Chukchi Sea made available to stakeholders and the general public for the purpose of understanding climate change, ecosystem shifts, and potential impacts on oil-development in the Chukchi Sea. (FY 2013, FY 2014)
- An annual, synthetic, ecosystem-based assessment of the eastern Bering Sea published in the Ecosystem Considerations Chapter of the Stock Assessment and Fishery Evaluation

reports delivered to the North Pacific Fisheries Management Council and contributions to at least two individual species stock assessments. (FY 2014 – FY 2018)

- Publication of the 2nd and 3rd special issue of the Bering Sea Integrated Ecosystem Research Program. (FY 2014 and FY 2015, respectively)
- Gulf of Alaska Integrated Ecosystem Research Program special issue published in an appropriate peer-reviewed journal. (FY 2014, FY 2015)
- Two special issues on the Synthesis of Arctic Research (SOAR) published in peer-reviewed journals and information delivered to stakeholders via internet, media, and Native village outreach. (FY 2015, FY 2016)
- Annual Arctic Report Card and outreach video: <http://www.arctic.noaa.gov/reportcard/>
- Coupled trophic model for use in ecosystem assessments for the Bering Sea. (annual)
- Regular contribution of data from 4 moored arrays in the Bering Sea and at least two arrays in the Chukchi Sea to year-round, long-term time series. This is accomplished through maintenance of the Bering Sea Climate and Ecosystem Observational Network. (FY 2014-2016)
- New/improved ship, seafloor *in situ*, and autonomous systems and sensors
- Updated and more precise forecast of timing for the next eruption at the NeMO and Ocean Observatory Initiative (OOI) seafloor observatory site in the caldera of Axial Volcano.
- Synthesis of results from Vents contributions to the U.S./Indonesia INDEX partnership (which will be integrated with an OER synthesis).
- Annual data and results from NOAA's exclusive access to the U.S. Navy's Sound Surveillance system (SOSUS) arrays as well as the deployable arrays of NOAA hydrophone assets.
- Annual synthesis of data and scientific results derived from Vents sensors and systems on the OOI cable to Axial Volcano.
- Annual synthesis of data and science results derived from ocean acidification measurements and experiments at Eifuku Volcano and other relevant sites.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percent of labs that have had formal expert peer reviews in the past 5 years and were rated -effectivell in terms of quality, mission relevance, and performance	100%	100%	100%	100%	100%	100%	100%
Description: This performance measure is recognized by the National Academy of Sciences report <i>Evaluating Federal Research Programs</i> , which states that -The most effective means of evaluating federally funded research programs is expert review. ll							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percentage of coral bleaching events successfully forecasted at monitored sites that support management decisions	78%	80%	82%	84%	86%	88%	90%
Description: This performance measure is for the continued improvement and production of coral bleaching forecasts used to identify events and support management decisions. Forecasts are developed using oceanographic data from <i>in situ</i> sensors at U.S. sites and validated in the field by host site collaborators. By comparing observations of bleaching with predictions made, the hit rate and false alarm rate of predictions can be calculated.							

Performance Measure: Cumulative number of tools, technologies, and information services that are used by NOAA partners/customers to improve ecosystem-based management (AOML contribution to GPRA 18c)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	N/A	3	5	6	7	8	9
Description: Work towards this performance measure represents the cumulative number of projects AOML partners/customers that use molecular and microbial assays or the data derived from those technologies for measuring and tracking microbial pollution in coastal ecosystems, including recreational waters. This research addresses NOAA's goals for healthy oceans and the generation of resilient coastal communities, thereby maximizing ecosystem health and economic yield.							

Performance Measure: Annual number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for management (GLERL contribution only)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	21	19	17	20	20	21	21
Description: This performance measure is associated with Measure 18a and reflects GLERL contribution only. The measure is for development and validation, by GLERL, of a harmful algal bloom warning system from real-time results provided to water intake managers protecting the drinking water of over 2 million coastal Lake Erie residents. <i>Microcystis aeruginosa</i> is the dominant bloom-forming, toxic cyanobacterium occurring in the Great Lakes. Preliminary studies have verified the presence of the cyanotoxin, microcystin in Lake Erie near water intake systems. In particular, microcystin concentrations have exceeded the recommended limit of 1 µg/L for drinking water (World Health Organization, 1998). This research will provide predictive models using baseline environmental data. This NOAA-wide performance measure is highlighting only one GLERL component. NOAA will continue to expand the number of ecosystems characterized for management.							

Performance Measure: Number of peer-reviewed papers published in the scientific literature each year documenting research that supports Great Lakes management	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	47*	35	35	35	35	35	35
Description: Peer-reviewed publications are a recognized benchmark of scientific productivity and research quality and significance supporting the decisions of managers and policy makers in the Great Lakes including regulation of water levels, siting of freshwater intakes for city water supplies, forecasts of beach contamination, and the forecast of environmental parameters used for recreation and shipping. *NOAA's actual number of publications can exceed targets based on the ability of data to be used for more than their original intended purpose.							

Performance Measure: Number of published peer-reviewed papers highlighting PMEL marine ecosystem research (per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	51*	28	28	28	28	28	28
<p>Description: Peer-reviewed publications are a recognized benchmark of scientific productivity related to PMEL/Vents and Ecosystems and Fisheries-Oceanography Coordinated Investigations (EcoFOCI) research. The Vents-related publications will advance our understanding of deep sea ecosystems and those of the EcoFOCI will increase knowledge of the North Pacific, Bering Sea, and Arctic ecosystems that will improve our current understanding, predictive ecosystem models, and management decisions in the face of climate change.</p> <p>*NOAA's actual number of publications can exceed targets based on the ability of data to be used for more than their original intended purpose.</p>							

Performance Measure: Number of ecosystem indicators contributed to the eastern Bering Sea Report Card	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	3	3	3	3	3	3	3
<p>Description: This is a new performance measure for the FY 2014 request. EcoFOCI will provide indicators of ecosystem health for the eastern Bering Sea to the annual publication of the Ecosystem Considerations chapter of the SAFE report to the North Pacific Fishery Management Council and for individual species stock assessments.</p>							

Performance Measure: Cumulative number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for management (PMEL contribution only)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	9	12	15	18	21	23	26
<p>Description: This measure is associated with Measure 18a and reflects PMEL contribution only. Vents interdisciplinary exploration and research will discover and characterize the ocean's still largely unknown deep micro- and macro-ecosystem diversity as well as provide new scientific data for understanding their critical relationships with ecosystems in the upper ocean's sunlit zone. Emphasis will be on discovery and characterization of deep ecosystem relationships to important NOAA goals including understanding ocean acidification, discovery and understanding of sources and sinks for carbon (particularly carbon dioxide) in the deep sea, and deep ocean nutrient sources and cycles. All of these efforts are essential to enable NOAA to achieve its holistic, global ecosystem mission.</p>							

NATIONAL SEA GRANT COLLEGE PROGRAM (<http://www.seagrants.noaa.gov/>)

The National Sea Grant College Program (Sea Grant) was established by Congress in 1966 (reauthorized in 2008) to enhance the practical use and conservation of coastal, marine, and Great Lake resources to create a sustainable economy and environment. The 32 state Sea Grant programs, located in every coastal and Great Lakes state, Puerto Rico, and Guam, form a dynamic national network of more than 300 participating institutions represented by more than 3,000 scientists, engineers, outreach experts, educators, and students. As a non-regulatory program, Sea Grant focuses on generating and disseminating science-based information to a wide range of groups who require scientific information to make daily decisions including commercial and recreational fishermen, educators, fish farmers, state and local planning officials, port and harbor commissioners,

seafood processors and retailers, and natural resource, water, and environmental quality managers. Sea Grant personnel are both trusted community residents and coastal experts charged with providing balanced and reliable science-based information to help stakeholders identify locally relevant solutions to critical coastal issues.

The Sea Grant model integrates research, outreach, and education. On-the-ground experts, located in every coastal and Great Lakes state, translate sound scientific information into tools, products, and services that benefit coastal residents and their communities every day. Sea Grant experts implement national priorities at the local and regional level, while also identifying citizens' needs to inform state, regional, and national research agendas. This two-way flow of services and information ensures that Sea Grant solutions meet demonstrated needs, help support businesses, and enable policy-makers to make balanced, well-informed decisions.

In accordance with the goals of NOAA's strategic plan, Sea Grant's program activities fall into the following four focus areas and two cross-cutting efforts:

Focus areas:

- Sea Grant ***Hazard Resilience in Coastal Communities*** objectives are to: (1) Promote widespread understanding of risks to coastal residents and businesses; (2) Increase capacity by helping communities reduce risk, pinpoint vulnerabilities, and use technologies to prepare for and mitigate hazards; and (3) Ensure an effective response to coastal catastrophes that allows for the earliest possible recovery.
- Sea Grant ***Sustainable Coastal Development*** objectives are to: (1) Strengthen local working waterfront economic activities while sustaining the natural coastal environment; (2) Enhance public access to the Nation's beaches and waterfronts; (3) Support sustainable planning processes that identify and pursue economic development policies and programs; (4) Assist fishing-dependent coastal communities, and (5) Address coastal tourism issues and their impact on communities' economic, ecological, and social systems.
- Sea Grant ***Safe and Sustainable Seafood Supply*** objectives are to: (1) Engage harvesters, recreational fisherman, producers and managers of seafood to minimize threats to, and enhance the productivity and management of, wild fisheries; (2) Support a viable domestic seafood industry through both sustainable wild-caught and farm-raised fisheries, and assist the communities that depend upon them; and (3) Ensure the health and safety of seafood.
- Sea Grant ***Healthy Coastal Ecosystems*** objectives are to: (1) Support ecosystem-based approaches to managing the coastal environment; (2) Restore the function and productivity of degraded ecosystems; and (3) Promote stewardship of healthy ecosystems.

Cross-Cutting Efforts:

- Sea Grant ***Climate Adaptation and Resilience*** objectives are to: (1) Assist citizens and decision makers in understanding climate processes and effects on coastal resources and communities; and (2) Increase capacity of coastal communities to respond to climate impacts.
- Sea Grant ***Ocean Literacy and Workforce Development*** objectives are to: (1) Provide national leadership in ensuring public literacy in marine and coastal issues; and (2) Develop professionals who understand marine and aquatic science.

Aquatic Invasive Species Program (AIS)

Aquatic invasive species can disrupt the function of coastal ecosystems, thereby impairing recreational, economic, and other beneficial uses of coastal resources. They constitute a major threat to coastal ecosystems and economies, and they have been responsible for dramatic fishery

losses. Hundreds of millions of dollars are spent each year to mitigate the effects of invasive species and to prevent new invasions. The AIS program provides critical support to national, regional, and state efforts to develop cutting edge control technologies and transfer those technologies into operational use.

The AIS Program cooperates and coordinates with state and local governments, NOAA and other Federal agencies, the academic community, and other organizations and individuals to target the highest priority issues. The AIS program responds to the mandates identified in the National Aquatic Nuisance Prevention and Control Act, the National Sea Grant College Program Act, and Executive Order 13112.

Marine Aquaculture Program

The United States faces an annual \$8 billion seafood trade deficit, importing more than 80 percent of our seafood, of which half is from foreign aquaculture. Domestic marine aquaculture has the potential to reduce this trade deficit. Sea Grant works to grow the U.S. marine aquaculture industry through an integrated program of research, education, and technology transfer that is focused on key scientific, engineering, environmental, and socioeconomic challenges facing this industry. Sea Grant works with other NOAA Line Offices (NMFS, NESDIS, and NOS) to support NOAA's efforts to increase the domestic production of safe and sustainable seafood via aquaculture in ocean, coastal, Great Lakes areas. Environmentally and economically sustainable aquaculture helps meet the increasing demand for seafood, creates and sustains jobs and stabilizes economies in coastal working waterfronts, and supports efforts to manage and rebuild wild fish stocks.

Schedule and Milestones:

FY 2014 – FY 2018

- National and state program strategic plans aligned and complete.
- State programs hold local and regional requests for proposals.
- Initiate 10 new projects to improve understanding of wind, solar, tidal, and wave energy, production, siting, and socioeconomic and/or environmental effects.
- Review all 32 programs against their program plans through external Performance Review Panels.
- Complete 52 community climate adaptation projects across the Nation by 2014.
- Produce an inventory of university-based research and extension personnel regularly involved in projects, activities, and research efforts directed at tourism matters.
- By 2017, create or retain over 2,000 jobs as a result of Sea Grant research, education, and extension in renewable energy, aquaculture, biotechnology, and other emerging industries.
- Carry out 20 locally-focused research projects on the impacts of ocean acidification on coastal ecosystems and on commercially important species by 2018.

Deliverables:

- An oyster aquaculture industry in one state adopts production and harvesting techniques that increase the delivery of safe oysters to market; twenty oyster aquaculturists adopt appropriate food cost effective harvest restrictions and production methods that reduce *Vibrio* in oysters that result in improved public safety.
- One major aquaculture company will implement new approaches to seafood production that benefits from Sea Grant research and extension on integrated multi-trophic aquaculture.
- 2.4 million resource managers, decision makers, and the general public will have attended Sea Grant sponsored/organized conferences, workshops, and meetings.
- Sea Grant will have leveraged nearly \$200 million from state and other partners.
- 4,200 peer-reviewed journal articles/book chapters will have been published.

- 3,600 graduate students supported.
- 900 students will have received PhD or MS/MA degrees with Sea Grant assistance.
- 100 coastal communities will have implemented climate adaptation measures.
- 15,600 conferences, workshops and meetings will have been sponsored /organized by Sea Grant.
- A domestic aquaculture industry finds alternative sources of feed materials to reduce pressure on wild harvested feed fish species and to ensure that fishing limits on menhaden and anchovy do not limit the growth of the industry.
- Create and transfer at least 200 decision-support tools/technologies to coastal managers per year.
- Complete training of more than 3,000 seafood processors in Hazard Analysis Critical Control Point per year.
- More than 2,800 acres of degraded ecosystems are restored due to Sea Grant activities (per year).
- Engage more than 550 coastal communities in activities (e.g. visioning, resource inventories, analysis of development policies) that address the sustainability of economic and environmental resources.
- Provide 150,000 coastal resource managers with information/training in local hazard resiliency, and hazard mitigation tools, techniques, and best practices.
- Assist 200 coastal communities to adopt sustainable development principles.

Performance Goals and Measurement Data:

Performance Measure: Percent of Sea Grant College Programs that have had formal expert peer reviews in the past 5 years and were rated -effectivell in terms of quality, mission relevance, and performance	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	100%	100%	100%	100%	100%	100%	100%
Description: This performance measure is recognized by the National Academy of Sciences report <i>Evaluating Federal Research Programs</i> that states -The most effective means of evaluating federally funded research programs is expert review. ll							

Performance Measure: Annual economic and societal benefits derived from Sea Grant activities	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Jobs created/retained	3800	4000	4000	4000	4000	4000	4000
Businesses created/retained	630	660	660	660	660	660	660
Economic benefit (millions of dollars)	170	100	100	100	100	100	100
Description: Society benefits from Sea Grant's assistance in developing new businesses/jobs and retaining existing businesses/jobs. This measure also tracks economic (market and non-market) benefits from the development of new ocean, coastal, and Great Lakes resources and technology.							

Performance Measure: Annual number of coastal communities that adopt/implement hazard resiliency practices to prepare for and respond to/minimize coastal hazardous events	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	145	175	175	175	175	175	175
Description: This metric tracks Sea Grant's contribution to individuals, businesses, and communities that develop comprehensive emergency preparedness and response plans to increase their resiliency and enable them to respond effectively. Sea Grant will contribute to this by building a sound knowledge base to improve forecasting capabilities, by identifying development and best management practices that reduce the vulnerability of people, buildings, and businesses to coastal hazards, and by advancing ways communities can manage and recover from these events when they occur.							

Performance Measure: Percentage of U.S. coastal states and territories demonstrating 20% or more annual improvements in resilience capacity to weather and climate hazards (%/yr) (Measure 18e)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	46%	40%	46%	51%	57%	63%	69%
Description: This measure tracks a range of contributions to address coastal community risk, vulnerability, and resilience to coastal hazards. It quantifies NOAA's contributions to this important goal across NOAA's coastal programs, measuring how NOAA is improving the Nation's capacity for resilience to hazards and is contributing significantly to NOAA's efforts to improve integration of its coastal programs, and expanding beyond the three coastal integration programs providing inputs to the measure (Coastal Services Center, Office of Ocean, Coastal, and Resource Management, and Sea Grant).							

Performance Measure: Annual number of coastal communities that have adopted/implemented sustainable development practices and policies as a result of Sea Grant activities	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	300	300	300	300	300	300	300
Description: This metric tracks communities that have made strides in sustainable development with Sea Grant aid – moving beyond analysis and planning and into implementation.							

Performance Measure: Annual number of fishermen, resource managers, consumers, and seafood businesses (harvesters, aquaculturists, processors, and recreational fishermen) who modify their practices using knowledge gained in fisheries sustainability, seafood safety, and the health benefits of seafood	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	35,000	33,000	33,000	33,000	33,000	33,000	33,000
Description: This measure tracks Sea Grant success in having stakeholders adopt responsible fishery practices. For example, Sea Grant efforts to educate fishermen on the benefits of using circle hooks as an alternative to j-hooks has decreased by-catch and increased the survival of hooked and released fish. Responsible harvesting and processing techniques and practices include measures to minimize by-catch and habitat destruction, ensure seafood safety, and support sustainability.							

Performance Measure: Cumulative number of regionally-focused climate impacts and adaptation studies, tools, and capacity-building utilized by coastal emergency management	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	2	5	7	8	10	12	14
Description: This measure tracks the cumulative number of regionally-focused climate impacts and adaptation studies, tools, and capacity-building utilized by coastal and emergency management. The use of these products will improve management responses to climate change.							

Performance Measure: Cumulative number of tools, technologies, and information services that are used by NOAA partners/customers to improve ecosystem-based management (2010 baseline)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	775	975	1175	1375	1575	1775	1975
Description: This measure tracks success in translating research findings into tools, technologies and information services that improve the use and management of coastal, ocean, and Great Lakes ecosystems. Examples of tools include: land cover data, benthic habitat maps, and environmental sensitivity index maps. Technologies refer to the transfer of new or underused approaches for addressing coastal management (e.g., remote sensing, biosensors, autonomous underwater vehicles, genetic markers for fishery stocks) and resource development (e.g., culture systems for aquaculture, marine pharmaceuticals). This includes the application of technology to coastal resource management through synthesis, integration, training, and the development of new management tools.							

Performance Measure: Annual number of coastal communities that have restored degraded ecosystems as a result of Sea Grant activities	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	255	200	200	200	200	200	200
Description: The number of coastal communities (including cities, municipalities, small towns even if unincorporated, and neighborhoods if they have a cohesive identity) that have undertaken activities for the purpose of restoring degraded ecosystems, and have succeeded in the goals of that activity. A community that undertakes a project with the goal of partial restoration of an ecosystem, and that significantly meets its goals, would count toward this performance measure even though the ecosystem was not completely restored.							

OCEAN EXPLORATION AND RESEARCH (OER) (<http://explore.noaa.gov/>)

OER was originally created in 2007. The creation of OER recognized and emphasized that exploration and research are a scientific continuum and are most productive when linked by common objectives and supported by targeted technology development.

OER develops and uses leading-edge technology and sensors to explore and study poorly-known and unknown areas and phenomena in the ocean. It manages the information acquired and generates the knowledge necessary to educate the public and inform environmental resource managers and policy makers on the use and preservation of ocean resources. OER contributes significantly to important NOAA focus areas such as Arctic exploration, global climate change, ocean acidification, biodiversity, new ocean resources such as discovery of new medicines, and coastal and marine spatial planning. OER collects information on new ecosystems, habitats, and resources, and conducts the research necessary to gauge their health, determine how they function and change over time, and to understand how human activities affected their long-term stability. In addition, OER investigates newly observed ocean phenomena such as underwater volcanic eruptions, and ensures that data and information are made available to scientists and decision makers working on significant environmental challenges such as climate change and ocean acidification. OER core activities include: (1) supporting interdisciplinary expeditions to characterize new ocean areas and phenomena; (2) conducting cutting edge transformational research to address National priorities and to identify new and emerging issues; (3) working with partners to develop new underwater technologies focused on increasing the pace and efficiency of ocean exploration and research; and (4) engaging a broad spectrum of stakeholders and audiences through education and outreach.

Ocean Exploration Program (OE)

OE efforts focus on the first step of the scientific process – initial investigation of the unknown to characterize natural features and phenomena. Areas to be explored are identified by working with other NOAA programs and Federal agencies, as well as the academic community, and emphasis is given to areas where there is consensus that the potential for discovery is high.

Results from OE efforts include a variety of products such as maps and geospatial databases and models, inventories and samples of living and non-living marine resources, oceanographic and atmospheric data, multimedia products such as video and still images, and peer-reviewed reports and journal articles. These results provide a critical baseline of knowledge which serves to catalyze new lines of research and inquiry, supports management decisions at multiple scales, and improves ocean literacy and stewardship through education and outreach. OE accomplishes its mission in the following distinct ways:

- Core Exploration Program: OE provides funding through competitive grants and intra- and interagency transfers to interdisciplinary teams of scientists, explorers and educators focusing on exploring natural environments and phenomena, searching for and identifying shipwrecks and submerged paleo-landscapes once inhabited by humans, and development of advanced underwater technologies.
- NOAA Ship *Okeanos Explorer*: In FY 2005, Congress directed the U.S. Navy to transfer the 224-foot survey vessel USNS *Capable* to NOAA for conversion to the Nation's first vessel dedicated to systematically exploring the ocean. Renamed the *Okeanos Explorer*, the vessel is outfitted with three primary capabilities: (1) deep-ocean high-resolution multibeam sonar mapping; (2) deep-water high-definition videotaping, sensing and sampling using a sophisticated dual-body remotely-operated vehicle (ROV); and (3) a satellite-based broad-band transmission telepresence capability, to allow teams of scientists to lead expeditions from shore-based Exploration Command Centers (ECC) and to engage students and the general public in the real-time ocean exploration and discovery with live transmissions from the seafloor. *Okeanos Explorer* Program discovery data has been used by scientists and managers for follow-up research on targeted habitat, species and ecosystems, geologic features, natural resource and hazards identification; oceanographic research and modeling; hydrographic mapping and nautical chart development; fisheries management; damage assessment; discovery and preservation of maritime heritage resources; and extension of the U.S. continental shelf (see Extended Continental Shelf Mapping below). The program of exploration aboard the ship also serves as a test-bed for developing advanced exploration sensors and technology, new data products, and data processing and management.
- Education: A component of OE's mission is to enhance understanding of science, technology, engineering, and mathematics used in exploring the ocean; and build interest in careers that support ocean-related work. Education materials are developed to encourage educators and students to become personally involved with the voyages and discoveries of the NOAA Ship *Okeanos Explorer* and other expeditions supported by the program. Educator professional development is designed to increase understanding of deep-sea exploration and discoveries and the technologies that enable these discoveries, and improve the teaching about ocean science and the importance of knowledge in the supporting disciplines of technology, engineering and mathematics.
- Partnership Projects: OE invests in a variety of small- and large-scale projects with Federal and non-Federal partners who have a shared interest in ocean exploration, as well as funding they can apply to leverage the OE investment. The following three examples highlight large-scale, multiyear exploration partnerships:
 - Telepresence: In June 2009, the University of Rhode Island established the Inner Space Center (ISC) to: receive data and information from the *Okeanos Explorer* and transmit it to the shore-based ECCs; and conduct live events during expeditions and develop post-event processed videos and other products. Further, the University of New Hampshire also partnered to acquire, process, and develop products from the multibeam mapping system on the *Okeanos Explorer*.
 - Extended Continental Shelf Mapping (ECS): In FY 2007, OE joined an interagency task force formed under the Interagency Committee on Ocean Science and Resource Management to plan and prepare for new investments in field surveys to identify potential extensions of the U.S. Exclusive Economic Zone (EEZ) using criteria set forth in Article 76 of

the United Nations Convention on the Law of the Sea, which defines how coastal States may define their ECS. In collaboration with several Federal agencies, OE invests funds to support bathymetric mapping, geophysical and seismic surveys, data management and analysis, and the development of products to help define the ECS. In addition to mapping unknown territory, information on habitat and resources is also collected.

- *National Oceanographic Partnership Program (NOPP)*: Through NOPP, OE partners with the Bureau of Ocean Energy Management (BOEM) to investigate and characterize offshore lease blocks for decision support on permitting oil and gas exploration and development in the Gulf of Mexico. Under this partnership, OE provides the ships and a submersible to BOEM-funded peer-reviewed scientific investigations. OE and BOEM are now applying this approach to investigating and characterizing deep water canyons located on the continental shelf and slope in the Mid-Atlantic Bight, and have engaged in discussions concerning extending these investigations into the Arctic Ocean.

National Undersea Research Program (NURP)

NURP was created in 1982 following the recommendations of a 1980 National Academy of Sciences Report. The report recommended the creation in NOAA of a network of regional undersea science and technology centers located at major universities and other oceanographic facilities to focus its research on NOAA's mission responsibilities and to advance underwater technologies. Through this model, NURP leveraged the skills and resources of its academic partners to meet NOAA undersea research objectives. The NURP mission was to place scientists underwater to support underwater research necessary to further our understanding of ocean ecosystems, their resources, how they function, and the impacts of natural changes and human activities.

Schedule and Milestones:

- Two to three interagency partnership expeditions per year to explore and characterize habitats and ecosystems in deep water areas, i.e., BOEM, NSF.
- Acquire DAS on UNOLS, Navy, NOAA and other vessels to accelerate and complete the baseline mapping of the potential ECS.
- Develop an annual extramural competition for the exploration of unknown and poorly known ocean areas where there is a high potential for discovery, including efforts focused on new and unique ecosystems and historically important submerged cultural resources, as well as efforts to advance ocean exploration technology.
- Conduct a minimum of eight telepresence-enabled systematic expeditions using the NOAA Ship Okeanos Explorer and the Ocean Exploration Trust Vessel Nautilus, and expand the technological capabilities of other ships such as those in the UNOLS Fleet to conduct telepresence operations.

Deliverables:

- Conduct ECS expeditions to map and characterize the potential ECS in the central and western Pacific, Arctic, Gulf of Alaska, and the western Atlantic.
- Complete BOEM-NOAA Partnership expeditions to explore and characterize habitats and ecosystems in deep water areas in the Mid-Atlantic Bight and expand this highly leveraged NOPP sanctioned partnership into the Arctic and other EEZ regions, generating maps, peer-review journal reports, and other products.
- Conduct Autonomous Underwater Vehicle (AUV) mapping and habitat characterization surveys generating maps and databases containing information on environmental and oceanographic conditions in the areas surveyed.

- Conduct an increased number of telepresence-enabled systematic expeditions providing opportunities to engage a multitude of shore-based stakeholders and other users in real-time ocean exploration. Deliverables also include baseline high-resolution maps and GIS products of previously unmapped areas or areas that have only been mapped at low-resolution, baseline characterization reports, high-resolution video and still image libraries and continue to populate the appropriate national archives with oceanographic and geospatial data collected in these areas.
- Transition results of exploration expeditions and projects to deliberately catalyze and plan targeted follow-up research, and products tailored to support management decisions related to marine resources.

Performance Goals and Measurement Data:

Performance Measure: Annual number of coastal, marine and Great Lakes ecological characterizations that meet management needs (Measure 18a, OER contribution only)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	15	1	1	2	2	2	2
Description: Conduct joint expeditions with DOI's BOEM and other partners to explore and characterize habitats and ecosystems in deep water areas of the Gulf of Mexico and the Mid-Atlantic Bight.							

Performance Measure: Develop undersea technology tools (to advance exploration, research, and measurement of ocean characteristics)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	1	1	2	2	2	2	2
Description: OER is a NOAA and national focal point for the design, development, deployment, testing, evaluation, application, and transition to operational status of new marine technologies including instrument systems, sensors, and platforms.							

Performance Measure: Conduct mapping and ecosystem surveys per ECS task force directives (number of surveys per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	1	1	2	2	2	2	N/A
Description: The Extended Continental Shelf mapping (ECS) effort is a high-level interagency multi-year effort to define the potential extension of the U.S. continental shelf under international law. The ECS mapping effort is expected to conclude by 2017. Within NOAA, OER intends to use this information strategically to make informed decisions regarding comprehensive exploration and research.							

Performance Measure: Number of regions analyzed per year for potential ECS (based on data collected during surveys)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	1	1	2	2	3	3	N/A
Description: The ECS effort is a high-level interagency multi-year effort to define the potential extension of the U.S. continental shelf under international law. The ECS mapping effort is expected to conclude by 2017. Within NOAA, OER intends to use this information strategically to make informed decisions regarding comprehensive exploration and research.							

Performance Measure: Explore, map and visualize maritime wrecks and paleo-landscapes (number of wrecks/landscapes per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	2	2	2	2	2	2	2
Description: OER Marine Archaeology program explores and discovers maritime heritage sites significant to American and World history using the latest in advanced technology. Sites include shipwrecks, prehistoric submerged landscapes, and other maritime cultural sites. The program supports the research and protections standards enumerated in the United Nations Educational, Scientific, and Cultural Organization (UNESCO) Convention on the Protection of the Underwater Cultural Heritage.							

Performance Measure: Conduct systematic exploration, mapping and characterization of unknown areas in national and international waters using the NOAA Ship <i>Okeanos Explorer</i> Program and provide information and products to multiple users through telepresence links (Number of unknown areas characterized, mapped, and explored per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	8	8	8	8	8	8	8
Description: The <i>Okeanos Explorer</i> offers a new approach to discovery: systematic exploration. This approach includes: (a) telepresence, the ability to bring scientific expertise virtually to the vessel through live connections between shore and sea, (b) a next-generation multi-beam sonar system, and (c) a highly sophisticated remotely operated vehicle (ROV). The ship's telepresence system delivers live images from the ship's ROV and maps from its multi-beam sonar to support live interactions between dedicated centers located throughout the world and the <i>Okeanos Explorer</i> .							

Performance Measure: Conduct AUV mapping and habitat characterization surveys (number of surveys/year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	1	2	2	2	2	2	2
Description: Autonomous Underwater Vehicles (AUVs) provide NOAA with a capability that significantly improves its ability to collect marine observation data for all of its mission areas. AUVs provide a broad and synoptic view of our ocean and marine environments to meet the needs of government, environmental managers, scientists, business, and the public. OER utilizes and manages AUVs through its extramural partners, and supports the development of new technologies and approaches for the efficient use of NOAA AUVs.							

Performance Measure: Annually prepare education products expressly tied to OER's mission for use by formal and informal educators to enhance ocean science literacy	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	8	8	8	8	8	8	8
Description: The goal of OER's education product development is to increase formal and informal educator access to, understanding of, and appreciation for systematic deep-ocean exploration and its importance in forming the baseline for ocean research, management, and policy decisions.							

OTHER ECOSYSTEMS PROGRAMS

NOAA Ocean Acidification Program (OAP)

The OAP was established according to section 12406 of the 2009 Federal Ocean Acidification Research and Monitoring Act (FOARAM) to fund, oversee and coordinate research, monitoring, and other activities consistent with the strategic research plan being developed by the interagency working group on ocean acidification (OA) and is responsive to additional requirements introduced in the Magnuson Stevens Reauthorization Act. The 2010 *NOAA Ocean and Great Lakes Acidification Research Plan* (http://www.pmel.noaa.gov/co2/files/feel3500_without_budget_rfs.pdf) provides organized details about NOAA's research strategy. The OAP fosters and directs: (1) interdisciplinary research among the ocean and atmospheric sciences to improve understanding of ocean acidification; (2) deploys and maintains an expanding long-term ocean acidification monitoring program (including a coral reef monitoring program) utilizing existing and new global and national ocean observing assets; (3) research to identify and develop adaptation strategies and techniques for effectively conserving marine ecosystems as they cope with increased ocean acidification; (4) educational opportunities that encourage an interdisciplinary and international approach to exploring the impacts of ocean acidification; (5) national public outreach activities to improve the understanding of current scientific knowledge of ocean acidification and its impacts on marine resources; and (6) coordination of ocean acidification monitoring and impacts research across other agencies and appropriate international ocean science bodies. To achieve these requirements, the OAP provides resources and coordination NOAA-wide across multiple Line Offices including OAR, NMFS, NOS, and NESDIS. In addition, the OAP provides grants for critical research projects that explore the effects of ocean acidification on ecosystems and the socioeconomic impacts of increased ocean acidification that are relevant to the goals and priorities of the strategic research plan.

The OAP: (1) promotes the development of an ocean and coastal OA monitoring network comprised of fixed observing platforms, underwater systems, AUV's, and dedicated cruises within the Pacific, Atlantic, and Gulf of Mexico with partners in Climate Program Office and Integrated Ocean Observing

System (IOOS); (2) partners with the Coral Reef Conservation Program to establish a coral reef OA monitoring network capable of tracking coral reef community response to OA; (3) funds NMFS and extramural partners to conduct a range of experimental studies examining the sensitivity of commercially important living marine resources under NOAA's purview to OA; (4) promotes the development of forecasting models of ecosystem and socioeconomic impacts; (5) invests in critical new technologies that can facilitate geochemical and ecosystem monitoring; and (6) provides for an outreach and education effort to explain ocean acidification and its potential impacts on ecosystems and society.

The value of ocean acidification research is already evident in the Pacific Northwest where oyster hatcheries on the verge of collapse just a few years ago are again major contributors to the \$111 million West Coast shellfish industry. Beginning in 2005, production at some Pacific Northwest oyster hatcheries began to decline at an alarming rate, posing severe economic impacts and challenging a way of life held by shellfish growers for over 130 years. Oyster production represents 76 percent of the West Coast shellfish industry, which supports more than 3,000 jobs. A \$500,000 investment in monitoring coastal seawater, which enables hatchery managers to schedule production when water quality is good, is helping to restore commercial hatcheries and expected to reap an estimated \$35 million for coastal communities in Oregon and Washington. This example highlights the urgency of this problem and the value of ocean acidification research and monitoring.

Schedule and Milestones:

FY 2014 – FY 2018

- Deploy and maintain OA moorings in coordination with a broad range of internal and external partners
- Deploy and maintain coral reef monitoring sites according to new implementation guidelines completed in FY 2013
- Instrument and maintain OA sensors on NOAA Research and Volunteer Observing Ships
- Conduct Ocean Acidification coastal observing and process research cruises
- Single- and multi-species experiments (vulnerable economically-important and protected species)
- Develop high-resolution physical-biogeochemical-ecosystem and socioeconomic regional models critical for developing adaptation strategies
- Develop coastal early-warning system that can identify episodic low pH events (coastal upwelling, river high discharge occurrences) and alert managers of potentially impacted resources
- Integration and serving of OA data generated through the activities listed above, across NOAA, and with other Federal agencies
- Development of data synthesis products responsive to stakeholder needs
- Conduct robust education and outreach activities in coordination with partners
- Develop curricula and outreach products and services including development of NOAA national OA web portal for access to information and data
- Ensure finalization of the National Interagency Strategic Research Plan for OA

Deliverables:

- Interagency working group National Strategic Research Plan for OA delivered to Congress (FY 2013-2014)
- Integrated assessments of the ecological and societal impacts of ocean acidification in each U.S. coastal region and the Great Lakes to identify vulnerable communities where mitigation and adaptation strategies may be needed

- Improved public understanding of the threats of ocean acidification and the solutions to preserving our ocean and Great Lakes ecosystems via public lectures and web-based information
- Standardized chemical and biological monitoring protocols for the measurement of carbon dioxide system parameters and physiological effects on marine organisms
- Predictions of pH and carbonate saturation in the future ocean using global climate change model projections
- Enhanced characterization of the threat ocean acidification poses by resolving the direct and indirect ecological impacts to economically-important species and NOAA-managed protected species
- Regional biogeochemical and ecological models developed through the synthesis efforts of existing models and the incorporation of new knowledge gained on the impact of ocean acidification
- Recommended atmospheric limit for carbon dioxide based on projected losses of marine resources, ecosystem services, and economic losses due to the degree of ocean acidification at different carbon dioxide emission scenarios
- Decision support tools and requisite scientific knowledge for understanding and responding to ocean acidification in support of ecosystem based management and other related management schemes, such as fisheries management and coastal and marine spatial planning
- Educational and outreach products and services to increase the dialogue among scientists, policy-makers, teachers, and the public

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of sites with <i>in situ</i> -based fixed platforms that are accurately measuring the carbon parameters needed to calculate mean annual Aragonite Saturation State determined to be within 0.2 units of the actual mean	10	14	16	18	18	18	18
<p>Description: This measure represents an annual inventory of <i>in situ</i>-based fixed and underway observing platforms dedicated to monitoring the magnitude, and rate of biogeochemical changes in response to increasing atmospheric carbon dioxide. Monitoring sites will be located in ecologically and economically important marine ecosystems. These ocean acidification observing platforms are defined by their inherent ability to fully constrain the carbonic acid system and must be capable of resolving decadal changes in ocean chemistry in response to ocean acidification. The data provided will be used by Federal and state regulatory agencies and commercial fisheries organizations.</p>							

SUSTAINED OCEAN OBSERVATIONS AND MONITORING

OAR develops and sustains key components of the Global Ocean Observing System (GOOS). This requires an integrated effort with the NOAA Climate Program Office (CPO) providing the oversight and program management responsibility, which includes planning, budgeting, evaluation, and coordination of the overall program. With support from CPO OAR Laboratories AOML and PMEL and the Cooperative Institutes carry out core observing activities including deployment, operations, and maintenance of *in situ* platforms and instrumentation, data management, monitoring, and technology development. These observing systems provide a range of physical, biogeochemical, and ecological *in situ* research observations and products.

GOOS is a foundation for climate research and prediction as well as long-term monitoring for climate change detection and attribution. GOOS observations are used routinely for weather and ecosystems research, invaluable for weather and ocean predictions, and provide validation information for NOAA and NASA satellite products. Satellites are critical elements of this composite system, but are listed elsewhere in the NOAA and NASA budgets. All interdependent elements work together to provide the needed system.

NOAA provides the major U.S. contribution to the global component of the Integrated Ocean Observing System (IOOS), as codified in the Integrated Coastal and Ocean Observation System Act of 2009. All components of the global system require international partnerships and contributions. This observation system is based on measuring a set of core variables that have been agreed to internationally to provide the information needed by the U.S. and other nations to effectively plan for and manage their response to climate variability and change.

Major elements of GOOS that this program contributes to include:

Argo Profiling Floats

These floats provide the subsurface measurements of ocean temperature and salinity that are critical inputs to global sea level change and upper ocean heat content, as well as fundamental global subsurface ocean information important for understanding distribution and movement of fish. Twenty-two nations plus the European Union currently maintain 3,000 floats. Development of deep diving Argo floats is underway with deployment of test floats anticipated in FY 2015.

Surface Drifting Buoys

Sea surface temperature is an important ocean variable for the global heat, water, and carbon cycles and is critical to climate, ecosystem, and weather research. NOAA strives to maintain a global array of 1,250 surface drifting buoys with 14 international partners. This array is used to calibrate satellite observations and reduce errors in global measurement of this critical ocean variable.

Tide Gauge Stations

Sea level rise is one of the most immediate impacts of climate change with the potential to affect coastal ecosystems, communities, and economies. Tide gauge stations also contribute to weather research through improved storm surge models. NOAA, in cooperation with 66 nations, is implementing the Global Climate Observing System sea level reference network of 170 international tide gauge stations to measure sea level change at the coast and to calibrate the satellite altimeter measurements of the deep ocean. GPS-enhanced tide gauge stations will enable more accurate measurements of sea level change.

Tropical Moored Buoys

Earth's tropics are the ocean's major source for heat exchange with the atmosphere. Together with international partners, NOAA is working to instrument all three tropical oceans - the Pacific - Tropical Atmosphere Ocean (TAO) Array; Atlantic (PIRATA); and Indian (RAMA) Oceans - for continuous real-time measurement of ocean-atmosphere exchanges that affect the way our climate varies from year to year.

Ocean Reference Stations

NOAA, in cooperation with international partners, is implementing a sparse global network of high-quality ocean reference station (ORS) moorings for accurate long-term climate records in key ocean regions and will expand to another sentinel site. The ORS surface and subsurface measurements are a cornerstone of the documentation of long-term changes in the ocean and provide ground truth for improving forecast models.

Ships of Opportunity

The data from Ships of Opportunity (SOOP) have been the foundation for understanding long-term changes in marine climate and are essential input to climate and weather forecast models as well as deployment of the drifting buoys and Argo floats.

Ocean Carbon Networks

Projecting decadal to centennial global climate change is closely linked to assumptions about feedbacks between the ocean and atmosphere related to sequestering of carbon in the ocean and additional input of carbon dioxide into the atmosphere. NOAA, in cooperation with the National Science Foundation and international partners, is implementing an ongoing ocean carbon inventory surveying the globe once every ten years and augmenting those observations with a network of moored buoys and instrument systems installed aboard volunteer observing ships.

Dedicated Ships

Ocean research vessels from NOAA and university partners are essential elements of the support infrastructure necessary to sustain the ocean observing system. The dedicated ships provide the highest quality reference data sets, the platforms for the ocean carbon surveys, and platforms for deployment of the moored and drifting buoys and the Argo floats, but support is needed to strengthen this fleet.

Data Management and Analysis

A robust and scalable Data Management and Communications infrastructure is essential to the vision of a sustained and integrated ocean observing system. Standards and protocols are essential to enable interoperability across all global and coastal ocean observing systems. Data must be retained and made available for analyses and for assimilation into models to understand and forecast climate change, and for efficiently managing observing system operations and improvements.

Schedule and Milestones:

Schedule/Milestones	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Ocean Reference Stations deployed (Cumulative total number)	11	10	10	10	10
Drifting Buoy Array deployed (Total number/year-reseeding the array)	950	950	950	950	950
Argo Array deployed (Total number/year – reseeding the array)	350	350	350	350	350
Deep Argo profiling floats deployed (Cumulative total number)	0	8	12	20	28
Tropical Moored Buoys (TAO / PIRATA / RAMA) installed (Cumulative total number)	89	89	89	89	89
Tide Gauge Reference Stations (Cumulative total number)	63	63	63	63	63
Tide Gauge Reference Stations w/GPS installed (Cumulative total number)	111	112	113	114	115
Ocean Carbon Surveys conducted (Cumulative total number)	21	22	23	24	25
Dedicated ship support (Cumulative total days at sea)	200	200	200	200	200

Deliverables:

The value of the ocean observing system can be assessed by the type and quality of products derived from it and from its scientific and operational value. The current observing system is designed with the objective to assess key ocean parameters for use in climate, ecosystem, and weather research.

For each of the observational programs, the data deliverables and outputs are quality controlled and made available on a publically accessible web site. For programs such as Argo, involving measurements by multiple institutions, a single data center web site is typically maintained with the data from all providers available from the single site. The remaining deliverables are scientific papers in the peer-reviewed literature, which communicate the ecosystem, climate and weather research results.

Performance Goals and Measurement Data:

Ocean Observations

Performance Measure: Error in global measurement of sea surface temperature (°C) (Measure 16c)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	0.56	0.50	0.50	0.50	0.50	0.50	0.50

Description: This measure is intended to document progress in accurately measuring the global sea surface temperature (SST) using *in situ* drifting buoys to verify that satellite SST data are accurate and representative. This reflects how improvements in ocean observations will decrease the uncertainty in global sea surface temperature measurements, which will ultimately play a role in calculations of the ocean-atmosphere exchange of heat and the heat storage in the global ocean. The sea surface, covering over 70% of the Earth surface, has a tremendous influence on global climate because it is where the atmosphere responds to the ocean via the transfer of heat either to or from the atmosphere. Since sea surface temperature is measured by buoys, ships, and satellites, this performance measure is well-suited as an indicator of the effectiveness of our integrated ocean observing system and the more accurate estimates of sea surface temperature will improve our ability to detect changes in the climate system. Success in this performance measure requires the maintenance and increase of *in situ* ocean sensors. The goal is to reach an indicator value of 0.3 degrees Celsius, which has been specified by the international Global Ocean Observing System (GOOS) as the required accuracy for measurement of sea surface temperature.

Performance Measure: Increased percentage of global <i>in situ</i> ocean observing system implementation	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	62%	61%	59%	58%	57%	57%	57%

Description: This measure tracks the percentage of global coverage of the Global Ocean Observing System. There are eight (8) individual ocean observing systems and one data management system that make up GOOS. The percentage completion of the eight systems determines the cumulative total percentage of this performance measure. A predictive understanding of the Earth's climate is critically dependent on quantitative measurements of ocean parameters - the ocean is second only to the sun in effecting climate change and variability.

Performance Measure: Percent reduction in the error of the observed estimates of ocean and meridional heat transport	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2015 Target	FY 2017 Target	FY 2018 Target
	0.5%	0.9%	1.2%	1.6%	1.9%	2.2%	2.5%

Description: As a result of observations, research, and reports on the state of the ocean, heat storage, and meridional heat transport in the Atlantic Ocean, there will be increased knowledge for scientists creating modeled estimates of heat transport over time, leading to less uncertainty in those models. Accurately describing heat is a key part of climate models, and increased longevity in datasets leads to a more accurate average or mean measurement of these systems. This contributes to developing a framework for future research that promises to improve the ability of climate models to predict summer rainfall and hurricane activity for the Western Hemisphere, helping local communities and economies.

Performance Measure: Cumulative number of data collection platforms deployed by PMEL in support of the Global Ocean Observing System (GOOS)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	666	680	724	780	832	875	914
Description: This measure represents a significant portion of PMEL's contribution to GOOS. The measure identifies each Argo float deployed and each moored buoy from the PIRATA, RAMA, and ocean climate station programs as a unit; TAO is not included as it is maintained by the National Data Buoy Center (NWS). Completion of GOOS is analogous to the global weather observing system since fully-implemented GOOS will provide ocean data that all nations can use to provide improved ocean-related analytical and predictive products (forecasts).							

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

Ocean, Coastal, and Great Lakes Research Laboratories and Cooperative Institutes (Base

Funding: \$22,926,000 and 119 FTE; Program Change: +\$1,505,000 and 0 FTE): NOAA requests \$1,505,000 and 0 FTE for a total of \$24,431,000 and 119 FTE to fund grant opportunities for Cooperative Institutes to identify new methods of addressing scientific questions that define NOAA's mission goals in Oceans and Coasts.

Proposed Actions:

NOAA will fund grant opportunities to NOAA Cooperative Institutes, engaging the innovation of the ocean research community to help NOAA identify new methods of addressing scientific questions that define NOAA's mission goals in Oceans and Coasts. With this funding, NOAA will sponsor the integration of sensor suites and appropriate configuration of the most promising innovative ocean observing platforms available, including gliders, autonomous surface and undersea craft, dual-use platforms, as well as other candidate technologies identified to enhance the cost-effectiveness of the NOAA fleet. The investment in Cooperative Institutes will enhance NOAA's operational and research capabilities, performance, and efficiency.

A prioritized list of the most cost-effective enhancements/replacements of NOAA fleet observing capabilities will inform a series of Requests for Proposals (RFPs) to fund the development of prototype systems. Each proposal will identify one or more -championll NOAA programs that support the development of the new capability. Funding will focus on the adaptation of existing innovative observing technologies to meet NOAA-specific needs and to help replace observing capabilities that are currently only available via NOAA ships. This funding will develop and integrate the technological solutions for field-testing and evaluation. Implementation on an operational scale will be the responsibility of the NOAA programs that have championed the development of the new capability. This program funding will then be steered toward development of the next potential technology.

NOAA will engage the already established Autonomous Underwater Vehicle (AUV) Working Group, comprised of members from all Line Offices, to initially evaluate and recommend the technologies to develop. Other technologies outside of the purview of this group, such as exploiting dual-use platforms, animal-borne sensors, and vessels of opportunity will also be explored. The AUV working group will allow NOAA to move forward quickly in an area where some development and partnerships have already borne some positive results.

Statement of Need and Economic Benefits:

Ocean research and observation systems are the basis for predictions of: economically important global climate phenomena such as El Niño and La Niña; measurements of the health of ocean, coastal, and Great Lakes ecosystems and fisheries; understanding the oceanic components of weather; as well as detecting and understanding other coastal hazards such as tsunamis. The economic benefit of the research and forecasts from these systems is well founded, but the current methods of maintaining these systems and observations (which are critical input for the forecasts) are becoming more costly due to the growing fuel and port fees as well as increasing maintenance expenses given the increasing age of the NOAA fleet. These factors are contributing to a decline in NOAA's ability to support the Agency's ocean-related mandates. Development of a more economical operational model that uses a portfolio of observational platforms will significantly increase the amount of information collected per ship day.

Base Resource Assessment:

The base resources for this activity are described in Ocean, Coastal, and Great Lakes Laboratories and Cooperative Institutes base narrative.

Schedule and Milestones:

FY2014

- NOAA AUV Working Group defines high priority candidate technologies for development, and testing. RFP issued to University and NOAA Laboratories and their partners.
- Development/integration activities commence on two candidate technologies.

FY2015 -2018

- Additional technologies identified by NOAA AUV Working group or its successor group.
- Issue RFPs.
- Performance demonstration of prior year awardees.
- Development/integration activities commence on two candidate technologies.

Performance Goals and Measurement Data:

Performance Measure: Identify high priority technologies as candidate systems for development/ integration (per year).	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	2	2	2	2	2
Without Increase	0	0	0	0	0	0	0
Description: The NOAA AUV Working Group will provide the initial recommendations for candidate technologies for development. NOAA envisions funding, on average, two technologies per year. However, depending on the complexity of the technologies chosen, it may be necessary to fund only one new technology in some years with the existing funding level.							

Performance Measure: Demonstration/testing of new technologies	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0	1	1	2	2
Without Increase	0	0	0	0	0	0	0
Description: Successful demonstration of new technologies will depend on the complexity of the new technologies being developed (i.e., some developments will be ready for field testing in a year or less, while others will take longer). NOAA plans to introduce early in the process some technologies, which will require a shorter development cycle to produce new operational capabilities in a shorter (one to two year) timeframe. More complex technologies can require 5 years or more to bring to an operational demonstration status. This measure is an approximation only.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: Ocean Coastal, and Great Lakes Research Laboratories and Cooperative Institutes

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	180
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	1,325
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> \$1,505

Ocean, Coastal, and Great Lakes Research Laboratories and Cooperative Institutes: Ocean Research Advisory Panel (Base Funding: \$0 and 0 FTE; Program Change: + \$200,000 and 0 FTE): NOAA requests an increase of \$200,000 and 0 FTE for a total of \$200,000 and 0 FTE to support the activities of the Ocean Research Advisory Panel (ORAP). The Administration will submit legislation to transfer ORAP responsibility from the Department of Defense to NOAA. As the Nation's premier ocean research agency, NOAA is the appropriate place to support this organization. ORAP's role is to advise the National Ocean Research Leadership Council and to provide independent recommendations. ORAP members include individuals from the National Academies, state government, academia, and ocean industries, representing marine science, marine policy, and other related fields.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: Ocean Research Advisory Panel

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	200
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> \$200

National Sea Grant College Program Base: National Sea Grant College Program (Base Funding: \$57,697,000 and 23 FTE: Program Change: +\$4,495,000 and 0 FTE: NOAA requests an increase of \$4,495,000 and 0 FTE for a total of \$62,192,000 and 23 FTE to support competitive research specifically in alignment with one of the National Sea Grant College Program's focus areas - to develop more resilient coastal communities.

Proposed Actions:

This funding will allow for additional, competitively-awarded research projects. Specific research projects will be selected through a proposal-driven, competitive process at the state, regional, and national levels. All funding will be matched with an additional 50 percent in non-Federal funds. Competitive projects will focus on work to successfully and directly assist coastal communities. Specific areas of competitive research will include:

- marine-related energy sources and efficiency,
- wise use of water resources,
- climate change adaptation,
- coastal processes studies,
- resilience from natural hazards,
- technology development, and
- resilient coastal businesses and industries, including fisheries and tourism.

Research projects will have direct oversight from state Sea Grant Program Directors to ensure alignment with the National Sea Grant and NOAA Strategic Plans. The impact of each project on society will be tracked and reported to reflect jobs created or retained, and new tools and technologies used. Research results will be published in peer-reviewed journals, technical reports, and other relevant literature. In addition, the practicable Sea Grant research results will be conveyed to the 400 Sea Grant Extension professionals for direct transfer to coastal constituents.

Statement of Need and Economic Benefits:

Coastal communities in the United States provide vital economic, social and recreational opportunities for millions of Americans. The coastal population has increased by 45 percent to a total of 164 million, or half of the Nation's population, between 1970 and 2010, and the coastal economy now accounts for 58 percent of the Nation's gross domestic product.⁹ As a result, coastal communities are more vulnerable than ever to natural and technological hazards.

Although the societal impact of research projects often do not become apparent until many years after the completion of the research, some benefits of Sea Grant research can be projected based on past results. For example, Sea Grant Programs across the Nation reported to the National Sea Grant that in FY 2011, they cumulatively created or retained 3,800 private sector jobs, excluding those jobs directly funded by the Federal funds. In 2011, Sea Grant's total appropriation of \$61.3 million supported these programs. Using FY 2011 rates, the Federal dollars-to-jobs ratio is approximately \$16,000 per job; therefore, if applying this rate to the \$5 million investment, it could result in up to 300 private-sector jobs created or retained.

Base Resource Assessment:

The base resources for this activity are described in the National Sea Grant College Program base narrative.

Schedule and Milestones:

⁹ <http://stateofthecoast.noaa.gov/>

- Carry out 50 locally-focused research projects each year to develop techniques and knowledge that will enhance the resilience of coastal communities to economic and environmental hazards.

Deliverables:

- 70 peer-reviewed journal articles/book chapters per year.
- At least 50 decision-support tools/technologies will have been created and transferred to coastal managers by FY 2018.

Performance Goals and Measurement Data:

Performance Measure: Annual economic and societal benefits derived from Sea Grant activities	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase							
Jobs created/retained	N/A	N/A	4000	4050	4100	4150	4200
Businesses created/retained	N/A	N/A	660	670	680	690	690
Economic benefit (millions of dollars)	N/A	N/A	100	102	104	105	105
Without Increase							
Jobs created/retained	3800	4000	4000	4000	4000	4000	4000
Businesses created/retained	630	660	660	660	660	660	660
Economic benefit (millions of dollars)	170	100	100	100	100	100	100
Description: Societal benefits from Sea Grant's assistance in developing new businesses/jobs and retaining existing businesses/jobs. This measure also tracks economic (market and non-market) benefits from the development of new ocean, coastal, and Great Lakes resources and technology.							

Performance Measure: Annual number of coastal communities that adopt/implement hazard resiliency practices to prepare for and respond to/minimize coastal hazardous events	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	175	180	185	190	190
Without Increase	145	175	175	175	175	175	175

Description: This metric tracks Sea Grant’s contribution to individuals, businesses, and communities that develop comprehensive emergency preparedness and response plans to increase their resiliency and enable them to respond effectively. Sea Grant will contribute to this by building a sound knowledge base to improve forecasting capabilities, by identifying development and best management practices that reduce the vulnerability of people, buildings, and businesses to coastal hazards, and by advancing ways communities can manage and recover from these events when they occur.

Performance Measure: Annual number of coastal communities that have adopted/implemented sustainable development practices and policies as a result of Sea Grant activities	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	300	310	320	330	330
Without Increase	300	300	300	300	300	300	300
Description: This metric tracks communities that have made strides in sustainable development with Sea Grant aid – moving beyond analysis and planning and into implementation.							

Performance Measure: Cumulative number of tools, technologies, and information services that are used by NOAA partners/customers to improve ecosystem-based management (2010 baseline)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	1175	1400	1650	1900	2150
Without Increase	775	975	1175	1375	1575	1775	1975
Description: This measure tracks success in translating research findings into tools, technologies, and information services that improve the use and management of coastal, ocean, and Great Lakes ecosystems. Examples of tools include: land cover data, benthic habitat maps, and environmental sensitivity index maps. Technologies refer to the transfer of new or underused approaches for addressing coastal management (e.g., remote sensing, biosensors, AUVs, genetic markers for fishery stocks) and resource development (e.g., culture systems for aquaculture, marine pharmaceuticals). This includes the application of technology to coastal resource management through synthesis, integration, training, and the development of new management tools.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: National Sea Grant College Program Base

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	4,495
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$4,495

National Sea Grant College Program: STEM Education (Base Funding: \$57,697,000 and 23 FTE: Program Change: - \$4,000,000 and 0 FTE: NOAA requests a decrease of \$4,000,000 and 0 FTE for a total of \$53,697,000 and 23 FTE as part of the Administration's STEM education reorganization plan, which will consolidate most STEM funds into the Department of Education and National Science Foundation.

Proposed Actions:

Scientists and engineers create many of the innovations that drive our nation's global competitiveness. Our nation's capacity to create and innovate must never be limited by a shortage of talent in science, and technology, engineering and mathematics (STEM) fields. To prepare our students for STEM jobs and other high-skilled careers, we must provide them with opportunities to learn and develop knowledge and competencies in these areas.

To meet future workforce needs, and to leverage their expertise and unique assets in support of STEM education, federal agencies have developed a range of education programs. In the absence of a single guiding plan, these efforts have proliferated over many years to include over 220 programs across 13 different agencies at an annual federal investment of almost \$3 billion. Many of these initiatives are not effectively aligned either to the needs of students or to national priorities, and this fragmented approach to investment has made it difficult to reform and improve Federal STEM education efforts. The Administration is proposing a comprehensive reorganization to facilitate a cohesive national strategy of STEM education programs to increase the impact of Federal investments in four areas: K-12 instruction; undergraduate education; graduate fellowships; and education activities that typically take place outside the classroom. The reorganization involves consolidating or restructuring 90 programs across 11 agencies and improving the delivery, impact, and visibility of STEM efforts. Nearly \$180 million will be redirected from consolidated programs to the Department of Education, the National Science Foundation (NSF), and the Smithsonian Institution to implement initiatives in the four core reform areas. The Administration will ensure that all science mission agencies have input into the development and implementation of these initiatives so that they align with agency goals while improving STEM education at all levels in a streamlined way.

The Department of Education will lead an initiative to improve K-12 STEM instruction by supporting partnerships between school districts and universities, science agencies, businesses, or other educational entities to transform teaching and learning. NSF will focus on improving the delivery of undergraduate STEM education through evidence-based approaches and reforming graduate fellowships so they reach more students and address national workforce needs. The Smithsonian Institution, which already has strong partnerships with several mission agencies, will improve the reach of federally-supported informal education activities, and help align those activities with State standards so that they are relevant to what students are learning in the classroom.

NOAA will work with the Smithsonian to harness NOAA's unique expertise and resources to create relevant materials and curricula, on-line resources, and effective delivery and dissemination mechanisms to reach more teachers and students both inside and outside the classroom.

Therefore, in accordance with the Administration's STEM education initiative, NOAA proposes to terminate STEM education programs within Sea Grant, including the following programs:

- Sea Grant John A. Knauss Marine Policy Fellowship Program
- Sea Grant/National Marine Fisheries Service (NMFS) Graduate Fellowship Program

- All state Sea Grant Program STEM activities, such as K-12 teacher training, curricula development, and education

Base Resource Assessment:

Base resources from the Sea Grant College Program support Sea Grant John A. Knauss Marine Policy Fellowships, Sea Grant/NMFS Fellowships, and State Sea Grant Program STEM activities such as K-12 teacher training, curricula development, and education.

Schedule and Milestones:

N/A

Deliverables:

N/A

Performance Goals and Measurement Data:

N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: National Sea Grant College Program: STEM Education

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(4,000)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$(4,000)

National Sea Grant College Program Base: Grand Challenge (Base Funding: \$0 and 0 FTE: Program Change: +\$10,000,000 and + 1 FTE: NOAA requests an increase of \$10,000,000 and 1 FTE for a total of \$10,000,000 and 1 FTE to sponsor a Grand Challenge initiative to foster scientific and technological innovation in ocean mapping and observing technologies that will increase the rate of discovering new energy sources, seafloor features, pharmaceutical products, species, ecosystems, artifacts, and improve understanding of the role oceans play in our weather and climate.

Proposed Actions:

NOAA will sponsor a Grand Challenge initiative, with the overarching goal of revealing the unknown ocean while reducing overall costs. The vision of this challenge is to foster scientific and technological innovation in ocean mapping and observations in order to increase the rate of discovering new species, ecosystems, energy sources, seafloor features, pharmaceutical products, and artifacts, as well as to improve understanding of the role oceans play in our weather and climate. This Grand Challenge will be further refined through a series of workshops in collaboration with government, industry, academia, and interested constituents and citizens.

The Grand Challenge will be an incentive prize opportunity. The goal is to recruit private innovators, industry and other interested parties to compete against each other to obtain a goal and specific criteria as specified by the challenge. This initiative is consistent with the President's Strategy for American Innovation, and with the authorities in the America Competes Act. Challenge subjects will solve gaps in NOAA's technology solutions to meet recognized missions, and to do so at significantly reduced cost. Toward achieving the grand goal outlined above, NOAA will first establish a series of subordinate challenges, examples of which are described below:

1. Deliver the technology to map and characterize the oceans at five percent of the present cost.
 - a. improve inertial navigation systems to ensure mapping accuracy of remote vehicles, both tethered and untethered;
 - b. develop advanced in situ biological sensors for ecosystem studies, including but not limited to, comprehensive meta-genetics and measurements of the microbial world;
 - c. develop a way to capture data and images and bring it back to land instead of having to bring samples to shore. In essence, deliver undersea laboratories to bring to land;
 - d. develop lower-cost observing technologies to supplement or replace higher-cost current observing platforms both in the ocean and coastal environments; and
 - e. perfect -swarmll technology in which cooperating unmanned undersea vehicles use artificial intelligence to make cooperative measurements and cross-communicate to spontaneously adapt to the conditions found.
2. Map and characterize the U.S. EEZ and Extended Continental Shelf areas within 5 years.
3. Map and characterize the world's oceans within 10 years.
 - a. produce accurate global (and regional) ocean and coastal ecosystem models to forecast fish stocks, ocean health, and coastal conditions, proven through the application of the volumes and decades of existing ocean data.
4. Produce an open-access, online global ocean atlas.

Prizes for the subordinate challenges will be in the range of hundreds of thousands of dollars, depending on the scale and scope of the accomplishment desired. Larger prizes will be in the range of millions of dollars.

Currently, NOAA working groups are defining the gaps in technology and mission areas that should be addressed by the subordinate or lesser levels of the Grand Challenge, and by prize incentives. The first entity to successfully meet the desired criteria set forth in the Grand Challenge or any of the subordinate challenges will be awarded the prize money.

OAR will be administrator of this incentive prize opportunity, but oversight of the process will include all Line Organizations, the NOAA Research Council, and the NOAA Chief Scientist. External partners may also have a role to play in oversight. Many programs and funding sources exist within NOAA that will inform this effort, and be leveraged to add value to this Grand Challenge opportunity. These programs and elements include the Integrated Ocean Observing System (IOOS) program, the NMFS Advanced Technology Working Group and fund, the Coast Survey Development Laboratory, and NWS National Data Buoy Center. Principles of collaboration, leveraging, and appropriate divisions of labor will be made a priority through the planning and administration of the Grand Challenge. This collaboration and leveraging will extend to the external community, including engaging interagency partners such as the National Science Foundation and Office of Naval Research through the National Oceanographic Partnership Project. NOAA will also engage other Prize entities, including X-Prize, with whom NOAA has worked on three previous prize subjects, as well as philanthropic organizations and individuals who have already demonstrated their resolve toward similar objectives through self-funded explorations.

Without prize incentives, NOAA's pace of technology integration and advancement has traditionally been slow, taking decades to deliver the next generation of innovation. This investment will yield efficiencies and methods that will improve NOAA's work, and do so more cost effectively. NOAA is interested in fashioning a larger strategic outlook for prize incentives beyond the one year, and developing, with expert consultation, a more comprehensive 5 year Prize Grand Challenge.

Statement of Need and Economic Benefits:

The ocean covers more than 70 percent of the planet's surface, driving weather, regulating temperature, and ultimately supporting all living organisms. Throughout history, the ocean has been a vital source of food, transport, and commerce; however, 95 percent of the ocean remains unexplored through mapping or observations. Our Grand Challenge is to Reveal the Unknown Ocean while at the same time reduce cost and advance the Nation's technical ability to conduct ocean and coastal observations.

Prize authority significantly advances technology solutions by generations of technology that would otherwise be unattained. This investment will inspire innovation in the private sector and universities to produce valuable new methods and tools that will increase the rate of discovering the ocean's vast resources.

Base Resource Assessment:

No base resources exist for this initiative.

Schedule and Milestones:

- 60 days after NOAA/OAR receives appropriations NOAA will organize workshops of experts to refine the -market failures and areas of needed technological advancement.
- Within 90 days, NOAA will publish the availability of prize amounts for some of the community/agency derived challenges subordinate to the Grand Challenge.
- 120 days after NOAA/OAR receives appropriations NOAA will complete engagement of National Oceanographic Partnership Program (NOPP) partners, prize foundations, industry, and other potential contributors to recruit participation. NOAA will also publish the availability of prize amounts for the first challenges subordinate to the Grand Challenge.
- 180 days after NOAA/OAR receives appropriations NOAA could announce a major Grand Challenge.

Deliverables:

- Technology to map and characterize the oceans at 5 percent of the present cost.
- Ability to map and characterize the U.S. EEZ and Extended Continental Shelf areas within 5 years.
- Ability to map and characterize the world's oceans within 10 years.
- Production of an open-access on-line global ocean atlas with bathymetry, chemical, and biological information from microbiology to large animals.

Performance Goals and Measurement Data:

Performance Measure: Number of technical mission gaps filled to meet NOAA mission needs (cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	3	5	10	15	15
Without Increase	N/A	0	0	0	0	0	0
Description: NOAA will define gaps (in technology, methods, or cost) in current methods that restrain technical advances and offer prizes in these areas with specific performance targets. Prizes will generate direct and indirect solutions to advance missions.							

Performance Measure: Number of projects with leveraged partners delivering results. (per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	3	5	5	5	5
Without Increase	N/A	0	0	0	0	0	0
Description: Prize opportunity invites leveraging, and the extent of leveraging will be a measure of how wide the reach of prizes has extended.							

PROGRAM CHANGE PERSONNEL DETAIL

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: Grand Challenge

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Supervisory Program Analyst	Silver Spring, MD	ZP-V	1	123,758	123,758
Program Analyst	Silver Spring, MD	ZP-IV	1	89,033	89,033
Subtotal			<u>2</u>		<u>212,791</u>
2013 Pay Adjustment (0.5%)					<u>1,064</u>
Total					<u>213,855</u>
less Lapse			25% <u>1</u>		<u>(53,464)</u>
Total full-time permanent (FTE)					160,391
2014 Pay Adjustment (1.0%)					<u>1,604</u>
TOTAL					161,995

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1
Authorized Positions:	
Full-time permanent	2
Other than full-time permanent	<u>0</u>
Total	2

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: Grand Challenge

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$162
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	162
12 Civilian personnel benefits	51
13 Benefits for former personnel	0
21 Travel and transportation of persons	100
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	2,899
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	25
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	6,763
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$10,000

Aquatic Invasive Species Program: Aquatic Invasive Species Program Closure: (Base Funding: \$1,005,000 and 3 FTE: Program Change: -\$1,005,000 and -3 FTE): NOAA requests a decrease of \$1,005,000 and 3 FTE for a total of \$0 and 0 FTE to terminate the Aquatic Invasive Species Program.

Proposed Actions:

NOAA proposes to eliminate grants for national research and outreach competitions in Aquatic Invasive Species, given the EPA's more significant efforts in this issue. However, aquatic invasive species research will continue through the efforts of NOAA's state Sea Grant partners. NOAA's current tools, technologies, and information services to control invasive species will be maintained.

Base Resource Assessment:

The base resources for this activity are described in the Ocean, Coastal, and Great Lakes Research base narrative.

Schedule and Milestones:

FY 2014: Completion of ecological and social science research projects targeted to support production of an invasive species transport vector management model or guidance to help the mid-Atlantic region control the live bait invasion vector.

Deliverables:

N/A

Performance Goals and Measurement Data:

Performance Measure: Cumulative number of tools, technologies, and information services created for controlling Aquatic Invasive Species	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With decrease	N/A	N/A	6	6	6	6	6
Without decrease	4	6	8	10	12	14	16
Description: This work supports the Executive Order 13112-mandated National Invasive Species Management Plan. From the Plan: "Strategic goal 3: Contain and reduce the spread and populations of established invasive species to minimize their harmful impacts...A variety of control and management tools are needed to assess, remove and contain invasive species populations and guide management decisions." These tools may be informational, educational or administrative practices, or chemical, biological, or mechanical systems. Both research and outreach will play key roles in developing these tools, and in putting them in the hands of the resource managers who need them.							

PROGRAM CHANGE PERSONNEL DETAIL

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: Aquatic Invasive Species Program Closure

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Marine Scientist	Silver Spring, MD	ZT-III	-2	51,630	(103,260)
Marine Scientist	Silver Spring, MD	ZT-IV	-1	62,467	(62,467)
Subtotal			<u>-3</u>		<u>(165,727)</u>
2013 Pay Adjustment (0.5%)					<u>(829)</u>
Total					<u>(166,556)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-3		<u>(166,566)</u>
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(166,566)</u>

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	-3
Other than full-time permanent	<u>0</u>
Total	-3
Authorized Positions:	
Full-time permanent	-3
Other than full-time permanent	<u>0</u>
Total	-3

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: Invasive Species Program

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$(167)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>(167)</u>
12 Civilian personnel benefits	(50)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(10)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(778)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>\$(1,005)</u>

National Sea Grant College Program: Marine Aquaculture Research: (Base Funding: \$4,335,000 and 1 FTE: Program Change: +\$221,000 and 0 FTE): NOAA requests an increase of \$221,000 and 0 FTE for a total of \$4,556,000 and 1 FTE to enhance Sea Grant's support of national grant competitions for marine aquaculture research and technology transfer. Sea Grant facilitates the transfer of aquaculture research and technology into business operations, as well as informs the public and practitioners about key issues and information related to aquaculture. Environmentally and economically sustainable aquaculture helps meet the increasing demand for seafood, creates and sustains jobs, stabilizes economies in coastal working waterfronts, and supports efforts to manage and rebuild wild fish stocks.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: Marine Aquaculture Research

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	221
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	221

Ocean Exploration Program (Base Funding: \$19,930,000 and 11 FTE; Program Change: +\$10,070,000 and 4 FTE): NOAA requests an increase of \$10,070,000 and 4 FTE for a total of \$30,000,000 and 15 FTE to map and explore the extended continental shelf.

Proposed Actions:

This program change will increase:

- Grants and other extramural funding for ocean exploration including assessments and characterizations of unknown and poorly known ocean areas and phenomena; locating and assessing historically important submerged cultural resources such as shipwrecks; the development of advanced undersea technologies focused on accelerating the pace and efficiency of ocean exploration; and conducting focused exploration on targets identified in the potential U.S. Extended Continental Shelf (ECS).
- This increase will enable OER to perform more ECS mapping expeditions, pursuing the following areas of interest: the Arctic, Pacific, Gulf of Alaska, Palmyra Atoll/ Kingman Reef (between Hawaii and American Samoa), Necker Ridge (between Hawaii and the Midway Island). OER will also enhance ECS assessment and analysis efforts to better determine the potential extension of the U.S. continental shelf according to internationally recognized criteria as established in Article 76, United Nations Convention on the Law of the Sea.
- Funding increase in grants for expeditions conducted with partners using the NOAA Ship *Okeanos Explorer*, as well as the Exploration Vessel *Nautilus* through a Joint Program Agreement with the Ocean Exploration Trust.

Statement of Need and Economic Benefits:

General Ocean Exploration:

Results from Ocean Exploration (OE) efforts include a rich variety of products. These products include: maps and geospatial databases; inventories and samples of living and non-living marine resources; oceanographic and atmospheric data; multimedia products such as video and still images; and peer-reviewed reports and journal articles. These products are archived and made accessible through the appropriate NOAA archive centers. The results provide a critical baseline of knowledge which serves to catalyze new lines of research and scientific inquiry, support ocean resource management decisions at local, regional, and basin scales, and improve ocean literacy and stewardship through public engagement.

U.S. Extended Continental Shelf:

Areas beyond 200 nautical miles (nm) of U.S. coastlines have been the focus of high-resolution bathymetric mapping and seismic reflection profiling over the past several years, in ongoing efforts to define the limits of the U.S. continental shelf according to international law. These efforts to establish the outer limits of the U.S. ECS have already led to scientific discoveries, such as the existence of previously unknown seamounts in the Arctic Ocean, and never before seen mega-plumes of gas from major vent fields off the west coast. Continued efforts will lead to additional scientific understanding, including insight into: climate variability (based on an improved understanding of bottom topography, gas flux measurements, and local and regional ocean currents); the characterization of new and unique marine ecosystems; identification of new and unconventional energy and mineral resources; and increased understanding of potential hazards such as earthquakes and tsunamis. The data collected will also lead to better scientific understanding of the processes that form our continental margins.

An additional four FTE positions will increase OE's capabilities in data management, advanced technology arena, help to manage an expended grants program as well as augment our science and operational team during exploration expeditions.

Base Resource Assessment:

Base resources for this activity can be found in the Ocean Exploration and Research base narrative.

Schedule and Milestones:

- Conduct two to three interagency partnership (i.e., BOEM, National Science Foundation) expeditions per year to explore and characterize habitats and ecosystems in deep water areas.
- Develop an annual extramural competition for conducting the next phase in improving our understanding of the potential resources and natural habitats in areas identified through the ECS Mapping Initiative.
- Acquire Days-At-Sea on UNOLS, Navy, NOAA and other vessels to accelerate and complete the baseline mapping of the potential ECS.
- Develop an annual extramural competition for the exploration of unknown and poorly known ocean areas where there is a high potential for discovery, including efforts focused on new and unique ecosystems and historically important submerged cultural resources, as well as efforts to advance ocean exploration technology.

Deliverables:

- ECS expeditions to map and characterize the potential ECS in the central and western Pacific, Arctic, Gulf of Alaska, and the western Atlantic.
- BOEM-NOAA partnership expeditions to explore and characterize habitats and ecosystems in deep water areas in the Mid-Atlantic Bight and expand this highly leveraged NOPP sanctioned partnership into the Arctic and other EEZ regions, generating maps, peer-review journal reports, and other products.
- Autonomous Underwater Vehicle (AUV) mapping and habitat characterization surveys generating maps and databases containing information on environmental and oceanographic conditions in the areas surveyed.
- Results of exploration expeditions and projects transitioned to deliberately catalyze and plan targeted follow-up research, and products tailored to support management decisions related to marine resources.

Performance Goals and Measurement Data:

Annual number of coastal, marine and Great Lakes ecological characterizations that meet management needs (Measure 18a, OER contribution only)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	2	3	3	3	3
Without Increase	15	1	1	2	2	2	2
Description: Conduct joint expeditions with DOI's BOEM and other partners to explore and characterize habitats and ecosystems in deep water areas of the Gulf of Mexico and the Mid-Atlantic Bight. With additional funding there will also be a possibility to conduct work in the Arctic. Without additional investments in FY 2014 the BOEM partnership will be terminated in FY 2015.							

Performance Measure: Conduct mapping and ecosystem surveys per ECS task force directives (number of surveys per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	3	3	3	3	N/A
Without Increase	1	1	2	2	2	2	N/A
Description: The Extended Continental Shelf mapping (ECS) effort is a high-level interagency multi-year effort to define the potential extension of the U.S. continental shelf under international law. The ECS mapping effort is expected to conclude by 2017. Within NOAA, OER intends to use this information strategically to make informed decisions regarding comprehensive exploration and research.							

Performance Measure: Number of regions analyzed for potential ECS (based on data collected during surveys)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	3	3	4	4	N/A
Without Increase	1	1	2	2	3	3	N/A
Description: The ECS effort is a high-level interagency multi-year effort to define the potential extension of the U.S. continental shelf under international law. The ECS mapping effort is expected to conclude by 2017. Within NOAA, OER intends to use this information strategically to make informed decisions regarding comprehensive exploration and research.							

Performance Measure: Explore, map and visualize maritime wrecks and paleo-landscapes (number of wrecks/landscapes per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	3	3	3	3	3
Without Increase	2	2	2	2	2	2	2
Description: OER Marine Archaeology program explores and discovers maritime heritage sites significant to American and World history using the latest in advanced technology. Sites include shipwrecks, prehistoric submerged landscapes, and other maritime cultural sites. The program supports the research and protections standards enumerated in the United Nations Educational, Scientific, and Cultural Organization (UNESCO) Convention on the Protection of the Underwater Cultural Heritage.							

Performance Measure: Conduct systematic exploration, mapping and characterization of unknown areas in national and international waters using the NOAA Ship <i>Okeanos Explorer</i> Program and provide information and products to multiple users through telepresence links (Number of unknown areas characterized, mapped, and explored per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	9	9	9	9	9
Without Increase	8	8	8	8	8	8	8
Description: Telepresence-enabled systematic ocean exploration using the <i>Okeanos Explorer</i> offers a new approach to discovery. This approach includes: (a) telepresence, the ability to bring scientific expertise virtually to the vessel through live connections between shore and sea, (b) a next generation multi-beam sonar system, and (c) a highly sophisticated, ROV. The ship's telepresence system delivers live images from the ships' ROVs and maps from multi-beam sonar to support live interactions between dedicated centers located throughout the world and the <i>Okeanos Explorer</i> .							

Performance Measure: Conduct AUV mapping and habitat characterization surveys (number of surveys/year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	3	3	3	3	3
Without Increase	1	2	2	2	2	2	2
Description: Autonomous Underwater Vehicles (AUVs) provide NOAA with a capability that significantly improves on its ability to collect marine observation data for all of its mission areas. AUVs provide a broad and synoptic view of our ocean and marine environments to meet the needs of government, environmental managers, scientists, business, and the public. OER utilizes and manages AUVs through its extramural partners, and supports the development of new technologies and approaches for the efficient use of NOAA AUVs.							

PROGRAM CHANGE PERSONNEL DETAIL

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: Ocean Exploration Program

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Program Support Specialist	Silver Spring, MD	ZA-II	1	42,209	42,209
Physical Scientist	Silver Spring, MD	ZP-III	1	62,467	62,467
Physical Scientist	Silver Spring, MD	ZP-IV	3	89,033	267,099
Supervisory Physical Scientist	Silver Spring, MD	ZP-V	1	123,758	123,758
Subtotal			<u>6</u>		<u>495,533</u>
2013 Pay Adjustment (0.5%)					<u>2,478</u>
Total					498,011 (124,503)
less Lapse		25%	<u>2</u>		
Total full-time permanent (FTE)			4		373,508
2014 Pay Adjustment (1.0%)					<u>3,735</u>
TOTAL					<u>377,243</u>

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	4
Other than full-time permanent	<u>0</u>
Total	4
Authorized Positions:	
Full-time permanent	6
Other than full-time permanent	<u>0</u>
Total	6

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: Ocean Exploration Program

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$377
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	377
12 Civilian personnel benefits	113
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	184
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	9,396
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$10,070

Ocean Exploration and Research: National Undersea Research Program (NURP) (Base Funding: \$3,985,000 and 6 FTE; Program Change: -\$3,985,000 and -6 FTE): NOAA requests a decrease of \$3,985,000 and 6 FTE for a total of \$0 and 0 FTE to complete the termination of the National Undersea Research Program (NURP).

Proposed Actions:

To ensure an orderly transition, fund any associated costs, and appropriately dispose of the technologies owned by NOAA, including the Aquarius Undersea Habitat and the *Pisces V* submersible, notification and transition were initiated in FY 2012. NURP's academic partners may have the opportunity to continue their efforts through other funding sources.

Schedule and Milestones:

By FY 2014:

- Transition activities, including disposal of the technologies that are part of NURP.
- Begin procedures to close down the centers and Cooperative Institutes and properly and safely dispose of and/or transfer of all the equipment within.

Deliverables:

N/A

Performance Goals and Measurement Data:

Performance Measure: Conduct targeted research to follow-up and transition Ocean Exploration discoveries to management and operations	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	0	0	0	0	0
Without Decrease	7	6	6	6	6	6	6
Description: This performance measure specifically captures research done by the National Undersea Research Program laboratories to further investigate discoveries made during the course of ocean exploration. OAR will continue to ensure the results of exploration are well organized and widely disseminated, making them available to other NOAA programs and other Federal agencies in order to stimulate follow-on research.							

Performance Measure: Develop undersea technology tools (to advance exploration, research, and measurement of ocean characteristics)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	0	0	0	0	0
Without Decrease	1	1	2	2	2	2	2
Description: This performance measure specifically captures technological tool development conducted by the National Undersea Research Program laboratories to further investigate discoveries made during the course of ocean exploration. OAR will continue to ensure the results of exploration are well organized and widely disseminated, making them available to other NOAA programs and other Federal agencies in order to stimulate follow-on research.							

PROGRAM CHANGE PERSONNEL DETAIL

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: National Undersea Research Program

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Program Support Specialist	Silver Spring, MD	ZA-II	-1	42,209	(42,209)
Physical Scientist	Silver Spring, MD	ZP-III	-1	62,467	(62,467)
Physical Scientist	Silver Spring, MD	ZP-IV	-3	89,033	(267,099)
Supervisory Physical Scientist	Silver Spring, MD	ZP-V	-1	123,758	(123,758)
Subtotal			<u>-6</u>		<u>(495,533)</u>
2013 Pay Adjustment (0.5%)					<u>(2,478)</u>
Total					<u>(498,011)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)					<u>(498,011)</u>
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(498,011)</u>

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	-6
Other than full-time permanent	<u>0</u>
Total	-6
Authorized Positions:	
Full-time permanent	-6
Other than full-time permanent	<u>0</u>
Total	-6

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: National Undersea Research Program

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$(498)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	(124)
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>(622)</u>
12 Civilian personnel benefits	(187)
13 Benefits for former personnel	0
21 Travel and transportation of persons	(37)
22 Transportation of things	0
23.1 Rental payments to GSA	(64)
23.2 Rental Payments to others	(316)
23.3 Communications, utilities and miscellaneous charges	(5)
24 Printing and reproduction	0
25.1 Advisory and assistance services	(69)
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	(13)
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(2,672)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>\$(3,985)</u>

Ocean Exploration and Research: STEM Education (Base Funding: \$23,915,000 and 17 FTE: Program Change: -\$900,000 and 0 FTE): NOAA requests a decrease of \$900,000 and 0 FTE for a total of \$23,015,000 and 17 FTE as part of the Administration's STEM education reorganization plan, which will consolidate most STEM funds into the Department of Education and the National Science Foundation.

Proposed Actions:

Scientists and engineers create many of the innovations that drive our nation's global competitiveness. Our nation's capacity to create and innovate must never be limited by a shortage of talent in science, and technology, engineering and mathematics (STEM) fields. To prepare our students for STEM jobs and other high-skilled careers, we must provide them with opportunities to learn and develop knowledge and competencies in these areas.

To meet future workforce needs, and to leverage their expertise and unique assets in support of STEM education, federal agencies have developed a range of education programs. In the absence of a single guiding plan, these efforts have proliferated over many years to include over 220 programs across 13 different agencies at an annual federal investment of almost \$3 billion. Many of these initiatives are not effectively aligned either to the needs of students or to national priorities, and this fragmented approach to investment has made it difficult to reform and improve Federal STEM education efforts. The Administration is proposing a comprehensive reorganization to facilitate a cohesive national strategy of STEM education programs to increase the impact of Federal investments in four areas: K-12 instruction; undergraduate education; graduate fellowships; and education activities that typically take place outside the classroom. The reorganization involves consolidating or restructuring 90 programs across 11 agencies and improving the delivery, impact, and visibility of STEM efforts. Nearly \$180 million will be redirected from consolidated programs to the Department of Education, the National Science Foundation (NSF), and the Smithsonian Institution to implement initiatives in the four core reform areas. The Administration will ensure that all science mission agencies have input into the development and implementation of these initiatives so that they align with agency goals while improving STEM education at all levels in a streamlined way.

The Department of Education will lead an initiative to improve K-12 STEM instruction by supporting partnerships between school districts and universities, science agencies, businesses, or other educational entities to transform teaching and learning. NSF will focus on improving the delivery of undergraduate STEM education through evidence-based approaches and reforming graduate fellowships so they reach more students and address national workforce needs. The Smithsonian Institution, which already has strong partnerships with several mission agencies, will improve the reach of federally-supported informal education activities, and help align those activities with State standards so that they are relevant to what students are learning in the classroom.

Therefore, in accordance with the Administration's STEM education initiative, NOAA proposes to terminate STEM education programs within the Office of Ocean Exploration, including outreach and education programs.

Schedule and Milestones:

N/A

Deliverables:

N/A

Performance Goals and Measurement Data:
N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research **Sub-**
program: Ocean, Coastal, and Great Lakes Research
Program Change: Ocean Exploration Base Funding: STEM Education

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(900)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$(900)

Integrated Ocean Acidification: Integrated Ocean Acidification (Base Funding: \$6,310,000 and 3 FTE; Program Change: +\$2,101,000 and + 1 FTE): NOAA requests an increase of \$2,101,000 and 1 FTE for a total of \$8,411,000 and 4 FTE to advance research to improve our understanding of enhanced coastal acidification and the impacts to coastal marine resources, and to develop tools and adaptive strategies for affected industries and stakeholders.

Proposed Actions:

This program adjustment will enable NOAA to better inform regional stakeholders and state agencies about the consequences of enhanced coastal OA for water quality and ecosystem resilience allowing coastal resource managers to better discern attribution of local chemistry changes necessary to inform policy and adaptive strategies. The Washington State Blue Ribbon Panel on Ocean Acidification, which includes state, Federal, and industry stakeholders, recommends increased observations and research to understand how ocean acidification is affecting local waters, such as Puget Sound. Hatchery owners in Chesapeake Bay and New England also need scientific guidance in the face of OA's impacts. Additional program resources will support the following critical activities:

Enhanced U.S. Coastal Ocean Acidification Observing System

Improving our understanding of coastal ocean acidification processes demands strategic coordination of observing infrastructure and process monitoring (chemical, physical, ecological). Strategic development of these regional networks can be informed by targeted studies designed to optimize observing assets yielding improved skill and cost efficacy. NOAA will make competitive, extramural awards to be used to generate *regionally targeted ocean acidification observing studies* within coastal environments. Regions of interest (e.g., Puget Sound, Chesapeake Bay, Gulf of Mexico, Gulf of Maine, and selected coral reef sites) will be prioritized on the basis of marine species impact studies conducted with base funding. The studies will guide the development of an integrated enterprise of multi-platform observing and coupled ecological process monitoring needed to track carbon cycle dynamics and the associated ecosystem response, as well as determine long-term trends of OA in response to global change forcings in the coastal oceans. Data access and management will comprise an important element of this enhanced observing system.

Scientific Capacity Building for Impacted Industries (In partnership with IOOS Marine Sensor Program)

Seafood industries in regions beyond the Pacific Northwest are growing increasingly concerned about potential impacts of ocean acidification on their harvest and the economic consequences. In an effort to build resilience and develop adaptation strategies in response to ocean acidification, a science partnership will be fostered in collaboration with the new IOOS Marine Sensor Program to outfit coastal industries with both scientific and monitoring capacity. This effort will be structured in research and development mode with intention for industry to operate once established. The National Oceanographic Partnership Program will award funding through a competitive process.

Regional Coastal Ocean Acidification Models

NOAA will develop enhanced coastal acidification models which are regionally focused and optimized for characterizing carbonate chemistry dynamics within high priority coastal ecosystems. These models will provide information for coastal managers such as nutrient or local atmospheric input and how it affects local acidification. Regional models simulating hydrodynamics and biogeochemistry already exist for many regions but they do not yet include carbon dynamics as parameters of interest. After an initial inventory of existing modeling assets, NOAA will develop competitive RFPs to upgrade existing models in selected regions in partnership with the academic community. In the case of regions which lack functional models, efforts will focus on building new models. These models will rely heavily on the data being generated through the enhanced coastal observing system described above for validation.

Regional Ocean Acidification Outreach Synthesis Products

Data products specific to user needs will integrate a growing wealth of OA data to clearly communicate how ocean acidification is affecting U.S. waters. Products will include 1) near real time maps of ocean water chemistry for high priority regions; 2) short and long term forecasts (e.g. early warnings for shellfish growers); and 3) other visualizations pertinent to the coastal resources (fisheries, protected areas, coral reefs) potentially endangered by OA. These products will be developed in close coordination with regional stakeholder communities.

Statement of Need and Economic Benefits – Cost Benefit Analysis:

Global ocean chemistry is changing at a rate at least ten times faster than at any time over the past 50 million years in response to rising atmospheric carbon dioxide.¹⁰ This ocean acidification (OA) has been associated with changes in a broad range of marine biological processes including shell formation, recruitment, and behavior. Coastal factors such as upwelling, riverine discharge, nutrient loading, and hypoxia can enhance OA at regional and local scales. In 2009, U.S. shellfish represented about half the total seafood revenue estimated at \$3.9 billion.¹¹ In Washington State alone, the shellfish industry generates \$270 million annually, and directly and indirectly supports 3200 jobs. Recreational oyster and clam harvesters contribute more than \$27 million annually to coastal economies.¹² Coral reefs also provide \$30 billion in ecosystem services to local communities.¹³ It has been determined through research that ocean acidification is already having a negative impact on coral reefs and shellfish causing marine resource managers (including industry owners) to request enhanced information on how to adapt to the changing conditions. NOAA's scientific contributions to oyster hatcheries in Washington and Oregon have already helped reverse the financial losses. To more effectively respond to and mitigate the impacts of OA, we need to improve our understanding of OA and the impacts to valuable coastal marine resources. NOAA also needs to develop tools and adaptive strategies for affected industries and stakeholders.

Base Resource Assessment:

Base resources for this activity can be found in the Other Ecosystem Programs base narrative.

Schedule and Milestones:

FY 2014

- Inventory of regional hydrodynamic/biogeochemical models and regional workshops to identify stakeholder need for data products.
- Announce competitive RFPs for model development, optimization studies, impacted industry capacity building and synthesis product development. Some direct scientific assistance to regional partners provided.

FY 2015

- Award competitive grants for rotating observing optimization, model development, stakeholder support and data synthesis products.

FY 2016

- Release initial data synthesis visualization products in pilot region.

¹⁰ Honisch, B. et al. 2012. The Geological Record of Ocean Acidification. *Science*. Vol 335: p1058-1063.

¹¹ U.S. summary data (page 7) of the [2009 NMFS Fisheries Economics report](#).

¹² [Washington Shellfish Initiative white paper](#), December 2011,

http://www.mypugetsound.net/index.php?option=com_docman&task=doc_view&qid=589&Itemid=238; Washington State Blue Ribbon Panel on Ocean Acidification. 2012. [Ocean Acidification: From Knowledge to Action \(Washington State's Strategic Response\)](#). p. xv. <https://fortress.wa.gov/ecy/publications/publications/1201015.pdf/>.

¹³ Cesar, H., L. Burke, and L. Pet-Soede. 2003. *The Economics of Worldwide Coral Reef Degradation*. Cesar Environmental Economics Consulting (CEEC), 6828GH Arnhem, The Netherlands, 23 pp.

- Observing optimization partially completed for pilot region.
- FY 2017
- Complete observing optimization for 1 region (1 region completed per year).
- FY 2018
- Linked models for management application functional for 2 regions (2 regions completed every other year).

Deliverables:

- Optimized observing system in each of the 8 large marine ecosystem regions which targets observing data collection in most efficient way
- Operational regional ecosystem models, which can be used to inform management of inputs to coastal waters of anthropogenic substances which enhance local acidification.
- Readily available near real time data products, which raise the visibility of ocean acidification and provide actionable information to policymakers and coastal managers.
- Seafood industries more resilient to ocean acidification impacts.

Performance Goals and Measurement Data:

Performance Measure: Number of coastal regions with completed observing system optimization studies. (cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0	0	1	2	3
Without Increase	0	0	0	0	0	0	0
Description: Cumulative number of completed regional analyses. Competitive studies will be initiated in beginning in FY 2014 with final analysis of the initial region anticipated in three years (FY 2016).							

Performance Measure: Number of industry partners provided scientific capacity through OA adaptation technologies and methods (cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	1	3	4	6	6
Without Increase	0	0	0	0	0	0	0
Description: Industry partners provided direct scientific and monitoring support to aid them in designing adaptive management technologies and strategies that promote resilience to enhanced coastal OA conditions.							

Performance Measure: Number of large marine ecosystem (LME) provided coastal OA models and synthesis products and tools in support of stakeholder and management decisions (cumulative)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0	0	2	4	6
Without Increase	0	0	0	0	0	0	0
Description: Number of regions provided OA models and/or synthesis products and tools. Regions are defined by NOAA's Regional Ecosystems and U.S. LMEs. Although we plan to rotate the focus from LME to LME, the targeted optimization studies and synthesis products will likely focus on subregions within the LMEs (distinct estuaries, marine protected areas, seamounts, river mouths within LMEs) given the limited funding.							

PROGRAM CHANGE PERSONNEL DETAIL

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: Integrated Ocean Acidification

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Silver Spring, MD	ZP-III	2	62,467	124,934
Subtotal			<u>2</u>		<u>124,934</u>
2013 Pay Adjustment (0.5%)					<u>625</u>
Total					125,559
less Lapse			25% <u>1</u>		<u>(31,390)</u>
Total full-time permanent (FTE)			1		94,169
2014 Pay Adjustment (1.0%)					<u>942</u>
TOTAL					95,111

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1
Authorized Positions:	
Full-time permanent	2
Other than full-time permanent	<u>0</u>
Total	2

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: Integrated Ocean Acidification

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$95
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 95
12	Civilian personnel benefits	29
13	Benefits for former personnel	0
21	Travel and transportation of persons	8
22	Transportation of things	0
23.1	Rental payments to GSA	53
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	5
25.1	Advisory and assistance services	0
25.2	Other services	123
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	1,788
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> \$2,101

Sustained Ocean Observations and Monitoring: Global Ocean Observing System (GOOS)
(Base funding: \$41,103,000 and 42 FTE; Program Change: +\$4,002,000 and 1 FTE; NOAA
requests an increase of \$4,002,000 and 1 FTE for a total of \$45,105,000 and 43 FTE to make progress in critical ocean observations and analyses, Arctic monitoring, and more comprehensive deep ocean monitoring with new full ocean depth profiling floats (Argo) within the Global Ocean Observing System.

Proposed Actions:

NOAA requests an increase in support for three components of the Global Ocean Observing System (GOOS): 1) critical ocean observations and analysis; 2) progress in observational efforts in the rapidly changing Arctic; and 3) technology development to improve our understanding of the deep ocean via deployment of Deep Argo Floats that would provide valuable information on sea level rise and the global energy balance.

Ocean Observations and Analysis

Specific enhancements to the GOOS (both observations and analysis) that will advance monitoring global sea level rise and its drivers include:

- Tide Gauge Stations: NOAA will deploy ten tide gauge stations and equip fifteen enhanced reference tide gauge stations with GPS receivers and real-time reporting transmitters to provide absolute sea level rise measurements, groundtruth satellite data, and provide real-time monitoring for tsunamis, El Niño, and storm surge events. Costs associated with the support of these upgrades are requested to meet ongoing operations and maintenance of the systems.
- Ocean Reference Stations: NOAA will deploy and maintain one real-time reporting deep ocean monitoring system in a boundary current location to monitor energy and carbon exchanges between the ocean and atmosphere, upper ocean temperature and salinity, and near-surface currents.
- Ocean Analysis and Assimilation: NOAA will engage university and government researchers to analyze and assimilate ocean data to improve ocean models for more reliable projections of climate changes. Partners will also help assess the adequacy of existing and future observing systems.
- Drifting Buoys: NOAA will deploy fifty additional drifters. Drifters provide a full network of sea surface temperature observations as part of the Global Drifter Array. These observations are critical to support monitoring of sea surface temperature and atmospheric pressure.
- South Atlantic Meridional Overturning Circulation: NOAA will continue engaging university and government researchers to analyze the variability of the Meridional Overturning Circulation in the South Atlantic and the role this variability plays in climate changes such as variations in precipitation and surface air temperatures.

Arctic

NOAA proposes to increase investments in the Arctic Program resulting in additional analyses that address the immediate and near-term changes in Arctic conditions including sea-ice, marine ecosystems, and atmospheric aerosols. These analyses will lead to improved products and knowledge for decision making as well as contribute to other research efforts across a range of issues affecting or affected by the Arctic.

The NOAA Arctic program supports NOAA's response capabilities to stakeholders, particularly those in Alaska and the Pan-Arctic region, but also throughout the Nation. Arctic observations produce information and application-driven research outputs, such as nowcasts and forecasts tailored to Arctic stakeholder needs, and projections for planning and policy. The NOAA Climate Program Office will

lead this effort and utilize the capabilities of NOAA's Joint and Cooperative Institutes as well as NOAA laboratories.

Deep Argo

NOAA proposes to deploy two pilot arrays of Deep Argo floats; one in the Southwest Pacific basin and one in the Northwest Atlantic basin. NOAA requires a global array of Deep Argo (0-6,000 m) conductivity/temperature/depth profiling floats to supplement the present Argo Program's 3,400 upper ocean floats (<http://www-argo.ucsd.edu>). Together, the shallow and deep Argo arrays will close global budgets of heat, freshwater, and sea level data.

The proposed pilot arrays, together with deep-ocean repeat hydrographic surveys will demonstrate the capability of Deep Argo to resolve the spatial and depth distribution of decadal signals in the deep ocean. The U.S. Argo float consortium (Scripps Institution of Oceanography, Woods Hole Oceanographic Institution, University of Washington, NOAA Pacific Marine Environmental Laboratory, NOAA Atlantic Oceanographic and Meteorological Laboratory) together with management functions provided by the Climate Program Office will implement the Deep Argo pilot effort with specific tasks and responsibilities distributed among the partners similarly to the present U.S. Argo Program. International Argo partners are also contributing to Deep Argo, and the efforts of these partners will increase the number of Deep Argo floats and assist the U.S. effort directly through collaborative float deployment.

Statement of Need and Economic Benefits:

Episodes of devastating coastal inundation over the last decade have emphasized the critical importance of having an ocean observing system that can continuously monitor for approaching marine hazards and provide early warnings to the coasts for hazard mitigation. Storm surge, El Niño, tsunamis, as well as gradual sea level rise, all originate in the deep ocean well beyond the coastal zone, where much of our observing capacity currently exists. Gradual sea level rise results from an increase in mass due to melting ice and thermal expansion from ocean heating, which causes an increase in the amount of sea water. Recent studies suggest that much of the ocean heat driving sea level rise may be stored in the deep ocean, beyond routine observation by current technology. Emerging technology, such as deep Argo floats, will be able to better track this heat exchange.

More broadly, ocean observations serve as the foundation for understanding and forecasting the Earth's climate system, enabling real-time monitoring of ever-changing ocean conditions, and seasonal-to-decadal climate forecasts and analyses for a broad spectrum of ecosystem research and societal applications.

Economists project that investment in observing system technology will be amplified by orders of magnitude in socio-economic advantage to the Nation in planning for impacts and responses to climate change generally and sea level rise, in particular. The coupling of climate related sea level change with the high water levels due to extreme events such as hurricanes bring billion-dollar socio-economic impacts and dramatic shifts in our coastal marine ecosystems. Sea level rise threatens the stability of our coastal communities, economies, and ecosystems. Increasing ocean observations will improve our understanding of and ability to predict sea level rise which will lead to better planning, informed investments, and the development of adaptation strategies. Further, U.S. investment in the global system is more than matched by the international partners to date.

The Arctic region is currently undergoing profound atmospheric, terrestrial and oceanic changes related to climate variation and change. In many cases, observed changes far exceed the current model projections. These changes impact human health, infrastructure, fisheries, ecosystems, coastal communities, international maritime activity, and regional to mid-latitude climate shifts. Diminishing

sea ice cover contributes to significant changes in weather patterns both within and surrounding the Arctic, modifies ecosystems, opens new shipping channels, and provides access to previously unobtainable natural resources. Additionally, the domestic energy industry has increased interest in the Arctic region as a source for oil and natural gas exploration/extraction and as part of a national energy policy.

Base Resource Assessment:

The base resources for this activity are described in the Sustained Ocean Observations and Monitoring base narrative.

Schedule and Milestones:

Ocean Observations

Schedule/Milestones With Increase	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Ocean Reference Stations deployed (Cumulative total number)	11	12	12	12	12	12
Drifting Buoy Array deployed (Total number/year-reseeding the array)	1000	1000	1000	1000	1000	1000
Deep Argo profiling floats deployed (Cumulative total number)	0	0	8	12	20	28
Integration of Deep Argo data into the Argo Data Management System	No	Yes	Yes	Yes	Yes	Yes
Tide Gauge Reference Stations w/GPS installed (Cumulative total number)	110	111	112	114	117	120

Deliverables:

- Upgraded tide gauge stations installed with GPS
- NOAA will contribute annually the international Deep Argo Program, including data transmission, data management, and public distribution of all deep Argo data.

NOAA will develop and disseminate observational and model-based ocean analysis products. Observationally-based products (e.g., global maps of observed ocean heat content, salinity, sea level, currents, etc.) will aid in evaluating and improving ocean and climate models, with a view towards providing improved predictions of climate change (e.g., improved predictions of sea level rise). In addition, model-based products (e.g., ocean state estimated from assimilation of ocean data into ocean models) will be produced on an -as neededll basis in response to emerging climate priorities. Additionally, the supporting data analysis and delivery infrastructure will be enhanced to facilitate extracting maximum information from observational data.

Performance Goals and Measurement Data:

Performance Measure	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Error in global measurement of sea surface temperature (°C). (Measure 16c)							
With Increase	N/A	N/A	0.48	0.48	0.48	0.48	0.48
Without Increase	0.56	0.50	0.50	0.50	0.50	0.50	0.50
<p>Description: This measure is intended to document progress in accurately measuring the global sea surface temperature (SST) using in situ drifting buoys to verify that satellite SST data are accurate and representative. This reflects how improvements in ocean observations will decrease the uncertainty in global sea surface temperature measurements, which will ultimately play a role in calculations of the ocean-atmosphere exchange of heat and the heat storage in the global ocean. The sea surface, covering over 70 percent of the Earth surface, has a tremendous influence on global climate because it is where the atmosphere responds to the ocean via the transfer of heat either to or from the atmosphere. Since sea surface temperature is measured by buoys, ships, and satellites, this performance measure is well-suited as an indicator of the effectiveness of our integrated ocean observing system and the more accurate estimates of sea surface temperature will improve our ability to detect changes in the climate system. Success in this performance measure requires the maintenance and increase of in situ ocean sensors. The goal is to reach an indicator value of 0.3 degrees Celsius, which has been specified by the international Global Ocean Observing System (GOOS) as the required accuracy for measurement of sea surface temperature.</p>							

PROGRAM CHANGE PERSONNEL DETAIL

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: Global Ocean Observing System

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Program Manager	Silver Spring, MD	ZP-IV	1	89,033	89,033
Subtotal			<u>1</u>		<u>89,033</u>
2013 Pay Adjustment (0.5%)					<u>445</u>
Total					<u>89,478</u>
less Lapse			25% <u>0</u>		<u>(22,770)</u>
Total full-time permanent (FTE)			1		66,708
2014 Pay Adjustment (1.0%)					<u>667</u>
TOTAL					<u>67,375</u>

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1
Authorized Positions:	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Ocean, Coastal, and Great Lakes Research
Program Change: Global Ocean Observing System

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$67
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 67
12	Civilian personnel benefits	27
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	272
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	2,336
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	1,300
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> \$4,002

**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES
SUB-PROGRAM: INNOVATIVE RESEARCH AND TECHNOLOGY**

The objective of the Innovative Research and Technology sub-program is to accelerate the adoption of advanced computing, communications, and information technology throughout NOAA. Innovative Research and Technology supports OAR's High Performance Computing and Communications (HPCC) Initiative. The HPCC program supports OAR through major improvements in weather and climate forecasting, ecosystem and ocean modeling, and environmental information dissemination. These improvements are heavily dependent on major advances in high-end computing power, advanced information technology, and the availability of environmental data and information. These critical investments allow NOAA to meet its mission to deliver vital services and science education.

Through this program, NOAA participates as a mission agency in the multi-agency Networking and Information Technology Research and Development (NITRD) program. NOAA participates on several NITRD Interagency Working Groups including:

- High End Computing
- Large Scale Networking
- Software Design and Productivity
- Human Computer Interaction and Information Management.

HIGH PERFORMANCE COMPUTING (HPCC) INITIATIVES

HPCC supports a number of objectives in NOAA's Strategic Plan through support of IT research targeted at improving NOAA's mission and services which expands the global understanding of environmental science. The purpose of the HPCC program is to make major improvements in the Nation's ability to forecast the weather and climate, and to disseminate environmental information. At the same time, the program is aimed at stimulating the modernization of NOAA's computationally intensive services through the use of evolving high performance computing and high-speed networking technologies. Improvements in the accuracy and timeliness of NOAA's short-term weather warnings, seasonal forecasts, hurricane forecast improvements, as well as regional and global climate predictions are heavily dependent on major advances. These advances would include high-end computing power, advanced information technology, and the widespread availability of environmental data and information. Timely and responsive dissemination of NOAA's services and information requires full use of modern network and communication technologies. This program provides NOAA's focus for coordinating with external organizations and programs impacting the HPCC Program, through NITRD and its Interagency Coordinating Groups on Information Technology Research and Development (IT R&D), and by establishing agreements with other Federal agencies to obtain additional computational cycles to support NOAA's environmental research activities.

The activities that are currently being conducted with program resources and how those resources are allocated are as follows:

<i>Activity</i>	<i>Dollars</i>	<i>FTE</i>
Program Management	\$1.3M	6
HPCC R&D IT Proposals	\$0.0M	0
Environmental Modeling Software Development	\$4.0M	3
R&D HPC Contract	\$3.0M	3
Acquisition Support	\$0.7M	1

The HPCC program provides NOAA with necessary computational and network resources required to support continued advances in environmental modeling capabilities. Benefits of the HPCC program include:

- Improvements in short-term warning and weather forecast systems and models,
- Enabling scientists to attack long-lead time problems associated with the physical processes that govern the behavior of the atmosphere and ocean,
- Maintaining NOAA's leadership position in understanding climate with applications towards critical issues such as hurricanes, drought, sea-level rise, and
- Accelerating modeling and simulation activities and providing relevant decision support information on a timely basis for programs such as the multi-agency Climate Change Science Program.

Schedule and Milestones:

FY 2014

- Make decision on whether or not to exercise next four-year contract option for R&D HPC support services
- Update FIM global model for operations
- Develop 1 km global non-hydrostatic Atmospheric General Circulation Model (AGCM)
- Develop 1/50° Ocean General Circulation Model (OGCM)
- Develop high resolution climate/carbon/ice model for Polar Regions for decadal prediction capability for Arctic, assessment of potential for Arctic feedbacks to accelerate climate change, and more accurate estimates of sea level rise rates

FY 2015-2018

- Update FIM global model and updates for operations

Deliverables:

- HPC System availability – Maximum number of computational hours made available to scientists

Performance Goals and Measurement Data:

Performance Measure:	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
HPCC / R&D System Availability	Actual	Target	Target	Target	Target	Target	Target
	99%	96%	96%	96%	96%	96%	96%
<p>Description: Maintaining high system availability translates into providing NOAA scientists, researchers, and collaboration partners with the maximum number of computational hours available enabling them to conduct important R&D on an almost 24/7 basis. The HPCC program provides NOAA researchers with a reliable computing resource which allows them to plan, with a high degree of confidence, their project milestones and deliverables. System outages can adversely affect NOAA initiatives such as meeting the Intergovernmental Panel on Climate Change milestones or cause delays in implementing operational improvements for hurricane track and intensity predictions. Ensuring high system availability enables NOAA to maximize its investment in these resources.</p>							

Performance Measure: Number of software development projects completed for climate, weather and water environmental R&D	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	4	4	4	4	4	4	4
Description: This is a new performance measure for the FY 2014 request. Each year the HPCC program funds software modeling development projects supporting NOAA's environmental scientists. These models run on NOAA's R&D supercomputers. These modeling efforts are focused on many different disciplines including climate change supporting the IPCC, hurricane forecast improvement, and advances in models supporting weather forecasting. Other OAR performance measures have direct dependencies on these modeling efforts.							

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

High Performance Computing and Communication (HPCC): Advanced Networking Research and Development (Base Funding: \$9,092,000 and 13 FTE; Program Change: +\$3,294,000 and 0 FTE): NOAA requests an increase of \$3,294,000 and 0 FTE for a total of \$12,386,000 and 13 FTE to fund advanced networking research and development (R&D) projects and increase the number of software development projects.

Proposed Actions:

This increase will allow the HPCC program to fund advanced networking R&D projects. OAR also estimates that the requested funding will enable the program to double the number of software development projects that can be completed. In FY 2014, OAR plans to:

- Incorporate the Flow-following finite-volume Icosahedral Model (FIM) as a member of the operational global ensemble system;
- Incorporate the operational global ocean model (HYCOM) into the NOAA Environmental Modeling System which will allow the National Centers for Environmental Prediction (NCEP) to begin coupled atmospheric/ocean testing for numerical weather prediction medium range predictions;
- Continue development and testing of neural networks within the Global Forecast System (GFS);
- Continue development and testing of advanced numerical methods in the operational Global Forecast System to achieve higher resolution with minimal computational cost;
- Continue development and testing of a global non-hydrostatic unified modeling system for next generation NOAA operational application;
- Increase quality control levels for data used in the National Climate Assessment, international assessments for ozone and Intergovernmental Panel on Climate Change assessments; and,
- Release new coupled climate models and the component models which they comprise, such as the Modular Ocean Model which is used in the operational climate forecast system.

Increased funding will also allow the program to make investments in the research and development High Performance Computing System computational infrastructure, facility, and network resources.

Statement of Need and Economic Benefits:

Improvements in the accuracy and timeliness of NOAA's short-term weather warnings, seasonal forecasts, hurricane forecasts, as well as regional and global climate rely on high-end computing, advanced information technology, and the widespread availability of environmental data and information. Timely and responsive dissemination of NOAA's services and information requires full use of modern network and communication technologies. This program provides NOAA's focus for coordinating with external organizations and programs impacting the HPCC Program, through the Networking and Information Technology Research and Development (NITRD) Program and its Interagency Coordinating Groups on Information Technology Research and Development (IT R&D), and by establishing agreements with other Federal agencies to obtain additional computational cycles to support NOAA's environmental research activities.

Base Resource Assessment:

The base resources for this activity are described in the Innovative Research and Technology base narrative.

Schedule and Milestones:

FY 2014

- Fund approximately 11 HPC and advanced networking R&D projects
- Update Flow-following finite-volume Icosahedral Model (FIM) global model and updates for operations
- Parallelization of FIM dynamics for Intel MIC (type of GPU) to evaluate this technology
- GPU parallelization of WRF physics used in the NIM model
- Integrate global ocean model (HYCOM) into FIM using the NOAA Environmental Modeling System
- Develop and test the use of neural networks with the GFS
- Development and testing of advanced numerical methods in the operational GFS to achieve higher resolution with minimal computational cost development and testing of a global non-hydrostatic unified modeling system for next generation NOAA operational application
- Continued Quality Control of model data used in the National Climate Assessment and international assessments for Ozone and Intergovernmental Panel on Climate Change assessments

FY 2015

- Fund approximately 11 HPC and advanced networking R&D projects
- Update FIM global model for operations
- Develop 1 km global non-hydrostatic Atmospheric General Circulation Model (AGCM)
- Develop 1/50° Ocean General Circulation Model (OGCM)
- Develop high resolution climate/carbon/ice model for Polar Regions for decadal prediction capability for Arctic, assessment of potential for Arctic feedbacks to accelerate global warming, and more accurate estimates of sea level rise rates

FY 2016

- Fund approximately 11 HPC and advanced networking R&D projects
- Update FIM global model and updates for operations

FY 2017

- Fund approximately 11 HPC and advanced networking R&D projects
- Update FIM global model and updates for operations

FY 2018

- Fund approximately 11 HPC and advanced networking R&D projects

Deliverables:

- HPC System availability – Maximum number of computational hours made available to scientists.

Performance Goals and Measurement Data:

Performance Measure: Number of software development projects completed for climate, weather and water environmental R&D (per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With increase	N/A	N/A	8	8	8	8	8
Without increase	4	4	4	4	4	4	4
Description: Each year the HPCC program funds software modeling development projects supporting NOAA's environmental scientists. These models run on NOAA's R&D supercomputers. These modeling efforts are focused on many different disciplines including climate change supporting the IPCC, hurricane forecast improvement, and advances in models supporting weather forecasting. Other OAR performance measures have direct dependencies on these modeling efforts.							

Performance Measure: Number of R&D Information technology innovation projects initiated and completed. (per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	11	11	11	11	11
Without increase	17	0	0	0	0	0	0
Description: Each year the HPCC program sponsors a program to promote innovation in information technology across all elements of NOAA supporting NOAA's many missions. The goal in the program is identify promising new and innovative technologies or uses for existing technologies that can rapidly be adopted into operational settings supporting NOAA.							

Performance Measure: Number of Networking and Information Technology Research and Development (NITRD) interagency activities that NOAA actively participates in (per year)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	5	5	5	5	5
Without increase	5	3	3	3	3	3	3
Description: NOAA has traditionally been an active participant in the White House Office of Science and Technology NITRD program. Funding from HPCC allows NOAA to participate in several NITRD interagency working groups including High End Computing, Human Computer Interaction and information management, Large Scale Networking, Software Design and Productivity. The NITRD activity has resulted in many benefits for NOAA including improvements to NOAA's wide area networking capabilities.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Innovative Research and Technology
Program Change: High Performance Computing and Communication

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	3,294
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> \$3,294

APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION, AND CONSTRUCTION
SUB-PROGRAM: OAR SYSTEMS ACQUISITION

The objective of this sub-program is to provide sustained capability of the NOAA Research and Development High Performance Computing System (R&D HPCS) in order to advance climate science and accelerate the development of regional and sub-regional information products and services.

NOAA's R&D HPCS provides computational resources to support advances in environmental modeling crucial for understanding some of the most critical climate issues of today. This investment includes the supercomputing systems, associated storage devices, advanced data communications, hardware and software engineering services, security, and necessary data center space. NOAA's R&D HPCS leverages world-class research staff and modeling capabilities now in place at NOAA to address important research problems in climate and weather research. NOAA's on-going model development is advancing the climate research program through NOAA computational research and collaboration with the inter-agency and academic climate research community. The American Recovery and Reinvestment Act funding enhanced NOAA's R&D HPCS, accelerating NOAA's capabilities to provide climate information to decision makers at regional and state levels.

Schedule and Milestones:

FY 2014

- Begin migration of major modeling applications to fine-grain architecture
- Generate robust simulations of regional climate change around the world (including tropical storms) using 25-km resolution global atmospheric model

FY 2015

- Continue to maintain Gaea R&D HPCS system at Oak Ridge National Laboratory
- Migrate major modeling applications and begin migration of minor applications
- Improve realism of the NOAA Earth System Models by closing the nitrogen cycle, and major feedback on the global carbon cycle
- Reduce the percentage of uncertainty in possible twenty-first century sea level rise

FY 2016

- Upgrade storage capacity of climate model data archive
- Develop the initial physical formulations to incorporate soot and dust aerosol impacts on snow and ice albedo in climate models, and improve sea ice models essential to developing a predictive understanding of Arctic climate change
- Migrate minor applications to perform in balance with major applications

FY 2017

- Enhance contributions to assessments of human impacts on climate through inclusion of more realistic physical processes and important feedback in climate models, and analysis of causes of past climate change
- Gain greater confidence in projections of regional climate impacts

FY 2018

- High-resolution Earth System Model integrations publically available for use in regional decision-making through federated data services
- Exploratory application of Earth System Models using exascale high-performance computing platforms

Deliverables:

- Sustained high availability of the NOAA R&D High Performance Computing system
- Improved credibility of projections of changes of important climatic quantities, such as regional climate change and extreme events, to allow society to efficiently plan for and adapt to climate change
- Major contributions of model data to the Program for Climate Model Diagnosis and Inter-comparison, in support of national and international climate assessments
- Capability to develop and provide decadal prototype forecasts and predictions made with high-resolution coupled climate model
- NOAA's environmental modeling applications able to utilize performance increases available through fine-grain architectures

Performance Goals and Measurement Data:

Performance Measure: Percent of codes ported to fine-grain architectures in NOAA's model suite	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	0%	0%	30%	60%	100%	100%	100%
Description: This is a new performance measure for the FY 2014 request. NOAA models are currently written to maximize efficiency on scalar computer architectures. It is expected that architectures based on fine-grained computing technologies will be replacing current architectures in the near future. NOAA must prepare mission critical applications to efficiently execute on next generation HPC architectures while maintaining performance levels on the current HPC. This performance measure tracks the re-coding of these applications to run on fine-grained architectures.							

Out-year Funding Estimates

Research Supercomputing	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from 2014 Base		-	-	-	-	-		
Total Request	295,056	10,379	10,379	10,379	10,379	10,379	N/A	Recurring

PROGRAM CHANGES FOR FY 2014:

The following exhibit shows the summary object class detail for the Information Technology R&D program changes less than \$100,000. Please contact the Department of Commerce if details for any of these changes are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Program: Office of Oceanic and Atmospheric Research
Sub-program: Information Technology R&D
Program Change: System Acquisition

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	29
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	\$29

THIS PAGE INTENTIONALLY LEFT BLANK

BUDGET PROGRAM: NATIONAL WEATHER SERVICE

For FY 2014, NOAA requests a net increase of \$42,190,000 and a decrease of 103 FTE from the FY 2014 base for a total of \$1,050,101,000 and 4,546 FTE for the National Weather Service (NWS) after a net decrease of \$4,141,000 and 0 FTE to account for the reprogramming of the FY 2012 Spend Plan. The requested funding includes \$11,241,000 and 0 FTE in inflationary adjustments and \$1,183,000 in IT savings for reinvestment in DOC Working Capital Fund IT initiatives.

National Weather Service Base Overview

The NWS Operations, Research, and Facilities account (\$916,851,000 and 4,623 FTE) includes the following sub-programs:

- Operations and Research (\$813,842,000 and 4,435 FTE) includes the operations of 122 Weather Forecast Offices (WFO) and 13 River Forecast Centers (RFC) which provide up-to-date and accurate weather forecasts, warnings, and outlooks to the Nation; and research to operations activities that advance weather and climate prediction.
- Systems Operation and Maintenance (\$102,477,000 and 188 FTE) includes the operation of systems such as the Advanced Weather Interactive Processing System (AWIPS), the Next Generation Radar (NEXRAD), the Automated Surface Observing System (ASOS) and others that collect and process the observations necessary to provide weather forecasts, warnings, and outlooks.

The Procurement, Acquisition, and Construction (PAC) account (\$91,060,000 and 26 FTE) include the following sub-programs:

- Systems Acquisition (\$88,433,000 and 26 FTE) includes the AWIPS II Extended project, which will add new capabilities and improve the ways in which forecasters access and visualize meteorological information. Systems acquisition also includes NWS' operational High Performance Computing (HPC) capability, which is used to run all of NOAA's operational weather models.
- Construction (\$3,159,000 and 0 FTE) includes upgrades and improvements to NOAA's WFO's and Weather Service Offices (WSO).

The NWS (<http://www.weather.gov/>) provides weather, water, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure, which can be used by the public, other governmental agencies, the private sector, and the global community.

NWS is a world-class science-based team of professionals who work together to provide the best weather, water, and climate information in the world by:

- Producing and delivering reliable information;
- Incorporating proven advances in science and technology;
- Measuring, reporting, and evaluating our performance;
- Issuing forecasts to help reduce weather- and water-related fatalities; and
- Working with others to make the weather, water, and climate enterprise more effective.

NWS is dedicated to serving the American public by providing a broad spectrum of weather, climate, and hydrological forecast guidance and decision support services. NWS strives to meet society's need for weather and hydrological forecast information. As more sectors of the economy recognize the impacts of weather and water on their businesses, they are becoming more adept at using sophisticated weather and water information to improve commerce. According to the American Meteorological Society, weather is directly linked to public safety, and a significant portion of the U.S. economy is weather-sensitive. Concern for public safety drives NWS to improve the timeliness and accuracy of warnings for all weather-related hazards.

NWS is committed to enhancing observation capabilities by: (1) improving data assimilation that effectively uses all the relevant data NWS and others collect; (2) improving collaboration with the research community through creative approaches such as community modeling; by rapidly transforming scientific advances in modeling into improved operational products; (3) improving the techniques used by our expert forecasters; (4) making NWS information available quickly, efficiently, and in a useful form (e.g., the National Digital Forecast Database); (5) including information on forecast uncertainty to help customers make better-informed decisions; (6) taking advantage of emerging technologies to disseminate this information; and (6) maintaining an up-to-date technology base and a workforce trained to use all of these tools to maximum effect.

The weather and water enterprise is larger than NWS. NWS depends on partners in the private, academic, and public sectors, starting with other line offices within NOAA to acquire data, conduct research, provide education and training, help disseminate critical environmental information, and provide advice to make best use of NWS information. NWS strives to work more closely with existing partners. NWS also seeks to develop new partnerships to achieve greater public and industry satisfaction with our weather and water information and to honor our commitment to excellent customer service.

In accordance with the strategic plan, NWS launched a nationwide initiative called Weather-Ready Nation (WRN) to build community resilience in the face of increasing vulnerability to extreme weather and water events. The initiative includes improvements in a wide range of areas to support management of the Nation's water supply, understanding of climate-related risks, economic productivity, and healthy communities and ecosystems. Record-breaking snowfall, cold temperatures, extended drought, high heat, severe flooding, violent tornadoes, and massive hurricanes have all combined to reach the greatest number of multi-billion dollar weather disasters in the Nation's history. The devastating impacts of extreme events can be reduced through improved readiness, which is why NWS is reacting with the WRN initiative to further reduce the Nation's weather-related vulnerabilities. The initiative will be enacted through improvements to demand-driven support services, innovative technology, and specialized training of our workforce.

Strategic components, which span NWS operational programs, include:

- Integration of social and behavioral sciences research to communicate risk and motivate appropriate action more effectively.
- Enhanced weather decision support service through a series of community-based pilot projects across the country ranging in focus from emergency response to integrated environmental services.
- Improved severe weather observations with upgraded technology such as nationwide implementation of Dual Polarization radar technology and the Joint Polar Satellite System.

- Improved regional weather information from community pilot projects that are collaborations between local authorities, scientists, and forecasters to deliver support technologies, such as enhanced data displays, remote communication methods, tablet technology, and localized modeling development.

Building a WRN starts with these internal actions, but requires the participation and commitment of a vast nationwide network of partners including other government agencies, emergency managers, researchers, the media, the private sector and more to assess why the Nation is experiencing such extreme impacts. Through a series of on-going symposiums, participants are identifying, prioritizing, and setting into motion actions to ensure that our society is ready, responsive, and resilient to extreme weather and other weather-dependent events.

NWS Weather and Hydrological Activities

- Improved effectiveness of NOAA's current observing systems.
 - Increased accuracy in forecasting and lead time in warning for severe weather and flooding events.
 - Increased number of observations obtained and used from partners, both international and domestic.
 - Increased number of observations archived, available, and accessible.
 - Increased number of new multi-use observing systems deployed.
 - Increased number of forecasters trained in the newest techniques.
 - Increased volume of forecast and warning information formatted to clarify the uncertainty of an event (e.g., space weather, air quality, water and weather forecasts).
 - Improved performance of NOAA's weather and water, air quality, and space weather prediction suite.
- Increased satisfaction with and benefits from NOAA information and warning services, as determined by surveys and analysis of emergency managers, first responders, natural resource and water managers, public health professionals, industry, government and the public.
 - Increased number of favorable scores on public surveys of citizen knowledge about appropriate actions under hazardous weather and water related conditions.
 - Increased percentage of the public reporting timely receipt of warnings as measured by public surveys.
 - Increased number of communities with plans in place to act on weather warnings and to reduce the impacts of severe weather.
 - Increased community knowledge of, use of, and satisfaction with NOAA information that supports local air quality monitoring and forecast programs.
 - Increased assistance to international partners to improve response capabilities to weather and water predictions.

NWS places an emphasis on severe weather-related events, which significantly affect people, their livelihoods and the economy. NWS strives to promote the Nation's commerce by providing information supporting society's ability to take preventive actions so that people remain safe; less damage is done to communities, businesses, and the environment; and economic productivity is maximized. NWS services are critical to the safe and efficient transportation of people and goods by sea, air and over land. The transportation and public utility sectors are a vital component of the U.S. economy and are highly vulnerable to weather and climate events. NWS will work to provide aviation forecast improvements to help mitigate air traffic delays and reduce weather-related aviation accidents; improve precipitation and water resource forecasting, which affects surface transportation; and improve ocean and wind forecasting,

which affects sea-borne transport from the high seas to our coasts and the Great Lakes. NWS is committed to working with our partners to continue improving weather information services in support of all modes of transportation and commerce.

NWS Activities in support of commerce

- Increased safety and productivity of transportation systems by providing relevant observations, warnings and forecasts of weather events impacting the transportation sector.
- Increased reliability, frequency, and use of marine, aviation, and surface transportation-related observations.
- Increased accuracy and use of weather and marine forecasts to increase efficiency of all land, water and air transportation systems.

NWS operates and maintains critical infrastructure, which enables the provision of NOAA's services to the Nation. NWS manages a distributed network of offices that span the Nation, delivering essential NOAA services, especially those related to high-impact events, at the local level where critical, life-saving decisions are made. This includes the management of all major weather observing systems, from software engineering and communications to facilities and logistics planning. NWS also ensures worldwide acquisition and delivery of weather and water data through the Telecommunications Gateway and the Office of Operational Systems Network (OPSnet). In support of NOAA's operational forecasting mission, NWS develops, improves and monitors data assimilation systems and models of the atmosphere and oceans, using advanced methods developed internally as well as cooperatively with scientists from universities, NOAA laboratories, other government agencies, and the international scientific community.

NWS's enabling infrastructure

- Ensure the reliability and integrity of NOAA's operational weather and water observing and prediction systems and services.
- Determine the optimal mix of observations, in terms of spatial and temporal resolution and data type, to advance NOAA's numerical modeling capabilities.

Research and Development Investments:

The NOAA FY 2014 Budget estimates, including research and development programs, are the result of an integrated requirements based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. NWS requests \$36,187,000 for investments in R&D in the FY 2014 budget.

NOAA's R&D planning is tied to the goals, enterprises, and associated objectives outlined in NOAA's Next Generation Strategic Plan. Specifically, NOAA's Science and Technology Enterprise and underlying objectives of holistic understanding of the Earth system through research; accurate and reliable data from observing systems; and an integrated environmental modeling system, provide the basis for a set of internal implementation plans covering a 7-year period which guide NOAA's research and development activities. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - informs the annual updates to these implementation plans, and is developing the next 5-Year Research and Development Plan for NOAA (FY 2013 - 2018), which will be publicly available when completed. This new plan will reflect NOAA's strategic objectives, provide a single guiding document for our scientists, the public, and our partners, and inform future internal planning efforts.

Significant Adjustments-to-Base (ATBs):

NOAA requests an increase of \$11,241,000 and 0 FTE to fund adjustments to current programs for NWS activities. The increase will fund the estimated 2014 Federal pay raise of 1.0 percent. The increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NOAA requests technical adjustments to restore programs affected by the reprogramming of the FY 2012 Spend Plan for a net change of \$0 to the agency.

NOAA requests technical adjustments to transfer a total of \$1,813,000 and 0 FTE from several NWS PPAs to the Program Support Payment to the DOC Working Capital Fund in order to support three new Department level initiatives: the Enterprise Security Operations Center (ESOC), the new Financial System (BAS) and the Personal Identity Verification (PIV) program.

These savings are applied to the following PPAs:

Local Warnings and Forecast Base	\$644,000
Central Forecast Guidance	\$7,000
Strengthen U.S. Tsunami Warning Network	\$532,000

NOAA also requests the following transfer for a net change of \$0 and 0 FTE to the agency:

From Office	PPA	To Office	PPA	Amount/FTE
NWS	NEXRAD Product Improvement (PAC)	NWS	Local Warnings & Forecasts (ORF)	\$0/5 FTE

NOAA requests a technical adjustment to move 5 FTE from the NEXRAD Product Improvement program in PAC to the Local Warnings & Forecasts program in ORF. This adjustment refocuses the FTE working on the NEXRAD Product Improvement (PI) program to other LWF activities, following the planned termination of that program.

Headquarters Administrative Costs:

In FY 2014, NWS Line Office headquarters will use \$22,403,800 in funds to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, NWS will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2014 Amount	FY 2014 FTE associated with NWS HQ
General Management & Direction/Executive Management	Includes Assistant Administrator's office, public affairs, information services	\$8,248,400	37.0
Budget & Finance	Includes Budget, Finance and Accounting	\$5,165,700	22.0
Information Technology (IT)	Includes IT-related expenses and other CIO related activities	\$3,315,000	17.0
Facilities/Other Administrative (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$3,975,500	6.0
Human Resources	All HR services, including EEO	\$1,699,200	14.0
TOTAL		\$22,403,800	96.0

Narrative Information:

Following this section are base justification materials and program change narratives by sub-program for this line office. Please note that no program change narrative is provided for program changes of less than \$100,000, however, a summary exhibit is provided at the end of each sub-program showing the object class detail for the small program changes. Please contact the Department of Commerce if details for any of these changes are required.

ADJUSTMENTS RELATED TO THE REPROGRAMMING OF THE FY 2012 SPEND PLAN

Adjustments to the FY 2014 Base are required in order to restore programs affected by reprogrammings made to the FY 2012 Spend Plan. In FY 2012, funds were reprogrammed to sustain the warning and forecast capabilities of the National Weather Service and to delay future improvements to services. These reprogrammings are carried forward into the FY 2013 Annualized Continuing Resolution. NOAA seeks to restore these funds to the FY 2014 base funds.

NOAA requests the following technical adjustments in FY 2014 to restore programs affected by the Reprogramming of the FY 2012 NWS Spend Plan:

Line Office	Account	Page	Program, Project, or Activity	Reprogramming Adjustment
NWS	ORF	NWS-8	Local Warnings and Forecasts Base	(\$24,660,000)
NWS	PAC	NWS-8	Next Generation Weather Radar (NEXRAD)	(\$9,400,000)
NWS	ORF	NWS-8	Air Quality Forecasting	\$2,282,000
NWS	ORF	NWS-8	Sustain Cooperative Observer Network	\$800,000
NWS	ORF	NWS-8	Aviation Weather	\$9,773,000
NWS	ORF	NWS-8	Weather Forecast Office (WFO) Maintenance	\$2,006,000
NWS	ORF	NWS-8	Weather Radio Transmitters Base	\$100,000
NWS	ORF	NWS-8	Central Forecast Guidance	\$1,305,000
NWS	ORF	NWS-8	Next Generation Weather Radar (NEXRAD)	\$347,000
NWS	ORF	NWS-8	Automated Surface Observing System (ASOS)	\$988,000
NWS	ORF	NWS-9	Advanced Weather Interactive Processing System (AWIPS)	\$2,500,000
NWS	PAC	NWS-9	Advanced Weather Interactive Processing System (AWIPS)	\$5,944,000
NWS	PAC	NWS-9	Weather and Climate Supercomputing	\$100,000
NWS	PAC	NWS-9	Cooperative Observer Network-Modernization	\$2,174,000
NWS	PAC	NWS-9	Complete and Sustain NOAA Weather Radio	\$100,000
NWS	PAC	NWS-9	Weather Forecast Construction	\$1,500,000
OAR	ORF	OAR-12	Climate Competitive Research Program	\$1,934,000
NESDIS	ORF	NESDIS-6	Product Processing & Distribution	\$500,000
NESDIS	ORF	NESDIS-6	Archive, Access, and Assessment	\$1,157,000
OMAO	ORF	OMAO-6	Aircraft Services	\$550,000
Total				-

NWS - Local Warnings and Forecast Base, Labor and Operations:

A decrease of \$24,660,000 to the Local Warnings and Forecast (LWF) Base will enable the restoration of other NOAA programs affected by the reprogramming of the FY 2012 Spend Plan within NOAA. A corresponding request to increase LWF for labor and operations in the FY 2014 request will allow NWS to meet its requirements to continue to protect life and property by sustaining warning and forecast capabilities.

NWS - Next Generation Weather Radar, Product Improvement, PAC:

A decrease of \$9,400,000 to the Next Generation Weather Radar (NEXRAD) Product Improvement program will enable the restoration of other NOAA programs affected by the reprogramming of the FY 2012 Spend Plan.

NWS - Air Quality Forecasting:

A restoration of \$2,282,000 to the Air Quality Forecasting will sustain on-demand dispersion forecasts of volcanic ash, transport of smoke, and forecast of emergency releases, supporting aviation affected by volcanic activity.

NWS - Sustain Cooperative Observer Network:

A restoration of \$800,000 to the Sustain Cooperative Observer Network will continue investment in the modernization of the nationwide network of volunteer-operated weather observing sites.

NWS - Aviation Weather, Next Generation Air Transportation System:

A restoration of \$9,773,000 to the Aviation Weather in support of the Next Generation Air Transportation System (NextGen) Weather program will ensure the continued investment to improve the accuracy, timeliness and consistency of weather products and services for the aviation industry by avoiding delays and improving safety.

NWS - Weather Forecast Office Maintenance:

A restoration of \$2,006,000 to the Weather Forecast Office (WFO) Maintenance program will ensure the routine maintenance on its government-owned WFOs. Maintenance will continue on health, safety, and critical requirements.

NWS – Weather Radio Transmitter Base:

A restoration of \$100,000 to Weather Radio Transmitter Base will allow for the procurement of replacement parts for repair.

NWS - Central Forecast Guidance:

A restoration of \$1,305,000 to Central Forecast Guidance (CFG) will ensure continued hurricane intensity research and development in the Hurricane Forecast Improvement Project (HFIP) slowed during the reprogramming of the FY 2012 Spend Plan.

NWS - Next Generation Weather Radar, ORF:

A restoration of \$347,000 to the Next Generation Weather Radar operations and maintenance (O&M) program will ensure the continued enhancements on data processing improvements.

NWS - Automated Surface Observing System, ORF:

A restoration of \$988,000 to the Automated Surface Observing System (ASOS) operations and maintenance (O&M) program will ensure the continued availability of this critical observing system and the necessary cyclical replacement of components.

NWS - Advanced Weather Interactive Processing System, ORF:

A restoration of \$2,500,000 to Advanced Weather Interactive Processing System (AWIPS) operations and maintenance (O&M) program will ensure the continued hardware replacements on life cycle components.

NWS - Advanced Weather Interactive Processing System, PAC:

A restoration of \$5,944,000 will fund the Advanced Weather Interactive Processing System (AWIPS) Technology Infusion. A corresponding decrease of \$2,639,000 is included in the FY 2014 request to slow the current implementation of tools and capabilities and allow for investment in the AWIPS Future Forecast Office Initiative to improve situational awareness during weather events. .

NWS – Weather and Climate Supercomputing:

A restoration of \$100,000 to Weather and Climate Supercomputing will ensure full operational supercomputing capacity for forecast models.

NWS - Cooperative Observer Network-Modernization (NOAA’s Environmental Real-Time Observations Network):

A restoration of \$2,174,000 to the Cooperative Observer Network-Modernization will fund the legacy Historical Climatology Network.

NWS – Complete and Sustain NOAA Weather Radio:

A restoration of \$100,000 to Complete and Sustain NOAA Weather Radio will continue work on the Weather Radio Improvement Project.

NWS – Weather Forecast Office Construction:

A restoration of \$1,500,000 to Weather Forecast Office (WFO) Construction will allow for the continuation of facility modernization projects and capital improvements on government-owned WFOs necessary to maintain their structural integrity.

For information on these adjustments within other Line Offices, please see the page numbers as referenced in the table above.

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES
SUB-PROGRAM: OPERATIONS AND RESEARCH

The objectives of the Operations and Research sub-program are to:

- Provide up-to-date and accurate weather forecasts, warnings, and outlooks to the Nation
- Support the emergency management community
- Engage in outreach and education activities to support public decisions

NOAA's NWS serves the people of the United States 24 hours each day. NWS is the sole, official and authoritative U.S. voice for issuing warnings during life-threatening weather situations. NWS forecasters issue public, aviation, marine, fire weather, climate, space weather, river and flood forecasts and warnings every day.

NWS has over 4,500 full-time equivalents (FTEs) in 122 Weather Forecast Offices (WFO), 13 River Forecast Centers (RFC), 9 National Centers for Environmental Prediction (NCEP), and other support offices around the country. In addition, NWS supports a national infrastructure to gather and process data worldwide from the land, sea, and air. This infrastructure collects data from technologies such as Doppler weather radars, satellites operated by NOAA's National Environmental Satellite, Data, and Information Service (NESDIS), data buoys for marine observations, surface observing systems, and instruments for monitoring space weather. These data feed sophisticated models running on high-speed supercomputers. A highly trained and skilled workforce uses powerful workstations to analyze all of these data and issue forecasts and warnings. High-speed communications tie this entire information infrastructure together and disseminate forecasts and warnings to the public.

NWS staff also use trained community volunteers to enhance weather service operations. Cooperative observers collect weather data that become part of the Nation's climate records and citizen storm spotters provide NWS with visual confirmation of severe weather events. As environmental information becomes more sophisticated, complete, and available to all, the environmental literacy of the public becomes more important. NWS outreach and education activities are aimed at making sure the public understands the information we provide and can use it effectively in the decisions they make.

LOCAL WARNINGS AND FORECASTS BASE

Local Warnings and Forecasts Base includes the following activities:

Cooperative Observer Program (COOP): The National Weather Service (NWS) Cooperative Observer Program (COOP) is truly the Nation's weather and climate observing network of, by and for the people. Approximately 9,000 volunteers take observations on farms, in urban and suburban areas, National Parks, seashores, and mountaintops. The data are representative of where people live, work and play. The COOP was formally created in 1890 under the Organic Act. The observational data obtained from the network are critical for snow amount forecasts, liquid to water equivalence, snow depth, precipitation type forecasts, flood outlooks, flood forecast guidance modeling, monitoring of droughts, issuing local weather forecasts, and declaration of disasters by government officials. The data from the COOP program are the primary data utilized in the NWS model forecast guidance for snowfall predictions. The COOP network continues to be used by NOAA to prepare national, regional, and local climate forecasts and is critical in the development of climatological normals and averages. Operations costs for the COOP network, such as labor, travel, and expendable materials, are funded within the Local Warnings and Forecasts Base. Sustainment and modernization activities for the COOP, such

as precipitation gauge and temperature sensor improvements, are funded within the Sustain Cooperative Observer Network PPA.

Upper Air (UA) Observations Program (<http://www.ua.nws.noaa.gov>) provides meteorological data to support NWS forecast operations. NWS operates or supports 102 radiosonde stations in the United States and possessions, Caribbean, and Pacific Island nations and launches over 78,000 radiosondes from these sites each year. A radiosonde is a small, expendable instrument package that is launched by a large hydrogen or helium gas filled balloon. During its ascent, the radiosonde measures and transmits atmospheric profiles of pressure, temperature, and relative humidity. Winds are measured by the instrument drift over the flight path. Pressure, temperature, wind and humidity data are significant sources for NWS weather prediction models and NWS forecaster operations, which are used to support severe storm, aviation and marine forecasts, and climate and other research uses. Radiosondes also serve to provide a reference for satellite sounding data and operational forecasts.

Marine and Coastal Weather Services (<http://www.nws.noaa.gov/om/marine/marine.shtml>) encompass a vast area from inter-coastal waterways to near-shore bays and inlets to the open oceans that span much of the Northern and Western Hemispheres. The program aims to promote safe and efficient transportation in support of both commercial and recreational interests and commercial and recreational fishing industry. Forecasts, analyses, watches, warnings and advisories of maritime conditions, as well as coastal and tropical hazards are provided by forty-seven coastal WFOs and three components of NCEP, including the Ocean Prediction Center, the Hydrological Prediction Center, and the National Hurricane Center (<http://www.ncep.noaa.gov>). These services cover coastal waters, offshore, high seas waters, and Great Lakes nearshore and open lake waters.

Using observational data sources such as buoy observations and satellite imagery, numerical model forecast guidance provided by various sources such as NCEP and the NOAA Office of Oceanic and Atmospheric Research's (OAR) Great Lakes Environmental Research Laboratory, as well as analyses of ice from the National Ice Center (NIC) (<http://www.natice.noaa.gov>), the forecasters at tropical and marine centers and coastal and Great Lakes offices maintain a continuous monitoring of weather conditions over marine zones. Marine and coastal products describe wind, waves, visibility, icing, coastal flooding, severe weather, high surf, and rip currents. Tropical products describe hazards associated with tropical cyclones such as storm surge, wind, waves, and inland impacts.

National Data Buoy Center (NDBC) (<http://www.ndbc.noaa.gov>) operates a global network of over 200 observing platforms to provide marine meteorological, oceanographic and geophysical observations accurately and in real-time to assist warning centers, marine forecasters, the U.S. Coast Guard, ocean platform operators and the public in making sound decisions to safely operate in the marine environment.

NDBC's Weather and Ocean Platform network includes 101 moored Coastal Weather Buoys (CWB) and 48 land-based coastal marine stations. They are deployed in the coastal and offshore waters from the western Atlantic to the Pacific Ocean around Hawaii, and from the Bering Sea to the South Pacific. This network provides forecasters with frequent, high-quality marine observations for forecast preparation and to verify forecasts after they are produced. Other users rely on the observations and forecasts for commercial and recreational activities. All stations measure wind speed, direction, and gusts; barometric pressure; and air temperature. In addition, all CWB stations, and some Coastal Marine Automated Networks (C-

MAN) stations, measure sea surface temperature and wave height and wave period. Conductivity and water current are measured at some stations as well.

NDBC operates and maintains the Tropical Atmosphere Ocean (TAO) array, designed for the study of year-to-year climatic variations related to El Niño and the Southern Oscillation (ENSO). The array consists of 55 moored ocean buoys and 4 Acoustic Doppler Current Profilers (ADCP) in the equatorial Pacific. The buoys collect real-time air temperature; relative humidity; wind speed and direction; ocean temperature and pressure; however, some buoys collect shortwave radiation; rainfall amounts; and ocean currents.

To support the buoy network, NDBC's Industrial Operations and Engineering Complex has specialized equipment and provides NDBC with the environment needed to support the assembly and service of Weather and TAO buoys and C-MAN stations. Buoy hulls are refurbished in the onsite sandblast and painting facility. Equipment integration and testing aboard the buoys are accomplished in high bays. Sensors are calibrated in wind tunnels or environmental chambers, and later tested with the onboard station microprocessors, called payloads, on test stands at the outside sensor test facility. Final calibration and testing of the completed buoy systems are accomplished in the onsite canal.

Fire Weather Services (<http://weather.gov/fire>) support national, regional and local land management agencies such as the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS). NWS issues a complete Fire Weather Forecast twice daily, with updates as needed. The forecast contains weather information relevant to fire control and smoke management for the next 36-48 hours. Once per day, NWS meteorologists issue forecasts for specific wildland observation sites for input into the National Fire Danger Rating System (NFDRS). NFDRS determines land use restrictions and informs the public of the daily fire danger via the Smokey Bear awareness campaign. The WFOs issue Fire Weather Watches or a Red Flag Warnings based upon a prescribed set of criteria. These products alert not only the public, but other agencies that conditions are creating the potential for extreme fire behavior.

On the national level, the NWS Storm Prediction Center issues assessments for one, two, and 3-8 days in advance of the development of critical fire weather patterns. These include large-scale areas that may experience critical fire weather conditions including the occurrence of "dry thunderstorms." These thunderstorms, containing little precipitation, are responsible for thousands of fires annually.

Upon request, NWS also provides on-scene assistance at large wildfires or other disasters, including HAZMAT incidents. Incident Meteorologists (IMETs) are NWS forecasters specially trained to work with Incident Management Teams during severe wildfire outbreaks or other disasters requiring onsite weather support. IMETs travel quickly to the incident site and then assemble a mobile weather center capable of providing continuous meteorological support for the duration of the incident. IMETs can be deployed anywhere a disaster strikes. There are 87 IMETs nationally with IMET equipment.

Climate Services Division (CSD) (<http://www.nws.noaa.gov/om/csd/>), at NWS headquarters, provides the strategic vision for climate services within NWS and oversees the NWS regional and local climate services programs. The regional and local offices deliver short-term climate products, information, and services, which in many cases are based on products and guidance from the Climate Prediction Center. At the NWS Headquarters level, the division also sets NWS regional and local policies and procedures for climate prediction products, defines service and mission needs, solicits user feedback to evaluate new products and services, and approves final

product design. CSD provides internal training for NWS operational field personnel, and external user targeted training and outreach on climate variability and change. CSD coordinates across NOAA lines; with Federal agencies; the university community; and the private sector, and encourages collaborative arrangements among various regional, state and local climate stakeholders.

River & Flood Forecast Services are provided for nearly 4,000 locations in the form of daily river forecasts by the 13 NWS River Forecast Centers (RFC) (<http://water.weather.gov/ahps/rfc/rfc.php>) using the Community Hydrologic Prediction System (CHPS), a system of hydrologic models based on rainfall, soil characteristics, precipitation forecasts, and several other variables. Some RFCs, especially those in mountainous regions, also provide seasonal snow pack and peak flow forecasts. These forecasts are used by a wide range of users, including those in agriculture, hydroelectric dam operation, and water supply resources. The information is also the basis for local flood and flash flood warnings, watches, and advisories issued by the WFOs that emphasize flooding impacts depending on geographic area, land use, time of the year, and other factors.

Water Resource Forecast Services extend basic NWS river and flood forecasting services from a limited number of locations to a full suite of localized water forecasts throughout watersheds nationwide. Integrated Water Resources Science and Services (IWRSS), the backbone of NOAA's national water information strategy, is a multi-agency partnership allowing NOAA's research and development enterprise and operational service delivery infrastructure to leverage the investments and capabilities of other Federal water agencies and academia. Through IWRSS, NOAA's new National Water Center (NWC), and the 13 RFCs, NOAA will deliver a new suite of short-to long-range high-resolution forecasts (including estimates of uncertainty) for stream flow, soil moisture, soil temperature, and many other variables directly related to watershed conditions. IWRSS will enable the NWS, in partnership with other Federal agencies, to provide emergency managers and the public with detailed maps that explicitly show forecasted extent and effects of flooding for faster and more effective evacuations and helping communities become more resilient to floods. The NWC will support the development of these new capabilities and deliver a new generation of information and services to mitigate water-related disasters, inform routine decision-making about water, and address competing demands for increasingly limited water availability. These activities will enable NOAA to deliver a national database of hydrologic analyses and predictions, and generate user-friendly Geographic Information Systems (GIS) products for monitoring floods and drought. These activities contribute to the National Integrated Drought Information System (NIDIS).

The Aviation Weather Center (AWC) (<http://aviationweather.gov/>), located in Kansas City, Missouri, is the mechanism by which the United States disseminates its weather forecasts to the aviation community under an international agreement through the International Civil Aviation Organization. The AWC provides wind, temperature, and flight hazard (e.g., icing and turbulence) forecasts for flight planning and en route aircraft operations for the United States, the North Atlantic and North Pacific routes, and some routes in the Southern Hemisphere. In addition to the en route weather support provided for the aviation industry, the AWC also produces guidance products for use by WFOs in support of the airport terminal forecast function. Thus, the AWC discharges large-scale, global aviation functions which can be sensibly centralized, while the WFOs discharge local aviation functions based on centralized guidance provided by the AWC.

The Space Weather Prediction Center (SWPC) (<http://www.swpc.noaa.gov>) in Boulder, CO, provides real-time monitoring and forecasting of solar and geophysical events and develops

techniques for forecasting solar and geophysical disturbances. The SWPC operates the national civilian space weather operations center. Forecasts, alerts, and warnings are provided to customers on a 24 hour-per-day, seven day a week basis. SWPC products are synthesized from over 1,400 data streams providing observations of the solar terrestrial environment. The center serves many industries and private-sector clients, such as: the power industry, the airline industry, and satellite operators. SWPC also provides services to numerous government agencies including: the Federal Emergency Management Agency (FEMA), the Department of Defense (DoD), the Federal Aviation Agency (FAA), the Department of Energy (DOE), the Department of Homeland Security (DHS), and the National Aeronautics and Space Administration (NASA).

With a rapidly growing customer base and expanding interest in critical areas (airline safety, dependability and accuracy of GPS, reliability of electric power, and emerging commercialization of space), new demands for space weather information and services are emerging, and modeling capabilities are critical to the meet these increasing demands. This investment will support the scientific development necessary to improve data assimilation, enhanced prediction tools, and model development capabilities for key components of the coupled earth-system modeling effort that will ultimately link weather phenomena, both space weather and terrestrial weather, into one unified modeling framework.

SWPC has been designated a Primary Mission Essential Function (PMEF) system. SWPC has been identified as an essential government resource in the National Security Presidential Directive/NSPD 51 and Homeland Security Presidential Directive/HSPD 20. The program provides security for this National Critical system.

The AWC and the SWPC are managed by NCEP, which is described under the Central Forecast Guidance (CFG) sub-program.

Schedule and Milestones:

FY 2014

- Cyclical replacement of IMET equipment
- Space Weather capabilities ported onto AWIPS II and used operationally at SWPC Forecast Office

FY 2015

- Cyclical replacement of IMET equipment, with full deployment of IMET upper air observation kits
- Geospace model guidance operational

FY 2016

- Cyclical replacement of IMET equipment
- Initial operations capability of Whole Atmosphere Model (WAM)

FY 2017

- Cyclical replacement of IMET equipment
- Full operations capability of WAM

FY 2018

- Cyclical replacement of IMET equipment
- SWPC generated regional nowcasts and short term forecasts of ionospheric disturbances begin

Deliverables:

- Cyclical IMET equipment replacement
- Operational CHPS
- All NWS space weather products and data displays available through AWIPS II
- Improved geomagnetic disturbance forecasts
- Improved forecasts of space weather conditions

The schedule, milestones, and deliverables for Local Warnings and Forecasts Base for NDBC activities are provided with the program changes requested for this activity.

Performance Goals and Measurement Data:

Performance Measure	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Tornado Warnings Lead Time, Measure 15a	11	13	13	13	13	13	13
Tornado Warnings Accuracy, Measure 15a	70	72	72	72	72	72	72
Tornado Warnings False Alarm Ratio, Measure 15a	73	72	72	71	71	71	71
Flash Flood Warnings Lead Time, Measure 15b	53	58	60	61	61	63	65
Flash Flood Warnings Lead Accuracy, Measure 15b	76	74	74	76	76	76	76
Winter Storm Warnings Lead Time, Measure 15f	18	20	20	20	20	20	20
Winter Storm Warnings Accuracy, Measure 15f	83	90	90	90	90	90	90
Marine Wind Speed Forecast Accuracy, Measure 15g	76	74	74	75	75	76	76
Marine Wave Height Forecast Accuracy, Measure 15g	78	75	76	76	77	77	77
Aviation Forecast IFR Accuracy, Measure 15h	61	65	65	65	65	65	65
Aviation Forecast IFR False Alarm Ratio, Measure 15h	39	38	38	38	38	38	38
Geomagnetic Storm Forecast Accuracy, Measure 15i	N/A	N/A	51	53	53	53	53

AIR QUALITY FORECASTING

The NWS Air Quality Forecast Services (http://www.nws.noaa.gov/ost/air_quality/index.htm) capability is an integrated, end-to-end forecast system that provides timely, reliable forecast guidance to accurately predict the onset, severity and duration of poor air quality. Forecast guidance consists of next-day ground-level ozone and smoke predictions, at hourly intervals and 12 km grid resolution for all 50 states. Forecast products are available as graphic products on the National Digital Guidance Database (<http://www.weather.gov/aq/>) on ftp-servers at the NWS Telecommunications Gateway, and via NOAA's partner agency, the Environmental Protection Agency (EPA), which develops health-based interpretations and posts state and local community forecasts. NOAA's products meet customer requirements from Federal, state, local, and public sectors with state-of-the-science information, both to assist state and local air quality forecasters who issue health-based air quality alerts for participating cities, and to provide information for people at risk from poor air quality at any time of day or night, on any day of the week, in any month of the year, in cities, suburbs, and rural areas alike.

The schedule, milestones, and deliverables for Air Quality Forecasting are provided with the program change requested for this activity.

ALASKA DATA BUOYS

This program was instituted to expand the Alaskan coastal buoy network. The buoys report hourly marine weather information including wind speed and direction, air and sea temperature, atmospheric pressure, and detailed wave information such as swell height, significant wave height, period, and steepness. These buoys provide real-time meteorological and oceanographic information that is not otherwise available resulting in more accurate weather forecasts and warnings. Weather information transmitted by the buoys help meteorologists with long range outlooks in addition to short term forecasts and warnings.

Schedule and Milestones:

- Maintain Alaska Data Buoy array (FY 2014 – 2018)

Deliverables:

- Hourly marine weather wind speed and direction, air and sea temperature, atmospheric pressure, and detailed wave information

SUSTAIN COOPERATIVE OBSERVER NETWORK

The continued investment in Sustain Cooperative Observer Network aids in the modernization of the nationwide network of volunteer-operated weather observing sites, funding activities such as precipitation gauge and temperature sensor improvements. Operational costs, such as labor, travel, and expendable materials for the COOP network are funded under the Local Warnings and Forecasts Base. The network's instruments require continued refreshment to ensure sustainability and accuracy. This funding provides for sustaining and modernizing equipment, as recommended by the National Research Council in 1998. Rain gauge refurbishment is estimated to be complete by the end of 2016.

The schedule, milestones, and deliverables are provided with the program change requested for Sustain Cooperative Observer Network.

NOAA PROFILER NETWORK (NPN)

Originally developed and deployed by NOAA's Office of Oceanic and Atmospheric Research, NPN is a network of 35 operational and two non-operational support Wind Profilers that were

installed starting in 1988. Wind Profilers, vertical looking radars, are used across the Nation to track upper air wind profiles that detect the potential development of severe convective weather. The Wind Profilers also provide information that leads to improved forecasts of other types of dangerous weather, such as tornadoes and winter storms, and provides useful information for issuing aviation advisories, volcanic ash plumes tracking and wildfire predictions.

The schedule, milestones, and deliverables are provided with the program change requested for Sustain Cooperative Observer Network.

STRENGTHEN U.S. TSUNAMI WARNING PROGRAM

Strengthen U.S. Tsunami Warning Program (SUSTWP) is supported by the Pacific Tsunami Warning Center (PTWC) (<http://www.prh.noaa.gov/ptwc>) at Ewa Beach, Hawaii and the West Coast/Alaska Tsunami Warning Center (WC/ATWC) (<http://wcatwc.arh.noaa.gov>) at Palmer, Alaska. These centers issue tsunami watches and warnings for all U.S. communities at risk. NWS collects and analyzes observational data from an international network of seismological observatories and sea level observing stations that operate on a cooperative basis. Observational data is also collected from the NOAA Deep Ocean Assessment and Reporting of Tsunamis (DART) Buoy Network. The DART Buoy Network consists of 39 deep-water buoys located throughout the Pacific Ocean, Atlantic Ocean, and Caribbean. The centers use these data to prepare watches and warnings covering all U.S. territories and states bordering on the Pacific and Atlantic Ocean Basins and disseminate them to WFOs, Federal and state disaster agencies, military organizations, private broadcast media, and other facilities that can furnish warning information to the public.

The schedule, milestones, and deliverables are provided with the program change requested for SUSTWP.

PACIFIC ISLAND COMPACT

The U.S. maintains a Compact of Free Association (COFA) or agreement with the Republic of the Marshall Islands (RMI), the Federated States of Micronesia (FSM), and the Republic of Palau (ROP) to provide basic government and commerce services including weather services to these island nations. The Compact provides the necessary funding to support the NWS Weather Service Offices (WSO) and associated weather warning, forecast, and observation services for these islands including WSO Majuro, RMI; WSOs Pohnpei, Yap and Chuuk of the FSM, and WSO Koror of ROP. This continued investment will also preserve critical weather observation infrastructure and services in the Pacific necessary to support core NOAA mission responsibilities in the Pacific such as aviation, typhoon, and marine forecasts; climate monitoring; and support to U.S. Navy operations.

Schedule and Milestones:

FY 2014 - 2018:

- Provide weather warning, forecast, and observation services

Deliverables:

- Support WSO and provide weather warnings, forecasts, and observations services to participants in the Pacific Island Compact.

ADVANCED HYDROLOGIC PREDICTION SERVICE

The Advanced Hydrologic Prediction Service (AHPS) is a web-based suite of river-forecast products providing information on the magnitude and certainty of occurrence of floods or

droughts, from hours to days and months before an event. Prior to AHPS, river forecasts were text products with 1-, 2-, and 3-day lead times and were delivered via the weather wire. Congressional funding for AHPS began in FY 2000. When implementation is complete, advanced river forecast information will be provided at 4,011 locations throughout the United States to assist emergency managers, water managers, and the general public in making decisions based on improved forecasts and the certainty of a hydrologic event.

The NWS has the primary responsibility among the Federal agencies to provide advanced alerts via flood warnings and forecasts in the United States (in accordance with the Weather Service Organic Act, 15 USC 313; Inland Flood Forecasting and Warning System Act of 2002, 15 USC 313c; and NOAA Reorganization Plan No. 4 of 1970 as amended, 5 USC 1557-61, 1994). Through AHPS, the NWS provides forecasts to all users of hydrologic predictions.

Schedule and Milestones:

- See Program Performance Measures and Deliverables below

Deliverables:

- Incorporate advanced hydrologic science into NWS models
- Provide more specific and timely information on fast-rising floods with increased lead time
- Deliver graphic forecast products that are easier to use
- Provide probabilistic forecasts useful to assess river level and flood risk
- Provide products with forecast horizons two weeks or further into the future
- Increase the distribution of products using advanced information technologies (such as the internet and web-based GIS formats) to provide broader and more timely access to and delivery of information
- Provide partnered flood forecast inundation mapping at selected locations
- Expand outreach and engage partners and customers in all aspects of hydrologic product improvement

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Total Forecast Locations with AHPS	3,258	3,637	4,011	4,011	4,011	4,011	4,011
Description: Number of forecast locations that will have AHPS capability to assist emergency managers, water managers, and the general public to make decisions based on the probability of a hydrologic event taking place.							

AVIATION WEATHER

The Aviation Weather Program is focused on improving the accuracy, timeliness and consistency of aviation weather products and services to improve the safe and efficient flow of air traffic in the National Airspace System (NAS). The Aviation Weather program supports the Federal Aviation Administration (FAA), International Civil Aviation Organization (ICAO), and the World Meteorological Organization (WMO), as well as the aviation industry and stakeholders. In response to the requirements of the international community and FAA, aviation weather products issued by NWS span the globe. The Aviation Weather program also serves as the focal point for NOAA's role in the multi-agency Next Generation Air Transportation System (NextGen) and is the lead for NOAA's development of NextGen IT Services, which will provide enhanced weather forecast information for integration into an air traffic management system.

Capabilities for NextGen will result in a significant increase in weather prediction and dissemination capabilities with wide-ranging benefits across NOAA.

Numerous programs contribute to NWS's aviation weather forecast and service capabilities. NWS maintains an extensive surface, upper air, and radar weather observing program and a nationwide aviation weather forecasting service capability. Aviation services are provided to FAA and other NWS customers in two general categories: Aerodrome Forecasts, otherwise known as Terminal Area Forecasts (TAF), and en route area forecasts and advisories. Government Performance and Results Act (GPRA) targets for ceiling and visibility accuracy and false alarm ratio are derived from information in TAFs generated by 122 WFOs for more than 630 specific airports. Numerous area forecast products are provided for both domestic and international airspace, including text area forecasts, collaborative convective forecast products, AIRMETs (AIRman's METeorological Information), SIGMET (Significant Meteorological Information) weather advisories, and en route pilot guidance.

The acquisition of data from aircraft-based water vapor sensors and a variety of product enhancements and training activities are also managed from this program. All aviation weather projects support increasing and improving observation capabilities, improved forecast products and techniques, outreach and training, operational adaptation of applied research, and verification of forecast products.

Economic activity attributed to civil aviation-related goods and services totaled \$1.3 trillion in 2009, generating 10.2 million jobs with \$394.4 billion in earnings. Aviation accounted for 5.2 percent of America's Gross Domestic Product. (See FAA's The Economic Impact of Civil Aviation on the U.S. Economy, August 2011). The Congressional Joint Economic Committee estimates that air traffic delays cost the U.S. Economy over \$41 billion in 2007, of which 70 percent were related to adverse weather. The FAA has determined that two thirds of these weather delays are avoidable with better, more integrated weather information, potentially reducing the number of delays by 46 percent and potentially saving \$19 billion annually (See FAA's Research, Engineering and Development Advisory Committee (REDAC), in its "Report of the Weather-ATM Integration Working Group (3 Oct, 2007)). As the demand for air traffic grows, air traffic delays and the associated economic toll will only increase.

The multi-agency NextGen Joint Planning and Development Office (JPDO) developed a plan to achieve these required improvements and accommodate the expected growth in demand. A critical component of the NextGen plan is the integration of weather information into air traffic operations. To enable this integration, JPDO is calling for the creation of rapidly updated, high-resolution probabilistic weather information consistent across space and time and accessible to all NAS managers and users through a network-enabled infrastructure. This information will be produced by an enhanced forecast process, where meteorologists use automated, rapidly updated gridded datasets to add value to guidance. This capability does not presently exist within the Federal government, and the JPDO partner agencies are depending on NOAA, as the Federal experts in the provision of weather information, to deliver it.

NOAA is legislatively mandated by Title 49 of the U.S. Code to provide weather information to the FAA. In addition, Public Law No 108-176 directs DOT, FAA, DOC, NASA and JPDO to conduct integrated planning for research to operations to support NextGen. NextGen is a Presidential Initiative.

Schedule and Milestones:

FY 2014

- NextGen IT Services Project Critical Design Review
- Acquire additional water vapor data via aircraft observation
- Improve skill in aviation weather forecasting through training
- Improve gridded forecasts of aviation weather elements such as ceiling and visibility and Convection
- Develop improved performance measures for gridded aviation weather elements

FY 2015

- Operational Test and Evaluation of NextGen IT Services
- Implement digital aviation services to provide consistent operational forecast products from gridded weather elements
- Develop improved volcanic ash modeling to enhance aviation safety
- Acquire additional water vapor data via aircraft observation

FY 2016

- Enhance ensemble and probabilistic modeling techniques for aviation parameters
- Complete implementation of Traffic Flow Management weather support solutions
- Acquire additional water vapor data via aircraft observation
- Improve skill in aviation weather forecasting through training
- Implement capability to allow transfer of gridded weather information into legacy text products for aviation

FY 2017

- Optimize NextGen IT Services to accommodate additional data providers, users and increase data throughput
- Acquire additional water vapor data via aircraft observation

FY 2018

- Implement advanced forecast applications for the generation of aviation weather information
- Acquire additional water vapor data via aircraft observation
- Implement capability to provide consistent convective weather information for aviation users

Deliverables:

- NextGen Weather Initial Operational Capability
- Impact-based performance measures for weather forecast impact on air traffic
- Operational aviation advisory and forecast product generation from grids to improve forecast consistency for aviation products
- Operational WAFC icing gridded forecast product
- Distance Learning Aviation Course modules 3 and 4
- Increased granularity and greater accuracy in numerical models from water vapor data

WEATHER FORECAST OFFICE MAINTENANCE

The continued investment of Weather Forecast Office (WFO) Maintenance allows NWS to fund recurring maintenance contracts and address priority maintenance repairs. WFOs provide forecasters with modernized facilities supporting advanced technology systems and the provision of weather service to the public. As WFOs continue to age, the facilities require recurring and cyclic maintenance. This investment allows NWS to protect the capital investment in its previously modernized facilities in accordance with NWS operational standards along with GSA and private industry standards.

The schedule, milestones, and deliverables are provided with the program change requested for WFO Maintenance.

NOAA WEATHER RADIO TRANSMITTERS BASE

NOAA Weather Radio (NWR) was designed to be used as a reliable, inexpensive means of communicating weather related warnings directly to the public. The existing infrastructure of NWR has tremendous potential for use communicating warnings and information about non-weather related hazards and emergencies. NWR infrastructure as a national warning network consists of over 1000 existing broadcast stations; broadcast coverage that reaches 98 percent of the Nation’s population; and the ability to deliver the broadcasted message to individuals monitoring their own NWR receivers as well as the ability to reach millions of listeners and viewers since NWR signal enters the Emergency Alert System, which is monitored by television and radio license holders.

Program resources are used to fund management and contract costs for the NWR sites maintained under the National Maintenance Contract. No full-time equivalents (FTEs) are associated with this program.

NWR is the only NWS dissemination system capable of reaching individuals at nominal cost (individual purchase of NOAA weather radio) and is the only system the Federal Communications Commission mandates that broadcast media outlets monitor as a source of public safety announcements. The United States Federal Response Framework, Emergency Support Function Annex #2 – Communications, tasks NOAA/NWS to provide public dissemination of critical pre and post event information on the All Hazards NWR. NOAA has had extensive meetings with the Department of Homeland Security, discussing the use of NWR as an all hazards warning system.

Schedule and Milestones:

FY 2014 – FY 2018

- Maintain NWR services

Deliverables:

- 405 Sites x 3/year Preventative Maintenance and/or Corrective Action Visits
- 841 Sites Logistics and Spare Parts Provisioning and Line Replaceable Unit Repair Support

Performance Goals and Measurement Data:

Performance Measure: Sustain NWR Service Availability	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	96%	96%	96%	96%	96%	96%	96%
Description: This measure reflects NOAA’s ability to maintain operational readiness including necessary equipment modernization to ensure overall NWR system reliability and availability. This NWR system consists of console replacement systems at each WFO, dedicated leased commercial phone lines to NWR transmitters, and the distributed NWR transmitters.							

CENTRAL FORECAST GUIDANCE

The Central Forecast Guidance (CFG) Program provides an integrated suite of weather and environmental forecast guidance from the short-term through seasonal, inter-annual, decadal, and centennial time frames and specific tailored forecast products. CFG consists of seven National Centers for Environmental Prediction (NCEP) (<http://www.ncep.noaa.gov>) and also funds NOAA's Hurricane Forecast Improvement Project (HFIP). NCEP provides the backbone of NOAA's Weather-Ready Nation goal by providing expert analysis and prediction services to the local weather forecast office infrastructure. Forecasters use these services as the basis for local forecast products. The total forecast process depends on NCEP products and local forecast efforts to enhance accuracy and uniformity of service across the country.

NCEP is the principal means through which NOAA provides operational weather, ocean, coastal, and climate prediction services for large areas, up to and including the entire globe, to a vast assortment of domestic and international users. These services typically exceed the domain of a single WFO and require centralized supercomputing resources; efficiency demands that these forecasts be generated centrally. Users include numerous private weather providers, airlines, government research laboratories, media outlets, energy companies, the military, insurance and safety organizations, academic institutions, storm spotters and chasers, and various American Meteorological Society listservs.

Each NCEP center depends on the observational infrastructure, data assimilation systems, numeric modeling function, and application of model output statistics to produce value-added forecast guidance products for NWS field offices and direct users. The seven centers that are funded through CFG are described below. NCEP's two additional science-based centers, the Aviation Weather Center and the Space Weather Prediction Center, are funded through Local Warnings and Forecasts Base.

The ***Climate Prediction Center*** (CPC) (<http://www.cpc.noaa.gov/index.php>), located in College Park, Maryland, includes a broad range of climate products and services related to climate monitoring, short-term climate fluctuation forecasts, and information on the impacts of climate patterns on the Nation. Their product suite spans time scales from a week to seasons, extending into the future as far as technically feasible, and covers the land, the ocean, and the atmosphere, extending into the stratosphere. These climate services are available for users in government, the public and private industry. Applications include the mitigation of weather-related natural disasters and uses for social and economic good in agriculture, energy, transportation, water resources, and health. Continual product improvements are supported through diagnostic research, increasing use of models, and interactions with user groups.

Additionally, WFOs issue daily and monthly climate reports for their areas, providing localized information about temperature and precipitation records and extreme events such as droughts. WFOs serve as the local NOAA user interface for climate services, including outreach and education in this area. They are also the stewards for the integrity and continuity of the historical climate record in their area of responsibility.

The ***Storm Prediction Center*** (SPC) (<http://www.spc.noaa.gov/>), located in Norman, Oklahoma, provides timely and accurate forecasts and watches for severe thunderstorms and tornadoes over the contiguous United States. The SPC also monitors heavy rain, heavy snow, and fire weather events across the United States and issues specific products for those hazards. The forecast products cover time scales ranging from a few hours out to eight days. Products issued from the SPC supply specific guidance to WFOs about the probability and intensity of hazardous weather occurrences.

The **Weather Prediction Center** (WPC) (<http://www.wpc.ncep.noaa.gov/>), located in College Park, Maryland, is responsible for preparing a variety of analysis and guidance products in support of the NWS mission. WPC products include three hourly surface analyses over North America, quantitative precipitation forecasts (QPFs) out through seven days that are used by WFOs to develop local rainfall, snow, and ice forecasts and by the Regional Forecast Centers (RFC) to develop local river and flood forecasts. WPC produces very short term (0-6 hour) discussions and graphics outlining areas where heavy rainfall conditions may develop and result in flash flooding. The WPC produces forecasts of winter weather, including snowfall and ice accumulation, forecasts of weather conditions out seven days for the Continental U.S. and out eight days for Alaska. In addition WPC provides short range forecasts out through 60 hours, showing the location of fronts and weather. These forecasts are used as the basis for the low level weather charts produced by the Aviation Weather Center for pilot briefings. WPC also provides technical discussions describing model consistency and WPC preferences among the models. WPC serves as the backup for the National Hurricane Center. The WPC provides special QPFs and coordinates with other Federal agencies such as the Federal Emergency Management Agency (FEMA) during major flood events.

The **Ocean Prediction Center** (OPC) (<http://www.opc.ncep.noaa.gov/>), located in College Park, Maryland, discharges domestic and international meteorological products to marine interests under the International Convention for Safety of Life at Sea, to which the United States is a signatory. It is a central resource for marine interests operating outside the domain of coastal WFOs. The OPC provides weather and sea state warnings and forecasts for the offshore waters and high seas of the Northern Hemisphere for planning and operational purposes. Its warnings and products go directly to ships at sea via several dissemination methods, and are vital for the protection of life and property. The OPC also provides guidance for WFOs with coastal responsibilities, which extend out to nearly 100 nautical miles. Coastal WFOs have responsibility for forecasts and warnings out to that limit, while the centralized OPC has responsibility for offshore and high seas waters.

The NCEP experts in the area of tropical meteorology are concentrated at the **National Hurricane Center** (NHC) in Miami, Florida (<http://www.nhc.noaa.gov/>). Services provided by the NHC include advisories, watches, and warnings for tropical cyclones in the North Atlantic and eastern North Pacific oceans, the Caribbean Sea, and the Gulf of Mexico, including the portions of the U.S. coastline threatened by such storms. In addition, forecasters provide aviation and marine analyses and forecast products for the same areas of responsibility. The NHC functions both to provide guidance, coordination, and tropical weather expertise to WFO forecasters and to serve users of centrally generated products.

NCEP also maintains two critical support organizations to facilitate the central forecast guidance process:

NCEP Central Operations (NCO) (<http://www.nco.ncep.noaa.gov/>) located in College Park, Maryland operates the NOAA Weather and Climate Operational Supercomputer, manages the model production suite upon which all NCEP and WFO services are based, coordinates communications linking the several parts of NCEP, and provides operational quality assurance of incoming observations and outgoing products. NCO is the technical transition point between the development of numerical weather and climate prediction models and their operational use by forecasters at NCEP and the WFOs. NCO provides central support for software development for data processing, display, interaction, and product generation. NCO consists of computing, communications, and software specialists, as well as meteorologists with special knowledge of numerical modeling operations.

NCEP's Environmental Modeling Center (EMC) (<http://www.emc.ncep.noaa.gov/>) located in College Park, Maryland, develops, enhances, and maintains complex data assimilation and numerical weather, ocean and climate modeling software systems that span the globe. The computer models and other numerical forecast products developed by the EMC provide the basic guidance meteorologists at NCEP and the WFOs use in making weather and climate predictions. EMC serves as the integrator of numerical modeling research and development performed at universities and research laboratories. EMC conducts model impact studies to validate data sets that lead to new data requirements from observing technologies (e.g., satellites, radar, etc.).

Another critical program activity within CFG is the **Hurricane Forecast Improvement Project (HFIP)**. HFIP's goals include improving the accuracy and reliability of hurricane track and intensity forecasts; extending lead time for hurricane forecasts with increased certainty; and increasing confidence in hurricane and storm surge forecasts. HFIP also focuses not only on improved hurricane track and intensity forecasting, but also on advances in data assimilation and processing in modeling that underpin and extend to all weather and ocean forecasting and ultimately reduce the computing capacity necessary to run operational models. These needs are identified in the recent National Academies of Science (NAS) report, *Weather Services for the Nation: Becoming Second to None* (2012), with the recommendation that the NWS should give priority to upgrading its data assimilation system and increasing the resolution of its deterministic and ensemble modeling systems.

Schedule and Milestones:

NCEP Centers

FY 2014-2018

- Implement model upgrades routinely
- Update model access and display websites
- Conduct regular customer/partner outreach forums
- Update product suite based on customer requirements
- Engage in training activities with international partners
- Energize testbeds at all centers to accelerate research into operations
- Expand availability of climate products through the climate portal
- Work with National Ocean Service to expand into ecological forecasting
- Annual upgrades to operational hurricane models at NCEP

Deliverables:

- Approximately 28 million model fields a day for every forecast hour; including temperature, winds, humidity as a function of pressure
- 100 to 200 products and services from each of NCEP's service centers per day
- Continuous improvement to NOAA's operational forecast suite
- Additional improved modeling techniques delivered for evaluation at Developmental Testbed Center
- Over a thousand extended and long-range climate outlooks issued yearly
- Experimental real-time forecast guidance to NHC from running the experimental Hurricane Forecast System on the HFIP R&D Computing

The schedule, milestones, and deliverables for CFG for Expanding & Accelerating Weather Forecasting Improvement research and development are provided with the program changes requested for this activity.

Performance Goals and Measurement Data:

Performance Measure: 48 hour Hurricane Track Error in nautical miles (Measure 15c)	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
	Actual	Target	Target	Target	Target	Target	Target
	69	83	81	80	78	77	77
Description: Please see measure description under the Annual Performance Plan (APP) under section Targets and Performance Summary.							

Performance Measure: Accuracy (%) (Threat score) of Day 1 precipitation forecasts, Measure 15e	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
	Actual	Target	Target	Target	Target	Target	Target
	32.6	31	32	32	33	33	33
Description: Please see measure description under the Annual Performance Plan (APP) under section Targets and Performance Summary.							

Performance Measure: U.S. Seasonal Temp. Forecast Skill, Measure 16a	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
	Actual	Target	Target	Target	Target	Target	Target
	29	22	23	24	25	26	26
Description: Please see measure description under the Annual Performance Plan (APP) under section Targets and Performance Summary.							

Performance Measure: Day 5 500 millibar height anomaly correlation	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
	Actual	Target	Target	Target	Target	Target	Target
	0.867	0.872	0.875	0.875	0.900	0.900	0.900
Description: The weather forecast skill is assessed using a scientifically accepted measure, called 500 millibar anomaly correlation at 5 days. This measure serves as a very sensitive proxy for overall forecast of lead times and accuracy of severe weather events. The Global Forecast System serves as the underpinning of NCEP's modeling suite and NCEP's services to the Nation.							

Performance Measure: Timeliness of Delivery for NCEP's model guidance	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
	Actual	Target	Target	Target	Target	Target	Target
	99.4%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%
Description: NCEP EMC delivers over 28 million model output fields including temperature, winds, humidity as a function of pressure per day. This model guidance is disseminated to NWS Regions and WFOs and external users. Timeliness of delivery impacts WFOs' ability to develop the forecasts with sufficient lead times to warn the public of severe weather events.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Timeliness of Delivery for NCEP Centers' products and services	99.3%	98%	98%	98%	98%	98%	98%
Description: NCEP Centers interpret model based guidance and observational information to develop a suite of forecasts and outlooks at a rate of approximately 100-200 products per day per center. Users rely on these services to inform decisions for protection of life and property and enhancement of the economy.							

PROGRAM CHANGES FOR FY 2014:

Local Warnings and Forecast Base: NWS Labor and Operations (Base Funding: \$644,744,000 and 4,093 FTE: Program Change: \$22,868,000 and 0 FTE): NOAA requests an increase of \$22,868,000 and 0 FTE for a total of \$667,612,000 and 4,093 FTE to provide the National Weather Service (NWS) additional resources to meet its labor and related costs. NWS requires this funding to maintain current level of services and ongoing operations necessary to issue warnings and forecasts to protect life and property.

Proposed Action:

This increase provides funding to cover Weather Forecast Office (WFO) staffing and other critical field office labor and related costs. These positions directly provide meteorological and hydrological services to the American public. This funding request of \$22.9 million will enable NWS to fund operational positions within the appropriate line, while maintaining funding levels for other operational needs.

Investment in NWS' labor and operations funds the day-to-day operations that allow NOAA to issue timely and accurate weather warnings and forecasts. Without this funding, NOAA's ability to deliver public, aviation, marine, fire weather, climate, space weather, river and flood forecasts and warnings that are used by the general public, businesses, governments, academia, and our international partners would be significantly hampered.

While it is critical to provide sufficient funding to meet current operational needs, NOAA understands NWS' current business model may need to be reexamined as it is based largely on the modernization that occurred in the 1990s. NWS is analyzing the recent National Academies of Science (NAS) report, -Weather Services for the Nation: Becoming Second to None (2012). In addition, NWS has contracted, as directed in the FY 2012 Appropriations, for a follow-on study to evaluate efficiencies to NWS operations. Once these actions are completed, NWS will be in a better position to propose changes.

In FY 2012 NWS began increasing lapse in headquarters, and reducing overhead-related government expenses and contractor labor. NWS is reassessing its management and centralized support business model, reorganizing its headquarters and enabling the reductions to government and contract labor to be made permanent. The reduction in government staff will be achieved through attrition, if possible.

Statement of Need and Economic Benefits:

NWS provides daily around-the-clock weather and flood warning and forecast services to the general public for the protection of life and property and to meet the needs of all segments of the economy. NWS is the sole, official and authoritative United States voice for issuing warnings during life-threatening weather situations. NWS forecasters issue public, aviation, marine, fire weather, climate, space weather, river and flood forecasts and warnings every day for the United States, its territories, adjacent waters and ocean areas, to protect life and property and enhance the national economy. NWS data and products form a national information database and infrastructure used by government agencies, the private sector, the public, and the global community.

The United States is one of the most severe and diverse weather prone countries in the world. Each year, Americans cope with, on average, 10,000 thunderstorms, 5,000 floods, 1,000 tornadoes, and 6 hurricanes. Some 90 percent of all Presidentially-declared disasters are weather-related. There are approximately 7,900 weather-related deaths per year. During the

1980-2011 period, the United States sustained over \$880 billion in overall inflation adjusted damages and costs due to 134 weather and climate disasters¹. According to the American Meteorological Society, weather is directly linked to public safety, and about one-third of the U.S. economy (about \$4 trillion) is weather-sensitive. Vulnerability from severe weather is increasing as the Nation's population continues to grow and shift to coastal areas. More and more sectors of the U.S. economy are recognizing the impacts of weather, water, and climate on their businesses and are becoming more sophisticated at using weather-related information to make better decisions. To meet this growing demand for information and to improve the timeliness and accuracy of warnings for all weather-related hazards, the NWS will continue to enhance observing capabilities; improve data assimilation from both the NWS and external partners; improve collaboration with the research community; provide the NWS information in a quick, efficient, and useful form; and include information on forecast uncertainty to help customers make fully informed decisions.

Base Resources Assessment:

The base resources for this activity are described in the Operations and Research base narrative.

Schedule and Milestones:

- N/A

Deliverables:

- Continuity of timely and accurate weather and water forecasts and warnings
- Aviation weather forecasts for all identified airports and air routes
- Space weather forecasts and products
- Community Hydrologic Prediction System fully operational

1

National Climatic Data Center. (2012, June 19). Retrieved June 19, 2012, from Billion Dollar Weather/Climate Disasters: <http://www.ncdc.noaa.gov/billions/>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service **Sub-**
program: Operations and Research
Program Change: LWF Base: Labor and Operations

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$17,837
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	17,837
12 Civilian personnel benefits	5,031
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	22,868

Local Warnings and Forecasts Base: Establishment of Regional Enterprise Application Development and Integration teams (Base Funding: \$12,176,000 and 122 FTE; Program Change: -\$9,781,000 and -98 FTE): NOAA requests a decrease of \$9,781,000 and 98 FTE for a total of \$2,395,000 and 24 FTE to reflect the significant efficiencies that can be achieved by transition to a new information technology (IT) service delivery model for the National Weather Service (NWS) forecast offices.

Proposed Actions:

The NWS has identified efficiencies which have been realized in the delivery of IT support services to field offices through investments in open source software and implementation of IT best practices. In FY 2014, NWS proposes to consolidate 122 Information Technology Officer (ITO) full-time equivalents (FTE) (one from each Weather Forecast Office (WFO)) to a regional approach consisting of 24 ITO FTEs allocated at the six NWS Regional Headquarters and the National Headquarters through the establishment of Regional Enterprise Application Development and Integration (READI) teams.

The current service delivery model has redundancies and through regionalization of these IT support functions, significant efficiencies can be realized in service delivery. These savings can be accomplished by leveraging upgrades and improvements to existing systems and new technologies, such as the ongoing Advanced Weather Interactive Processing System II (AWIPS), deployment and adopting a more efficient service model. Through investments in IT, NWS has gained the ability to fulfill much of the ITO responsibilities remotely, including systems analysis and software modifications and updates. These technology efficiencies enable NWS to reduce its workforce without impact to its mission to protect lives and property and enable the agency to provide a higher degree of consistency of service delivery.

The READI teams will have responsibility in these two primary areas which the ITOs currently manage:

- Enterprise compatible application development and integration
- IT management and systems analysis

These READI teams will ensure the working order of all computer applications and software including regular maintenance and installation of new software. The IT teams will be available to each Weather Forecast Office (WFO) as a source of software and information technology expertise.

The READI concept plans to replicate the service currently provided by on-site ITOs with a regional approach that meets or exceeds current service levels.

NWS will make every effort to minimize the impact to affected employees and reduce ITO staffing through attrition across the entire organization. Many current ITOs can qualify for other NWS positions, such as meteorologists or electronics systems analysts. In addition, NWS will explore opportunities for voluntary separation incentives for interested individuals.

Base Resources Assessment

The base resource assessment is provided in the Program Summary for Local Warnings and Forecasts.

Schedule and Milestones:

FY 2014

- Finalize consolidation plans

- Execute ITO consolidation
- Staff READI teams

Deliverables:

- READI teams at six NWS Regional Headquarters and the National Headquarters which are meet or exceed current levels of service

PROGRAM CHANGE PERSONNEL DETAIL

Program: National Weather Service
Sub-program: Operations and Research
Program Change: LWF Base: ITOs

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Information Technology Officer	various*	GS-13	-98	81,823	(8,018,654)
Subtotal			<u>-98</u>		<u>(8,018,654)</u>
2013 Pay Adjustment (0.5%)					<u>(40,093)</u>
Total					<u>(8,058,747)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-98		<u>(8,058,747)</u>
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(8,058,747)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-98
Other than full-time permanent	<u>0</u>
Total	-98
Authorized Positions:	
Full-time permanent	-98
Other than full-time permanent	<u>0</u>
Total	-98

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Operations and Research
Program Change: LWF Base: ITOs

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	(\$8,059)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(8,059)
12 Civilian personnel benefits	(1,722)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(9,781)

Local Warnings and Forecasts Base: Tropical Atmosphere Ocean Array (Base Funding: \$4,291,000 and 0 FTE; Program Change: \$2,400,000 and 0 FTE): NOAA requests an increase of \$2,400,000 and 0 FTE for a total of \$6,691,000 and 0 FTE to increase the operations and maintenance of Tropical Atmosphere Ocean (TAO) buoys, to achieve an 80-percent data availability standard.

Proposed Actions:

NOAA proposes to increase ongoing operations and maintenance (O&M) of the TAO array to meet full O&M needs. With this increase, NOAA will be able to maintain a data return rate of 80 percent. The current budget profile does not support the full O&M cost of the 55 NWS TAO buoys, including parts, labor, and services for replacement and spare equipment, sensor calibration, equipment preparation, data analysis and distribution, field service, and logistics.

Without this increase, at the TAO network will drop to 45 percent data availability in FY 2014. The inability to maintain the array and provide optimal observations will affect NOAA's ability to produce accurate forecasts and predictions related to El Niño and La Niña phenomena.

Statement of Need and Economic Benefits:

Data provided via the TAO network directly contributes to the prediction of El Niño and La Niña. Accurate prediction of the onset of El Niño and La Niña allows mitigation actions to be taken in agriculture, fishing, and human health. Lessening the economic and health impacts of these events and anticipating increases in other weather-related disasters associated with them, such as landslides, flooding, brush and forest fires, tornados, and hurricanes, can have consequences in terms of dollars and lives and are of vital concern to constituents. The societal and economic benefits of prediction of El Niño and La Niña include reduction in loss of life and property from disasters; improved understanding of the effects of environmental factors on human health; improved understanding, assessment, prediction, mitigation and adaption to climate variability and change; improved protection and monitoring of ocean resources; improved monitoring and management of energy resources; further protection and monitoring of water resources; improved weather information, forecasting, and warning; further development of the capacity to make ecological (terrestrial, coastal, and marine) forecasts; and increased support for sustainable agriculture and tools to combat land degradation. Important operational decisions made within industries such as agriculture and utilities can be improved based on seasonal El Niño/Southern Oscillation (ENSO) forecasts (NOAA Economics). Research estimates that ENSO forecasting may benefit agriculture decision-making in the U.S., resulting in a net economic value between \$507-\$959 million/year (Chen et al. 2002). In addition, improved long-range weather forecasts of ENSO and the Pacific Decadal Oscillation (PDO) has been valued at \$161 million/year, as derived from more efficient reservoir operations and hydropower sales on spot markets of electric, gas, and sanitary services (Hamlet et al., 2002).

Base Resource Assessment:

The base resources for this activity are described in the Local Warnings and Forecasts base narrative.

Schedule and Milestones:

- Conduct routine buoy operations and maintenance.

Milestones	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Operational Refreshed TAO stations deployed (Total #/yr)	11	11	11	0	0	0
Refreshed TAO stations deployed (Cum Total #)*	37	48	59	59	59	59

*includes 4 moored Acoustic Doppler Current Profilers (ADCPs) refreshed at the end of FY 2011

Deliverables:

- Reach and maintain data availability level of 80 percent

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Observational Data Availability of TAO Network (% Annually)							
With Increase	N/A	N/A	80%	80%	80%	80%	80%
Without Increase	70%	50%	45%	45%	45%	45%	45%
Description: This measure captures the data return from the TAO array expressed as percent available annually. This measure assumes the approximately 278 ship days needed for TAO servicing and maintenance.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Operations and Research
Program Change: LWF Base: Tropical Atmosphere Ocean Array

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	64
22 Transportation of things	250
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	65
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	1,071
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	450
31 Equipment	500
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	2,400

Local Warnings & Forecasts Base: National Data Buoy Center (NDBC) Sustainment (Base Funding: \$28,272,000 and 40 FTE; Program Change: -\$2,000,000 and 0 FTE): NOAA requests a decrease of \$2,000,000 and 0 FTE for a total of \$26,272,000 and 40 FTE to reduce the Coastal Data Buoy sustainment program within the NDBC. The program includes Coastal Weather Data Buoys (CWB) and Coastal-Marine Automated Network (C-MAN) stations.

Proposed Actions:

NWS proposes to reduce funding for buoy sustainment to a level that will sustain 73 percent data availability. At this level, NDBC will continue to provide marine meteorological, oceanographic and geophysical observations accurately and in real-time to assist warning centers, marine forecasters, the U.S. Coast Guard, ocean platform operators and the public in making sound decisions to safely operate in the marine environment.

Base Resources Assessment:

The base resources for this activity are described in the Operations and Research base narrative.

Schedule and Milestones:

FY 2014 - 2018

- Conduct buoy operations & maintenance
- Engineering and design activities for new moorings and components
- As funding permits, address backlogged buoy maintenance

Deliverables:

- Maintain data availability level of 73 percent
- Procure new moorings and components

Performance Goals and Measurement Data:

Performance Measure: Data Availability of weather buoy networks	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With decrease	N/A	N/A	73%	73%	73%	73%	73%
Without decrease	74%	76%	78%	80%	80%	80%	80%
Description: Availability of meteorological and ocean observations from the NDBC coastal buoy network for forecasts and warnings.							

Performance Measure: Number of quality controlled marine observations (millions)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With decrease	N/A	N/A	1.82	1.90	1.90	1.90	1.90
Without decrease	1.70	1.82	1.95	2.10	2.10	2.10	2.10
Description: Observations from all weather buoys and C-MAN Stations.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service **Sub-**
program: Operations and Research
Program Change: LWF Base: NDBC Sustainment

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(200)
25.2 Other services	(800)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	(1,000)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(2,000)

Air Quality Forecasting: Reduction to the National Air Quality Forecasting Capability (Base Funding: \$3,997,000 and 0 FTE; Program Change: -\$3,132,000 and 0 FTE): NOAA requests a decrease of \$3,132,000 and 0 FTE for a total of \$865,000 and 0 FTE to discontinue the National Air Quality Forecasting Capability (NAQFC). Remaining funding will sustain on-demand dispersion forecasts of volcanic ash, transport of smoke, and forecast of emergency releases, supporting aviation affected by volcanic activity.

Proposed Actions:

NOAA proposes to terminate the NAQFC, which provides air quality forecasts of ozone and particulate matter, and redirect funding to other priorities in the National Weather Service (NWS) that are more aligned to NOAA's core mission. Remaining funding will sustain the on-demand, operational dispersion forecasts of volcanic ash, transport of smoke, and forecast of emergency releases. Funding will support operational maintenance of a radiological and volcanic ash plume pollution dispersion model, called the Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT).

The EPA, through the Office of the Air Quality Planning and Standards and Office of Air Radiation, has the legislative mandate to implement the Clean Air Act (CAA). In 2008, NOAA entered into a five year agreement to provide air quality research and operational modeling in support of CAA requirements for the National Ambient Air Quality Standards and State Implementation Plans. This agreement expires in 2013.

The NWS proposes the following:

- Discontinue national numerical air quality forecast guidance including ozone prediction, currently operational in 50 states, which is used by EPA for health-based air quality index summaries, and by state and local agencies who issue Air Quality Index (e.g. code orange) forecasts
- Discontinue support for continued research and development of air quality models and chemical data assimilation including those efforts focused on aerosol, dust, and particulate matter prediction

Base Resources Assessment:

The base resources for this activity are described in the Local Warnings and Forecasts base narrative.

Schedule and Milestones:

- Direct NWS support for air quality forecast guidance will be terminated in FY 2014
- Direct NWS support for Air Quality Index will be terminated in FY 2014
- Maintain forecast operations for Alaska volcanic ash, Alaska smoke, and emergency releases nationwide (FY 2014 – 2018)

Deliverables:

- Volcanic ash forecast in Alaska
- Smoke predictions in Alaska
- On demand forecast of emergency releases nationwide

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Operations and Research
Program Change: Air Quality Forecasting

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	(42)
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	(923)
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	(2,167)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(3,132)

Sustain Cooperative Observer Network (Base Funding: \$1,871,000 and 0 FTE: Program Change: -\$873,000 and 0 FTE): NOAA requests a decrease of \$873,000 and 0 FTE for a total of \$998,000 and 0 FTE to Sustain the Cooperative Observer Network.

Proposed Actions:

NWS will delay by one year the purchase of wireless thermometer systems and air and water temperature sensors required to complete the network modernization. In addition, NWS will delay the conversion of Network data into a digital format for archiving at the National Climatic Data Center. However, all data will continue to be preserved.

The requested funding continues to support sustainment and modernization activities, as recommended by the National Research Council in 1998.

Base Resources Assessment:

The base resources for this activity are described in the Operations and Research base narrative.

Schedule and Milestones:

FY 2014

- 85 Fischer & Porter Rain Gauge Replacements (FPR) installed

FY 2015

- 85 FPRs installed

FY 2016

- Final 80 FPRs installed

FY 2017

- Purchase and installation of 200 wireless thermometer systems
- Purchase 50 pan evaporation water temperature sensors
- Purchase 100 soil temperature sensors

FY 2018

- Purchase and installation of 200 wireless thermometer systems
- Purchase 50 pan evaporation water temperature sensors
- Purchase 100 soil temperature sensors

Deliverables:

- FPR project complete in FY 2016 – total installed 2,182 – project completed with spares in stock
- Install 400 of needed 3,000 wireless thermometer systems
- Install 100 of needed 330 pan evaporation water temperature sensors
- Install 200 of needed 1,600 soil temperature sensors

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Operations and Research
Program Change: Sustain Cooperative Observer Network

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(873)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(873)

NOAA Profiler Network (Base Funding: \$4,254,000 and 7 FTE; Program Change: -\$2,443,000 and -3 FTE): NOAA requests a decrease of \$2,443,000 and 3 FTE for a total of \$1,811,000 and 4 FTE in its NOAA Profiler Network (NPN) Program to continue operations and maintenance support of three profilers located in Alaska.

Proposed Actions:

Given current plans to turn off wind profilers that will experience operating frequency interruptions once the European Galileo satellites are launched mid-decade, less funding is needed for NPN Operations and Maintenance (O&M). NOAA proposes to significantly decrease its NPN O&M and apply remaining funds to support the three remaining profilers located in Alaska that have been converted to new frequencies to avoid interference with the Galileo satellites. The cost to support these three profilers in Alaska is as follows:

Labor (4 FTE):	\$0.68 million
Operations:	\$0.69 million
<u>Maintenance:</u>	<u>\$0.43 million</u>
Total annual cost:	\$1.8 million

Originally developed and deployed by NOAA’s Office of Atmospheric Research, the Alaska NPN consists of three Doppler radar sites that provide vertical wind profile data. This data is utilized as a forecast tool to validate numerical weather model information and to provide fidelity in forecast parameters which support public and aviation weather warnings in Alaska. The most critical use of the Alaska profiler network is to support the production of aviation warnings of volcanic ash, as ash can cause catastrophic engine failure for aircraft in flight; there are over 100 volcanoes in Alaska - 40 of which are considered active.

The data are also used to evaluate the strength and timing of down-slope wind events along the Alaska Range (e.g., major fire weather and aviation hazards, as well as impacts to the Valdez Oil Terminal) and determine the potential for heavy snow events and blizzards affecting the Anchorage area, the largest population center in the state. In addition, data are used in weather forecasts for Mt. McKinley (elevation ~21,000 ft) that support search and rescue missions in Denali National Park, as visitors from around the world attempt to climb North America’s highest peak.

Base Resources Assessment:

The base resources for this activity are described in the Operations and Research base narrative.

Schedule and Milestones:

- Steady State

Deliverables:

- Operational NPN in Alaska

PROGRAM CHANGE PERSONNEL DETAIL

Program: National Weather Service
Sub-program: Operations and Research
Program Change: NOAA Profiler Network

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Electronics Engineer	Boulder, CO	GS-14	-1	105,211	(105,211)
Physical Scientist	Boulder, CO	GS-14	-1	105,211	(105,211)
IT Specialist	Boulder, CO	GS-14	-1	105,211	(105,211)
Subtotal			<u>-3</u>		<u>(315,633)</u>
2013 Pay Adjustment (0.5%)					<u>(1,578)</u>
Total					<u>(317,211)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-3		(317,211)
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(317,211)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-3
Other than full-time permanent	<u>0</u>
Total	-3
Authorized Positions:	
Full-time permanent	-3
Other than full-time permanent	<u>0</u>
Total	-3

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Operations and Research
Program Change: NOAA Profiler Network

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	(\$317)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	(7)
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	(324)
12 Civilian personnel benefits	(127)
13 Benefits for former personnel	0
21 Travel and transportation of persons	(2)
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(1,410)
25.2 Other services	(580)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>(2,443)</u>

Strengthen U.S. Tsunami Warning Program (Base Funding: \$23,076,000 and 19 FTE; Program Change: \$3,804,000 and 0 FTE): NOAA requests an increase of \$3,804,000 and 0 FTE for a total of \$26,880,000 and 19 FTE. This request expands NOAA's partner funding for education and awareness programs to the National Tsunami Hazard Mitigation Program (NTHMP) within the Strengthen U.S. Tsunami Warning Program (SUSTWP) and additionally provides funding for sustainment of the Deep-ocean Assessment and Reporting of Tsunamis (DART) buoy network.

Proposed Action:

The recent Japanese earthquake and Pacific tsunami highlighted the importance of advancing tsunami preparedness and forecasting. The requested funding supports investments in SUSTWP infrastructure and expands outreach activities. NOAA proposes increased grant funding to support local education, awareness, and inundation and evacuation map development within the NTHMP. Expanding NTHMP grants will allow NOAA to better engage state and local community partners to ensure alignment of emergency response plans and mitigation programs in at-risk areas, thereby providing the opportunity to increase the recognition rate of TsunamiReady communities, particularly within the most at-risk coastal areas.

The requested funds will reduce time between scheduled maintenance intervals for the DART buoy network, and will increase target network data availability to 82 percent. The increased funding also will provide for sufficient levels of sensors and other equipment.

Investment in the NTHMP mitigates the risks found in the 2011 National Academies of Science (NAS) assessment report entitled, -Tsunami Warning and Preparedness,|| which indicated that the current capabilities are still not sufficient to meet the challenges posed by a tsunami generated close to land, similar to the recent Japanese tsunami, which could reach the coast just minutes after the triggering event. The NAS report concluded that strengthened tsunami warning and preparation will require persistent progress across the broad spectrum of efforts, including risk assessment, public education, government coordination, detection and forecasting, and warning-center operations. In its report, NAS acknowledged recent improvements to NOAA's tsunami detection and warning system and called on the NTHMP to increase public education and community preparedness.

Statement of Need and Economic Benefits:

NOAA places its ability to warn and advise the American public on the threat of tsunamis as its highest priority within the Tsunami Program. In conjunction, a holistic program is needed, which includes mitigation planning and education to effectively prepare at-risk communities. NOAA engages NTHMP to achieve the outreach and education components. The NTHMP is a consortium of state partners that use NOAA tsunami program funding to support local community education and mitigation activities. These activities include inundation mapping to develop evacuation plans, routes, and signage; education and awareness campaigns; provision of education materials; and training for the public and local officials. These activities have been supported through grants offered by NOAA using appropriated funding.

Higher data availability of the DART network will enable earlier refinement of warnings for both the extent of the area warned and the timing of the tsunami alert or warning.

Base Resources Assessment:

The base resources for this activity are described in the Operations and Research base narrative.

Schedule and Milestones:

FY 2014 - 2018

- Operate Tsunami Warning Centers (Pacific Tsunami Warning Center and West Coast and Alaska Tsunami Warning Center)
- Operate, maintain, and conduct lifecycle management of DART buoy network
- Sustain critical observing system networks and the operations and maintenance of (tsunami-reporting) seismic sensors and sea-level stations
- Recognize TsunamiReady Communities
- Provide NOAA's partner funding for education and awareness programs to the NTHMP

Deliverables:

- Operational Tsunami Warning Centers
- Operational DART buoy network
- Operational observing system network
- TsunamiReady Communities
- Education and awareness programs to the NTHMP

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
TsunamiReady Communities							
With Increase	N/A	N/A	137	147	157	167	177
Without Increase	114	124	134	144	154	164	174
Description: This measure represents the cumulative number of communities that NOAA designates as being adequately prepared for a tsunami. As a voluntary program, the communities earn the designation through spreading awareness of tsunamis, educating community members, and improving emergency evacuation plans.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Observational Data Availability of DART Network (% Annually)							
With Increase	N/A	N/A	80%	82%	82%	82%	82%
Without Increase	76%	80%	80%	80%	80%	80%	80%
Description: This measure captures the data return from the DART network expressed as average percent available annually.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Operations and Research
Program Change: Strengthen U.S. Tsunami Warning Network

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	1,804
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,000
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>3,804</u>

National Mesonet Network (Base Funding: \$11,032,000 and 0 FTE; Program Change: -\$11,032,000 and 0 FTE): NOAA requests a decrease of \$11,032,000 and 0 FTE for a total \$0 and 0 FTE for the congressionally directed use of funds for the National Mesonet Network. NWS is using congressionally directed FY 2012 funding as indicated in the Commerce, Justice, Science, and Related Agencies Appropriations Act, 2012 to further develop the Meteorological Assimilation Data Ingest System (MADIS) for validation and quality control of mesonet data, and to continue to ingest data from mesonets. NWS proposes to create a national mesonet program within NOAA with the following request for appropriated funds.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Operations and Research
Program Change: National Mesonet Network

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(11,032)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	(11,032)

National Mesonet Network (Base Funding: \$0 and 0 FTE: Program Change: \$5,500,000 and 0 FTE): NOAA requests an increase of \$5,500,000 and 0 FTE for a total of \$5,500,000 and 0 FTE to establish the National Mesonet Program.

Proposed Actions:

With this request, NOAA proposes to leverage previous Congressionally-directed investments in mesoscale weather observation to formally establish the National Mesonet Program in the President's Budget. With FY 2014 funds, NWS will support the transition of Meteorological Analysis and Data Ingest System (MADIS) to operations and continue procurement of non-Federal surface and near-surface mesonet observational data.

Investment in the National Mesonet Program mitigates the risk of less accurate and timely forecasts and warnings of small-scale, high impact weather events that can quickly threaten lives and property. This program will support the procurement, organization, and dissemination of localized weather data that can quickly be utilized by forecasters to issue warnings for emergency management, public officials, media sources, businesses, and the general public.

Statement of Need and Economic Benefits:

Despite decades of progress in our ability to observe and predict the weather, NWS remains limited in our ability to provide long-lead forecasts for small-scale, high impact phenomena. Such phenomena include the initiation of individual thunderstorm cells, the location of the divide between rain and snow during major winter storms, flash floods, and fine-scale, short-lived variations in solar radiation and low-level winds. The National Mesonet program was established in response to a 2008 report from the National Academy of Sciences (NAS), *Observing Weather and Climate From the Ground Up: A Nationwide Network of Networks*. The 2008 NAS report demonstrates the key to providing forecasts of these phenomena is obtaining and optimizing the use of frequent, dense observations of wind, temperature, and moisture in the lowest 5000 feet of the atmosphere, and soil moisture, as provided by non-Federal mesonet-type observing networks. Obtaining and using these observations end-to-end in NWS operations will be used to improve NWS service delivery capabilities that save lives and enhance the Nation's economy.

Base Resources Assessment:

There are no base resources for this program as it is a new start.

Schedule and Milestones:

FY 2014-2018

- Maintain metadata obtained via competitive solicitation in FY 2009-2012
- Establish and maintain National Mesonet Program Office
- Support transition of enabling IT infrastructure (MADIS) to operations

Deliverables:

- End-to-end capability for obtaining and using non-Federal observational data and associated metadata to improve NWS operational products and services
- Access to several thousand non-Federal observations of near-surface wind, temperature, humidity, solar radiation, and soil moisture

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Accuracy of analysis low-level temperature, wind, humidity, and pressure							
With increase	N/A	N/A	+1%	+2%	+3%	+4%	+5%
Without increase	N/A	N/A	0	0	0	0	0
<p>Description: Observations from mesonet stations will be used in NWS mesoscale analysis and modeling systems that are either currently operational or will be operational by FY 2012, including the Real-Time Mesoscale Analysis (RTMA) system. This new source of dense observations will improve the accuracy of the analysis fields for near-surface temperature, wind, pressure, and moisture by 5 percent in 5 years. The analysis errors in the current operational analyses are about 1.2°C (temperature), 1.3 m/s (wind), 0.8 mb (pressure) and 0.5 g/kg (moisture). An improvement of 1 percent in the accuracy of analyses for these fields will lead to statistically significant improvements in NOAA services that derive from those analyses, including forecasts of thunderstorms, flash flooding, air quality, fire weather, aviation ceiling/visibility.</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Operations and Research
Program Change: National Mesonet Network

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	5,500
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	5,500

Advanced Hydrologic Prediction Service: Flood Forecasts (Base Funding: \$8,223,000 and 0 FTE; Program Change: -\$2,014,000 and 0 FTE): NOAA requests a decrease of \$2,014,000 and 0 FTE for a total of \$6,209,000 and 0 FTE for the congressionally directed use of funds for the Advanced Hydrologic Prediction Service (AHPS) program. NWS used FY 2012 funding to support increased flood forecasts as indicated in the Commerce, Justice, Science, and Related Agencies Appropriations Act, 2012. However, the dual polarization advancements to the NEXRAD radar will dramatically improve quantitative precipitation forecasts, which inform flood prediction. NOAA will continue to collaborate with river commissions to ensure that critical data is coordinated and incorporated in accurate and timely flood forecasts.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Operations and Research
Program Change: Advanced Hydrologic Prediction Service: Flood Forecasts

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(693)
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	(1,321)
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	(2,014)

Weather Forecast Office Maintenance (Base Funding: \$7,455,000 and 0 FTE: Program Change: -\$867,000 and 0 FTE): NOAA requests a decrease of \$867,000 and 0 FTE for a total of \$6,588,000 and 0 FTE to the National Weather Service (NWS) Weather Forecast Office (WFO) Maintenance program.

Proposed Actions:

The WFO Maintenance program allows NWS to protect the capital investment in its previously modernized facilities in accordance with NWS operational standards along with GSA and private industry standards. As WFOs continue to age, the facilities require continued routine maintenance. NWS will continue to prioritize routine maintenance and will extend the time between preventative maintenance actions. NOAA will reduce its effort to address backlogged repairs.

Base Resources Assessment

The base resources for this activity are described in the Operations and Research base narrative.

Schedule and Milestones:

FY 2014-2018

- Conduct routine WFO maintenance

Deliverables:

- Routine WFO maintenance

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Operations and Research
Program Change: WFO Maintenance

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(867)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	(867)

Central Forecast Guidance: Expanding & Accelerating Weather Forecasting Research to Operations (Base Funding: \$79,940,000 and 307 FTE; Program Change: \$14,807,000 and 0 FTE): NOAA requests an increase of \$14,807,000 and 0 FTE for a total of \$94,740,000 and 307 FTE to expand and accelerate critical weather forecasting research to operations (R2O) to address growing service demands and increase the accuracy of weather forecasts. This will be achieved through, (1) accelerated development and implementation of improved global weather prediction models; (2) improved data assimilation techniques; and (3) improved software architecture and system engineering.

Proposed Actions:

The requested funding will support the expansion and acceleration of R2O activities associated with improving weather forecasts through improvements to NOAA's operational environmental prediction suite. Targeted improvements in the suite will result in multiple weather forecast service improvements. NWS has established the following objectives to accelerate weather forecasting skill:

- A Next Generation Global Modeling System that meets the evolving national prediction requirements
- Effective assimilation for environmental observations at global and regional scales
- A software architecture and engineered system that maximizes the benefit from HPC and enabling quicker transition of internal and external research to operations
- Hurricane forecast models that meet societal requirements to effectively mitigate economic disruption

To achieve a world class global prediction system, NOAA will:

- improve model physics equations to better describe weather phenomenon;
- increase resolution of key environmental models to improve the specificity of forecasts;
- improve coupling between component models such as atmosphere, ocean, land surface, ice, and coastal prediction systems;
- enhance probabilistic forecast systems by including more ensemble members at higher resolution;
- develop advanced data assimilation methods at global and regional scales and for specific storms such as hurricanes;
- conduct data impact studies of future observing systems such as the next-generation satellites to enable both rapid incorporation of future observing systems data and guide observing systems strategies and requirements;
- build a high-performance, flexible software infrastructure to increase ease of use, performance, and interoperability;
- investigate effective use of emerging HPC technologies; simplification of software structure; and a community-based model infrastructure which will streamline the incorporation of proven research advances into operations.

To ensure continuity and synchronization, this proposal was developed in tandem with the planning of the Disaster Relief Appropriations Act, 2013 funding provided to improve weather forecasting and hurricane intensity forecasting capabilities, to include data assimilation from ocean observing platforms and satellites. NWS, working with OAR, plans for complementary investments in research and operational high performance computing to enable next-generation weather modeling and the transition from research to operations of proven models. Sandy Supplemental funding will allow NWS to immediately pursue these efforts, addressing more quickly attainable goals, while setting the stage for longer-term, more involved efforts that are targeted with the FY 2014 request and require further planning.

NOAA will use targeted grants to academia and visiting scientists programs to establish strong extramural research and development (R&D) collaborations. These collaborations will leverage investments from the Nation's weather enterprise and provide significant benefits to NOAA's customers.

Statement of Need and Economic Benefits:

Weather-Ready Nation (WRN) seeks to ensure a society that is able to prepare for and respond to environmental events that affect safety, health, the environment, the economy, and homeland security. Recent record-breaking snowfall, temperatures, drought, flooding, tornadoes and hurricanes have combined to reach the greatest number of multi-billion dollar weather disasters in the Nation's history. Devastating impacts of extreme events can be reduced through improved readiness, which is why NWS has established the WRN initiative to further reduce the Nation's weather-related vulnerabilities.

Despite NWS' consistent and solid performance, further efforts are required to mitigate the loss of life and property resulting from severe weather events. Hurricane Irene and Sandy are two recent examples of devastating storms that demonstrated NOAA's unique ability to generate accurate forecasts, but yet fell short of the levels required to effectively mitigate the hazards. These storms, particularly Sandy, demonstrated the significant vulnerability of the Nation's coastal areas to coastal storms and inundation.

Investment into an integrated, holistic, and probabilistic approach to service delivery with improved accuracy, lead time and confidence will strengthen our ability to mitigate the effects of significant weather events. Incorporation of targeted scientific developments and state-of-the-art technology into service delivery will allow stakeholders to better understand the likelihood of severe environmental events and improve their ability to effectively respond.

Without this investment, the gap between NOAA's forecast skill and that of other major world weather forecast centers will continue to grow. Continuing at the current level of NOAA's forecast suite accuracy and uncertainty information will not support reduced evacuation areas for storms such as hurricanes. Further, the United States will continue to experience preventable losses while infrastructure vulnerability increases. Another impact could be the potential erosion of public confidence in U.S. weather forecast accuracy.

Base Resources Assessment:

The base resources for this activity are described in the Operations and Research base narrative.

Schedule and Milestones:

FY 2014

- Define Prototype Next Generation Global Modeling System
- Define model re-architecture requirements for next-generation heterogeneous fine-grain computing platforms

FY 2015

- Extend NOAA Environmental Modeling System (NEMS) infrastructure to include ice, ocean, near shore water level (storm surge), and land surface prediction models

FY 2016

- Initiate Development Testing for coupled global prediction system

- Demonstrate increased skill (7 day skill extended to 14 days) for coupled global ocean-atmosphere-ice-wave system demonstrated

FY 2017

- Re-architect and re-engineer component models for efficient transfer to fine grain computing platforms

FY 2018

- Implement Next Generation Global Modeling System

Deliverables:

- Annual upgrades to operational Data Assimilation System
- Annual upgrades to NEMS infrastructure
- Upgraded component models (ocean, atmosphere, ice, land surface, wave) for coupled system
- Coupled global system using re-engineered system component models
- Improved utilization of HPC resources and cost effective implementation of science
- Agile HPC environment with quicker operational transition of R&D efforts

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Day 7 500 millibarr (mb) anomaly correlation							
With Increase	N/A	N/A	0.73	0.75	0.77	0.82	0.87
Without Increase	0.72	0.72	0.73	0.73	0.74	0.76	0.78
Description: This is the longest standing measure used by the scientific community to assess the quality and skill of weather forecast models. This measure is the ratio between weather predictions and observations in the middle of the atmosphere. It is used to assess the ability of weather forecast models to predict the timing and strength of atmospheric waves that effect large scale weather patterns. A perfect correlation value is 1 and a value of 0.6 or less is considered to have no skill. Today the Day 5, 500 mb anomaly correlation has a value of 0.867. This investment will advance the current skill of weather models out to 7 days.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
48 hour Hurricane Intensity Error in knots (Measure 15d)							
With Increase	N/A	N/A	12	10	9	7	6
Without Increase	13	12	12	11	11	10	9
Description: Please see measure description under the Annual Performance Plan (APP) under section Targets and Performance Summary.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Operations and Research
Program Change: Central Forecast Guidance: Expanding & Accelerating Weather Forecasting Research to Operations

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	11,877
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,930
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>14,807</u>

The following exhibit shows the summary object class detail for Operations & Research program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Operations and Research

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(50)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(50)

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUB-PROGRAM: SYSTEMS OPERATIONS AND MAINTENANCE

The objectives of the Systems Operations and Maintenance sub-program are to:

- Maintain the operations of systems that collect observations necessary to provide weather forecasts, warnings, and outlooks to the Nation
- Maintain processing systems necessary to generate weather forecasts, warnings, and outlooks to the Nation

This sub-program reflects the costs of on-going operations and maintenance of major NWS observing and processing systems.

NEXT GENERATION WEATHER RADAR

The Next Generation Weather Radar (NEXRAD) (<http://www.roc.noaa.gov/>) is the joint NWS/FAA/DOD weather radar system consisting of 160 operational radars. NEXRAD utilizes Doppler technology and hydrometeorological processing to provide significant improvements over the previous generation of weather radars for tornado and thunderstorm warnings, air safety, flash flood warnings, and water resources management. The system is modular in design, upgradeable, has long lifecycle expectancy, and provides its principal users with a wide array of automated weather information that will increase their capability to meet their respective operational requirements. In FY 2014, NWS will continue to operate and maintain its network of 122 operational NEXRAD systems and 7 non-operational support systems. These non-operational support radars are used for training, testing and maintenance.

Resources are allocated to continuous operations, maintenance and sustainment activities that result in a reliable and secure national radar network. Logistics and Sustaining Engineering ensure adequate sparing levels and address component obsolescence through fleet-wide modifications. Radar Repairs are performed by both on-site and dispatched Radar Operations Center technicians, while National Reconditioning Center reconditions failed components and returns the parts to inventory stock. Utilities provides for commercial electricity services for the radars. Training is provided for radar operators/forecasters and electronics technicians. Hardware/Software Maintenance provides for technology refresh of Information Technology (IT) components to address obsolescence and maintain IT Security compliance, and provides routine software releases to integrate improved radar science and security patches. Telecommunications provides for telecommunications services to transmit continuous radar data to/from Weather Forecast Offices, to archive and to servers for public access. NWS headquarters support provides Configuration Management, Logistics Management and Telecommunications Management.

THE AUTOMATED SURFACE OBSERVING SYSTEM

The Automated Surface Observing System (ASOS) (<http://www.weather.gov/asos/>) is the Nation's primary surface weather observing network supporting aviation operations and weather forecasting. It was designed to replace manual observations in support of weather forecast activities, aviation operations, and the needs of the meteorological, hydrological, and climatological research communities. ASOS operates 24x7, significantly increasing the amount of reliable, continuous information available to forecasters and the aviation community. ASOS is a joint NWS/FAA/DOD automated surface observation system consisting of 1,001 operational systems. In FY 2014, NWS will continue to operate and maintain 315 NWS ASOS units and to maintain 572 FAA ASOS units under a reimbursable funding arrangement.

ADVANCED WEATHER INTERACTIVE PROCESSING SYSTEM The Advanced Weather Interactive Processing System (AWIPS) (<http://www.crh.noaa.gov/lmk/?n=awipsoverview>) is a technologically advanced information processing, display, and telecommunications system that is the cornerstone of the modernized NWS. This system is required to integrate and display all meteorological and hydrological data, and all satellite and radar data at NWS field offices. AWIPS acquires and processes data from modernized sensors and local sources, provides computational and display functions at operational sites, provides an interactive communications system to interconnect NWS operational sites, and disseminates weather and flood warnings and forecasts in a rapid and highly reliable manner. This system integrates satellite and NEXRAD Doppler weather radar data and provides to the local field forecaster capabilities to significantly improve forecasts and warnings. AWIPS provides the only display for the NEXRAD Doppler weather radar at NWS WFOs and RFCs. The AWIPS satellite broadcast offers the communications capability to provide internal and external users with open access to much of NOAA's real-time environmental data.

The AWIPS operations and maintenance budget provides critical operational support for forecast operations at all 122 WFOs, 13 RFCs, 6 National Centers and numerous other test systems and special purpose systems. These investments include the maintenance and support of the critical IT software, hardware, communications and data that all forecasters use to prepare their daily forecast products. The Satellite Broadcast Network (SBN) (primary and backup) transmits most of the critical weather data from satellites, NCEP models, observations systems and other sources, to all field office forecasters. A continuous technology refresh program replaces all AWIPS servers, workstations and other IT components at all sites, at regular intervals. Contract staff provides regular software updates to the forecast decision support software (AWIPS) as well as bug fixing capability, security patching and operating system upgrades.

AWIPS has been designated a Primary Mission Essential Function (PMEF) system. AWIPS has been identified as an essential government resource in the National Security Presidential Directive/NSPD 51 and Homeland Security Presidential Directive/HSPD 20. Funding provided in this program is critical to providing adequate security for this National Critical system.

NATIONAL WEATHER SERVICE TELECOMMUNICATIONS GATEWAY The National Weather Service Telecommunications Gateway (NWSTG) (<http://www.weather.gov/tg/>) is the Nation's hub for the collection and distribution of weather data and products. NWSTG provides national and global real-time exchange services using automated communication resources to collect and distribute a wide variety of environmental data such as observations, analysis, and forecast products. These time-perishable products are distributed as received to ensure the fastest availability of the information. NWSTG ensures that the delivery of critical meteorological data necessary for the protection of life and property and the economic well-being of the Nation continues uninterrupted, providing increased operational availability and reducing risk vulnerability in the event of lost access to NWSTG for whatever reason.

The NWSTG Backup eliminates the NWSTG as a single point of failure by providing backup operations for the primary systems within 12 hours of a failure. This capability reduces the vulnerability of the NWSTG to extended outages and the risks to NWS operations. Thousands of customers worldwide use data distributed by NWSTG, and these data affect a wide range of economic and emergency management decisions. Without this backup capability, NWSTG is a

single point of failure, vulnerable to natural disasters, human error, computer viruses, hacker attacks, and terrorism.

In conjunction with NWSSTG Backup, the Legacy Replacement Project replaced the legacy NWSSTG core mainframe-based message switching system with server-based technology, and upgraded the facility support infrastructure. Full operational capability of the Legacy Replacement was achieved in 2006 and full operational capability of NWSSTG Backup was achieved in 2007. With the utility of the current hardware now waning and expected increased demand for processing capacity due to the demand for higher resolution weather products, planning for the next generation NWSSTG re-architecture is underway.

NWSSTG has been designated a Primary Mission Essential Function (PMEF) system. NWSSTG has been identified as an essential government resource in the National Security Presidential Directive/NSPD 51 and Homeland Security Presidential Directive/HSPD 20. Funding provided in this program is critical to providing adequate security for this National Critical system.

Schedule and Milestones:

NEXRAD

FY 2014

- Radar Product Generator (RPG) and Radar Data Acquisition (RDA) Software Build 14 deployment
- RPG and RDA Software Build 15 development and test
- Signal Processor refresh - Procure Beta site hardware

FY 2015

- RPG and RDA Software Build 15 deployment
- PG and RDA Build 16 development and test

FY 2016

- RPG and RDA Software Build 16 deployment
- PG and RDA Software Build 17 development and test

FY 2017

- RPG and RDA Software Build 17 deployment
- PG and RDA Software Build 18 development and test

FY 2018

- RDA and RPG Software Build 18 deployment
- RDA and RPG Software Build 19 development and test
- Signal Processor refresh - Finish deployment and make final spare parts purchases

ASOS

FY 2014-2018

- Deploy the interim LINUX Migration
- Begin Acquisition Control Unit, Data Collection Platform (ACU/DCP) tech refresh acquisition
- Design, build and test engineering systems
- Conduct operational testing
- Obtain production decision
- Obtain Authority to Operate

AWIPS

- Steady State (FY 2014 – 2018)

NWSTG Backup

- Steady State (FY 2014 – 2018)

Deliverables:

NEXRAD

- RPG and RDA Software Build 14 deployed to provide new signal processing science and Dual Polarization enhancements
- Supplemental Product Generator (SPG) Build 5.0
- Signal Processor contracts established for hardware refresh

ASOS

- Deployment of interim ASOS IT security improvements
- Improved auditing, incident reporting (through the system log), password management, and account management
- Compliant system

AWIPS

- Continued 24/7 support of operational system
- Continued refresh hardware based on expected life and warranties
- Continued correction of Discrepancy Reports on the baseline software application suite

NWSTG Backup

- Continued 24/7 support

Performance Goals and Measurement Data:

Performance Measure: NEXRAD	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Mission & Business Results: Network availability of 96%	96%	96%	96%	96%	96%	96%	96%
Customer Results: Archived data available to customers in 24 hours 96% of the time	96%	96%	96%	96%	96%	96%	96%
Description: Measure tracks the uptime of the radars, but excludes planned preventive maintenance. Archived data availability metric tracks the 24-hr availability of radar data directed from the sites to NCDC to archive.							

Performance Measure: AWIPS	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Master Ground Station Availability	99.95%	99.95%	99.95%	99.95%	99.95%	99.95%	99.95%
Satellite Broadcast Network Data Availability	99.96%	99.96%	99.96%	99.96%	99.96%	99.96%	99.96%
Service Restoration – Level 1	95%	95%	95%	95%	95%	95%	95%
Service Restoration – Level 2	95%	95%	95%	95%	95%	95%	95%
<p>Description: Measures contribute to a high performance IT system in support of high level of forecaster skill and decision making ability, leading to faster, more accurate and more precise weather watches, warnings, and advisories that will save more lives and property. Service restoration is the time to resume service after interruption. -Level 1 refers to critical priority calls (pertains to sites in Critical Weather Status). -Level 2 refers to high priority calls (comparable to critical priority but for sites not in Critical Weather). The interruption must involve a loss of functionality that prevents the site from using AWIPS to collect and distribute mission-critical data or from preparing and issuing forecasts and warnings.</p>							

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

Next Generation Weather Radar (NEXRAD): Operations and Maintenance: (Base Funding: \$46,336,000 and 103 FTE: Program Change: \$119,000 and 0 FTE): NOAA requests an increase of \$119,000 and 0 FTE for a total of \$46,455,000 and 103 FTE for the continued operations and maintenance (O&M) of NEXRAD. This funding will support on-going O&M at the National Weather Service's 122 operational NEXRADS.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Systems Operation & Maintenance
Program Change: NEXRAD

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	119
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>119</u>

Advanced Weather Interactive Processing System (AWIPS): Operations and Maintenance (Base Funding: \$39,426,000 and 41 FTE; Program Change: -\$848,000 and 0 FTE): NOAA requests a decrease of -\$848,000 and 0 FTE for a total of \$38,578,000 and 41 FTE to re-direct funding to the AWIPS Future Forecast Office Initiative, which will lead to improved data management and processing capabilities.

Proposed Actions:

NOAA proposes an \$848,000 reduction to AWIPS operations and maintenance (O&M) in order to invest in the Future Forecast Office, which will lead to service delivery efficiencies. To achieve these efficiencies, NOAA will extend cyclical replacement of AWIPS Information Technology hardware, including servers, workstations, monitors, and printers from the current cyclical replacement period of three to five years to four to six years. This reduction is a combination of a \$1,000,000 IT efficiency decrease combined with a planned increase of \$152,000.

This reduction introduces a level of risk to AWIPS and NWS forecast and warning operations by deferring cyclical replacement of computer equipment used in every day operations. By deferring cyclical replacement of computer equipment, AWIPS equipment may fail at higher rates and experience more parts degradation, which in turn may increase system downtime. In the event of increased downtime, NWS will implement service backup more frequently and for longer periods of time (service backup consists of transferring functions to an adjacent WFO for execution).

Base Resources Assessment:

The base resource activities are described in the Systems Operation & Maintenance base narrative.

Schedule and Milestones:

FY 2014

- Direct Access Storage (DAS) Replacement

FY 2015

- Workstation Replacement
- Text Workstation Replacement
- Data Servers Replacement

FY 2016

- Communications Processor (CP) Replacement
- Terminal Server Replacement
- SBN CP Replacement

FY 2017

- Local Data and Dissemination (LDAD) Replacement
- Local Area Network (LAN) Switch Replacement
- Servers supporting Network Control Facility Replacement

FY 2018

- Network Attached Storage Replacement
- Pre-Processor Server Replacement
- NCF Workstation Replacement

Deliverables:

- Hardware cyclical replacement period extended to 4 – 6 years

Performance Goals and Measurement Data

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
AWIPS Hardware Availability							
With decrease	N/A	N/A	97.5%	96.5%	95.5%	94.5%	93.5%
Without decrease	98%	98%	97.5%	97%	96.5%	96%	95.5%
<p>Description: There are approximately 3,100 pieces of critical AWIPS hardware infrastructure in use everyday day at the WFOs, RFCs, and NCs. This metric measures the availability of this hardware to be used to support NWS operations. The AWIPS O&M program was reduced by \$2.5 million in the reprogramming of the FY 2012 Spend Plan. The optimal availability target for this performance measure is 99%.</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Systems Operation & Maintenance
Program Change: AWIPS

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(848)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	(848)

The following exhibit shows the summary object class detail for Systems Operation & Maintenance program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)**

Budget Program: National Weather Service
Sub-program: Systems Operation & Maintenance

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	9
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	9

**APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION, AND CONSTRUCTION
SUB-PROGRAM: SYSTEMS ACQUISITION**

The objectives of the Systems Acquisition sub-program are to:

- Upgrade NOAA's operational suite
- Process all of NOAA's operational weather models

AUTOMATED SURFACE OBSERVING SYSTEM

The Automated Surface Observing System (ASOS) serves as the Nation's primary surface weather observing network. ASOS provides reliable, 24-hour, continuous surface weather observations which are vital to aviation safety and are important data points for numerical models and weather forecasting and warning services. The product improvement portion of this acquisition program is developing new ASOS sensor capabilities to meet changing user requirements and decrease maintenance costs for NOAA, DOD, and Federal Aviation Administration (FAA) in this tri-agency program.

The ASOS Product Improvement Program will implement new beneficial technologies, replace sensors no longer in production, and reduce maintenance costs. Improved performance in solid and liquid/solid mixes of precipitation and in icing conditions will promote increased aviation safety, better weather forecasting, and better climatology. Higher reliability designs will decrease maintenance and logistics costs, and improve availability of critical surface observations and weather information.

NWS will also continue its tech refresh of the Acquisition Control Unit (ACU), Data Collection Platform (DCP) with this investment. This on-going initiative will ensure the continued operation of this critical system that supports the meteorological requirements of both the NWS and FAA. The upgrade to the ACU/DCP will enable ASOS to provide rapidly updated real time sensor data for the Next Generation Air Transportation System (NextGen).

Schedule and Milestones:

FY 2014

- Deploy the LINUX Migration
- ACU/DCP tech refresh procurement

Deliverables:

- Current ASOS software ported to an operating system with ongoing support and security updates
- Technologically supportable hardware and software configurations
- Full compliance with Federal, DOC, NOAA, and NWS IT security policies and procedures

Outyear Funding Estimates (\$ in thousands):

ASOS Product Improvement	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Changes from FY 2014 Base		0	(1,635)	(1,635)	(1,635)	(1,635)		
Total Request	49,847	1,635	0	0	0	0	0	51,482

Outyears are estimates only. Future requests will be determined through the annual budget process.

ADVANCED WEATHER INTERACTIVE PROCESSING SYSTEM TECHNOLOGY INFUSION

The Advanced Weather Interactive Processing System (AWIPS) is the cornerstone of a modernized NWS. AWIPS hardware and software were deployed to Weather Forecast Offices (WFOs), River Forecast Centers (RFCs), and other NWS sites throughout the United States from 1996 to 1999. The system has been in its Operations and Maintenance phase of its lifecycle since 1999, and is critical to NWS mission related to the preservation of life and property from severe weather and flooding events, and the enhancement of the national economy.

Sustained investments in the AWIPS hardware, communications, and software infrastructure, are necessary for realizing return on NOAA investments in many other programs such as NEXRAD, weather satellites, other weather radars, sensors, and instruments. NWS Government Performance and Results Act goals are based on the effective use of these technology investments along with advanced decision assistance tools, forecast preparation and advanced database capabilities. Continued AWIPS improvements produce increased performance in the NWS GPRA goals of Tornado Warning Lead Time, Flash Flood Warning Lead Time and Winter Storm Warning Lead Time goals.

In 2006, NOAA instituted a major software re-architecture (AWIPS II) with the AWIPS prime contractor through a series of task orders. AWIPS II development was completed in late 2011 and deployment will be completed in 2015.

AWIPS II Extended contains multiple projects to add new and improved functionalities and capabilities for NWS field forecasters, NOAA partners and the public. These capabilities include the National Centers AWIPS (NAWIPS) integration with AWIPS, remote access capabilities to support Incident Meteorologists mission requirements, and training capabilities. In addition, the AWIPS II Extended projects will add new functionalities to more effectively access data providers (data delivery), improve collaboration capabilities to support collaboration among NWS operational units and NOAA trusted partners, improve means to generate information to support decision makers, and improve ways for forecasters to access and visualize meteorological information.

AWIPS needs to transform its service delivery to better align itself with the emerging needs of the Department of Homeland Security (DHS), Federal Aviation Administration (FAA), emergency managers, decision makers, the American public and industry. Emergency managers, DHS, and industry are demanding increased lead time and more precision and consistency in weather, flood, and hurricane forecasts to improve their decisions for resource planning, evacuation planning, and business operations. These decisions are potentially lifesaving and can have multi-billion dollar impacts on the economy and livelihoods.

The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.

NEXT GENERATION WEATHER RADAR

The Next Generation Weather Radar (NEXRAD) Doppler weather system is one of the most important elements in NOAA's capability to warn for severe weather such as tornados, hail, and damaging thunderstorm induced-high winds. NEXRAD provides automated signal processing, computerized data processing by sophisticated meteorological software algorithms, and a high-capacity, processor-driven communications capability.

NEXRAD, initially developed as a tri-agency Program (NWS, FAA, and the United States Air Force Weather Agency) evolved into NEXRAD Product Improvement (NPI) Program, focusing on shared agency requirements to effect synergistic solutions. For example, external FAA radar data are provided to NWS forecast offices to address coverage issues and provide backup data sources.

NPI managed the Dual Polarization modification to NEXRAD. Dual Polarization transmits and receives signals in two dimensions, resulting in a significant improvement in precipitation estimation; improved ability to discriminate rain, snow, and hail; and a general improvement in data quality. Precipitation estimates, currently within 30 percent of ground-truth estimates, will improve to 12.5 percent as demonstrated in a study conducted by National Severe Storms laboratory (NSSL) in 2003. The improved precipitation estimates from the national network of radars will be used as input to weather models with a concomitant improvement in model outputs. The Dual Polarization capability will allow other improvements in severe weather detection, including improvements in snow storm detection and warnings, icing conditions for air and ground transportation, and continued support for improved modeling data input. NWS plans to upgrade all 122 NWS NEXRAD systems with the Dual Polarization capability, as well as 26 United States Air Force NEXRADs and 12 FAA systems under reimbursable agreements.

The Dual Polarization modification contract was awarded in September 2007. Initial deployment began in FY 2011 and is scheduled for completion in FY 2013.

There are no schedule, milestones, deliverables, and outyear funding estimates for this discontinued program.

NWS TELECOMMUNICATIONS GATEWAY LEGACY REPLACEMENT The National Weather Service Telecommunications Gateway (NWSTG) (<http://www.weather.gov/tg/>) is the NWS communications hub for collecting and distributing weather data and products and provides national and global collection and distribution of environmental data and forecast products to its field units and external users. Replacing the NWSTG system with up-to-date technology will reduce the current delays in collecting and disseminating data by reducing transit time through the NWSTG. The replacement will ensure reliable delivery of NWS products to users and will fully capitalize on better observation data and prediction models to improve services.

Base resources are currently being used for the maintenance and operations of the NWSTG and backup to ensure the continuous dissemination of weather data and products. Base funding currently pays for operational FTE's, telecommunication charges, and software licenses. Base funding also provides for the operation of the NWSTG's web servers and file servers that store and provide browser access to and retrieval of all nationally-generated forecast products and observational data. Base funding does not have the resources to take advantage of future

new products and data coming into NWS. Beginning in FY 2011, NOAA began a technology re-alignment of NWSTG. This two year effort will replace aging and unsupportable infrastructure while increasing backup capabilities.

Timely, available, and accurate weather forecasts and warnings are critical to the health and well-being of the citizens and businesses in the United States and around the world. The NWSTG facilitates every NWS GPRA goal including: Tornado Warning Lead Time, Flash Flood Warning Lead Time, Winter Storm Warnings Lead Time, and Hurricane Track Forecasts. Weather and environmental disturbances have the potential to disrupt virtually every major public infrastructure system including transportation systems, power grids, telecommunications, and emergency response systems that protect the public. If any of the above were to occur, the effect on government would most probably come in the form of denial of service to the users of the services. Minutes count in saving lives and the performance of the NWS dissemination systems to supply information needed is crucial. The NWSTG has been identified as an essential government resource in Presidential Decision Directive 67 – Enduring Constitutional Government and Continuity of Government Operations.

In FY 2002, the NWS received funding to modernize the NWSTG legacy systems and to establish the backup facility. In FY 2008, NWS received an additional \$700,000 for capacity expansion and initial technology refresh of both systems. Despite these efforts, the NWSTG is currently operating over its designed capacity with no ability for additional expansion. A re-architected enterprise dissemination system designed to be flexible and expandable is required to process the increased volume of environmental products and data resulting from programs including Geostationary Operational Environmental Satellite-R Series (GOES-R), Joint Polar Satellite System (JPSS), Next Generation Air Transportation System (NextGen), and Dual Polarization Radar. The aging infrastructure, along with the significant increase in processing requirements, represent a major risk with the potential to disrupt or degrade the availability, accuracy, and timeliness of critical products and services that emergency managers and the public rely on during a severe weather, hydrometeorological, and electromagnetic events.

The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.

RADIOSONDE REPLACEMENT SYSTEM (RRS)

The NWS radiosonde network is the primary real-time upper air observation system for NOAA prediction models for severe weather, aviation, and marine prediction models and forecasts for day two and beyond. Observations of temperature, pressure, humidity, and wind speed/direction are taken twice a day at locations nationwide and in the Caribbean and Pacific using radiosondes. Radiosondes are balloon-borne instruments that transmit observational data to a ground receiving and processing station as they fly from the originating Upper Air (UA) Observing Site to up to 30 kilometers away. The network's observations are also used to benchmark the satellite and ground-based thermodynamic profiler measurements of temperature and moisture. Additionally, accumulated radiosonde data contribute to the climate record and atmospheric research.

Radiosonde data are used by DHS and the U.S. Environmental Protection Agency (EPA) in modeling the dispersion and mixing of hazardous materials and pollutants that are released into the atmosphere and by policy-makers to set regulations for industrial emissions and to protect public health from hazardous levels of pollution. FAA uses radiosonde data to analyze the

effects of freezing precipitation on aircraft which may be used in aircraft design and improved safety measures for air transportation.

The legacy Radio Direction Finding (RDF) radiosonde network is currently being replaced by a Global Positioning System (GPS) radiosonde network. The replacement ground-receiving and GPS-based radiosonde system has already provided a six-fold increase in independent vertical observing. In addition, the replacement system has virtually eliminated data losses due to physical obstructions. Finally, GPS radiosondes prevent the loss of both wind speed and direction readings due to low antenna angle observations caused by the jet stream carrying RDF radiosondes slightly beyond the radio horizon.

RRS meets NOAA's legislative mandate under the Omnibus Budget Reconciliation Act (OBRA) to vacate radio frequency spectra for auction and telecommunication utilization and to reduce bandwidth and interference on the frequencies used to transmit data from the radiosonde to the ground receiving station.

GPS radiosondes, in order to meet requirements for reduction of radio-frequency spectrum usage, require deployment of new ground station equipment. This ground equipment provides compatibility with more spectrum efficient radiosonde instruments, while replacing obsolete equipment in service for more than 30 years. By the end of FY 2013, 92 of 102 sites (90 percent) will have been deployed in the Continental US, Alaska, and Pacific region. Currently, no FTE's are allocated to these activities.

Schedule and Milestones:

FY 2014

- Transition 10 Cooperative Hurricane Upper-Air Stations to GPS for a total of 102 GPS sites

FY 2015-2018

- Steady State

Deliverables:

- 102 GPS site network

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of UA observing sites launching GPS radiosondes	86	92	102	102	102	102	102
Description: The radiosonde replacement program was initiated as a result of the 1993 OBRA in which the Government reallocated 5 megahertz (MHz) (1670-1675 MHz) to the private sector effective January 1, 1999 requiring the NWS to vacate this part of the spectrum. The GPS radiosonde complies with this requirement and this output measure demonstrates full compliance with the OBRA.							

Outyear Funding Estimates (\$ in thousands):

Radiosonde Replacement Program	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		0	0	0	0	0		
Total Request	71,403	4,014	4,014	4,014	4,014	4,014	N/A	Recurring

Outyears are estimates only. Future requests will be determined through the annual budget process.

WEATHER AND CLIMATE SUPERCOMPUTING

The NWS NCEP Weather and Climate Operational Supercomputing System (WCOS) is composed of primary and backup operational supercomputing systems, development computing systems, and the wide area network, which collectively perform a wide range of computational tasks. These tasks include data analysis, data assimilation, execution of complicated prediction models, post processing, and product generation. The WCOS provides support resources for (a) weather and climate forecasting capabilities 24 hours a day, 7 days a week, (b) numerical environmental prediction model development and testing, and (c) dissemination of NCEP operational products using the wide area networks. NCEP's operational products include national and global weather, water, climate and space weather guidance, forecasts, warnings and analyses to a broad range of users and partners (within NOAA, with other government agencies, military and the general public).

NWS maintains a backup supercomputer system, which is a clone of the primary supercomputer system and is located in an offsite facility. This system is used to thoroughly test pre-production weather and climate forecasting applications when it is not being used to run the Production Suite during a backup system test or actual emergency. The backup supercomputer system is capable of handling 100 percent of the operational workload should the primary supercomputer system be disrupted. Implementation and maintenance of a redundant WCOS architecture ensures uninterrupted flow of essential weather and climate data and products, continuity of storm watch and warning services to the public, and compliance with NOAA Critical Infrastructure Protection (CIP) plans.

The increased need for NWS products for air quality, ecosystem, coupled modeling, and short-range ensemble forecasts has increased demands on the infrastructure support required to deliver them. The cyclical upgrade of WCOS capability is intended to procure the computing and communications equipment needed to receive and process the increasing wealth of environmental data acquired by modernized observing systems, process improved and more sophisticated numerical weather prediction models, and stay current with the supercomputing technology the market has to offer. Execution of this program promotes public safety and the protection of property by providing NCEP with the computer systems that are capable of producing more accurate NWS climate and numerical weather prediction (NWP) guidance products for hurricanes, severe thunderstorms, floods, and winter storms. Additionally, the upgraded supercomputing system will more accurately forecast large-scale weather patterns in the medium (3 to 10 days) and extended range (30 days), as well as forecasts of major climate events such as El Niño and La Niña.

The High Performance Computing and Communications Act of 1991 Section 204(a) (2) (P.L. 102-994, 15 U.S.C. 5501-5528) states: -the National Oceanic and Atmospheric Administration

shall conduct basic and applied research in weather prediction and ocean sciences, particularly in development of new forecast models, in computational fluid dynamics, and in the incorporation of evolving computer architectures and networks into the systems that carry out agency missions. NOAA Administrative Order 216-110 establishes a policy for managing high performance computing resources as a corporate asset in support of NOAA's mission. The WCOSS investment supports NOAA's objectives of: (1) Serving society's needs for weather and water information; (2) Supporting the Nation's commerce with information for safe, efficient, and environmentally sound transportation; and (3) Providing critical support for NOAA's mission. The WCOSS supports strategic use of information technology including integrated high performance computing resources and data archival/retrieval capabilities, as needed to support NOAA's observation systems, data management, and modeling needs for operational service delivery.

NOAA provides environmental monitoring, assessment, and prediction services in order to protect life and property by ensuring an uninterrupted flow of critical forecast products. This program ensures the continued generation of NWS/NCEP products from operational forecast models and provides support for operating the NOAA's R&D supercomputer which serves as the meteorological and climate testbeds. Moreover, it supports the climate development work and the Joint Center for Satellite Data Acquisition (JCSDA) efforts.

WCOSS has been designated a Primary Mission Essential Function (PMEF) system. WCOSS has been identified as an essential government resource in the National Security Presidential Directive/NSPD 51 and Homeland Security Presidential Directive/HSPD 20. Funding provided in this program is critical to providing adequate security for this National Critical system.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
NCEP Production Suite (NPS) On-Time Product Generation	99%	99%	99%	99%	99%	99%	99%
Description: Sustain NPS on-time product generation within 15 minutes of target completion times at a rate of 99 percent or better.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Operational Use Time	99%	99%	99.9%	99.9%	99.9%	99.9%	99.9%
Description: Operational Use Time (OUT) is defined as the percentage of time the NCEP Production Suite (NPS) can run on the WCOSS. OUT is determined by considering all WCOSS resources in which a subset of this total resource is necessary to execute the entire NPS. The NPS executes on either the Primary or Backup WCOSS.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Development Use Time	99%	99%	99%	99%	99%	99%	99%
Description: Development Use Time (DUT) is defined as the percentage of time development jobs can run on the WCOSS. DUT is determined by considering all WCOSS resources minus the resources necessary to execute the entire NCEP Production Suite (NPS). The Transition to Operations (T2O) executes within the DUT and the T2O will execute on the Primary and Backup WCOSS.							

The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.

COOPERATIVE OBSERVER NETWORK-MODERNIZATION (NO AA' s ENVIRONMENTAL REAL-TIME OBSERVATION NETWORK)

The U.S. Historical Climatology Network—Modernization (USHCN-M) (also known as the Regional Climate Reference Network (USRCRN), and formerly referred to as the Cooperative Observer Network-Modernization (COOP/Mod and NOAA’s Environmental Real-time Observation Network (NERON), will provide and maintain long term, high quality observations of temperature and precipitation to meet the stringent data quality and continuity requirements of the climate science community. When fully implemented, the USHCN-M will consist of approximately 438 newly installed stations. USHCN-M will capture the representative temperature and precipitation records of the nine climate regions of the contiguous United States. The Southwest Region was completed and commissioned in 2011. The West and Northwest Regions are in progress.

The USHCN-M will introduce automated systems with greater temporal resolution (5-minute observations) which will be made available only hours after measurement. The sites will be deployed against an evenly dispersed grid to ensure exceptional geographical coverage. The new sites will have a triple configuration of high-quality sensing equipment that allow for early identification and correction of errors – leading to higher confidence in the regional climate signal. The new sites will be rigorously selected as ideal for climate monitoring and free of artificial influences. The station infrastructure will be expandable to allow for additional data sets (soil temperature, soil moisture, snow fall, snow depth, etc.)

The USHCN-M will improve NOAA’s ability to detect regional-scale changes in annual precipitation (as small as 10 percent per century) and annual averages surface air temperature changes (as small as 0.2 degrees C per century) at the 95th percentile in the lower 48 states (Cumulative Total percent confidence of detection). Climate change and variability occur on multiple time scales: decades, centuries, millennia.

The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.

COMPLETE AND SUSTAIN NOAA WEATHER RADIO

NWS faces challenges in its efforts to sustain a high level of reliability and maintainability of NOAA Weather Radio (NWR), due to equipment obsolescence and degraded reliability. Four hundred (400) NWR station transmitters employ 1970’s-installed vacuum tube technology from four different manufacturers. These older stations are less reliable than newer ones using solid-state transmitters. Older stations demonstrate mean time between failure (MTBF) rates of

6,000 hours, or one failure every 250 days. In comparison, newer solid-state transmitters demonstrate MTBF of over 10,000 hours, a 67 percent improvement. Furthermore, stations have single points of failure due to configurations that include single, instead of dual, transmitters and lack of backup power generators to ensure continued service in the event of primary electrical service failure. Combined, these factors significantly decrease reliability and availability and increase logistics and maintenance costs. Refurbishing these older stations and adequately funding operations and maintenance costs will allow NWR to meet expectations of availability as the Nation's weather and all hazard warning system.

NWS will implement the NOAA Weather Radio (NWR) Console Replacement System (CRS) functions in the AWIPS-II at each of the 122 Weather Forecast Offices (WFOs) to sustain the NWS capability to quickly disseminate severe and high impact weather warnings, watches and forecasts and non-weather emergency messages to the public. NWS will implement the NOAA Weather Wire Service (NWWS) broadcast to emergency managers and other users using the AWIPS Satellite Broadcast Network to replace the service provided by the NWWS contractor.

Schedule and Milestones:

FY 2014-2018

- Procure final 80 transmitters
- Install remaining 181 transmitters
- Upgrade telecoms to digital Image and Publications System
- Replace obsolete transmitter site monitoring equipment
- Procure and install 240 antennas/coaxial cables
- Procure and install 160 generators
- Replace 133 Radio Frequency (RF) test meters
- Procure 138 RF signal analyzers
- Conduct transmitter O&M

Deliverables:

- 100 percent solid state transmitter network for all 1010+ stations
- Replacement of obsolete and end-of-life site components
- 96 percent or better station availability

Outyear Funding Estimates (\$ in thousands):

Complete and Sustain NWR	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		0	0	0	0	0		
Total Request	61,227	5,594	5,594	5,594	5,594	5,594	N/A	Recurring

Outyears are estimates only. Future requests will be determined through the annual budget process.

NOAA PROFILER CONVERSION

The current wind profiler network, referred to as NOAA Profiler Network (NPN) consists of 35 operational and two support vertical looking radars that observe wind direction and velocity at various altitudes. This observational data are used in weather models that predict clouds, precipitation, and temperature. The data provides indicators of severe weather, such as tornadoes and winter storms formation. The data is also used for issuing aviation advisories, tracking volcanic ash plumes and predicting the spread of wildfires. NPN data has improved

probability of detection, decreased false alarm rate, and improved lead time for tornado warnings, severe thunderstorms, flash floods, and winter storms. Wind profiler data also improves warnings related to aviation and fire weather.

Thirty-two of the existing 37 wind profilers use an experimental transmitter frequency of 404 MHz issued by the National Telecommunications and Information Administration (NTIA) upon the profilers' deployment. These 32 profilers using the 404Mhz frequency must cease transmitting on this frequency to avoid interference with the European Union's Search and Rescue Satellite Tracking (SARSAT) transponders aboard the (Galileo) GPS satellite constellation. Thirty of the 32 wind profilers operating at 404MHz are located in the central United States along Tornado Alley.

The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.

PROGRAM CHANGES FOR FY 2014:

Advanced Weather Interactive Processing System: Future Forecast Office (Base Funding: \$24,231,000 and 15 FTE; Program Change: -\$2,639,000 and 0 FTE): NOAA requests a decrease of \$2,639,000 and 0 FTE for a total of \$21,592,000 and 15 FTE for Advanced Weather Interactive Processing System (AWIPS) Technology Infusion. Also within the AWIPS Program, NOAA proposes to re-prioritize resources to fund the AWIPS Future Forecast Office initiative, which will lead to improved data management and processing capabilities. The AWIPS Future Forecast Office initiative will be funded through a redirection of \$1,000,000 in AWIPS operations and maintenance (ORF) and the redirection of \$4,000,000 from existing AWIPS PAC.

Proposed Action:

With this reduction, NOAA will slow the implementation of new tools and capabilities aimed at improved decision support services including the visualization of meteorological information, and eliminate the Forecast Verification Development and related work currently being executed in the Office of Oceanic and Atmospheric Research /Global Systems Development (OAR/GSD).

NOAA proposes a strategic re-investment of \$5,000,000 in the AWIPS Future Forecast Office Initiative to improve situational awareness during weather events. These proposed capabilities are intended to reduce the time forecasters spend on the production of forecast products and information in order to spend more time supporting Impact-Based Decision Support Services (IDSS). All new tools and applications will leverage existing AWIPS II functionality and be developed within the AWIPS Development Environment (ADE). Investment in the AWIPS Future Forecast Office mitigates operational risks by increasing the resources of the forecaster and giving them more flexibility in supporting IDSS.

Investment in the AWIPS Future Forecast Office mitigates operational risks by increasing the resources of the forecaster and giving them more flexibility in supporting IDSS. By relieving the forecaster of the burden of shifting through volumes of data, the forecaster can issue more timely and efficient forecasts, warnings, and outlooks to the Nation which allows NWS to meet its mission to protect life and property and enhance the national economy.

Remaining funds will support AWIPS II Extended, a multi-phase program to add new and improved functionalities and capabilities for NWS field forecasters, NOAA partners and the public. These capabilities include the National Centers for Environmental Prediction integration with AWIPS (NAWIPS), remote access to support Incident Meteorologists mission requirements, and training capabilities. In addition, AWIPS II Extended will add new abilities to access data providers (data delivery); improve collaboration capabilities among NWS operational units and NOAA trusted partners; and improve means to generate information supporting decision makers.

Base Resources Assessment:

The base resources for this program are described in the Systems Acquisitions base narrative.

Schedule and Milestones:

FY 2014-2018

- Continue to implement new forecast tools and capabilities, though at a slower rate
- Hydrometeorological Data Monitoring Final Operating Capability (FOC)
- New Forecaster Tools FOC

- IRIS Functionality FOC
- Enhanced Ensemble Forecasting FOC
- Data Mining Techniques FOC

Deliverables:

- New forecast tools and capabilities
- NAWIPS development at NCEP
- NOAA Weather Radio migration
- Implementation of IDSS
- User defined products
- New data delivery methods
- New Forecaster Tools

Performance Goals and Measurement Data

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Annual number of new capabilities or products introduced into field operations							
With decrease	N/A	N/A	10-20	10-20	10-20	10-20	10-20
Without decrease	N/A	N/A	20-30	20-30	20-30	20-30	20-30
Description: AWIPS II Extended will add new capabilities and products to sustain operations and more effectively access and process data, resulting in better forecasts and warning. This performance measure reflects the number of products and capabilities the NWS transitions into field operations per year. In FY 2011 and FY 2012, AWIPS capabilities were frozen during the migration to AWIPS II.							

Outyear Funding Estimates (\$ in thousands):

AWIPS Tech Infusion	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		(2,639)	(2,639)	(2,639)	(2,639)	(2,639)		
Total Request	233,302	21,592	21,592	21,592	21,592	21,592	N/A	Recurring

Outyears are estimates only. Future requests will be determined through the annual budget process.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Systems Acquisition
Program Change: AWIPS: Future Forecast Office

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(2,639)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	(2,639)

Next Generation Weather Radar: NEXRAD Product Improvement: (Base Funding: \$5,900,000 and 0 FTE; Program Change: -\$5,900,000 and 0 FTE): NOAA requests a planned decrease of \$5,900,000 and 0 FTE for a total of \$0 and 0 FTE for the planned completion of the NEXRAD Product Improvement Program (NPI).

Proposed Action:

NOAA proposes to close out this program. Dual Polarization was determined to be the last major science upgrade to the NEXRAD array. Prior funding will complete the NEXRAD systems upgrade with the Dual Polarization capability. NWS anticipates full deployment of Dual Polarization to the NEXRAD array by the end of 2013.

Base Resources Assessment:

The base resources for this program are described in the Systems Acquisitions base narrative. The Dual Polarization modification to the NEXRADs, when fully fielded and with proper NEXRAD Product Improvement investments and algorithm improvements, will improve Precipitation Estimation accuracy from +/- 35 to +/- 20 percent. Hail false alarm rates will drop from ~39 to ~8 percent.

Outyear Funding Estimates (\$ in thousands):

NEXRAD Product Improvement	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		(5,900)	(5,900)	(5,900)	(5,900)	(5,900)		
Total Request	138,891	0	0	0	0	0	0	138,891

Outyears are estimates only. Future requests will be determined through the annual budget process.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Systems Acquisition
Program Change: NEXRAD

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(5,900)
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	(5,900)

NWS Telecommunications Gateway Legacy Replacement: NWS Telecommunications Gateway Legacy Replacement (Base Funding: \$1,201,000 and 0 FTE; Program Change: \$15,014,000 and 0 FTE):

NWS requests an increase of \$15,014,000 and 0 FTE for a total of \$16,215,000 and 0 FTE to design and implement a re-architected NWS Telecommunications Gateway (NWSTG) and its backup to ensure a modern, scalable, extensible, and reliable system using current best practices. This proposed increase will allow high availability through a fully redundant backup system, eliminating NWSTG functions as a single point of failure for the collection and dissemination of time-perishable products to and from thousands of customers worldwide due to current limited backup capabilities of the current infrastructure. A re-architected NWSTG will be poised to accommodate future data volumes driven by increased satellite, numerical model data and climate observations and other requirements, and to maintain system integrity and reliability.

Proposed Action:

The funding requested here will support the Re-Architecture during its planned profile, FY 2014-2018: the Build, Test, and Deploy Phase. The Build sub-phase will take three years (FY 2014-2016). The Test sub-phase will take two years (FY 2016-2017). The Deploy sub-phase will take two years (FY 2017-2018). Each sub-phase has overlap as the primary and backup systems are developed. During this phase, NWS will:

- Award implementation services contracts
- Implement and transition the NWSTG functions into a new operational dissemination architecture, allowing the revamped NWSTG to begin ingesting additional model and observational data
- Deploy fully re-designed NWSTG functions and backup into operational steady state in FY 2018

NWS is working closely with its users and partners to determine all weather information requirements NWS must meet within the next decade. These requirements include the need to manage and disseminate rapidly expanding volumes of satellite and radar information and numerical weather prediction guidance to NOAA's internal and external users, including the international community. As a result, NWS must design and implement a set of systems and services to deliver the functionality of the NWSTG using modern technologies and standards while maintaining the required reliability and integrity of this critical capability.

Investment in the NWSTG mitigates operational risks by eliminating NWSTG as a single point of failure due to current limited capabilities of the NWS infrastructure and legacy NWSTG functions. Failure of the NWSTG would prevent the collection and dissemination of time perishable products to and from thousands of customers worldwide, greatly reducing the ability of NWS to meet its mission to protect life and property and enhance the national economy.

Statement of Need and Economic Benefits:

The NWSTG is the Nation's hub for the collection and distribution of weather data and products. The NWSTG is a central collection center and communications data switching system for millions of hydrometeorological observations and products each day for NOAA's internal use as well as other user communities, including other Federal Agencies; international organizations; commercial partners; academia; and the Public. NWSTG operates twenty-four hours a day to acquire data, process observations, construct messages, and disseminate messages and files of observations, model analysis, and forecast products. The NWSTG has been identified as an essential government resource in Presidential Decision Directive 67 – Enduring Constitutional Government and Continuity of Government Operations.

The NWSTG realignment technology refreshment is in process and is scheduled to be completed at the end of FY 2013. By FY 2014 NWSTG will have approximately 74 percent of its capability backed up at the new NWSTG backup location (14 of 19 NWSTG functions). In addition, the planned implementation of advanced satellite systems, improved radar capabilities and advanced numerical weather prediction models will cause at least a threefold increase in the volume of weather information flow. The projected volumes of observational and weather forecast and warning information cannot be managed with the current system architecture. The antiquated architecture, along with the significant increase in processing requirements, require a re-design to the infrastructure to ensure the availability, accuracy, and timeliness of critical products and services that emergency managers and the public rely on during severe weather and electromagnetic events.

Base Resources Assessment:

The base resources for this activity are described in the Systems Acquisition base narrative.

Schedule and Milestones:

FY 2014

- Complete system design
- Build-out infrastructure for dissemination services to support NWSTG re-architecture functions
- Leverage existing data centers, build out additional datacenter capacity to support NWSTG re-architecture functions
- Develop Test Plan and Test Scripts
- Build and test staging environment

FY 2015

- Build production environments
- Conduct system and operations test and evaluation
- Obtain Certification and Accreditation

FY 2016

- Cutover -architecture into operations (primary and backup systems)
- Conduct knowledge transfer from Technology Re-architecture IT support contract to Operations and Maintenance IT Support staff

FY 2017

- Maintain NWSTG and backup using best practices and establish equipment lifecycle refreshment

FY 2018

- Steady-State

Deliverables:

- Redesigned NWSTG functions within integrated dissemination infrastructure is operational and scalable and extensible to meet increased data flow requirements
- NWSTG functions can process data without decrement to either availability or latency
- NWSTG backup is fully aligned and capable of full capability failover

Performance Goals and Measurement Data:

Performance Measure: System Availability (%)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With increase	N/A	N/A	98%	98.0%	99.0%	99.9%	99.9%
Without increase	96.6%	98%	98%	96.6%	95.6%	94.6%	85.0%
Description: This metric is a measure of the effectiveness and robustness of the system. It measures the amount of time the system is on-line and available to support the primary mission.							

Performance Measure: Backup Capability	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With increase	N/A	N/A	14	14	19	19	19
Without increase	4	4	14	14	14	14	14
Description: This metric is the number (19) of mission functions (defined by the Gateway Impact Assessment as the essential business functions of the NWSTG that must be up and running within 12 hours after an emergency) supported by our backup system. Currently, NWSTG is capable of supporting the following business functions via the backup system: HAZCollect, GCOM, NDBC, and EMWIN. The completion of the Technology Re-alignment in FY 2013 increases the backup capabilities targets by 10 additional mission functions starting in FY 2014 with the end goal to implement all 19 functions by the end of FY 2016 via the Technology Re-architecture project. The purpose of ensuring all 19 functions are successfully implemented via the backup system within 12 hours is to limit mission interruption and mission degradation to ensure NWS can meet its mission providing timely forecast, watches, and warnings to its customers.							

Outyear Funding Estimates (\$ in thousands):

NWS Telecommunications Gateway	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		15,014	20,029	9,059	2,009	2,009		
Total Request	17,440	16,215	21,215	10,245	3,195	3,195	N/A	Recurring

Outyears are estimates only. Future requests will be determined through the annual budget process.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Systems Acquisition
Program Change: NWS Telecommunications Gateway Legacy Replacement

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	15,014
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	15,014

Weather and Climate Supercomputing: Enhancement of Operational High Performance Computing System (Base Funding: \$40,382,000 and 0 FTE; Program Change: \$3,787,000 and 0 FTE): NOAA requests an increase of \$3,787,000 and 0 FTE for a total of \$44,169,000 and 0 FTE to enable the NOAA operational weather supercomputer located at the National Centers for Environmental Prediction (NCEP) to become a competitive, world class system leading to enhanced accuracy of NOAA's operational environmental prediction suite.

Proposed Actions:

With this increase, NOAA will allocate \$13.8 million to support improved supercomputing operations, including repurposing \$10.0 million from the completion of the bridge contract to this effort. The National Weather Service (NWS) will have successfully completed the transition to a new operational high performance computing (HPC) system from the legacy operational HPC contract by the fall of 2013. This funding was specifically provided for the past two years to enable NWS to continue production of numerical weather prediction (NWP) guidance on a bridge contract while a new supercomputer system was configured to support improved supercomputing operations.

Acquisition of additional Weather and Climate Operational Supercomputing System (WCOS) capacity will accommodate the growing demand for critical forecast products and will result in improved skill, uncertainty information, and specificity in NOAA's operational numerical prediction guidance. This additional HPC capacity will enable NOAA to begin mitigating the gap between the United States' Global Forecast System (GFS) and other international prediction systems by running higher resolution models and ensemble modeling systems. Specific actions include providing additional operational HPC resources for:

- More sophisticated data quality control and data assimilation systems
- Higher resolution GFS with enhanced physics
- Larger ensemble model systems at higher resolutions which provide probabilistic forecast guidance at global and regional scales
- Development and operational transition of storm scale probabilistic models such as the High Resolution Rapid Refresh for aviation weather and other applications
- Development and operational transition of forecast systems for additional missions such as tsunami and space weather

Without this investment, the gap between NOAA's forecast skill and that of other major world weather forecast centers will continue to grow. Continuing at the current level of NOAA's forecast suite accuracy and uncertainty information will not support reduced evacuation areas for storms such as hurricanes. Another impact could be the potential erosion of public confidence in U.S. weather forecast accuracy.

Statement of Need and Economic Benefits:

Weather and climate impact approximately one third of the Nation's economy. Decision makers need credible information at finer scales to mitigate the impacts of weather and climate on the public and businesses. NOAA's highly trained forecasters use model-based estimates of the current and future states of the Earth's environment in the development of weather and seasonal forecast products and services for the Nation. The performance accuracy of these products and services is underpinned by the skill of NOAA's operational environmental prediction suite. The current request ensures NOAA's ability to apply supercomputing resources to NOAA's science-based modeling applications and thereby achieve continuing (1-3 percent annual) improvements in weather and seasonal forecast GPRA targets.

Base Resources Assessment:

The base resources for this activity are described in the Systems Acquisition base narrative.

Schedule and Milestones:

FY 2014-2018:

- Capacity and capability growth of operational HPC resources
- Operations and maintenance of operational HPC resources

Deliverables:

- Reliably produce over 15 million environmental numerical prediction products per day for weather, climate and ocean forecasts
- Increased operational HPC resources
- Run more ensemble models at higher resolutions

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Supercomputer Capacity: Trillion Floating Point Operations per Second (TeraFLOPS) per system (Primary and Backup)							
With increase	N/A	N/A	1,277	1,277	1,277	2,308	2,308
Without increase	73	208	356	356	356	892	892

Outyear Funding Estimates (\$ in thousands):

Weather and Climate Supercomputing	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		3,787	3,787	3,787	3,787	3,787		
Total Request	346,153	44,169	44,169	44,169	44,169	44,169	N/A	Recurring

Outyears are estimates only. Future requests will be determined through the annual budget process.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Systems Acquisition
Program Change: Weather and Climate Supercomputing: Enhancement of Operational High Performance Computing System

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	3,787
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>3,787</u>

Cooperative Observer Network-Modernization: Cooperative Observer Network-Modernization (NOAA' s Envi ronment al Real -Time Observations Network) (Base Funding:

\$3,708,000 and 2 FTE: Program Change: -\$3,708,000 and -2 FTE): NOAA requests a decrease of \$3,708,000 and 2 FTE for a total of \$0 and 0 FTE to terminate the U.S. Historical Climatology Network—Modernization (USHCN-M) (also known as the Regional Climate Reference Network (USRCRN); and formerly referred to as the Cooperative Observer Network-Modernization (COOP/Mod) and NOAA's Environmental Real-time Observation Network (NERON)).

Proposed Actions:

NOAA proposes to terminate the USHCN-M in FY 2014, but will continue to pursue improvements to hydrologic and climate observations through other programs. Due to cost of maintaining existing and newly deployed sites, full deployment of USRCRN is not feasible. Instead, NOAA will continue to use existing observing systems, such as the COOP Network, to observe snow fall for liquid water equivalence, snow depth, and precipitation type used in flood outlooks, flood forecast guidance modeling, monitoring of droughts, issuing local weather forecasts, and declaration of disasters by government officials. The COOP network, including the modernized sites that are already deployed, will be used by NOAA to prepare national, regional, and local climate forecasts and is critical in the development of climatological normals and averages. In addition, Automated Surface Observing System and Mesonet can produce similar data for meteorological and hydrological forecasts.

Base Resources Assessment:

The base resources for this activity are described in the Systems Acquisition base narrative.

Outyear Funding Estimates (\$ in thousands):

Cooperative Observer Network - Modernization	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		(3,708)	(3,708)	(3,708)	(3,708)	(3,708)		
Total Request	27,700	0	0	0	0	0	N/A	27,700

Outyears are estimates only. Future requests will be determined through the annual budget process.

PROGRAM CHANGE PERSONNEL DETAIL

Program: National Weather Service
Sub-program: Systems Acquisition
Program Change: Cooperative Observer Network Modernization (NERON)

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Silver Spring, MD	GS-14	-1	105,211	(105,211)
IT Specialist	Silver Spring, MD	GS-14	-1	105,211	(105,211)
Subtotal			<u>-2</u>		<u>(210,422)</u>
2013 Pay Adjustment (0.5%)					<u>(1,052)</u>
Total					<u>(211,474)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			<u>-2</u>		<u>(211,474)</u>
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(211,474)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-2
Other than full-time permanent	<u>0</u>
Total	-2
Authorized Positions:	
Full-time permanent	-2
Other than full-time permanent	<u>0</u>
Total	-2

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Systems Acquisition
Program Change: Cooperative Observer Network Modernization (NERON)

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	(\$211)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	(3)
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	(214)
12 Civilian personnel benefits	(68)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(3,426)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	(3,708)

NOAA Profiler Conversion: (Base Funding: \$1,709,000 and 0 FTE: Program Change: - \$1,709,000 and 0 FTE): NOAA requests a decrease of \$1,709,000 and 0 FTE for a total of \$0 and 0 FTE to terminate the NOAA Profiler Conversion Program (NPN).

Proposed Actions:

NOAA proposes to terminate the conversion and tech refresh of 32 profiler sites from 404 to 449 MHz. Thirty-two of the existing 37 wind profilers use a transmitter frequency of 404 MHz issued by the National Telecommunications and Information Administration (NTIA) upon the profilers' deployment. These 32 profilers using the 404Mhz frequency will be required to cease transmitting on this frequency to avoid interference with the new European Union's Search and Rescue Satellite Tracking (SARSAT) transponders aboard the (Galileo) GPS satellite constellation.

NOAA proposes to terminate the conversion and tech refresh program in FY 2014 and will continue to pursue improvements in detecting tornadoes and other severe weather through other programs. NOAA will continue to use existing observing systems, such as Dual Polarized radar, radiosondes and aircraft observations to the fullest extent to mitigate the loss of profiler data. Three (3) profiler sites in Alaska already operating on the 449 MHz frequency will continue to operate. These profilers will allow NOAA to continue to provide volcanic forecast products to preserve a safe Alaska airspace.

Base Resources Assessment:

The base resources for this program are described in the Systems Acquisition base narrative.

Outyear Funding Estimates (\$ in thousands):

NOAA Profiler Conversion	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		(1,709)	(1,709)	(1,709)	(1,709)	(1,709)		
Total Request	26,652	0	0	0	0	0	N/A	26,652

Outyears are estimates only. Future requests will be determined through the annual budget process.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Systems Acquisition
Program Change: NOAA Profiler Conversion

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(1,709)
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	(1,709)

Ground Readiness Project : Ground Readiness Project (Base Funding: \$0 and 0 FTE: Program Change: \$15,446,000 and 0 FTE): NOAA requests an increase of \$15,446,000 and 0 FTE for a total of \$15,446,000 and 0 FTE to ensure utilization of the substantial increase in environmental satellite, radar, and model data that will improve weather warnings and forecasts. This activity continues the efforts started with funding from the Disaster Relief Appropriations Act, 2013.

Proposed Action:

This NWS Ground Readiness Project (GRP) investment will continue to prepare NOAA for the three-fold increase in data volume expected from new environmental satellites, which far exceeds the capacity of the organization's current information technology (IT) infrastructure. To fully exploit and benefit from these new observations and products, NWS's IT infrastructure must be enhanced.

Additional funding is needed to:

- Increase operational capacity in current Satellite Broadcast Network (SBN) communications from one transponder (30 megabit per second to 75 megabit per second) to one and half transponders
- Procure SBN receivers for sites with AWIPS including Weather Forecast Offices (WFO) and River Forecast Centers (RFC), National Centers, Head Quarters development and test beds, and training centers to support increases in data volume on the SBN
- Upgrade IT networks at WFOs, RFCs, National Centers for Environmental Prediction (NCEP), Advanced Weather Interactive Processing System (AWIPS) Network Control Facilities, and infrastructure for dissemination services as part of the Integrated Dissemination Program (IDP)

Investment in GRP mitigates the risk that NOAA would be limited to current processing capacities and likewise would ensure a return on satellite and modeling investments. NOAA has invested billions of dollars in new satellite sensing systems and data sets within NOAA's National Environmental Satellite, Data, and Information Service (NESDIS) that will come online over the course of FY 2014-2017 to improve the fidelity and accuracy of weather warnings and forecasts.

Provided below is detailed information on FY 2014 Ground Readiness activities.

- **Providing IDP functionality:** NWS will test IDP functionality to sectorize, composite, integrate and streamline the large volumes and types of new data and metadata. This effort allows NWS to significantly improve current methods of processing and distribution of data by developing intelligent distribution logic and software (smart push/pull), which ensures that users receive only the data they request from the system, omitting extraneous data, dampening the data-growth curve, and thereby reducing network bandwidth costs. The system architecture includes AWIPS, NWS Telecommunications Gateway (NWSTG), and NCEP.
- **SBN Upgrade:** NWS field forecast offices also require a growing suite of environmental satellite, model and radar products. The second SBN bandwidth upgrade ensures that this broader suite of data products can be disseminated to internal and external users. The planned SBN data sets include geographically sectorized and re-sampled imagery from Geostationary Operational Environment Satellite - R series (GOES-R) and Suomi National Polar-orbiting Partnership (NPP). These data sets are critical to the issuance of

severe weather warnings by NWS forecast offices and essential to the conveyance of such warnings to NOAA's external partners (including industry). To ingest the increased data set from the SBN, the WFOs and RFCs require upgrades to their SBN receivers. The proposal provides SBN receivers to all NWS locations with data requirements including WFOs, RFCs, NCEP centers, tsunami warning centers, test beds and training sites.

- Increasing terrestrial telecommunications, processing and interagency peering capabilities: NWS's three primary systems which produce/disseminate data to internal and external users (NCEP, NWSTG, and AWIPS) must ingest and distribute new satellite observations and products. Additionally the NWS will continue to execute a phased bandwidth augmentation to its three primary systems. Increasing the terrestrial telecommunications capacity in a phased approach ensures NWS does not incur sustainment costs before the increased capacity is required.

The actions proposed here will continue the efforts started under the Disaster Relief Appropriations Act, 2013. The supplemental funds will address initial activities necessary to start the Ground Readiness Project.

Statement of Need and Economic Benefits:

This investment will continue to enable NWS to better meet the requirements of local, state, and Federal first responders, emergency managers, the private-weather industry, and decision-makers for significantly refined warnings and forecasts. In particular, new satellite data and processing capabilities will improve forecasts from the county/multi-town scale to the neighborhood scale, and in some cases, even street level. The activities proposed in this initiative will continue to ensure that NWS is able to exploit new satellite, radar and model data. This will also result in more refined, reliable, and advanced notice of deadly weather events by improving tornado lead time and reducing false alarm rates, which helps to save lives.

This funding profile covers the costs needed to acquire and sustain the IT infrastructure (hardware, software and telecommunications) required to maintain mission continuity and exploit the increased satellite observations. The funding requested is not duplicative of other NWS funding requests.

Base Resources Assessment:

The activity described in this program change establishes base resources for a new program.

Schedule and Milestones:

FY 2014

- SBN upgrade implemented to upgrade bandwidth required to support distribution of NPP and GOES-R data
- WFO/RFC SBN receivers deployed in support of GOES-R data testing
- NWS IDP functionality tested
- NCEP, NWSTG and AWIPS telecommunication circuit augmentation installed in support of GOES-R data increase
- Committee for Operational Processing Centers/NCEP Network leveraged for single NESDIS interface for NPP data distribution
- Provide backup network connection for Committee for Operational Processing Centers/NCEP Network to address single point of failure with NOAA-Department of Defense connection

FY 2015

- Direct readout antenna upgrades implemented at six sites
- IDP functionality operational (supporting post-launch tests)
- NCEP, NWSTG and AWIPS telecommunication circuit augmentation installed in support of GOES-R data increase
- GOES-R testing activities conducted

FY 2016

- NCEP Alternative Processing capability installed
- GOES-R launch and post-launch checkout
- Direct readout antenna upgrades at seven remaining sites
- Deploy and test NCEP’s additional processing capability in support of GOES-R launch

FY 2017

- Conduct needed refresh and operation and maintenance activities as new satellite system launches
- Conducted COPC/NCEP Network hardware maintenance activities

FY 2018

- Conduct needed refresh and operation and maintenance activities as new satellite system launches

Deliverables:

- Increased telecommunications bandwidth for NOAA IT infrastructure architecture
- Operational IDP functionality
- Three-fold increase in AWIPS SBN capacity includes WFO/RFC receivers
- Replacement of 13 DRO antennas

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target*	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percent (%) of mission required satellite data processed and distributed within targeted time							
With increase	N/A	N/A	98.5%	98.5%	98.5%	98.5%	98.5%
Without increase	N/A	N/A	98%	98%	70%	50%	30%
<p>Description: The without increase targets reflect the reduction in availability of satellite data. Suomi NPP data would need to be reduced to legacy sizes with full legacy GOES starting in FY 2013. GOES-R data would be reduced to legacy GOES sizes in FY 2015 due to only one legacy satellite being fully available with the reduced availability of the new GOES-R data. JPSS will have reduced availability by FY 2017 if NWS remains at legacy capability. The without increase target data are high level estimates based upon the ratio of legacy data to the full data set that each satellite will bring.</p> <p>*FY 2013 Target does not include goals that will be accomplished from the Disaster Relief Appropriations Act, 2013.</p>							

Outyear Funding Estimates (\$ in thousands):

Ground Readiness Project	FY 2013 & Prior*	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		15,446	18,707	15,399	15,399	15,399		
Total Request	0	15,446	18,707	15,399	15,399	15,399	N/A	Recurring

*FY 2013 & Prior estimates do not include funds from the Disaster Relief Appropriations Act, 2013. Outyears are estimates only. Future requests will be determined through the annual budget process.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Systems Acquisition
Program Change: Ground Readiness Project

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	15,446
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	15,446

The following exhibit shows the summary object class detail for Systems Acquisition program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Systems Acquisition

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(59)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(59)

THIS PAGE INTENTIONALLY LEFT BLANK

**APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION, AND CONSTRUCTION
SUB-PROGRAM: CONSTRUCTION**

The objectives of the Construction sub-program are to:

- Upgrade and improve NOAA's Weather Forecast and Weather Service Offices (WSO)
- Maintain structural integrity through capital improvements
- Maintain compliance with Federal law and national and local building codes

WEATHER FORECAST OFFICE CONSTRUCTION

To support its mission, the NWS operates and maintains 122 WFOs; 13 RFCs; 18 WSO; 9 National Centers; 2 Data Collection Offices; and 2 Tsunami Warning Centers. Of the WFOs and RFCs, 35 are leased.

The WFO Construction program started in the late 1980s as part of the NWS modernization and restructuring program. The original scope of the project, completed in FY 1999, included the construction or lease of 117 WFOs (13 of which were co-located with RFC) and cost approximately \$250 million. Since then, NWS added five WFOs to address service coverage requirements in Guam; Northern Indiana; Caribou, Maine; Huntsville, Alabama; and Key West, Florida. The original modernization scope did not include the upgrade and modernization of Alaska and Pacific Region Weather Service Offices and associated employee housing units. The original facilities are reaching twenty years in age and require the typical capital improvements necessary to maintain their structural integrity, (e.g., heating, ventilating, and air conditioning systems (HVAC), roof and uninterruptible power supply replacements). In addition, this effort is essential to maintaining compliance with Federal law and national and local building codes.

The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

WFO Construction: Weather Forecast Office and River Forecast Center Relocations

(Base Funding: \$3.159.000 and 0 FTE; Program Change: \$5.491.000 and 0 FTE): NOAA NWS requests a one year increase of \$5,491,000 and 0 FTE for a total of \$8,650,000 and 0 FTE to provide tenant improvements (TI) and move costs associated with Weather Forecast Office (WFO) and River Forecast Center (RFC) relocations due to unacceptable conditions at leased facilities that will impact operations.

Proposed Actions:

Investment in the WFO and RFC relocations mitigates operational risks as these improvements are needed for the continuity of weather forecast and warning operations and compliance with weather office standards. Standards of structural integrity, maintenance, security, temperature control, and adequate utilities ensure that forecasters, and the computing and system resources they rely on, meet regulations for issuing weather forecasts and warnings. Further, these Forecast Offices (FOs) are located in severe weather areas, such as tornados and hurricanes, where citizens, emergency managers, and local officials count on the timely and accurate delivery of weather warnings.

In FY2014, NWS will relocate four WFO/RFCs. NWS will pursue Build-to-Suit leases for each of these FOs. Under a Build-to-Suit lease, the offeror constructs a facility to NWS specifications and then leases the land and facility to the NWS. The Build-to-Suit strategy provides: flexibility, customization and reduced upfront budgetary resource requirements. NWS is seeking tenant improvements (TI) and associated move costs for these FOs.

NWS would align lease terms to ensure flexibility for future needs. NWS is analyzing the recent National Academies of Science (NAS) report, -Weather Services for the Nation: Becoming Second to Nonell (2012). In addition, NWS has contracted, as directed in the FY 2012 Appropriations, for a follow-on study to evaluate efficiencies to NWS operations. Once these actions are completed, NWS will be in a better position to evaluate these issues. The WFO replacement leases will be executed in a manner that creates flexibility for NWS going forward.

General Services Administration's (GSA) policy requires agencies to breakout mission unique requirements above the standard -Warm lit shell. These unique requirements are known as TIs and according to GSA policy should be funded separately from the lease. TI costs are estimated to be \$900,000 per facility and move costs are estimated to be \$600,000 per facility. NWS mission unique requirements include:

- Critical circuits and Communications
- Information Technology requirements - raised flooring; additional heating, ventilating, and air conditioning (HVAC) for Computer Room
- Tornado Shelter, as required
- Upper Air Inflatable Shelter, as required
- Security Equipment and Access Control (HSPD-12)
- Uninterruptible power supply (UPS) / Emergency Generator / Fuel Tank

Relocating a FO requires considerable costs. These costs include:

- Installation of dedicated, remote communications to existing Next Generation Weather Radar (NEXRAD)
- Relocation of all communication circuitry

- Relocation of entire Information Technology suite, including OPSnet, Advanced Weather Interactive Processing System (AWIPS) and Upper Air systems
- Parallel operation of dual AWIPS equipment during transition
- Relocation of office furniture and fixtures

Statement of Need and Economic Benefits:

To support its mission, the NWS operates a number of unique facilities including 122 WFO and 13 River Forecast Centers (RFCs). Of this total, 35 FOs have been leased since the 1990s. Today, four of these leased facilities face a multitude of issues making them unsustainable for continued operations. These leased facilities are currently facing immediate challenges.

Since the inception of these leases, many additional regulations have been implemented such as the Americans with Disabilities Act. These facilities do not comply with those regulations. At several sites, major systems such as HVAC are currently non-functional. Loss of these facilities will adversely impact vital service delivery, jeopardizing life and property. Without additional funding, NOAA will be required to revert to short-term, limited competition leases.

Base Resources Assessment:

The base resources for this activity are described in the Construction base narrative.

Schedule and Milestones:

FY 2014

- Relocate four WFO/RFCs

Deliverables:

- Four WFO's and WFO/RFC's under new leased facilities

Performance Goals and Measurement Data:

Performance Measure:	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Number of FOs relocated	Actual	Target	Target	Target	Target	Target	Target
With increase	N/A	N/A	4	0	0	0	0
Without increase	0	0	0	0	0	0	0
Description: The performance measure shows the number of FOs relocated. WFOs/RFC are mission critical. FOs are responsible for issuing advisories, warnings, statements, and short term forecasts for its warning area. Without relocation, FOs abilities will be limited due to deteriorating operational conditions potentially requiring facility closure. Federal Acquisition Regulations discourage limited-competition, short term real estate leases.							

Outyear Funding Estimates (\$ in thousands):

WFO Construction	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		5,491	-5,491	0	0	0		
Total Request	126,724	8,650	3,159	3,159	3,159	3,159	N/A	Recurring

Outyears are estimates only. Future requests will be determined through the annual budget process.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: National Weather Service
Sub-program: Construction
Program Change: WFO Construction: WFO and RFC Relocations

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	<u>0</u>
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	5,491
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	<u>0</u>
99	Total obligations	5,491

BUDGET PROGRAM: NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE

For FY 2014, NOAA requests a net increase of \$296,757,000 from the FY 2014 base level for a total of \$2,186,010,000 and 825 FTE for the National Environmental Satellite, Data, and Information Service (NESDIS) after an increase of \$1,657,000 for restorations from the reprogramming of the FY 2012 Spend Plan. This requested funding includes \$1,690,000 and 0 FTE in inflationary adjustments and \$405,000 in IT savings.

NESDIS BASE OVERVIEW

NESDIS is responsible for the procurement, launch, and operation of the Nation's civil operational environmental satellites. Along with providing for the health, safety and management of the satellites, NESDIS manages the product development and distribution of the corresponding data.

NESDIS has two sub-programs in the Operations, Research and Facilities account: 1) Environmental Satellite Observing Systems, with \$114,032,000 and 409 FTE and 2) Data Centers and Information Services, with \$69,753,000 and 269 FTE:

The goals of the Environmental Satellite Observing Systems sub-program include: (1) maintaining a system of polar-orbiting satellites to obtain global environmental data; (2) maintaining a system of geostationary satellites to provide near-continuous environmental observations of the Earth's Western Hemisphere; (3) acquiring, processing, and analyzing data from NOAA, the Department of Defense (DOD), and other Earth-observing satellites; (4) supplying data and interpretations to users; (5) introducing new technology and processes to improve environmental satellite system capabilities; (6) determining requirements for future satellite systems; (7) serving as the lead U.S. agency for the Search and Rescue satellite system, including operating and maintaining the mission control center; (8) monitoring global sea ice conditions to support safe and effective marine transportation; and (9) demonstrating better ways to use and distribute environmental data from NOAA, the National Aeronautic and Space Administration (NASA), and other satellites, aircraft, and laboratory investigations.

The Environmental Satellite Observing Systems sub-program includes the following budget line items and PPAs for FY 2014:

- Office of Satellite and Product Operations (OSPO), including Satellite Command and Control, NOAA Satellite Operations Facility (NSOF) operations, and Product Processing and Distribution;
- Product Development, Readiness, and Application, including Ocean Remote Sensing and the Joint Center for Satellite Data Assimilation (JCSDA);
- Commercial Remote Sensing Regulatory Affairs;
- Office of Space Commercialization; and
- Group on Earth Observations (GEO).

The goal of the NOAA Data Centers & Information Services sub-program is: 1) to provide the Nation with the long-term archive of and access to past, present, and future environmental observations and associated data recorded across the U.S. and globally; and 2) to provide worldwide environmental data and information products and services in the atmospheric, oceanographic, marine, solid Earth, and solar-terrestrial sciences to meet the needs of users. Environmental data and information maintained by NOAA are vital to every economic sector and are used in making decisions critical to national defense; industrial productivity; energy development and distribution; management and

planning of water resources; world food supplies; public health, safety, and welfare; and development of natural resources. Environmental scientists and observers also have a critical need for a long time-series of historical and recent global data to assess long-term environmental trends, to evaluate the current state of the environment, and to predict future environmental conditions and events.

In FY 2014, the NOAA Data Centers and Information Services sub-program consists of the following budget line items and PPAs:

- Archive, Access, and Assessment
- Coastal Data Development
- Regional Climate Services
- Environmental Data Systems Modernization

NESDIS has two sub-programs in the Procurement, Acquisition and Construction account: 1) Systems Acquisition and 2) Construction.

The Systems Acquisition sub-program (\$1,703,228,000 and 149 FTE) includes the PPAs below:

- Geostationary Systems – N Series;
- Geostationary Systems – R Series;
- Polar Orbiting Systems – POES;
- Altimetry Mission – Jason-3;
- Polar Orbiting Systems – Joint Polar Satellite System (JPSS);
- Polar Free Flyer (PFF)
- Deep Space Climate Observatory (DSCOVR);
- Constellation Observing System for Meteorology, Ionosphere, and Climate-2 (COSMIC-2)
- EOS & Advanced Polar Data Processing, Distribution & Archiving System;
- Critical Single Point of Failure (CIP);
- Comprehensive Large Array Data Stewardship System (CLASS);
- NPOESS Preparatory Data Exploitation; and,
- Restoration of Climate Sensors.

The Construction sub-program includes the Satellite CDA Facility (\$2,240,000 and 0 FTE).

Research and Development Investments:

The NOAA FY 2014 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. NESDIS requests \$27,021,000 for investments in R&D and infrastructure to support R&D in the FY 2014 budget.

NOAA's R&D planning is tied to the goals, enterprises, and associated objectives outlined in NOAA's Next Generation Strategic Plan. Specifically, NOAA's Science and Technology Enterprise and underlying objectives of holistic understanding of the Earth system through research; accurate and reliable data from observing systems; and an integrated environmental modeling system, to provide the basis for a set of internal implementation plans covering a 7-year period which guide NOAA's research and development activities. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - informs the annual updates to these implementation plans, and is developing the next

5-Year Research and Development Plan for NOAA (FY2013-2018), which will be publicly available when completed. This new plan will reflect NOAA's strategic objectives, provide a single guiding document for our scientists, the public, and our partners, and inform future internal planning efforts.

Significant Adjustments-to-Base (ATBs):

NOAA requests an increase of \$1,690,000 and 0 FTE to fund adjustments to current programs for NESDIS activities. The increase will fund the estimated 2014 Federal pay raise of 1.0 percent. The increase will also provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NOAA requests technical adjustments of \$405,000 and 0 FTE from three NESDIS PPAs to reflect IT savings. These funds will be reinvested in the DOC Working Capital Fund in order to support three new Department level initiatives: the Enterprise Security Operations Center (ESOC), the new Financial System (BAS) and the Personal Identity Verification (PIV) program.

These savings are applied to the following PPAs:

Product Processing and Distribution	\$159,000
Product Development, Readiness & Application	\$210,000
Archive, Access and Assessment	\$36,000

NOAA requests the following technical adjustments and transfers, for a net change of \$0 and 0 FTE to the agency.

NOAA requests a technical adjustment to transfer the NESDIS Satellite Command and Control and Product Processing and Distribution line items to the new NESDIS line item, Office of Satellite and Product Operations (OSPO). No adjustments have been made to the three PPAs, except in the alignment under this new line item.

NOAA requests a technical adjustment to rename the Regional Climate Centers PPA the Regional Climate Services PPA. No funding or FTE changes are associated with this request.

From Office	PPA	To Office	PPA	Amount/FTE
NESDIS	Restoration of Climate Sensors	NESDIS	Joint Polar Satellite System	\$26,018,000/ 0 FTE
NESDIS	Joint Polar Satellite System	NESDIS	Polar Free Flyer	\$62,000,000/ 0 FTE

NOAA requests a technical adjustment to move \$26,018,000 and 0 FTE from the Restoration of Climate Sensors PPA to the NESDIS Joint Polar Satellite System PPA, in order to more accurately reflect the actual costs of the JPSS program. The measurements provided by the climate sensors funded in the Restoration of Climate Sensors PPA are JPSS program requirements and the sensors are provided to the JPSS program for integration and accommodation on JPSS delivered flight platforms.

NOAA requests a technical adjustment to move \$62,000,000 and 0 FTE from the Joint Polar Satellite System (JPSS) PPA to the new Polar Free Flyer PPA, in order to focus the JPSS program on the core weather mission. The following instruments and accommodations will be transferred to the Polar Free Flyer PPA:

- Total Solar Irradiance Sensor-1 (TSIS-1) on Free Flyer-1
- Advanced Data Collection System-1 (ADCS-1) on Free Flyer-1
- SARSAT-1 on Free Flyer-1
- Advanced Data Collection System-2 (ADCS-2) on a to be determined spacecraft

Headquarters Administrative Costs:

In FY 2014, NESDIS Line Office headquarters will use \$24,398,500 to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, NESDIS will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2014 Amount	FY 2014 FTE associated with NESDIS Line Office HQ
General Management & Direction/Executive Management	Includes Assistant Administrator's office, public affairs, information services	\$7,695,000	36.9
Budget & Finance	Includes Budget, Finance and Accounting	\$ 3,279,800	17.9
Facilities/Other Administrative (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$ 2,649,400	8
Human Resources	All HR services, including Equal Employment Opportunity	\$ 1,281,000	7.2
Acquisitions and Grants		\$ 258,800	2
Information Technology	Includes IT-related expenses and other CIO related activities	\$ 9,234,500	17.0
Total		\$ 24,398,500	89.0

ADJUSTMENTS RELATED TO THE REPROGRAMMING OF THE FY 2012 SPEND PLAN

Adjustments to the FY 2014 Base are required in order to restore programs affected by reprogrammings made to the FY 2012 Spend Plan. In FY 2012, funds were reprogrammed to sustain the warning and forecast capabilities of the National Weather Service and to delay future improvements to services. These reprogrammings are carried forward into the FY 2013 Annualized Continuing Resolution. The restoration of these funds in FY 2014 seeks to restore these changes.

NOAA requests the following adjustments to restore programs affected by the Reprogramming of the FY 2012 Spend Plan:

Line Office	Account	Page	Program, Project, or Activity	Reprogramming Adjustment
NWS	ORF	NWS-8	Local Warnings and Forecasts Base	(\$24,660,000)
NWS	PAC	NWS-8	Next Generation Weather Radar (NEXRAD)	(\$9,400,000)
NWS	ORF	NWS-8	Air Quality Forecasting	\$2,282,000
NWS	ORF	NWS-8	Sustain Cooperative Observer Network	\$800,000
NWS	ORF	NWS-8	Aviation Weather	\$9,773,000
NWS	ORF	NWS-8	Weather Forecast Office (WFO) Maintenance	\$2,006,000
NWS	ORF	NWS-8	Weather Radio Transmitters Base	\$100,000
NWS	ORF	NWS-8	Central Forecast Guidance	\$1,305,000
NWS	ORF	NWS-8	Next Generation Weather Radar (NEXRAD)	\$347,000
NWS	ORF	NWS-8	Automated Surface Observing System (ASOS)	\$988,000
NWS	ORF	NWS-9	Advanced Weather Interactive Processing System (AWIPS)	\$2,500,000
NWS	PAC	NWS-9	Advanced Weather Interactive Processing System (AWIPS)	\$5,944,000
NWS	PAC	NWS-9	Weather and Climate Supercomputing	\$100,000
NWS	PAC	NWS-9	Cooperative Observer Network-Modernization	\$2,174,000
NWS	PAC	NWS-9	Complete and Sustain NOAA Weather Radio	\$100,000
NWS	PAC	NWS-9	Weather Forecast Construction	\$1,500,000
OAR	ORF	OAR-12	Climate Competitive Research Program	\$1,934,000
NESDIS	ORF	NESDIS-6	Product Processing & Distribution	\$500,000
NESDIS	ORF	NESDIS-6	Archive, Access, and Assessment	\$1,157,000
OMAO	ORF	OMAO-6	Aircraft Services	\$550,000
Total				-

NESDIS – Product Processing & Distribution:

The restoration of \$500,000 to Product Processing & Distribution (PP&D) will allow the program to continue providing the Nation with specialized expertise and computing systems that process, analyze, and distribute satellite-derived products and services that protect U.S. lives and property while enhancing the Nation's environmental, national, homeland, and economic security. PP&D processes data from Earth observing satellites to provide the highest quality products and services to its users. Specifically, this small restoration of funds will contribute to the implementation of Information Technology requirements for NOAA's Environmental Satellite Processing Center.

NESDIS – Archive, Access, and Assessment:

With the restoration of \$1,157,000 to the Climate Data Records Program (CDRs) in FY 2014, NOAA will continue to support competitive grants, NOAA Cooperative Institutes, and contracts.

The Program transforms historical and current raw satellite observations into unified, consistent and scientifically defensible long-term environmental data records and user products. These records support decision making, seasonal forecasting, climate monitoring, and climate modeling applications in the private and public sectors. For CDR development, the Program competitively selects community algorithms that can provide the greatest value to NOAA customers and stakeholders.

For information on these adjustments within other Line Offices, please see the page numbers as referenced in the table above.

Narrative Information:

Following this section are base justification materials and program change narratives by sub-program for this line office. Please note that no program change narrative is provided for program changes of less than \$100,000, however, a summary exhibit is provided at the end of each sub-program showing the object class detail for the small program changes. Please contact the Department of Commerce if details for any of these changes are required.

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUB-PROGRAM: ENVIRONMENTAL SATELLITE OBSERVING SYSTEMS

The objectives of Environmental Satellite Observing Systems are to:

- Provide secure and efficient command and control of NOAA, DOD, and other non-NOAA operational environmental satellites; and
- To ensure timely and uninterrupted delivery of data to users, including product processing, development, and distribution.

To achieve these objectives, NOAA meets the Nation's requirement to provide an environmental satellite system capable of providing timely and accurate environmental data. Early warning of major weather events saves countless lives and prevents substantial property damage. Billions of dollars in damage are incurred each year due to natural disasters. These losses would be significantly worse if NOAA satellite data and services were unavailable due to interference with, or the failure of, critical satellite command and data acquisition infrastructure.

OFFICE OF SATELLITE AND PRODUCT OPERATIONS (<http://www.ospo.noaa.gov/>)

The Office of Satellite and Product Operations (OSPO) manages and directs NOAA's 24x7 environmental satellite operations, acquisition, product processing and the distribution of environmental data and derived products to domestic and foreign users, and associated services. OSPO manages NOAA's Search and Rescue Satellite Aided Tracking (SARSAT) system and coordinates participation in the International COSPAS-SARSAT Program. OSPO also manages the strategic and tactical environmental and oceanographic ice services at the National Ice Center for the operational requirements of U.S. national interests.

SATELLITE COMMAND AND CONTROL (<http://www.oso.noaa.gov/>)

The goal of the Satellite Command and Control program is to provide efficient and secure command and control of NOAA, DOD, and other non-NOAA operational environmental satellites to ensure timely and uninterrupted delivery of data to users.

The NOAA Satellite Command and Control program operates the ground systems that command, control, and acquire data from NOAA's on-orbit satellites 24 hours per day, 365 days per year. The Satellite Command and Control program monitors satellite health and safety; schedules satellite operations and data acquisition to meet user needs; evaluates satellite systems performance; commands spacecraft; supports NASA during launch, activation, and evaluation of new satellites; and assesses satellite and ground station anomalies. The NOAA Satellite Command and Control program ensures acquisition and near real-time delivery of satellite data to product processing centers that, in turn, support NOAA's National Weather Service (NWS) mission to protect lives and property caused by severe weather events.

The Satellite Operations Control Center (SOCC)/Command and Data Acquisition (CDA) Facilities command and control both NOAA and non-NOAA environmental satellites; track the satellites health and safety; and acquire and process all data delivered from the satellites. The SOCC/CDA provides the vital link between the satellites and every data user. SOCC/CDA operations provide uninterrupted availability of critical information and support NOAA's critical national support functions that are not available commercially, such as real-time hurricane support.

NOAA SATELLITE OPERATIONS FACILITY (NSOF) Operations

The NOAA Satellite Operations Facility (NSOF) provides a modern, state-of-the-art-facility and infrastructure that supports uninterrupted 24/7 command, control and communications for NOAA's satellite program operations. The NSOF houses high technology equipment, including 16 antennae, which control Geostationary Operational Environmental Satellites (GOES), Polar-orbiting Operational Environmental Satellites (POES), and DOD's Defense Meteorological Satellite Program (DMSP) environmental satellites. Data from other non-NOAA operational and research satellites are also received to support specific NOAA missions. In addition to satellite operations, the 24/7 critical operations at NSOF provide environmental data used to develop weather and climate products, as well as other information products used daily by industry and citizens across the Nation.

PRODUCT PROCESSING AND DISTRIBUTION (<http://www.osdpd.noaa.gov/ml/index.html>) The Product Processing and Distribution (PP&D) program provides the Nation with specialized expertise and computing systems that process, analyze, and distribute satellite-derived products and services that protect U.S. lives and property while enhancing the Nation's environmental, national, homeland, and economic security. PP&D processes data from Earth-observing satellites to provide the highest quality products and services to its users.

PP&D provides products and services using data from NOAA, the Department of Defense (DOD), and NASA environmental satellites, as well as foreign and commercial spacecraft to national and international customers and users on a 24/7 basis. PP&D products enable NOAA to accurately track the location, extent, and duration of severe weather such as hurricanes, tornadoes, and winter storms; support development of flash flood warnings; track volcanic ash clouds and severe winds that threaten aviation safety; detect remote wild land fires; monitor coastal ecosystem health; identify and monitor maritime hazards from sea ice; and assist in search and rescue activities. PP&D is the operational interface with NOAA's National Weather Service (NWS) and supplies the satellite data that makes up approximately 93 percent of the information used in numerical weather prediction models. PP&D provides approximately 450 operational products organized into three categories: Atmospheric, Oceanographic, and Terrestrial.

PP&D is constantly assessing and using data from advanced satellite sensors to improve operational support to its customers. It also supports activities to improve the effectiveness and interoperability of national systems for sharing natural disaster information. By using maps and data generated by remote- and land-based sensors, this information is made widely accessible to all government agencies and other entities involved in managing and mitigating the impacts of disasters. PP&D products are widely used by all branches of the U.S. Armed Services and the Department of Homeland Security.

Included in the PP&D operations is NOAA's contribution to the joint U.S. National Ice Center (NIC), which monitors global sea ice conditions to support safe and effective maritime transportation in the polar regions, Great Lakes, Arctic, and North Atlantic waters. NOAA, the U.S. Navy, and the U.S. Coast Guard jointly operate the U.S. NIC to support the civil and military maritime communities. This service is critical to NWS warnings in ice-prone sea lanes, U.S. Coast Guard ice breaking missions, civilian and military shipping, and commercial fishing communities.

PP&D provides NOAA's contribution to the operations of the U.S. search and rescue satellite-aided tracking (SARSAT) system. SARSAT has contributed to the rescue of more than 33,000 people worldwide, including more than 7,000 people in the U.S., since its inception in 1982.

Schedule and Milestones:

Satellite Command & Control and NSOF Operations

- FY 2014:
 - Command and Control 8 NOAA Satellites and support 11 non-NOAA Satellites
 - Maintain Satellite Operation Facilities at Suitland, MD, Wallops, Virginia, and Fairbanks, Alaska
 - Conduct annual penetration testing on all IT Systems
 - Continuous Monitoring of all IT Systems
 - Assessment and Authorization for required IT Systems
- FY 2015:
 - Command and Control 7 NOAA Satellites and support 11 non-NOAA Satellites
 - Maintain Satellite Operation Facilities at Suitland, MD; Wallops, Virginia; and Fairbanks, Alaska
 - Conduct annual penetration testing on all IT systems
 - Continuous Monitoring of all IT Systems
 - Assessment and Authorization for required IT Systems
- FY 2016:
 - Command and Control 8 NOAA Satellites and support 11 non-NOAA Satellites
 - Maintain Satellite Operation Facilities at Suitland, MD; Wallops, Virginia; and Fairbanks, Alaska
 - Conduct annual penetration testing on all IT systems
 - Continuous Monitoring of all IT Systems
 - Assessment and Authorization for required IT Systems
- FY 2017:
 - Command and Control 10 NOAA Satellites and support 11 non-NOAA Satellites
 - Maintain Satellite Operation Facilities at Suitland, MD; Wallops, Virginia; and Fairbanks, Alaska
 - Conduct annual penetration testing on all IT systems
 - Continuous Monitoring of all IT Systems
 - Assessment and Authorization for required IT Systems
- FY 2018:
 - Command and Control 10 NOAA Satellites and support 11 non-NOAA Satellites
 - Maintain Satellite Operation Facilities at Suitland, MD; Wallops, Virginia; and Fairbanks, Alaska
 - Conduct annual penetration testing on all IT systems
 - Continuous Monitoring of all IT Systems
 - Assessment and Authorization for required IT Systems

Product Processing and Distribution

- FY 2014: Complete Certification and Accreditation of product processing system
- FY 2015: Transition high resolution information transmissions into operations
- FY 2016: Distribute validated GOES-R products
- FY 2017: Process and distribute 71 new Suomi National Polar-orbiting Partnership (Suomi NPP) products (cumulative) to users within 100% of targeted time; Bring GOES-16 (GOES-R) into operation; Bring Metop-C into operation
- FY 2018: Process and distribute new JPSS products to users within 98.5% of targeted time.

Deliverables:

Satellite Command and Control and NSOF Operations

	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Infrastructure Maintained # of National/Mission Critical Systems)	8	8	8	8	9	9

Product Processing and Distribution

- Delivery of Suomi NPP data to users
- New products transitioned into operations
- Upgraded system architecture to meet security needs and to facilitate transition of research products into operations

Performance Goals and Measurement Data:

Satellite Command and Control

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percentage of GOES satellite data successfully acquired to meet customer quality and timeliness requirements	99.62%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%
Description: Data from NOAA's GOES satellites are received on a daily basis and compiled monthly. This measure is the percentage of GOES datasets received against what was scheduled to be completed.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percentage of POES satellite data successfully acquired to meet customer quality and timeliness requirements	99.99%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%
Description: Data from NOAA's POES satellites are received on a daily basis and compiled monthly. This measure is the percentage of POES datasets received against what was scheduled to be completed.							

Product Processing and Distribution

Performance Measure: Percentage of NOAA-managed Satellite Data processed and distributed within targeted time	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	99.6%	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%
Description: This measure includes data from NOAA's GOES and POES satellites. It tracks the processing and distribution of environmental data to the users. This measure is used to track timeliness and customer satisfaction. The targeted time varies per satellite: GOES is 15 minutes, POES is 180 minutes (which is based on Advanced Television Infra-Red Observation Satellite Operational Vertical Sounder timeliness).							

Performance Measure: Number of environmental products implemented into operations	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	9	10	10	14	14	14	14
Description: This measures the number of validated environmental products (both new and enhanced) that are transitioned from research into operations. Efficiency in managing Research To Operation program resources is reflected by the number of new satellite products that are developed and implemented within the defined schedule and cost criteria for each separate product project.							

Performance Measure: Percentage of customer validated, required ice products that are produced and delivered within targeted time	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	96%	97%	97%	97%	97%	97%	97%
Description: Percentage of Imagery required daily by the National Ice Center (NIC) to generate weekly critical ice forecast and other ice products needed for safe marine transportation.							

Performance Measure: Transmission percentage rate of SARSAT distress alert and location information to search and rescue authorities within targeted time	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	95.76%	95%	95%	95%	95%	95%	95%
Description: Performance measure is important to beacon user customer group. The ability to deliver distress alerts in a timely fashion directly affects the chances of survival for the individual(s) in distress. Baseline performance was derived from historical data. The target performance is included in the Interagency SARSAT Operational Requirements document.							

PRODUCT DEVELOPMENT, READINESS & APPLICATION

<http://www.star.nesdis.noaa.gov/star/index.php>

The goal of NOAA's Product Development, Readiness, and Application (PDR&A) Line Item is to provide applications-focused research that will develop and evaluate prototype products, algorithms, and pre-operational products to improve existing operational satellite products and

services using data from current and next generation environmental satellites. This program includes three PPAs.

PDR&A: PDR&A enhances the accuracy of current satellite products and develops new satellite products to meet user requirements. Activities range from planning new satellite instruments to developing new satellite products and applications. This includes transitioning new satellite products to operations, improving satellite products as instruments degrade, and performing calibration/validation activities between instruments.

The Nation needs enhanced satellite data to improve and extend weather forecasts, expand environmental monitoring and assessment capabilities, and to provide new and improved tools for scientifically based ecosystems management. In the next few years, the number and quality of satellite instruments will grow significantly, providing enhanced data capable of allowing major improvements in weather prediction accuracy. To make these improvements, it is necessary to have both a targeted research program and a cadre of scientists and computing systems dedicated to development of improved satellite data products. The PDR&A activities ensure the highest accuracy of NOAA's current operational environmental satellite data and products via a robust and rigorous satellite data calibration/validation program. This effort improves product quality for the benefit of all users. PDR&A also incorporates the latest academic findings into its work through competitively awarded Cooperative Institutes with academic institutions (Universities of Wisconsin, Maryland, Colorado State, Oregon State, and the City College of New York). The academic expertise and the results of academic findings are infused into product development, readiness, and applications that either led to improvements in existing products or to the development of new products or sensors.

Ocean Remote Sensing (ORS): ORS targets the development of ocean related products and their transition to operations. Its scope includes developing new and improved ocean remote sensing data, products, and capabilities; ensuring continuity of data streams and specifying requirements for next generation satellite sensors; improving the understanding of ocean dynamics; and addressing research and operational needs related to marine ecosystems.

ORS facilitates the delivery and implementation of multiple satellite ocean data streams with continued science maintenance and improvements in research, data acquisition, calibration, and validation, which are required to maintain and enhance satellite-based tools and products utilized by the global and coastal oceans user community. Major activities under ORS include Coast Watch/Ocean Watch (including Marine Optical Buoy support), External Research (Cooperative Institute for Oceanographic Satellite Studies), Sea Surface Roughness, and Sea Surface Temperature.

Joint Center for Satellite Data Assimilation (JCSDA): JCSDA increases forecast prediction capabilities using advanced satellite assimilation methods. Its scope is to accelerate and improve the quantitative use of research and operational satellite data in weather, ocean, climate and environmental analysis and prediction systems.

JCSDA accelerates the application of satellite data for improving weather forecasts and other environmental models. The JCSDA was established to speed the development of new satellite data assimilation science into operational capabilities. NOAA (NWS, OAR, and NESDIS), NASA, and DOD are partners in this coordinated national effort to more fully realize the potential of the vast quantities of new satellite data that are becoming available. The JCSDA is also a risk reduction measure designed to accelerate the JPSS and GOES-R data utilization for the development of numerical weather prediction models and forecast models that will lead to increased accuracy and longer-range forecasts. In the next few years, the number and quality of satellite

instruments will grow significantly, providing an exponential increase in higher quality data capable of allowing major improvements in the accuracy of weather prediction.

Schedule and Milestones:

- FY 2014: Initial data exploitation of GCOM-W1 mission
- FY 2015: Provide near-real time ocean surface wind data to the National Hurricane and Central Pacific Hurricane Centers in support of operational wind nowcasts, forecasts, and warnings (These data will come from scatterometers on foreign satellites, such as the Advanced Scatterometer (ASCAT) instrument on EUMETSAT’s Metop satellite)
- FY 2016: Post-launch checkout of GOES-R
- FY 2017: Post-launch checkout of JPSS-1
- FY 2018: Initial data exploitation of GCOM-C2 mission

Deliverables:

- FY 2014: Initial GCOM-W1 mission products
- FY 2015: Near-real time ocean surface wind data
- FY 2016: Analyses of GOES-R post-launch check out
- FY 2017: Analyses of JPSS-1 post-launch check out
- FY 2018: Initial GCOM-C2 mission products

Performance Goals and Measurement Data:

Performance Measure: Number of products, applications, techniques, and systems developed	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	11	14	14	14	16	16	16
Description: As new requirements for satellite data and environmental information are identified and understood, research is performed that leads to the creation of new information products, applications, processing techniques, and systems.							

Performance Measure: Number of new satellite products developed and transitioned to operations	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	9	10	10	14	14	14	14
Description: To apply its research to operational needs, satellite information products are developed and tested that meet the requirements of customers (e.g. the National Weather Service). After an extensive evaluation, the products that satisfy the requirements are transferred to operations for customer use.							

Performance Measure: Number of refereed papers published	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	114	75	80	80	80	80	80
Description: To assure that research is valid, high-quality, and up-to-date, scientific results are published in peer-reviewed journals.							

COMMERCIAL REMOTE SENSING REGULATORY AFFAIRS (CRSRA)
(<http://www.nesdis.noaa.gov/CRSRA>)

The Nation requires a consistent and transparent regulatory process for licensing private remote sensing space systems in order to promote U.S. technological competitiveness and economic security, while ensuring satellite operation is consistent with our national security, intelligence, and foreign policy needs. NOAA's CRSRA program supports these requirements while furthering the Nation's homeland security and national security missions.

The CRSRA program coordinates interagency review of satellite license applications, amendments, and significant foreign agreements. NOAA licenses private remote sensing space systems and performs associated monitoring and compliance pursuant to the Secretary of Commerce's statutory responsibilities. Prior to issuing licenses, NOAA must consult with DOD and the Department of State to ensure license compliance with national security and foreign policy, respectively. NOAA works closely with other U.S. Government agencies to implement policy and ensure international coordination. Major monitoring and compliance activities supported by NOAA include review of quarterly license reports, on-site inspections, audits, license violation enforcement, and implementation of restrictions during national security and foreign policy crises. The number of license applications and revocations vary each year, and are not predictable. DOC's CRSRA, managed by NOAA, is responsible for enforcement and ensuring compliance with the terms of the license agreements. Worldwide commercial remote sensing space data sales were estimated to be \$735 million in 2007 and are expected to increase to \$2.5-\$3.4 billion by 2017. Dramatic future growth is expected due to growing civil and military user requirements, improvements in aerospace and information technologies, and e-commerce.

Schedule and Milestones:

- FY 2014: Evaluate all standard operating procedures to assure effectiveness, gaps, the need for new procedures, or modification of existing procedures
- FY 2015: Examine methodology for licensing of private space systems and determine if the existing license format is relevant or needs to change to better address changes in space systems and their operations
- FY 2016-2018: Review regulations for currency and update if appropriate; republish any new regulations

Deliverables:

- Issuance of new licenses, waivers and or amendments to licenses
- Review and approval of foreign agreements
- Quarterly and annual audits
- Annual inspections with appropriate documentation for the record

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Process all regulatory actions within statutory time lines and conduct all required audits	34 audits and inspections of domestic and foreign ground stations.	36 audits and inspections of domestic and foreign ground stations.	38 audits and inspections of domestic and foreign ground stations.	38 audits and inspections of domestic and foreign ground	40 audits and inspections of domestic and foreign ground stations.	40 audits and inspections of domestic and foreign ground stations.	42 audits and inspections of domestic and foreign ground stations.

and inspections

Processed 4 new licenses	Process at least 3 new licenses	Process at least 2 new licenses.	stations. Process at least 4 new licenses.	Process at least 5 new licenses.	Process at least 3 new licenses	Process at least 3 new licenses
--------------------------------	---------------------------------------	--	---	--	---------------------------------------	---------------------------------------

Description: Regulatory actions include the submission of new licenses, the amendment of an existing license (both are 120 days by law), review, and approval of any waiver to a license or a foreign agreement (60 days). Audits and inspections are the quarterly and annual review of records, licenses, data protection plans and agreements, and the annual onsite inspection of the company and any station associated with the collection of satellite data. It is the verification for enforcement.

OFFICE OF SPACE COMMERCIALIZATION (OSC)

(<http://www.space.commerce.gov>):

OSC, managed by NOAA for DOC, is responsible for developing space-related policies and promotion of the capabilities of the U.S. commercial space industry. OSC represents DOC negotiations with foreign countries to ensure free and fair trade internationally in the areas of space commerce. OSC assists U.S. commercial providers in their efforts to expand their business with the U.S. Government and promotes commercial provider investment by performing economic analysis on space and space-related markets. OSC identifies commercial solutions for key NOAA and other civil government data acquisition requirements. OSC also acts as a broad industry advocate within the Executive Branch to ensure the Federal Government uses commercially available space goods and services to meet its requirements, avoids legal and regulatory impediments, and does not compete with the U.S. commercial space industry. The 2004 U.S. Space-Based Positioning, Navigation, and Timing (PNT) Policy established, through Presidential Directive, a permanent National PNT Executive Committee (EXCOM) to manage the Global Positioning System (GPS) and its U.S. Government augmentations as a national asset. The policy further directed the EXCOM to establish the National Space-Based PNT Coordination Office (NCO) to serve as the Secretariat and perform those functions delegated by the Executive Committee. The Deputy Secretary of Commerce is a member of the Executive Committee and OSC provides management, personnel and facility support to the NCO in addition to performing studies and related activities to meet Executive Committee tasking and responsibilities.

Schedule and Milestones:

- FY 2014-2018: Accomplish two major policy decisions and commercial industry activities per quarter

Deliverables:

- Increased opportunities for commercial solutions for key NOAA and other civil government data acquisition requirements
- Improved coordination between government and industry on space-related issues and enhance engagement in interagency space-related policy activities

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of major policy decisions supported and industry studies and related activities executed	10	8	8	8	8	8	8
Description: The target represents specific actions planned to be executed during the year that deal with commercial space issues and industry studies of the market.							

GROUP ON EARTH OBSERVATIONS (GEO) (<http://www.noaa.gov/eos.html>):

The intergovernmental Group on Earth Observations (GEO) is a voluntary international partnership of governments and international organizations that provides a framework where these partners can collaborate globally on Earth observations. Its mission is the implementation of a Global Earth Observation System of Systems (GEOSS). The U.S. Government is a founding member of GEO. The Office of Science and Technology Policy, Executive Office of the President leads U.S. engagement with GEO and the Associate Director for Environment serves as U.S. Principal Representative to and Co-Chair of GEO. U.S. Government participation in this international activity is coordinated through the interagency U.S. Group on Earth Observations (USGEO). USGEO facilitates domestic coordination of Earth observation initiatives, as well as engagement with the intergovernmental GEO aimed at advancing U.S. goals and objectives relating to Earth observations.

Program resources support the activities of the GEO Secretariat staff in Geneva, who coordinate the 110 cooperative tasks and subtasks of the GEO Work Plan. The work plan is updated annually, with major revisions every three years. Tasks range from data integration and management, to water cycle observations, to Earth observations for climate change adaptation. Program resources also support the domestic cooperative activities of USGEO, including preparations for U.S. Government participation in major GEO meetings and events; the development of assessment reports for the Executive Office of the President; planning and coordination meetings focused on Federal agency investments in Earth observations, workshops, and other forums.

Global environmental and resource issues are among the great global challenges of our time, including mitigating and adapting to climate change and supporting global food security through sustainable agriculture. Integrated Earth observations are the indispensable foundation for addressing these challenges, of which GEO is a critically important forum for international engagement and cooperation on Earth observations.

The GEOSS endeavor is resulting in unprecedented global access to environmental information, and promises to advance its integration into new data products for the benefit of societies and economies worldwide. It represents a commitment to three important Administration principles: science-based decision making, open access to data and information, and increased international cooperation on science and technology.

In addition to the funding provided in the GEO PPA, NESDIS Headquarters funds labor/ benefits, travel, and supplements the USGEO grant.

Schedule and Milestones:

- FY 2014-2018: Support annual meeting of member governments and participating international organizations at GEO Plenary and associated Executive Committee and related meetings

Deliverables:

- Support the development of U.S. positions and contributions to the implementation of the GEOSS Implementation Plan through preparations for U.S. Government participation in major GEO meetings and events
- Development of reports for the Executive Office of the President as requested
- Planning and coordination meetings focused on Federal agency investments in Earth observations, workshops, and other forums

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of grants provided in support of annual USG participation in the implementation of GEOSS	1	1	1	1	1	1	1
Number of contracts and MOUs provided in support of national Earth observation portfolio	2	2	2	2	2	2	2
Description: Provide support for annual participation in the implementation of GEOSS and coordination of national Earth observation portfolio by USGEO, a NSTC Subcommittee, by providing grants to GEO Secretariat and USGEO Secretariat.							

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

Product Processing and Distribution: Suomi NPP and Polar Continuity Data Processing and Distribution (Base Funding: \$0 and 0 FTE; Program Change: +\$9,570,000 and 0 FTE):

NOAA requests an increase of \$9,570,000 and 0 FTE for a total of \$9,570,000 and 0 FTE to process and distribute environmental data from the Suomi National Polar-orbiting Partnership (Suomi NPP) mission. The Suomi NPP satellite was successfully launched in October 2011. The development and testing of the Suomi NPP data processing system will be completed by September FY 2013. In February 2013, NASA transitioned Suomi NPP satellite operations to NOAA.

Proposed Actions:

In FY 2014, NOAA will process and distribute Suomi NPP environmental products on a 24x7 basis to NOAA Operational Centers. The requested funding will provide contractual support for the Suomi NPP Production Environment within the Environmental Satellite Processing Center (ESPC) that will process and distribute NOAA-unique Suomi NPP products to the National Weather Service (NWS), NOAA, and other user communities. This same support will continue for the follow-on program, the Joint Polar Satellite System (JPSS).

Specifically, NOAA will fund contractor support for computer operations to monitor the processing system, secure hardware maintenance and software licenses, train science analysts to monitor and maintain science quality for all products, provide additional support for the help desk to respond to queries and comments from the user community, and maintain the communications network to deliver products to users. With this investment, NOAA assumes the operations for the Suomi NPP processing and distribution system and begins to use Suomi NPP operationally.

Statement of Need and Economic Benefits:

The Suomi NPP Data Processing System is a processing and distribution system that will develop NOAA-unique products from Suomi NPP satellite measurements into useful environmental products, which are delivered to the NWS and other customers within specific time requirements. The NOAA satellite data processing operational system uses software applications, network and hardware devices, drivers, and interfaces that process environmental data from Level 0, or raw data, to Level 1B, usable products.

Without the processing system to convert environmental data into required products and standard format used by the NWS, the data would be unusable to the NWS for weather models, warnings, watches, forecasts, etc. Without the processing and distribution network to deliver the products to the NWS, the NWS would not receive the products for its models to issue environmental warnings, watches and forecasts that save lives and protect property. Essentially, if the data are not processed and distributed in a timely fashion, they are not useful. Weather forecasts would be made less accurate and warnings less reliable, increasing risk to life and property.

Specifically, the Suomi NPP products are needed to: 1) Support real-time assessments and short-to-medium range forecasts and warnings of environmental conditions that may endanger human safety and health; 2) Improve transportation safety; 3) Assess vegetation and drought conditions; 4) Provide information on fire locations and burn areas; 5) Develop ocean products to enhance public health, protected species, fisheries and coastal zone management, recreational boating, the offshore oil/minerals industry, tropical (hurricane) cyclone analyses and; 6) Assess seasonal-to-inter-decadal variability of ocean color and sea surface temperature products for El Niño, La Niña, and Pacific Decadal Oscillation climate analyses.

Base Resource Assessment:

The base resources for this activity are described in the Office of Satellite and Product Operations base narrative.

Schedule and Milestones:

- FY 2014: Provide 24x7 operations of the Suomi NPP Data Processing System
- FY 2015: Provide 24x7 operational maintenance for the Suomi NPP data processing system; Implement IT refresh for Suomi NPP data processing
- FY 2016: Provide operational maintenance for Suomi NPP Data Processing backup system
- FY 2017: Process and distribute 71 Suomi NPP products to users within 98% of targeted time
- FY 2018: Sign Transition to Operations Plan for JPSS Processing System; Accept data processing system from JPSS

Deliverables:

The requested funding will provide contractual support for the Suomi NPP Production Environment (hardware and software) within the ESPC that will process and distribute 71 Suomi NPP products to the NWS, NOAA.net, and other user communities.

The 71 Suomi NPP environmental products include: CrIS/ATMS (Atmospheric Temperature and Moisture Profiles for NWS); MIRS (Microwave-based moisture products for NWS); and SST (Sea Surface Radiances for NWS and Sea Surface Temperatures for NOS/CoastWatch).

Performance Goals and Measurement Data:

Performance Measure:	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Performance Measure: Number of Suomi NPP Data Products Transitioned to Operational Products and Distributed	Actual	Target	Target	Target	Target	Target	Target
With Increase	N/A	N/A	10	15	14	0	0
Without Increase	N/A	N/A	0	0	0	0	0
Description: Implement into operations the processing and distribution of environmental data from the Suomi NPP mission and follow-on polar missions yielding the specified quantity of products each year. Products include microwave and infrared atmospheric soundings, atmospheric ozone, sea surface temperatures, vegetation health, and fire detection. A total of 71 data products will be transitioned to operational products and distributed by the end of FY 2016, after which the transition to operations for Suomi-NPP products will be considered complete. A backlog of 32 products from FY 2012 and 2013 will be transitioned to operations with this request.							

Performance Measure: Performance Measure: Percent of Suomi NPP Satellite Data ingested, processed and distributed within targeted time	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	98%	98%	98%	98%	98%
Without Increase	N/A	N/A	0	0	0	0	0
Description: The goal is to reach 98 percent of all available Suomi NPP data processed by the Suomi NPP Production Environment within 20 minutes from ingest.							

Processing raw data and distributing the useful products that result are also required to help meet key NWS performance metrics:

- Hurricane Track and Intensity Forecast Accuracy
- Winter Storm Warning Lead Time and Accuracy
- Precipitation Threat Accuracy
- Flood Warning Lead Time and Accuracy
- Marine Wind Speed and Wave Height Forecast Accuracy

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Environmental Satellite Observing Systems
Program Change: Suomi NPP and Polar Continuity Data Processing and Distribution

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	2,150
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	7,420
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	9,570

Product Development, Readiness, & Application: Product Development, Readiness, & Application (Base Funding: \$19,248,000 and 102 FTE; Program Change: +\$331,000 and 0 FTE):

NOAA requests an increase of \$331,000 and 0 FTE for a total of \$19,579,000 and 102 FTE to continue funding for the application-focused research that will develop and evaluate prototype products, algorithms, and pre-operational products. This research helps enhance the accuracy of current satellite products and develops new satellite products to meet user requirements. The Nation needs enhanced satellite data to improve and extend weather forecasts, expand environmental monitoring, and to provide new and improved tools for ecosystem management.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Environmental Satellite Observing Systems
Program Change: Product Development, Readiness, & Application

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	331
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	331

The following exhibit shows the summary object class detail for Environmental Satellite Observing Systems program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Environmental Satellite Observing Systems
Program Change: Multiple

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	83
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	83

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUB-PROGRAM: DATA CENTERS AND INFORMATION SERVICES

Through three NOAA National Data Centers (NNDCs), environmental data, information, products, and services are provided to support atmospheric, oceanographic, and the solid Earth and solar-terrestrial physical sciences to facilitate sustained economic growth, scientifically sound environmental management, and public safety for the Nation and the international community. The sub-program provides the core funding for the three NNDCs: the National Climatic Data Center (NCDC), the National Oceanographic Data Center (NODC), and the National Geophysical Data Center (NGDC).

The NNDCs provide the Nation with the long-term stewardship archive of past, present, and future environmental observations and associated data recorded across the U.S. and globally. Access to long time series of environmental data is critical to satisfying the Nation's wide range of needs related to the national security, the economy, the environment, and public safety. Approximately one-third of U.S. economic activity is climate sensitive and this figure continues to increase.¹ Business and government policies and decisions impacting water and energy management, manufacturing, transportation, food production, public health, and many other socio-economic issues depend on quality climate and weather data records. Collectively, the NOAA National Data Centers (NNDC) receive over one (PB) petabyte (10^{15}) of new data annually; provide access to an archive exceeding 7 PBs; support over one billion web contacts/hits; and provide data transfers to over 15 million customers. By 2018, the projected ingest of new data will exceed 20 PBs per year and the cumulative archive volume managed and accessible to customers will exceed 100 PBs.

ARCHIVE, ACCESS & ASSESSMENT

Climate Archive, Access, and Assessment (<http://www.ncdc.noaa.gov/oa/ncdc.html>)

The National Climatic Data Center (NCDC), located in Asheville, North Carolina, is the largest climate data center in the world, and is the Nation's designated Federal Records Center (FRC) for climate data. NCDC is one of two operational sites for NOAA's Comprehensive Large-Array Stewardship System (CLASS). The NCDC receives, processes, archives, provides access, disseminates, and conducts objective assessments of ground based and spaced observations. National and international observing systems provide a regional, national, and global perspective of the State of the Earth's weather and climate. Paleoclimate proxy records (i.e., pre-instruments), such as ice and coral cores, and tree rings, are also collected, archived, and made available to the global community of researchers and other interested users. The NCDC is a designated World Data Center (WDC) for Meteorology and WDC for Paleoclimatology.

The NCDC provides data, information, products and climate services to all sectors of the economy, delivering weather and climate data and information to nearly two million customers each year for planning, operations, and minimizing risks associated with weather and climate extremes. NCDC provides access and data retrieval via the internet and responds to thousands of requests received via e-mail, phone, fax, and the mail. NCDC routinely produces operational products for climate monitoring, such as the weekly and monthly State of the Climate reports, the U.S. and the North American Drought Monitoring Reports, and the Climatology for the U.S. reports. These and other climate assessments support business and government policy makers and implementers. NCDC also works very closely with various regional, state, and local stakeholders.

Approximately 3.5 petabytes (PBs) of data are now directly accessible from NCDC's website, www.ncdc.noaa.gov. 1.890 PB [1,890 terabytes (TB)] of data were delivered on-line during FY 2012 (a 40-fold increase over FY 2005), with approximately 900 million hits and downloads from NCDC's website during that time. Several factors account for this increase, including: continued infrastructure improvements at NCDC to accommodate user demand, the Climate Services Portal's continued development (www.climate.gov), and access to large volumes of Climate Forecast System Reanalysis data via the NOAA National Climate Model Portal (NCMP). NOAA climate data users and data requests-retrievals are placed into four general categories: Business (44 percent), Public (33 percent), U.S. Government (12 percent) and Academia (10 percent). The introduction of the Climate Services Portal website is a major contributor to increased customer interactions with NOAA.

The NCDC, in partnership with NASA scientists, develops long time series, satellite-derived Climate Data Records (CDRs). The NOAA National Climate Model Portal (NCMP) will provide access to the next suite of NOAA's Climate System Reanalysis and Reforecast models and products. NCMP provides an operational archive and access capability for the next generation, high-resolution weather and climate reanalysis datasets generated by sophisticated coupled ocean, air, and land models running on supercomputers across NOAA and its collaborators (National Science Foundation, Department of Energy, and others). NCMP is an extension of the National Operational Model Archive and Distribution System (NOMADS). NCDC, in cooperation with scientists and other NOAA activities and Federal agencies, has designed and deployed the Nation's first climate quality *in-situ* observing network.

NCDC in partnership with other NOAA offices and agencies is developing the National Integrated Drought Information System (NIDIS) portal. Also, NCDC, in partnership with the Climate Program Office and other NOAA offices, is continually improving the NOAA Climate Services Portal prototype (www.climate.gov).

Climate Database Modernization Program

The NCDC manages the conversion and accessibility of historical non-digital data records through the Climate Database Modernization Program (CDMP). CDMP's goal is to preserve and make available climate data going back several hundreds of years that range from the bottom of the ocean to the top of the atmosphere. Many of these holdings, which are part of the U.S. National Archives, were originally recorded on paper, film, and other fragile media, and stored at various NOAA Centers. Prior to CDMP, not only were these valuable data sources mostly unavailable to the scientific community, but storage technology for the archive was becoming obsolete. Today, CDMP has greatly improved the preservation and access to NOAA's holdings by migrating many of these resources to new digital media.

To date over 57 million images have been digitized for on-line access. Over 14 terabytes of data have been keyed and converted to digital format extending the historical climate record back to the early 1800s and in some cases the 1700s. These are now readily accessible via the Internet and other web-based portals.

Ocean Archive, Access, and Assessment (<http://www.nodc.noaa.gov/>)

The National Oceanographic Data Center (NODC), located in Silver Spring, MD, with offices in Stennis, MS; Honolulu, HI; San Diego, CA; and Charleston, SC, is the Nation's permanent archive for oceanographic data, ensuring the public access to and the scientific stewardship of long-term observational records of the global ocean, and U.S. coastal waters and their ecosystems. These holdings document the physical and chemical properties of the oceans, currents, and biota as observed from ships, buoys, satellites and other ocean and coastal platforms extending back nearly

150 years. NODC provides increased utilization of coastal and oceanographic data using web-based search/access and geographic information system (GIS) techniques to improve the understanding, management and use of coastal areas.

NODC's mission is to ensure that global and regional oceanographic data sets collected at great cost to NOAA are maintained in a permanent archive that is easily accessible. This is accomplished by: building scientifically, quality-controlled global and regional oceanographic databases; providing analysis and climatologies of key ocean variables; supporting ecosystem management by providing access to the Nation's coastal and ocean data resources; and providing information technology services in a secure, sustainable environment.

NODC serves NOAA and the Nation by providing scientific stewardship of marine data and information to more than 800,000 users annually. This service includes timely, relevant and authoritative ocean data products in support of NOAA's coast, ocean, and climate mission goals; leading efforts related to ocean satellite and *in-situ* data and metadata; providing world class quality NOAA products from multiple observations; and establishing strategic partnerships for better stewardship. Examples of the most requested products include the World Ocean Database and Atlas (cited more than 400 times per year for the past 10 years), the International Atlas of the Ocean series, and the sea surface temperature climatology derived from satellites and data sets gathered from operational ocean observing systems worldwide. NODC also provides a variety of publications including atlases and technical reports published on digital media. The NODC user community includes resource managers, researchers, educators, and maritime industry professionals from Federal, state and local agencies as well as academia and the public. NODC is a designated World Data Center for Oceanography and provides leadership for international data exchange programs through the Intergovernmental Oceanographic Commission (IOC).

Geophysical Archive, Access, and Assessment (<http://www.ngdc.noaa.gov/>)

The National Geophysical Data Center (NGDC), located in Boulder, Colorado, builds and maintains long-term archives of scientific data with a special emphasis on scientific stewardship of data acquired by NOAA observing systems. Data holdings include bathymetry, solar, geophysical, space environment, and earth observing satellite data. The NGDC plays an integral role in the Nation's research into the environment, at the same time providing public domain data to a wide group of users. The NGDC works very closely with NOAA's Space Weather Prediction Center and Office of Coast Survey to provide archive and access of space weather and hydrographic observations. NGDC works with contributors of scientific data to prepare documented reliable data sets, currently maintaining more than 850 digital and analog data sets, and continually developing data management programs that reflect the changing world of geophysics in an era of electronic data access. NGDC provides funding to the National Snow and Ice Data Center (NSIDC) at the University of Colorado for archive services of polar data. NGDC's unique capabilities have attracted other mission-related functions. NGDC is one of two operational sites for NOAA's Comprehensive Large-Array Stewardship System (CLASS) and is the parallel collection site and archive for the Global Positioning System Continuously Operating Reference Stations (GPS CORS). NGDC is responsible for the development and maintenance of the World Magnetic Model for the Department of Defense and also operates World Data Centers for marine geology and geophysics, solar terrestrial physics, and glaciology for the International Council of Science under the auspices of the U.S. National Academy of Sciences.

NGDC acquires, stewards and disseminates long-term climate records of the solar and space environments. Solar activity measures, such as the historical sunspot numbers, provide quantitative measures of solar variability that are incorporated into large-scale climate models. Related to this, NGDC works with climate scientists within the local Boulder area to maintain within NOAA an accurate

record of total solar irradiance and solar spectral irradiance derived from satellite measurements and to advocate for measurements of solar irradiance continuity as a primary forcing function in climate modeling. NGDC is also responsible for monitoring the long-term records of anthropogenic nighttime lighting which are used to calculate changes in impervious surface areas and other factors that can influence local climate variability. NGDC maintains the largest collection of ionospheric sounding data stretching back to the 1930s; this data has been used to infer climate related changes in the upper atmosphere, including the stratosphere and above. Finally, NGDC space weather datasets obtained by sensors on NOAA's fleet of polar and geosynchronous satellites provide a calibrated record of changes in the local space particle environment within the past 30 years.

Comprehensive Large Array data Stewardship System (CLASS) - Operations Systems (Data Center Operations)

The NGDC, NCDC, and NODC Data Centers are utilizing CLASS to ensure the long-term preservation (safe storage) and access for data, information, and metadata, particularly for large data sets. Beginning in FY 2008, components of the CLASS development design began to transition into the Data Centers' operations and become operationally integrated into the data management and customer servicing operations systems. At that time the NGDC, NCDC, and NODC assumed the responsibility for operating and sustaining these components of the CLASS Operations System. The CLASS Operations and Planning Board (COPB), which consists of the Directors of the three Data Centers, are responsible for the execution of the CLASS Operations budget (ORF). The COPB also reviews the requirements and provides guidance to the CLASS Development project manager and the associated CLASS budget. The CLASS project manager's focus is on the information technology required to ingest, store, access, and maintain the submitted data sets. The Data Centers through the COPB are responsible for the sustained operations of the CLASS Operations System, a critical component of NOAA's Enterprise System supporting information preservation and end-to-end stewardship of the archived data, as well as maintaining access interfaces used to support customer service requests.

Coastal Data Development

NODC's National Coastal Data Development supports marine environmental and ecosystems stewardship by providing access to the Nation's coastal data resources. NODC/NCDDC accomplishes this mission by using established and emerging technologies to support end-to-end data management for NOAA and NOAA's partners in Federal, State, local, academic, and other organizations. NCDDC focuses on development of products and services intended to bring together scientists and coastal managers to act as an important source of coastal ecological and observational data and information for the American public at large.

Regional Climate Services

The Regional Climate Services' focus is defining requirements of NOAA climate information users and feeding those requirements back into NOAA's core research infrastructure and translation efforts of emerging research to create more accessible and consistent experimental application within each of the regions. Each Regional Climate Service Director (RCSD) is located at an NWS Regional Office. They are charged with coordinating and organizing relationships and projects within their respective region across NOAA business units, as well as other agencies and non-agencies (government, private, academic, research). Each Regional Climate Center (RCC) provides a range of services and products to NOAA, as well as to state and local agencies, and to regional businesses, among other stakeholders.

Each RCC is located on a university campus and is funded from multiple public and private sector sources, as well as NOAA.

The merit-based, competitively selected RCCs ensure effective support for critical NOAA climate services, including,

- Weekly input to the *U.S. Drought Monitor* and other contributions to NIDIS;
- Operation of specialized climate data tools: *Datzilla*, a NOAA reporting and tracking system for observational errors, and *Weather Coder 3*, an operational NWS system to collect and process thousands of daily observations through the Applied Climate Information System (ACIS);
- Contributions to the development of the *NOAA Climate Portal*;
- Support *State of the Climate* reports by providing monthly summaries of regional climate anomalies;
- Acting as a regional hub for State Climatologists for climate information (e.g., support state adaptation programs); and,
- Supporting applied climate research and service development programs to support NOAA and other Federal agencies (e.g., USDA, DOI, and the Department of Homeland Security).

Environmental Data Systems Modernization

The goal of Environmental Data Systems Modernization (EDSM) is to provide increased access and utility to environmental data, information, products, and services through the use of innovative technologies and techniques.

Environmental data and information under the stewardship of NOAA are vital to a wide range of weather sensitive sectors of the economy such as: energy and water resources management, aviation, construction, engineering, utilities, food production (agriculture and aquaculture businesses), multi-modal commerce, tourism, manufacturing, and the insurance industry. Business and government leaders, as well as researchers, have critical needs for quality long time-series of historical and recent national and global data to evaluate the current status of the environment, to assess long-term environmental trends, and to predict future environmental conditions and events.

Environmental Data Systems Modernization (EDSM) supports an integrated suite of functions to preserve and exploit the full scientific value of NOAA's environmental, such as:

- Sustain and Operate timely/convenient access to the full range of data in the CLASS Operations System (NOAA Enterprise Archive system (integrated into the Data Center infrastructure),
- Sustain and Improve (non-CLASS) other Data Center IT infrastructure that supports customer services and data management functions,
- Improve the Integrity and Fidelity of the historical climate record, a function of Scientific Data Stewardship, and
- Integrate Observing Systems (IOS) activities, such as the Integrated Surface Data (ISD) structure for easier and more timely access to similar data from different observing systems; improved integrate metadata documentation and access; near real time monitoring of observing systems performance; and "Health of the Network – (HON)" to detect and correct potential data problems before they become a part of the long term climate records

NOAA is developing an integrated, national and global observing system that will bring together all aspects of environmental monitoring on common platforms to ensure data quality, to manage data efficiently for the long-term, and to make these data easily and readily accessible. NOAA plans to accomplish these goals through a program of Scientific Data Stewardship/Integrated Observations System.

Schedule, Milestones, and Deliverables:

Climate Archive. Access and Assessment

Climatic Data Services

Milestones/Deliverables	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Data ingested annually and placed in NCDC primary archive. (Total PBs/yr)	6.5	6.7	8.6	9.1	11.9	13.1
Data & information added annually to on-line access (in-situ + radar + satellite + model).(Total PB/yr)	4.0	4.0	6.0	8.0	10.0	11.0
Data/Information available for retrieval via the WWW. (Cumulative Total PBs)	9.0	13.0	19.0	27.0	37.0	41.0
Volume of data (in-situ + radar + satellite) delivered online to customers. (Total TB/yr)	2,000	3,000	4,500	6,000	8,000	9,500
Research Climate Data Sets Transitioned to Operations (transferred to ARC) (Cumulative Total #)	3	3	4	4	5	6
Climate Data Sets Upgraded/ Updated within the Applied Research Center (ARC) (Cumulative Total #)	57	64	71	78	84	89
Paleoclimate Reconstructions (Cumulative Total #)	21	24	27	30	33	36
Climate Extremes Indices providing socioeconomic impacts information (Cumulative Total #)	3	3	3	3	3	3

CLASS Operations

Schedule and Milestones, Deliverables, and Performance Measures are available in the National Climatic Data Center, Data Center Operations program change.

Climate Data Records

Schedule and Milestones, Deliverables, and Performance Measures are available in the National Climatic Data Center, Climate Data Records program change.

Ocean Archive, Access, and Assessment

Oceanographic Data Services

Milestones/Deliverables	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of authoritative global and coastal ocean data sets produced. (Total #/yr)	1	1	1	2	2	3
Volume of ocean data (and data products) delivered online to customers. (Total TB/yr)	58	58	58	61	64	64

Environmental Data System Modernization

Deliverables	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Observing systems regularly monitored (at the time of ingest/QC processing) on an operational basis for nominal system status and for random and time-dependent errors (Cum Total # of systems monitored)	9	9	10	10	11	12

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Annual percentage of U.S. states and territories that use NOAA climate information and services to improve decision-making in the face of a changing climate (Measure 16d)	22%	22%	24%	25%	27%	29%	31%
Description: This measure is an indicator of societal benefit derived from the use of NOAA climate information in public decision making in states and territories. This performance measure will track the numbers of states and territories that are benefiting from the inclusion of NOAA climate information in their decision making processes. It will also show how these decisions will lead to better results or improved decisions based on inclusion of this climate information.							

Climatic Data Services

Performance Measure: Safe Storage (NCDC Primary and Security archive), climate data from NOAA/other observing systems consistent with NARA standards (Cum Total PBs)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	8.2	13.0	13.4	17.4	18.2	23.8	26.2
Description: This measure reflects the amount of data safely stored by NCDC that is derived from NOAA observing systems.							

Climatic Data Services

Performance Measure: State of the Climate Annual Report 42 Essential Climate Variables (ECVs) (% & Cum # ECVs fully assessed)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	65% 27 of 42	69% 29 of 42	71% 30 of 42	74% 31 of 42	77% 32 of 42	79% 33 of 42	80% 34 of 42
Description: Track the increase in the number of essential climate variables that have a quantitative analysis and assessment of long-term trends and variations in climate performed and published in future annual issues of the Annual State of the Climate Report. The target of 100% is 42 essential climate variables that have a quantitative analysis performed. With adequate observing systems in place under the stewardship of NOAA, a comprehensive and quantitative analysis of atmospheric, ocean, and select terrestrial variables considered essential can be performed.							

PROGRAM CHANGES FOR FY 2014:

Archive, Access, and Assessment: Data Center Operations (Base Funding: \$726,000 and 0 FTE; Program Change: +\$4,289,000 and 0 FTE): NOAA requests an increase of \$4,289,000 and 0 FTE for a total of \$5,015,000 and 0 FTE for Data Center Operations to maintain NOAA's ability to provide long-term preservation (safe storage) and access to the Nation's environmental data and information.

Proposed Actions:

Funding will be used to sustain and operate NOAA's replacement (new generation) Enterprise Archive System, the Comprehensive Large Array Stewardship System (CLASS).

Funds will be used to support the following:

- Personnel who maintain, operate, and upgrade the new generation archive system;
- Provide high level of "up time" to meet NOAA operational requirements;
- Support communications bandwidth to deliver large data volumes from the source to the archive systems at the Data Centers;
- Maintenance contracts/upgrades to software and hardware needed on a recurring basis to keep the system functional and compatible;
- Periodic/routine increase in energy and heating-cooling-humidity demands related to the new operational archive/access system;
- Training to keep operator skill levels current; and,
- Meet IT security requirements.

Statement of Need and Economic Benefits:

NOAA proposes to sustain the replacement archive/access core mission functions integrated into the data center operations, and to accommodate the major campaigns planned by NOAA: Suomi NPP, JPSS, GOES-R, Weather/Climate Models, Dual Polarized and future Phased Array radar upgrades. Data Center Operations would also accommodate data from the altimetry mission (Jason-2), Continuously Operating Reference Stations (CORS), and data center holdings that will be transferred into the new archive/access system.

NOAA anticipates a 3,000 percent increase in data volume from the Suomi NPP satellite and long-term sustained and reliable archive/access operations are necessary to accommodate this increase. An additional projected 3,000 percent increase in data volume is expected from JPSS and more from GOES-R, dual polarized weather radar, and climate/weather models. NOAA is incrementally developing and seamlessly integrating the expanded capabilities into the operational and services management systems, a critical priority for both NOAA and the Data Centers.

Base Resources Assessment:

The base resources for this activity are described in the Archive, Access and Assessment base narrative.

Schedule and Milestones:

Operations Readiness Schedule	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Next Generation Archive Initial Operational Capability at Data Centers	IOC	EOC	EOC	EOC	EOC	EOC	EOC
Expand/Operate & Maintain Capability/ Capacity	X	X	X	X	X	X	X
Major Data Generating Programs							
NOAA POES (<i>Historical/Current</i> to End of Life for NOAA-19) Migration completed/new data goes directly to CLASS.	X	X	End ¹	X	X	X	X
NOAA GOES (<i>Historical/Current</i> to End of Life for GOES-14/15) Migration completed/new data goes directly to CLASS.	X	X	X	X	X	X	X
DoD (<i>Historical/Current</i> DMSP & New DWSS)	X	X	X	X	X	X	X
EUMETSAT (<i>Historical/Current</i> & New - MetOp, GCOM, EPS)	X	X	X	X	X	X	X
Jason (Jason-2 and future Jason-3)	X	X	X	X	X	X	X
WxRadar-NEXRAD (<i>Historical/Current</i> & Dual Polar FY 2012/ Future Phased Array FY 2020)	X	X	X	X	X	X	X
NCEP Models/Reanalysis Products (New, not previously archived) (<i>Historical/Current</i> & Future)	X	X	X	X	X	X	X
Suomi National Polar Orbiting Partnership (Suomi NPP) (New)	X	X	X	X	X	X	X
Joint Polar Satellite System (JPSS) (New)						X	X
GOES R, S, T, U (New)					X	X	X
Other [Legacy Systems Migration (<i>Historical, Current</i> and New), Long time series (Decades/ 100+ years), Many data sets (in-situ and more)]	X	X	X	X	X	Done ¹	X
Data Volume (one site) - Cum Total in PB	7	12	17	24	33	44	57

Table based on system LRD, latest NESDIS Satellite “Fly-Out” Plan, and NEXRAD schedule.

(IOC – Initial Operational Capability, EOC – Enhanced Operational Capability)

¹Observation or Migration ends, but data archive and service continue.

Deliverables:

- FY 2014-18: Operate/Sustain new generation Enterprise Archive System (currently referred to as CLASS), at minimum system availability of 95% for each node, and of 99% for combined nodes
- FY 2014-17: Safe storage and access for historical data migrated from legacy systems to new system
- FY 2014: Additional storage to accommodate anticipated data volume growth (Suomi NPP/NEXRAD DP, etc.).
- Continuously monitor system risk and protect data from loss or damage.

Performance Goals and Measurement Data:

Performance Measure: Sustained long-term preservation (safe storage for and access to) for NOAA's data and information. (Cumulative Total # Data Sets)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	4	5	7	10	12
Without Increase	3	3	3	4	5	6	7

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Data Centers & Information Services
Program Change: Data Center Operations

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	3,467
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	822
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	4,289

Archive, Access, and Assessment: Climate Data Records (Base Funding: \$9,116,000 and 2 FTE; Program Change: +\$10,000,000 and +3 FTE): NOAA requests an increase of \$10,000,000 and 3 FTE for a total of \$19,116,000 and a total of 5 FTE in support of the Climate Data Records (CDR) program.

Proposed Actions:

With this increase, NESDIS will conduct the following activities:

- Develop CDRs for catastrophe risk assessment;
- Develop NOAA's capability to generate and sustain operational CDRs;
- Develop new CDRs that satisfy U.S. state and regional needs;
- Process new Joint Polar Satellite System (JPSS) climate instrument data

This work will be managed and performed by NESDIS/National Climatic Data Center (NCDC) along with extensive use of competitive grants and contracts. Work will be performed in collaboration with other parts of NOAA, including its Cooperative Institutes, U.S. Global Change Research Program agencies, the Federal Emergency Management Agency, the Army Corps of Engineers, universities and contractors.

The user engagement program will undergo its most significant development in FY 2014 and 2015. It will be sustained and adapted to meet the growing number of CDR users, and will be managed for affordability, while still meeting the needs and expectations of the private sector and government users. This will be accomplished through rigorous use of standards and common formats, and by emphasizing interoperability with widely-used and freely available tools and applications. The CDR Program will regularly seek external comment and review and appropriately retire products or services that become obsolete.

The program's development of CDRs involves both the operational processing framework and each CDR's production software. The processing framework is expected to be complete in FY 2018. The program will first focus its efforts on completing the development of CDRs for the highest priority Essential Climate Variables (ECVs). Next, development will focus on those additional ECVs that are most important to the catastrophe risk modeling community.

Statement of Need and Economic Benefits:

Operational climate records are needed by Government and the private sector for decision-making, risk management, and climate research and modeling. It is virtually impossible to understand, predict and adapt to large-scale patterns or changes in the ocean, atmosphere and terrestrial surfaces without these fundamental records. The private sector (e.g., Energy, Water, Agriculture, and Insurance businesses) increasingly needs these records for their research and climate-related applications. Improved decision-making will enhance U.S. economic resilience, and the security and well-being of the public.

Global products best inform decadal and longer period climate variability understanding. However, better prediction of long-term weather variability (e.g., seasonal and interannual) requires finer scale data products. The CDR program's emphasis on such products, together with new records from TSIS and CERES, will enable improved understanding and prediction of medium-term weather and climate variability.

Base Resources Assessment:

The base resources for this activity are described in the NCDC base narrative.

Schedule and Milestones:

FY2014:

- Initiate two CDR end-user engagement initiatives.
- Begin transition of TSIS research processing capability to operations and prepare to transition CERES (satellite climate sensor) data processing capability to operations.
- Continue transitioning to Suomi NPP inputs

FY2015:

- Initiate three additional CDR end-user engagement initiatives.
- Begin delivery of one new TSIS (satellite climate sensor) operational CDR product (total solar irradiance) and begin transitioning the CERES research processing capability to operations.
- Continue transitioning to Suomi NPP; start plans for transition to GOES-R inputs

FY2016:

- Initiate three additional CDR end-user engagement initiatives.
- Continue delivery and maintenance of the TSIS (satellite climate sensor) operational CDR product (total solar irradiance) and test the CERES data operational processing capability.

FY 2017:

- Initiate three additional CDR end-user engagement initiatives.
- Continue delivery and maintenance of the TSIS (satellite climate sensor) operational CDR product; and operationally produce the CERES (satellite climate sensor) CDR (solar reflected & earth-emitted radiation).

FY 2018:

- Initiate three additional CDR end-user engagement initiatives.
- Conduct a major Program Review and assessment for progress and effectiveness.
- Continue delivery and maintenance of the TSIS (satellite climate sensor) operational CDR product and the CERES (satellite climate sensor) operational CDR.

Deliverables:

- CDRs for catastrophe risk assessments and for state and regional scale needs
- User Engagement Initiatives that increase the number of CDR users and types of usage
- The capability to generate and sustain operational CDRs
- The capability to process new JPSS Climate Sensors data into CDRs

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of high-priority research grade CDRs developed and transitioned to operational quality standards. (Cumulative Total)							
With Increase	N/A	N/A	1	3	10	17	21
Without Increase	0	0	0	0	0	0	0
Description: CDRs will be developed to address high priority Essential Climate Variables (ECVs). These ECVs span a variety of sectors from food, water, and energy security to housing, finance, insurance, banking, health and well-being.							

Program Change Personnel Detail

Budget Program: NESDIS
Sub-program: Data Centers & Information Services
Program Change: Climate Data Records

<u>Title:</u>	<u>Location</u>	<u>Grade</u>	<u>Number of Positions</u>	<u>Annual Salary</u>	<u>Total Salaries</u>
Program Senior Scientist	Asheville, NC	ZP-V	1	117,202	117,202
Data Quality Engineering Mgr Sr. Systems & Software Engineer	Asheville, NC	ZP-IV	1	84,317	84,317
Acquisition and Grants Mgr	Asheville, NC	ZP-III	1	59,158	59,158
Subtotal			<u>4</u>		
2013 Pay Adjustment (0.5%)					
Total					346,719
less Lapse		25%	<u>1</u>		86,680
Total full-time permanent (FTE)			3		260,039
2014 Pay Adjustment (1.0%)					<u>2,600</u>
TOTAL					262,639
Personnel Data			<u>Number</u>		
Full-Time Equivalent Employment					
Full-time permanent			3		
Other than full-time permanent			<u>0</u>		
Total			3		
Authorized Positions:					
Full-time permanent			4		
Other than full-time permanent			<u>0</u>		
Total			4		

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Data Center & Information Services
Program Change: Climate Data Records

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$263
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	263
12 Civilian personnel benefits	74
13 Benefits for former personnel	0
21 Travel and transportation of persons	50
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	15
25.1 Advisory and assistance services	1,539
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	1,438
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	4,422
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,199
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	10,000

Archive, Access, and Assessment: Big Earth Data Initiative (Base Funding: \$0 and 0 FTE; Program Change: +\$9,000,000 and 0 FTE): NOAA requests an increase of \$9,000,000 and 0 FTE for a total of \$9,000,000 and 0 FTE to increase the accessibility and interoperability of NOAA's high-value environmental observations in concert with other federal agencies.

Proposed Actions:

The Federal government invests several billion dollars annually across numerous Federal agencies to collect information about the Earth from satellite, airborne, terrestrial, and ocean-based systems. This information can be used to achieve broad benefits ranging from climate change resilience planning to natural disaster impact mitigation to commercial supply chain management to natural resource management. Access to and use of these data are fundamental to supporting decision-making, scientific discovery, and technological innovation. The Big Earth Data Initiative in the President's FY 2014 Budget invests in standardizing and optimizing the management of data from federal Earth observations systems. Interagency coordination for this effort will be accomplished through the USGEO Subcommittee of the National Science and Technology Council (NSTC), led by the Office of Science and Technology Policy (OSTP).

NOAA's participation in the Big Earth Data Initiative will focus on four specific objectives:

- **Data discoverability**, by providing interoperable catalog services or searchable inventories of datasets
- **Data access**, by providing interoperable, open-standard online services to retrieve data and derived products
- **Data compatibility**, by providing data in a small set of well-known formats appropriate to the various data types and using common vocabularies
- **Data documentation**, by augmenting metadata content and adopting international standards for metadata format

Specific to NOAA, this project will be managed by NOAA's Technology Planning and Integration for Observations (TPIO) program with oversight and approval by the NOAA CIO and NOAA Observing System Council (NOSC). TPIO will provide resources and guidance to data providers from all NOAA Line Offices for improving metadata, converting or offering data in standard formats, establishing or sharing online services for data access, and ensuring that data are registered in an appropriate catalog. Datasets will be prioritized for inclusion based on importance of the data and level of effort required. Planning will also include elaboration of the technical architecture needed to accomplish the stated objectives. Cross-NOAA coordination will involve the Environmental Data Management (EDM), Geographic Information System (GIS), and Enterprise Architecture (EA) Committees, as well as the Chief Information Officer (CIO) Council and the NOAA Observing Systems Council (NOSC). Interagency coordination on architecture and standards will be conducted through the U.S. Group on Earth Observations (USGEO) and the Federal Geographic Data Committee (FGDC).

Statement of Need and Economic Benefits:

NOAA produces a tremendous diversity of Earth observations that constitute a significant national asset and contribution to the Nation's economy. These data are often made available only to specific end users. This project is intended to maximize the discoverability and accessibility of selected high-value environmental observations by providing open, machine-readable data formats, metadata, and online services, and to adopt uniform data management practices in concert with other agencies. The Big Earth Data Initiative is in alignment with the U.S. Digital Government Strategy, which directs agencies to "unlock the power of government data to spur innovation" and NOAA's Next Generation Strategic Plan, which calls for "an increased focus on information management standards and

strategies to improve access, interoperability, and usability of NOAA's environmental information resources."

Base Resources Assessment:

No base resources exist for this initiative.

Schedule and Milestones:

- FY 2014: High-value NOAA datasets contributing to National Climate Assessment made accessible, documented, compatible, and cataloged. NOAA, NASA, and USGS agreement on standards and architecture
- FY 2015: High-value NOAA datasets identified in 2012 US Earth Observations Assessment made accessible, documented, compatible, and cataloged. Further improvements made to datasets and online service functions, if needed.
- FY 2016: High-value datasets from NOAA Observing Systems of Record made accessible, documented, compatible, and cataloged.
- FY 2017: Cooperative agreements established with value-added distributors or resellers to produce tailored products from NOAA data for domain-specific customers
- FY 2018: Feedback mechanisms established for user comments on NOAA data. Additional datasets available

Deliverables:

- High-value datasets from NESDIS, NWS, NOS, NMFS, OAR and OMAO which are
 - made accessible on-line via interoperable services;
 - discoverable through NOAA catalog or inventory;
 - documented with relevant metadata to support understanding and reuse; and
 - available in compatible formats to facilitate ingest and integration across federal agencies.

Performance Goals and Measurement Data:

N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Data Center & Information Services
Program Change: Big Earth Data Initiative

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	24
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	8,976
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	9,000

Archive, Access, and Assessment: National Oceanographic Data Center (Base Funding: \$12,366,000 and 53 FTE; Program Change: -\$2,108,000 and -2 FTE: NOAA requests a decrease of \$2,108,000 and 2 FTE for a total of \$10,258,000 and 51 FTE to consolidate operations at the National Oceanographic Data Center (NODC).

Proposed Actions:

In FY 2014, NODC will begin to consolidate its operations, centralizing Information Technology (IT) functions in Mississippi and administrative functions in Maryland. The consolidation will reduce requirements for contractor support for IT operations. During the consolidation there will be a temporary decrease in the number of data sets being produced until the NODC archive is migrated to the Comprehensive Large Array-data Stewardship System. NODC will continue to provide a permanent archive for ocean and coastal data.

Base Resource Assessment:

The base resources for this activity are described in the Data Centers & Information Services base narrative.

Schedules and Milestones:

By FY 2015, NODC will have migrated its archive storage to the Comprehensive Large Array-data Stewardship System (CLASS). NODC will continue to provide stewardship (quality control, analysis and management) for ocean and coastal data.

Deliverables:

- Development of authoritative, quality controlled, global and coastal ocean data sets/information products
- Delivery of ocean data (and data products) online to customers

Deliverables	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of authoritative global and coastal ocean data sets produced. (Total #/yr)	1	2	2	3	3	3
Volume of ocean data (and data products) delivered online to customers. (Total TB/yr)	88	83	88	93	98	103

Performance Goals and Measurement Data:

N/A

PROGRAM CHANGE PERSONNEL DETAIL

Budget Program: NESDIS
Sub-program: Data Centers & Information Services
Program Change: NODC

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
IT Specialist	Silver Spring, MD	ZP-III	-1	62,476	(62,476)
Admin Support	Silver Spring, MD	ZS-IV	-1	42,209	(42,209)
Subtotal			<u>-2</u>		<u>(104,685)</u>
2013 Pay Adjustment (0.5%)					(523)
Total					<u>(105,208)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-2		(105,208)
2014 Pay Adjustment (1.0%)					0
TOTAL					<u>(105,208)</u>

Personnel Data

Full-Time Equivalent Employment

Number
-2
<u>0</u>
-2

Authorized Positions:

Full-time permanent
 Other than full-time permanent
 Total

-2
<u>0</u>
-2

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Data Centers & Information Services
Program Change: NODC

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	(\$105)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>(105)</u>
12 Civilian personnel benefits	(32)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(1,971)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(2,108)</u>

Archive, Access, & Assessment: National Geophysical Data Center (Base Funding: \$6,267,000 and 48 FTE; Program Change: -\$578,000 and -3 FTE: NOAA requests a decrease of \$578,000 and 3 FTE for a total of \$5,689,000 and 45 FTE to discontinue specific sea-ice products developed for the National Snow and Ice Data Center and reduce staffing at NGDC.

Proposed Actions:

With this reduction, NOAA will not support specific sea-ice products that are developed for the National Snow and Ice Data Center; some of these products could potentially be funded through other sources outside of NGDC or NOAA. Two FTE will be reduced from the NGDC division responsible for providing scientific data stewardship for the nation’s operational space environmental data and information; however, with remaining staff NGDC will maintain the ability to provide mission critical space weather data sets to support NOAA’s forecasting and monitoring abilities. An additional one FTE will be reduced from the NGDC division responsible for archiving and assimilating natural hazard information, since funding provided by sources outside of NGDC was already scheduled to decrease.

Base Resource Assessment:

The base resources for this activity are described in the Archive, Access, and Assessment base narrative.

Schedules, Milestones, and Deliverables:

N/A

Deliverables (excluding CLASS)	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Cumulative total of data ingested and placed in the archive. Unit of measure is Terabytes (TB).	685	739	799	863	932	1000
Volume of data and information delivered online to customers. (TB/yr)	158	170	184	199	200	210

Performance Goals and Measurement Data:

N/A

PROGRAM CHANGE PERSONNEL DETAIL

Budget Program: NESDIS
Sub-program: Data Centers & Information Services
Program Change: NGDC

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Boulder, CO	ZP-IV	-1	87,815	(87,815)
Physical Scientist	Boulder, CO	ZP-III	-1	61,612	(61,612)
Scientific Data Technician	Boulder, CO	ZS-II	-1	26,758	(26,758)
Subtotal			<u>-3</u>		<u>(176,185)</u>
2013 Pay Adjustment (0.5%)					<u>(881)</u>
Total					<u>(177,066)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-3		<u>(177,066)</u>
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(177,066)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-3
Other than full-time permanent	<u>0</u>
Total	-3
Authorized Positions:	
Full-time permanent	-3
Other than full-time permanent	<u>0</u>
Total	-3

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Data Centers & Information Services
Program Change: NGDC

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	(\$177)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(177)
12 Civilian personnel benefits	(50)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(351)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(578)

Archive, Access, and Assessment: Climate Database Modernization Program (CDMP) (Base Funding: \$2,000,000 and 0 FTE; Program Change: -\$2,000,000 and 0 FTE): NOAA requests a decrease of \$2,000,000 and 0 FTE to terminate the Climate Database Modernization Program. This program scans images and keys data from paper and microfilm of new incoming and historical records and makes the digital data available on the web to businesses and members of the climate and environmental communities.

Proposed Actions:

NOAA proposes to terminate the CDMP program. The CDMP program is a partnership with four private sector contractors, currently supporting approximately 35 contractor personnel. CDMP's goal is to preserve and make available climate data going back several hundred years. To date, over 57 million images have been digitized for on-line access. Over 14 terabytes of data have been keyed and converted to digital format, extending the historical climate record back to the early 1800s, and in some cases, the 1700s. These are now readily accessible via the Internet and other web-based portals. Environmental publications and historical documents are now available in electronic form and can be downloaded to your computer.

Monthly observations from over 2,650 National Weather Service (NWS) Cooperative Observer Program stations, as well as approximately 1,600 NWS hydrological stations, are also digitized and then merged with historical long term climate data records from these stations going back decades and in some cases going back 100+ years. The Budget proposes to discontinue the conversion of new observations from paper to digital format. NWS is in the process of digitally converting its remaining stations that still record and report via paper, which will reduce the immediate operational need for CDMP supported service.

Base Resource Assessment:

The base resources for this activity are described in the Archive, Access, and Assessment base narrative.

Schedule and Milestones:

Terminate program in FY 2014

Deliverables:

N/A

Performance Goals and Measurement Data:

N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Data Centers & Information Services
Program Change: CDMP

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(2,000)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(2,000)

Coastal Data Development: Coastal Data Development (Base Funding: \$4,567,000 and 16 FTE: Program Change: -\$529,000 and 0 FTE): NOAA requests a decrease of \$529,000 and 0 FTE for a total of \$4,038,000 and 16 FTE to reduce regional product development at the National Oceanographic Data Center/National Coastal Data Development Center (NCDDC).

Proposed Actions:

This request will reduce regional project development and science contractor support at the National Coastal Data Development Center, a division of NODC. NODC will continue to identify and obtain coastal data sets for ingest into the national ocean and coastal archive.

Base Resource Assessment:

The base resources for this activity are described in the Data Centers & Information Services base narrative.

Schedules and Milestones:

Continue regional product development

Deliverables:

- Development of regional products and services in support of NOAA' Oceans, Climate and Coastal goals

Deliverables	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of regional products (multiple data elements) produced. (Total #/yr)	3	2	3	3	3	3

Performance Goals and Measurement Data:

N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Data Centers & Information Services
Program Change: Coastal Data Development

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	(529)
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(529)

Regional Climate Services: Regional Climate Services (Base Funding: \$6,841,000 and 6 FTE; Program Change: -\$1,089,000 and 0 FTE): NOAA requests a decrease of \$1,089,000 and 0 FTE for a total of \$5,752,000 and 6 FTE for Regional Climate Services (RCS), which includes the six Regional Climate Centers (RCCs) and the six Regional Climate Services Directors (RCSD).

Proposed Actions:

Regional Climate Services (RCS) activities will be impacted in the following ways in FY 2014:

1. Reduction in planned contract support will result in diminished build-out of regional services, especially in the areas of on-line web services and support to constituents. Some tailored products will be updated less often.
2. Travel will be greatly reduced for all Regions
3. Climate Information System migration to NCDC will be delayed.

Base Resource Assessment:

The base resources for this activity are described in the Data Centers & Information Services base narrative.

Schedules and Milestones:

- FY 2012-18: Establish and implement a continuous process for characterizing regional customer and partner requirements, starting with an initial baseline assessment of needs for products, services, tools, and capacity building
- FY 2012-18: Develop and implement a continuous system for conducting product and service delivery to the customers and partners of the climate service network.
- FY 2013-18: Establish a regionally based process for new product and service development, focusing on closing high priority gaps, and transitioning these new products and services into practical applications through active engagement with academic, private, and federal, state and local sectors in the regions.

Deliverables:

- Integrated tools and outreach that enhance risk management strategies for decision makers, such as GIS-enabled NOAA climate data products focused initially on coastal inundation and water management
- Competency-building training sessions for professional development to enhance use of regionally or sectorally relevant climate products and services; including feedback by user evaluations and surveys.
- Updated regional contributions to the Climate Services Portal.

Output (Cumulative Total):	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of customer requirements activities conducted	4	4	6	7	8	9
Number of products or tools ready for transition	4	4	6	6	8	8
Number of collaboration meetings held in each region	6	6	8	8	10	10
Number of new application projects/products used	6	6	8	8	10	10
Total	20	20	28	29	36	37

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
New regional products and services provided and used by the public, private sector, and decision support communities for climate related decisions (Cumulative Total)							
With Decrease	N/A	N/A	8	9	9	10	10
Without Decrease	7	8	9	10	11	12	12

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Data Centers and Information Services
Program Change: Regional Climate Services

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	(125)
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	(864)
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(100)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,089)</u>

Environmental Data Systems Modernization: Satellite Active Archive (Base Funding: \$1,500,000 and 0 FTE; Program Change: +\$746,000 and 0 FTE): NOAA requests an increase of \$746,000 and 0 FTE for a total of \$2,246,000 and 0 FTE to continue funding for the Satellite Active Archive (SAA) for web-based digital access to satellite data.

Proposed Actions:

FY 2014 funds will be used for:

- Communications circuits specific to connecting the Comprehensive Large Array-data Stewardship System (CLASS) archive system at the National Climatic Data Center (NCDC), Asheville, NC, and National Geophysical Data Center (NGDC), Boulder, CO, to the satellite providers “landing zone” pick-up point at the NOAA Satellite Operations Facility (NSOF), Suitland, MD; and,
- Support of communications bandwidth to deliver large data volumes from the source to the archive systems at the Data Centers.

This program increase will allow NOAA to purchase the N-wave communications circuits and bandwidth required to ingest current and anticipated increases in satellite data volumes. Funding will decrease NOAA’s vulnerability to IT Security intrusions and support periodic IT infrastructure refresh at all three NESDIS Data Centers. This will ensure the technological capacity to support and respond to expanding user needs with increases in the volume and scope of data requests, which is especially important given the projected rapid growth of new data holdings from satellite and radar observing systems.

Statement of Need and Economic Benefits:

The NOAA Satellite Active Archive mission is to provide robust and safe archive storage and stewardship, and open access to data sets and derived climate model products for present and future generations of users. This next generation archival and access capability enables NOAA and the Nation to maintain and improve its science programs in support of economic growth and improved environmental stewardship. Business, research, and government leaders have critical needs for quality long time-series of historical and recent national and global data to evaluate the current status of the environment, to assess long-term environmental trends, and to assist in predicting future environmental conditions and events. These funds will address the cost of CLASS related communications.

Base Resource Assessment:

The base resources for this activity are described in the Data Centers and Information Services base narrative.

Schedules and Milestones:

N/A

Deliverables:

- FY 2014: Additional storage to accommodate anticipated data volume growth (Suomi NPP/NEXRAD DP).
- FY 2014-2015: Safe storage and access for historical data migrated from legacy systems to new system
- FY 2014-2018: Operate/Sustain new generation Enterprise Archive System (CLASS), with minimum system availability of 95% for each node, and of 99% for the combined nodes
- FY 2014-2018: Continuously monitor system risk and protect data from loss or damage.

Performance Goals and Measurement Data
N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Data Centers & Information Services
Program Change: Environmental Data System Modernization

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	746
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	746

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION, AND CONSTRUCTION
SUB-PROGRAM: SYSTEMS ACQUISITION

Geostationary Operational Environmental Satellite Program

The goals of the Geostationary Operational Environmental Satellite (GOES) program are to continue the procurement of spacecraft, instruments, launch services, and ground systems equipment; provide satellite and instrument anomaly support to the on-orbit GOES satellites; and maintain the ground system for GOES satellite operations which is necessary to maintain an uninterrupted flow of environmental data collected from geosynchronous satellites to users.

GOES data provide:

- Cloud images and precipitation estimates for hurricanes and other coastal storms;
- NOAA Coast Watch sea surface temperature (SST) products for locating commercial and sport fish as well as protected marine species;
- New research products, such as ocean surface currents, that support both ecosystems management and safety of marine navigation;
- Primary information in the Nation's Climate Reference Network, providing reference quality data for surface temperature and precipitation monitoring;
- Images of the United States and adjacent ocean areas to enable the detection of hurricanes and other major weather events;
- Data collection from remote fixed in-situ observing platforms such as buoys and rain gauges for use in numerical weather prediction models and flood/drought assessments;
- Weather information to emergency managers for use during severe weather and other disasters;
- A means to obtain quantitative environmental data such as temperature, moisture, wind, radiation and solar energy particle flux for use in weather predictions, hydrometeorological flux, climate long term trending, ecosystems management, commercial economic gain, and transportation safety;
- Unique monitoring capabilities that support air, land, and marine transportation.

The GOES system provides an uninterrupted, continuous flow of data and information that meets customers' spatial, temporal and accuracy requirements, providing significant customer benefit within an established life cycle cost target. The procurement of GOES satellites is a cooperative venture between NOAA and NASA. Historically, NOAA defines requirements, manages, funds, implements system integration, procures ground segments, and operates the GOES satellites. NASA serves as the agency with multi-disciplinary engineering expertise, develops detailed system specifications, procures and launches the spacecraft, and assists NOAA in system integration.

NOAA GOES satellite systems are designed, developed, acquired, and operated as a single end-to-end system. The system includes the observing platform (space-based instruments); command and control of the platform; product generation and distribution; archive and access; and user interface. GOES contributes to an Integrated Global Observation System, which is an end-to-end approach linking requirements to services. The system delivers critical real-time data and information needed for sound decision making, addresses needs to support expanded climate services, and works with global partners.

The GOES program operates a two-satellite constellation in geosynchronous orbit above the equator and observes about 60 percent of the Earth with at least one satellite placed in on-orbit storage. GOES observations allow continuous monitoring from the same angle during the tracking/detection of severe storms, atmospheric moisture changes, mesoscale scanning, currents flow dynamics, and atmospheric chemicals (particles) that cannot be achieved from a non-stationary orbit without

increased error rates and lost data segments. NOAA maintains an on-orbit spare to complement the two operational GOES satellites. This on-orbit spare philosophy allows NOAA to quickly replace a failed satellite by re-positioning an on-orbit satellite to ensure there is no loss in continuous coverage. To facilitate this strategy, NOAA plans the launch of the next satellite to coincide with the planned switchover of the on-orbit spare to operational status.

A primary function of the GOES program is supporting the NWS in forecasting, tracking, and monitoring severe storms. The improved accuracy of the NWS forecasts by using GOES data results in dissemination of timely weather forecasting and advisories to impacted areas to ensure authorities and the public are equipped with decision-making information to protect lives and property.

GOES-N SERIES (http://www.osd.noaa.gov/GOES/goes_n.htm)

The NOAA GOES-N program serves the public by generating timely and accurate environmental data, images, and other weather information. The GOES-N Series program includes GOES-13, GOES-14, and GOES-15 satellites, launched May 2006, June 2009, and March 2010, respectively.

GOES-N satellites provide many weather images seen on U.S. television newscasts every day. The GOES-N imaging and sounding instruments feature flexible scans for small-scale area viewing in regions of the visible and infrared spectrum allowing meteorologists to improve short-term forecasts. The GOES-N satellites provide nearly continuous imaging and sounding, which allow forecasters to better measure changes in atmospheric temperature and moisture distributions and, hence, increase the accuracy of their forecasts. GOES-N environmental information is used for a host of applications, including weather monitoring and prediction models, ocean temperatures and moisture locations, climate studies, cryosphere (ice, snow, glaciers) detection and extent, land temperatures and crop conditions, and hazards detection.

During the week of October 26-29, 2012, GOES-13 monitored Hurricane Sandy as it moved along the U.S. East coast and into the Mid-Atlantic and northeastern U.S. The GOES-13 satellite provided images that tracked Hurricane Sandy and thereby facilitated the NWS in issuing timely advisory warnings. Additionally, GOES-N satellites produced some of the first images to track smoke from the oil fire that later became the Deepwater Horizon Oil Spill in the Gulf of Mexico. Scientists and environmentalists used and continue to use the GOES data and images to assess environmental impact to that region.

GOES-N satellites measure the Earth's atmosphere, its surface, cloud cover, and the solar and geosynchronous space environment; and provide a platform for the Imager, Sounder, Solar X-Ray Imager (SXI), and space environment monitoring instruments. The system also supports land and ocean-based Data Collection Platforms, transmits Imager and Sounder data, relays Low Rate Information Transmission data, relays GOES variable reformatted Imager and Sounder data, relays Emergency Managers Weather Information Network broadcasts, and participates in the international COSPAS¹-Search and Rescue Satellite-Aided Tracking (SARSAT) system. The base resources will maintain the ground system for GOES-N satellite operations necessary for a continuous flow of environmental data collected from the GOES satellites to users. This system includes the observing platform (space-based instruments); command and control of the platform; product generation and distribution; archive and access; and the user interface.

¹ COSPAS is an acronym for the Russian words "Cosmicheskaya Sistyema Poiska Avariynich Sudov," which mean "Space System for the Search of Vessels in Distress." It is indicative of the maritime origins of this distress alerting system.

Spacecraft	Date Launched	Operational Date
GOES-13	May 2006	2010-2015
GOES-14	June 2009	2015-2020
GOES-15	March 2010	2012-2017

See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.

GOES-R SERIES (<http://www.goes-r.gov/>)

The GOES-R program will provide end-to-end system integration through the acquisition, deployment, maintenance, and operations of the space, ground, and launch segments.

The needs and benefits of GOES-R series satellites are as follows:

- Maintains continuous real-time observations for severe storms, hurricanes, and weather monitoring to the Nation;
- Needed as a backup to GOES-14 or -15 as part of a system of two operational satellites and an on-orbit spare;
- Provides advances in NOAA’s observation capabilities for all NOAA mission goals including improvements to coastal, space weather, and lightning observations; and,
- Incorporates key enhancements in spatial and spectral information, coverage, and timeliness.

Average annual damage from tornadoes, hurricanes, and floods is \$11.4 billion with about 100 deaths annually². Approximately \$4 billion per year is lost in economic efficiencies as a result of weather-related air traffic delays³. Lightning causes between \$4 and \$5 billion in losses each year in the civilian sector with about 47 deaths and 303 injuries per year⁴. By helping to produce more accurate forecasts and warnings, the GOES-R series will minimize these losses.

Base funding is used for the following activities:

- Continued development of GOES-R and -S spacecraft and ground system; complete the Mission Operations (MOR) and Systems Integration Review (SIR) for the GOES-R System; continuation of the GOES-R ground system integration and test activities including the new antennas; continue GOES-R spacecraft integration and testing; continue ground system software development and hardware acquisition; begin spacecraft-to-ground system interface testing;
- Continuation of instruments already under contract: Advanced Baseline Imager (ABI), Solar Ultra Violet Imager (SUVI), Extreme Ultra Violet Sensor/X-Ray Sensor Irradiance Sensor (EXIS), Space Environmental In- Situ Suite (SEISS), and Geostationary Lightning Mapper (GLM); Initial Flight Models for each instrument will be delivered in FY 2013; begin GOES-S spacecraft integration and testing; and,
- Continued development of GOES-T and -U spacecraft and instruments.

² Extreme Weather Sourcebook 2001: *Economic & Other Societal Impacts Related to Hurricanes, Floods, Tornadoes, Lightning, and Other U.S. Weather Phenomena*. Collaborative Program on the Societal Impacts and Economic Benefits of Weather Information, Boulder, CO).

³ NOAA, 2002: GOES-R Sounder and Imager Cost/Benefit Analysis, NOAA NESDIS Office of Systems Development, Silver Spring, MD)

⁴ NOAA, 2004: GOES-R Sounder and Imager Cost/Benefit Analysis - Phase III. NOAA/NESDIS/Office of Systems Development, Silver Spring, MD

Spacecraft	Launch Readiness Date	Planned Operational Date
GOES-R	Oct 2015	Dec 2016
GOES-S	Feb 2017	Apr 2020
GOES-T	Apr 2019	Mar 2025
GOES-U	Oct 2024	Jul 2028

See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.

Polar-orbiting Operational Environmental Satellite Programs

The goals of the Polar-orbiting Operational Environmental Satellite programs are to continue the procurement of spacecraft, instruments, launch services, and ground systems equipment necessary to maintain an uninterrupted flow of weather and environmental data to users.

Polar satellites provide a continuous flow of global weather and environmental observations in support of the following operational requirements:

- Environmental monitoring, and weather and marine forecasting;
- Climate assessment and change prediction;
- Detecting weather systems and significant environmental events such as volcanic eruptions, oil spills, and wildfires;
- Measuring atmospheric ozone and the space environment;
- Collecting environmental data from other surface platforms such as buoys;
- Performing search and rescue functions; and,
- Sea surface heights for ocean weather and ocean climatology.

The current polar ground system also supports the multi-agency (NOAA, NASA, EUMETSAT, CNES) altimetry mission, Jason-2, which flies on a polar orbit.

POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE (POES)

(<http://www.oso.noaa.gov/poes/>)

POES is NOAA’s current operational polar satellite system, with the last satellite in the series (NOAA-19) launched on February 6, 2009. As part of an international agreement with the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the POES program also includes the European Polar Weather Satellite program, Metop. Metop satellites carry U.S. instruments and provide data services coverage from a mid-morning polar orbit through 2020.

NOAA has the responsibility to provide forecasts and warnings for the U.S., its territories, adjacent waters and ocean area; for the protection of life and property and the enhancement of the national economy. This mission requires an enduring capability to acquire global data from satellites, and the capability to process and disseminate environmental data on an extensive spatial range (global, regional and local) within a variety of time scales (minutes to days) to central processing centers and distributed direct users. These data include, but are not limited to global imagery; cloud and precipitation parameters; atmospheric profiles of temperature, moisture, wind, aerosols and ozone; surface conditions concerning ice, snow and vegetation; ocean parameters of sea temperature, color and state; and solar and in-situ space environment conditions.

These data are critical for,

- Severe storm and flood warnings;

- Tropical cyclone and hurricane reconnaissance and warnings;
- Hydrologic forecasts and forecasts of the ocean surface and internal structures;
- Medium range weather forecast (out to fifteen days);
- Solar and space environmental forecasts;
- Aviation forecasts (domestic, military, and international);
- Forecasts of ice conditions;
- Seasonal and inter-annual climate forecasts;
- Decadal-scale monitoring of climate variability;
- Assessment of long-term global environmental change;
- Environmental air quality monitoring and emergency response;
- Detection and analysis of fires and volcanic eruptions; and
- Short-term and mesoscale forecasts.

Continued funding supports the following activities:

- Satellite and instrument anomaly support to the on-orbit POES satellites;
- Polar Data Product Development;
- Maintaining the ground system for operations; and
- Procurement, maintenance and testing of the U.S. instruments on the European Metop satellites.

See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.

JOINT POLAR SATELLITE SYSTEM (JPSS)

JPSS will address NOAA's requirements to provide global environmental data such as cloud imagery, sea surface temperature, atmospheric profiles of temperature and moisture, atmospheric ozone concentrations, search and rescue, direct read-out, and data collection services. These data are used in numerical weather prediction models primarily for 2-10 day forecasts, for supporting operational forecasts in Alaska, and for environmental monitoring and forecasting. Specifically, JPSS data will improve weather forecasts, environmental monitoring, and warning lead times for severe storms, benefiting public safety, protection of property, and all weather-sensitive economic activity, such as agriculture, transportation, and energy production.

JPSS will provide continuity of polar satellite coverage and will improve the Nation's ability to collect and distribute higher resolution data and weather products. This is achieved through the modernization of sensors and systems to ensure improved performance, compatibility, supportability, and maintainability. NOAA has partnered with NASA to implement the JPSS Program, using its space acquisition expertise and acquisition authority to develop the satellites.

The JPSS program is in its third year of development as a new program. A life cycle cost of \$12.9B (including \$2.9B of sunk costs under NOAA's contribution to NPOESS) was proposed in the FY 2013 President's Budget. A comprehensive effort to prioritize program content was completed. This included the Level 1 Requirements Document, which was finalized in FY 2013 and required coordination with NWS and other NOAA Line Offices to identify, assess, validate and incorporate users' requirements. In addition, the independent cost estimate (ICE) will be reconciled to the program office's estimate to establish an executable program and will be validated by Key Decision Point-1 in FY 2013. The FY 2014 President's Budget Submission proposes a life cycle cost that supports NOAA's primary satellite mission of a weather-based program.

Base resources are used to operate and sustain S-NPP and to continue development of the instruments for JPSS-1, which include the Visible/infrared Imager/Radiometer Suite (VIIRS), Cross-track Infrared Sounder (CrIS), Advanced Technology Microwave Sounder (ATMS), and the Ozone Mapper Profiler Suite (OMPS)-Nadir. Base funds also support acquisition of the JPSS-1 satellite bus and ground system development. The Clouds and Earth's Radiant Energy System (CERES) Flight Model -6 on JPSS-1 is complete and is being prepared for integration and testing.

See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.

POLAR FREE-FLYER (PFF) MISSION

The Polar Free Flyer mission consists of the Free Flyer-1 spacecraft, the accommodation of the Total Solar Irradiance Sensor-1 (TSIS-1), Advanced Data Collection System-1 (ADCS-1), and Search and Rescue Satellite Aided Tracking-1 (SARSAT-1) instruments, along with operations and sustainment, and support of launch services. PFF also provides for the accommodation of Advanced Data Collection System-2 (ADCS-2) on a to-be-determined spacecraft.

The ground system requirements for PFF are supported in the JPSS core weather-satellite mission. The PFF mission will address NOAA's requirements to provide global environmental data, such as variability in the Sun's total output, as well as search and rescue, direct read-out data transmission, and data collection services.

NOAA will continue its partnership with NASA to implement the PFF mission, using its space acquisition expertise and acquisition authority to develop the spacecraft, to test and integrate the instruments, and to acquire and execute launch services.

A life cycle cost of \$335M is planned through year 2025. The PFF FY 2014 base was created through a technical transfer of funds from the JPSS program, which has been refocused to a core weather-based satellite mission. The lifecycle cost of JPSS has been reduced, and no longer includes the costs that were planned for the activities now covered in the PFF PPA.

The planned launch of FF-1 is July 2016. Base funds support acquisition of the FF-1 spacecraft and acceptance and coordination of delivered instruments, testing of TSIS-1 operation, and coordination of a ride share opportunity for FF-1.

Schedule and Milestones:

- FY 2014: Execute Preliminary Design Review, Key Decision Point-C; Critical Design Review, Spacecraft System Requirement Review; acceptance of completed instruments on site; execute TSIS-1 testing; and continue planning and coordination for a ride share and launch services for FF-1.
- FY 2015: Acceptance and coordination of SARSAT-1 instruments flying on FF-1; Complete System Integration Review leading to Key Decision Point-D which provides approval to proceed to system assembly, integration, test and launch; Integrated Independent Requirements Review is planned in the 3rd quarter and a Mission Operations Review in the 4th quarter followed by a Pre-Environmental Review.
- FY 2016: Conduct Flight Operations Review; ship spacecraft to launch site; execute Operations Readiness Review leading Key Decision Point-D, which provides approval to launch; planned launch of spacecraft in Q4 FY 2016.
- FY 2017: Spacecraft launch planned no later than the 2nd Quarter; Complete spacecraft commissioning; maintain spacecraft on-orbit; plan and coordinate schedule with CNES,

regarding the development of ADCS-2; evaluate concepts for accommodation on the applicable spacecraft.

- FY 2018: Provide for operations and sustainment of on-orbit FF-1 spacecraft; refine options for ADCS-2 accommodation; reduce to one to three options

Deliverables:

- The major activities and outcomes planned in 2014 are the preliminary design review, Key Decision Point-C, Critical Design Review and the spacecraft System Requirement Review.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Percent of Polar Free Flyer milestones completed on time	Actual	Target	Target	Target	Target	Target	Target
	N/A	N/A	75%	75%	75%	75%	75%
Description: Percentage of projected annual program oversight and technical management milestones completed each year to meet the launch readiness dates for the Polar Free Flyer. This includes key decision points, major reviews, testing, and delivery to the spacecrafts for the following instruments: TSIS-1, ADCS-1, SARSAT-1, and ADCS-2.							

Outyear Funding Estimates (\$ in thousands):

Polar Free Flyer	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base	0	0	TBD	TBD	TBD	TBD	TBD	-
Total Request	0	62,000	TBD	TBD	TBD	TBD	TBD	335,000

*Due to the timing of the Consolidated and Further Continuing Appropriations Act, 2013 that was signed into law on March 26, 2013 and further reductions from the sequestration, we are incorporating the effects of the lower FY 2013 funding level into the phasing of the Polar Free Flyer. Therefore, in consideration of these recent events, outyear funding estimates are marked as to be determined. Once an updated ICE and its reconciliation are complete, the Department will provide the Appropriations Committees the phasing of the Polar Free Flyer outyear funding.

SATELLITE ALTIMETRY MISSION – JASON-3

Jason-3 is a joint satellite altimetry mission between NOAA, the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), and the Centre National d’Etudes Spatiales (CNES), the French Space Agency. Jason-3 will provide continuity of precise measurement of sea [ocean] surface heights for applications in,

- Ocean Climatology: global sea-level rise, decadal variability in the ocean, seasonal/inter-annual variability, and coastal variability & its impact on ecosystems; and,
- Ocean Weather: operational oceanography, surface wave forecasting and evaluation, and hurricane intensity forecasting.

Jason-3 is a multi-year development and integration effort that started in FY 2010. NOAA is providing a microwave radiometer, precision orbit determination components [e.g., GPS, Laser Retroreflector

Array (LRA)], launch services, ground system and operations, and associated engineering services for Jason-3. In July 2012, the launch services contract was selected and the Falcon 9 v1.0 rocket was chosen as the launch vehicle. Through an interagency agreement, NASA is NOAA's acquisition and development agent, but NOAA will retain overall program management responsibility. EUMETSAT and CNES are providing the spacecraft, altimeter, additional precision orbit components, ground system and operations.

Jason-3 will follow in the tradition of the previous altimetry missions, Topex/Poseidon, Jason-1 and – Jason-2. The Jason series has been transitioned as a research endeavor from NASA and CNES to NOAA and EUMETSAT for joint implementation as a sustained and systematic (i.e., operational) capability.

NASA, on behalf of NOAA-NESDIS, is in the process of completing the mission instruments and has started the deployment of the launch vehicle. Continued funding supports the ongoing acquisition of Jason-3 components and launch services.

See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.

DEEP SPACE CLIMATE OBSERVATORY (DSCOVR)

Refurbishment of NASA's DSCOVR satellite will allow NOAA to maintain continuity of solar wind data used for geomagnetic storm warnings. NOAA will manage the DSCOVR mission as an operational sentinel to give notice of approaching solar storms with potentially calamitous consequences for terrestrial electrical grids, communications, GPS navigation, air travel, satellite operations and human spaceflight. This program is being conducted in partnership with the U.S. Air Force (USAF), which will provide the launch vehicle and services.

NOAA has an operational requirement for continuous solar wind data. These data are the sole source of geomagnetic storm alerts. Geomagnetic storms are the costliest form of space weather and have the greatest potential economic impact on the largest number of customers.

See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.

CONSTELLATION OBSERVING SYSTEM FOR METEOROLOGY, IONOSPHERE, AND CLIMATE (COSMIC)-2 GROUND SYSTEM

COSMIC-2 is part of an international partnership between Taiwan's National Space Organization (NSPO), the U.S., and Brazil for a follow-on mission to the current COSMIC constellation. In this COSMIC follow-on partnership, NSPO has agreed to procure 12 satellite buses and integration of instruments, and USAF will procure the instruments and provide the launch services. Through the requested funds in the FY 2013 Hurricane Sandy Supplemental, NOAA proposes to support the ground system, data processing, and archiving. NOAA already supports the reception and processing of data from the current COSMIC constellation and from foreign radio occultation satellites.

The COSMIC program is an effective means of obtaining global atmospheric temperature profiles. This data is currently used to determine high accuracy atmospheric temperatures at various altitudes that improve weather forecasts, and have demonstrated an 8+ hour forecast improvement starting at day four in the forecast model. This data is not available globally from other sources and losing this data will result in degradation of performance of NOAA's numerical weather models. COSMIC also helps to eliminate bias for artificial offsets in other observing systems by helping to create consistent measurements from different systems.

There are two launches planned for COSMIC-2, one in FY 2016 and the other in FY 2018. The first launch of six satellites is planned for an equatorial low earth orbit (24 degree inclination) and the second is planned to a higher low earth orbit (72 degree inclination). The two different orbits are necessary in order to meet NOAA's requirements for 45 minute average data latency and over 8000 soundings per day.

Data will be received at NOAA's Fairbanks ground station and through contracted commercial receiving stations. This equatorial ground reception system requires a minimum of 4 ground reception stations (2 ground stations on each side of the globe), to achieve the necessary data latency for Numerical Weather Prediction (NWP) applications. NOAA proposes to have a competitive solicitation for 2 equatorial ground reception stations, while Taiwan and Brazil have both agreed to supply one ground reception station in their countries. NOAA proposes to coordinate the download and supply the data for processing.

While the FY 2014 request does not include funding for COSMIC-2, the base narrative above reflects funding requested in the FY 2013 Hurricane Sandy Supplemental, which would fund the program from FY 2013 to FY 2015.

CRITICAL SINGLE POINT OF FAILURE/CRITICAL INFRASTRUCTURE PROTECTION (CIP)

The Critical Infrastructure Protection project will provide backup systems at the Wallops Command and Data Acquisition Station (WCDAS) and will perform all mission critical operations and critical product data processing functions in the event of a catastrophic outage at the NSOF primary site.

The CIP is a backup facility to the NSOF/Environmental Satellite Processing Center (ESPC) operations and ensures the continuity of the Nation's environmental satellite data images and critical products used by the NWS and DOD as inputs to analyses and forecast models. CIP will ensure continuity of the issuance of life-saving NWS watches and short-term warnings to the public in the event the primary ESPC system at the NSOF becomes inoperable.

The NOAA Product Processing and Distribution (PP&D) Office is a critical single point of failure for every operational NOAA satellite product and service that NWS and other users rely on for weather information. Satellite data represents approximately 93 percent of the input to numerical weather prediction models.

Schedule and Milestones:

- FY 2014: Build back-up systems for ESPC applications in order to address Research-to-Operations missions and continuing evolution of the Office of Satellite and Product Operations/ESPC systems and products
- FY 2015-2018: Maintenance and Operations

Deliverables:

- Provide backup systems that will perform mission critical operations and critical product data processing functions in the event of a catastrophic outage of the primary site, the satellite operations facility at NSOF
- Deliver continuity of operations of NOAA products and services generated by the environmental satellites

Performance Goals and Measurement Data:

Performance Measure: Percent of critical satellite data processed and distributed in the event of a catastrophic outage at the NSOF primary site	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	N/A*	90%	95%	95%	95%	95%	95%
Description: Provide critical satellite data product processing backup in the event of a catastrophic outage of the primary satellite operations facility at NSOF. Critical satellite data is data that has been approved for CIP backup by the Satellite Products and Services Review Board (SPSRB).							

Performance Measure: Percent of satellite data processed and distributed within 4 hours of CIP activation	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	N/A*	95%	95%	95%	95%	99%	99%
Description: The CIP requirement is to have Priority 1 operational products available within 24 hours of CIP activation (complete product list in found at http://www.osdpd.noaa.gov/ml/cip.html).							

*CIP was not activated in FY 2012.

Outyear Funding Estimates (\$ in thousands):*

CIP	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		-	-	-	-			
Total Request	30,428	2,772	2,772	2,772	2,772	2,842	0	44,358

*Outyears are estimates only. Future requests will be determined through the annual budget process.

NPOESS PREPARATORY DATA EXPLOITATION (NDE)

The NDE project is developing and implementing capabilities to process and distribute Suomi NPP (S-NPP) and future Joint Polar Satellite System (JPSS) products and services, once the data have been delivered to NOAA. NOAA must implement capabilities to process the observations into useful products that meet the requirements of NOAA's operational centers and other civilian users. The NDE program will generate measurements of atmospheric and surface properties with smaller biases and less noise that will improve and extend the NWS's capability to provide weather forecasts and warnings. NESDIS and the NWS have collaborated to establish a priority for NDE product developments. As a result, the NDE program will provide the capability to generate the following data products for NOAA within three years after the S-NPP launch: atmospheric and ocean surface radiances, snow cover, sea surface temperature, vegetation fraction, tropical cyclone products, polar winds, atmospheric moisture, ocean color, ozone profiles, aerosol optical thickness, surface albedo, cloud top and base height, active fires, land surface temperature and sea ice characterization.

The NDE project is developing the IT infrastructure and science code necessary to ingest and add value to S-NPP and JPSS observations. By mid-FY 2013, NDE will have procured and integrated an operational S-NPP Production Environment, the data processing system required by NESDIS operators to address the unique needs of the NOAA user community. Once validation and verification of the system and science products are complete, the Production Environments will be turned over to NESDIS Operations which will assume 24/7 operations in late FY 2013. The performance of this IT system is being evaluated during the S-NPP post-launch period in FY 2012 and FY 2013. Following

the transition of the S-NPP Production Environment to operations, NDE will focus development on new S-NPP-based products to provide polar continuity products to the user community, and on the development and implementation of a remote backup system.

Schedule and Milestones:

- FY 2014: Initiate the procurement/integration of the NDE Remote Backup System
- FY 2015: Complete installation of the NDE Remote Backup System in Fairmont, WV
- FY 2016: Augment NDE Production Environment s to prepare for JPSS-1 launch
- FY 2017: Evaluate new Production Environment using JPSS-1 data
- FY 2018: Integrate first set of JPSS-1 products into new Production Environment

Deliverables:

- Initiate delivery of the NDE Production Environment to NESDIS Operations in FY 2013; this system will enable NESDIS Operations to generate and deliver 65 products, based on S- NPP observations, to the NWS and other users in FY 2012-2016
- Additional six products planned for delivery based on JPSS observations in FY 2017-2018

Performance Goals and Measurement Data:

Performance Measure:	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Number of new Science Products Tested within NDE Science Algorithm Development and Integration Environment (SADIE)	Actual	Target	Target	Target	Target	Target	Target
	4	16	16	15	14	3 (JPSS)	3 (JPSS)
Description: NDE integrates new science algorithms, provided by NOAA scientists, into the NDE SADIE to conduct functional and end-to-end testing of the products generated from those algorithms. Once it is determined that the code is ready for operations, NDE will transition the algorithms to the Production Environment for routine operations. The process of testing new algorithms and integrating them into operations takes approximately one year. All algorithms listed in FY 2012-2016 will generate new operational products from Suomi NPP one year later. After the JPSS launch in 2017, JPSS Data Exploitation will provide 6 data products after completion of the calibration and validation period.							

Outyear Funding Estimates (\$ in thousands):*

NPOESS Data Exploitation	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		-	-	-	-	-		
Total Request	31,552	4,455	4,455	4,455	4,455	4,525	0	53,897

*Outyears are estimates only. Future requests will be determined through the annual budget process.

EARTH OBSERVING SYSTEM (EOS) & ADVANCED POLAR DATA PROCESSING, DISTRIBUTION, AND ARCHIVING

NOAA is committed to preserve the NASA Earth Observing System (EOS) data per NOAA’s long-term management agreement with NASA. EOS & Advanced Polar Data Processing, Distribution and Archiving System support is directed toward the NOAA CLASS Development project. It takes the NASA EOS data requirements for archive and access and provides funding to ensure the CLASS

Development team designs and engineers the appropriate capabilities and capacities into the CLASS Operating System. NOAA will use the funds to procure additional media storage hardware and telecommunications to safely store and provide access to NASA EOS data.

NOAA is currently responsible for the stewardship of over three petabytes (PB) of environmental data and information, which is expected to grow to well over 14 PBs in FY 2012. NOAA spends more than one billion dollars each year collecting environmental data in support of its mission. CLASS currently archives Jason-1, GCOM-W1 as well as Metop- B satellite data. NASA launched the Suomi NPP satellite in FY 2012, which NOAA will follow with the first launch of Joint Polar Satellite System satellite scheduled in FY 2017. The environmental data generated will be a 100-fold increase in data volume per satellite.

Outyear Funding Estimates (\$ in thousands):*

EOS & Advanced Polar Data Processing, Distribution, & Archiving Systems	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		-	-	-	-	-		
Total Request	15,320	990	990	990	990	992	0	20,272

*Outyears are estimates only. Future requests will be determined through the annual budget process.

COMPREHENSIVE LARGE ARRAY DATA STEWARDSHIP SYSTEM (CLASS) – DEVELOPMENT

CLASS is the NOAA Enterprise System IT capability for the Data Centers, providing archival storage for NOAA’s environmental data. It is currently utilized by the NOAA Data Centers for their archive and distribution of operational environmental satellite data from NOAA’s Geostationary and Polar (GOES and POES) operational satellites, the Suomi NPP satellite, and derived data products. CLASS is under development to support additional satellite data streams, including GOES-R and JPSS, as well as NOAA’s in-situ, NEXRAD and modeled data. The system is being evolved to provide a configurable set of tools for data ingest to allow rapid response to new requirements, additional tools for data management and stewardship by data center experts, and generalized access interfaces to allow tailored tools for expanded data access.

In the near term, efforts will focus upon operations and maintenance of CLASS components that have transitioned from development to operational status. Longer-term plans for CLASS include expanding the safe storage/access capacity to meet the data influx expected from the operational introduction of data from radar, models, and new satellites. The current CLASS configuration can provide services for approximately four petabytes (PBs) of data. Management of these data can be accomplished through expanding storage capacity at the Data Centers and automating the means of data ingest, quality control, and access through phased systems procurement. The early implementation of this archive and access system has paved the way to accommodate additional massive data volumes from the new generation of earth-observing satellites.

Schedule and Milestones:

N/A

Deliverables

- Safe Storage and Access Capability/Capacities “just in time” ready to meet phased-in introduction of new major observing systems (Satellites, Radars, Model Data, Other)
- Long-term, safe storage that meets the NOAA Data Centers’ legislative requirements

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Measure 1: CLASS Development System components integrated into the Data Centers’ operational architecture (CLASS Operations System) ready to support NEW Satellite Launches/RADAR DP and PH Upgrades, Model Data, etc. (Cum # systems the CLASS Ops System is ready to support)	9	9	10	10	11 GOES-R	12 JPSS-1	12
Measure 2: Annual Increase - New Data/Year (PB/FY)*	5.6	5.6	5.6	6.6	7.6	9.8	9.8
Measure 3: Cumulative Total Data (PB)*	7.6	13.2	18.8	25.4	33.0	42.8	52.6
Description: Measure 1 measures the cumulative number of systems ready to be supported by the CLASS Ops System. Measure 2 measures the annual increase of new data archived and distributed as measured in petabytes per year (PB/FY). Measure 3 measures the cumulative total data archived and distributed as measured in petabytes (PB).							

Outyear Funding Estimates (\$ in thousands):*

CLASS	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		-	-	(4,111)	(6,476)	(6,476)		
Total Request	81,234	6,476	6,476	2,365	0	0	0	96,551

*Outyears are estimates only. Future requests will be determined through the annual budget process.

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

Geostationary Operational Environmental Satellite N-Series (GOES-N): GOES-N (Base Funding: \$32,640,000 and 20 FTE; Program Change: -\$5,692,000 and 0 FTE): NOAA requests a decrease of \$5,692,000 and 0 FTE for a total of \$26,948,000 and 20 FTE to delay IT upgrades to the GOES-N ground system.

Proposed Actions:

This one-time decrease will result in a one-year delay to the planned upgrade of the real-time satellite control and telemetry processing system. Due to the age of the current hardware, there is a moderate risk that in FY 2014 cascading hardware failures would reduce performance to as low as 96 percent of data delivered within the specified time. This would impact the ability of users, such as the NWS, to reliably access GOES-N data within 15 minutes.

Base Resources Assessment:

The base resources for this activity are described in the Systems Acquisition base narrative.

Schedule and Milestones:

GOES-14 has a planned operational date of FY 2015

Deliverables:

Continued operational support and maintenance of the GOES ground systems and on-orbit assets

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percentage of NOAA-managed satellite data processed and distributed within 15 minutes							
With Decrease	N/A	N/A	98%*	98%	98%	98%	98%
Without Decrease	98%	98%	98%	98%	98%	98%	98%

Description: This measure includes observations from the primary geostationary spacecraft tracked from observation through availability to the user. This measure is used to track timeliness and customer satisfaction. The targeted time for GOES is 15 minutes. Assumes that the real-time satellite control telemetry processing system hardware will be upgraded in FY 2015.

*Due to the age of the current hardware, the FY 2014 target could drop as low as 96%

Outyear Funding Estimates (\$ in thousands):

GOES- N	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Total
Change from FY 2014 Base		(5,692)	(2,740)	(2,740)	(7,640)	(7,640)	(7,640)	(19,267)	
Total Request	2,121,394	26,948	29,900	29,900	25,000	25,000	25,000	13,348	2,296,490

*Outyears are estimates only. Future requests will be determined through the annual budget process.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Systems Acquisition
Program Change: GOES-N

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(5,692)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(5,692)

Geostationary Operational Environmental Satellite -R (GOES-R): GOES-R (Base Funding: \$618,899,000 and 46 FTE; Program Change: +\$335,862,000 and 0 FTE): NOAA requests an increase of \$335,862,000 and 0 FTE for a total of \$954,761,000 and 46 FTE to continue satellite engineering development and production activities for the GOES-R Series Program. The GOES-R series will incorporate new instruments with increased capability over the incumbent GOES-N series and will improve its ground system, which will provide better data products for NWS and other NOAA stakeholders.

Proposed Actions:

The FY 2014 request supports the following GOES-R Series activities as a four-satellite program:

- Continued development of GOES-R spacecraft and ground system. The program will complete the System Integration Review (SIR), Mission Operations Review (MOR), and Pre-Environmental Review (PER) for the GOES-R System;
- Begin GOES-S and -T instrument deliveries
- Continuation of instruments already under contract: Advanced Baseline Imager (ABI), Solar Ultra Violet Imager (SUVI), Extreme Ultra Violet Sensor/X-Ray Sensor Irradiance Sensor (EXIS), Space Environmental In-Situ Suite (SEISS), and Geostationary Lightning Mapper (GLM). Initial Flight Models for each instrument will be delivered in FY 2013 or early FY 2014, and will be prepared for integration with the spacecraft in FY 2014.
- Continuation of the ground system integration and test activities including the new antennas;
- Continued development of GOES-T & U spacecraft and instruments

Currently, NOAA's geostationary satellites include two operational satellites, GOES-East and GOES-West, and one spare satellite on orbit. With the funding profile requested, GOES-East will be replaced by the spare on-orbit satellite, GOES-14, in FY 2015 and GOES-West would be replaced by GOES-R in Quarter 2 FY 2017, when its calibration and validation would be complete. Without the requested increase, GOES-West would not be replaced by a fully operational GOES-R until Quarter 2 FY 2019, and an observation gap of up to two years would be realized.

Statement of Need and Economic Benefits:

The GOES-R Series will provide enhancements directly applicable to stakeholders such as NWS. Increased quantity, quality, and accuracy of satellite data that are processed and distributed within targeted time is a key objective for NWS to issue timely advisories to the public that protect life and property. Once GOES-R becomes operational in FY 2017, data from GOES-R satellites will not only sustain the geostationary coverage currently in place, but will also enhance NWS performance with a 10 percent improvement in the accuracy of hurricane intensity forecasts in the 24-to 48-hour time frames, and a 5 percent improvement in hurricane track forecast out to day 5.

The GOES-R Series will minimize losses to life, land, and the economy by giving early warning for severe weather events, which can cause significant impacts to people and property. One study⁵ estimated the impact of improved data from the GOES-R Series on selected sectors of the economy as having a combined annual value in the first year of satellite operations that exceeds \$921 million (in 2010 dollars). Benefits for selected industries (in 2005 dollars) include, for the first year of satellite operations:

⁵ Centrec Consulting Group, LLC. (2007, February 27). An Investigation of the Economic and Social Value of Selected NOAA Data and Products for Geostationary Operational Environmental Satellites (GOES). Report to NOAA's National Climatic Data Center. Savoy, IL

- Coastal Emergency Management: Tropical cyclone forecasts enhanced by improved ABI technology aboard GOES-R are expected to produce annual net economic benefits of \$450 million.
- Recreational Boating: The improved tropical forecasts are also expected to prevent annual losses to the recreational boating industry valued at \$31 million.
- Aviation: The new ABI technology will enhance the tracking of volcanic ash plumes. This will provide advance warning to pilots, who then can be routed around the damaging and deadly plumes. The annual net economic benefit to the airline industry from these enhancements is \$58 million.
- Energy Providers: One large cost of providing energy relates to the ability to forecast demand and then to supply the necessary energy on time. GOES-R data will allow for more accurate temperature forecasts, thereby enabling energy providers to better prepare for changes in demand. Annual savings for the energy sector is expected to be \$256 million.
- Agriculture: Improved information from GOES-R will enable researchers and forecasters to produce more accurate forecasts, resulting in irrigation water being used more efficiently. The annual net economic benefit for agriculture is valued at \$30 million.

The 2006 NOAA Economics Statistics report indicates that lightning activity causes \$4 to 5 billion in losses each year and that lightning has consistently been one of the top three causes of weather-related deaths. The GOES-R GLM instrument is the first ever operational satellite lightning detection system aboard a geostationary satellite. The GLM detects severe weather by mapping both cloud-to-ground and cloud-to-cloud lightning strikes. By having the GLM capability on GOES-R, NWS will be able to provide more accurate severe weather warnings, with the potential to save lives.

The GOES-R Series will also carry a number of solar and space monitoring instruments that will provide improved detection of approaching space weather hazards. These space storms endanger billions of dollars of commercial and government satellite systems and ground based power grids.

Base Resources Assessment:

NOAA is still assessing the impact of its full-year 2013 appropriations on program schedule and milestones. The schedule and milestones below may change based on the results of that assessment.

The base resources for this activity are also described in the Systems Acquisition base narrative.

Schedule and Milestones:

- FY 2014: Complete delivery of the GOES-R instruments, continue GOES-R spacecraft Integration and Test (I&T), continue Ground System software development and hardware acquisition, and begin spacecraft-to-ground system interface testing. Receive delivery of the ABI, GLM, SUVI, SEISS, and EXIS instruments for GOES-S and begin GOES-S spacecraft I&T
- FY 2015: Prepare for GOES-R launch. Test of the GOES-S spacecraft. Continue fabrication, assembly, integration of GOES T&U instruments. Continue design efforts for software and acquisition of hardware
- FY 2016: Launch GOES-R and prepare for GOES-S launch
- FY 2017: Launch GOES-S
- FY 2018: Prepare for GOES-T launch

Deliverables:

Spacecraft	Launch Readiness Date	Planned Operational Date
GOES-R	Oct 2015	Dec 2016
GOES-S	Feb 2017	Apr 2020
GOES-T	Apr 2019	Mar 2025
GOES-U	Oct 2024	Jul 2028

Performance Goals and Measurement Data:

Performance Measure: Percent of GOES-R Program milestones completed on time	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	75%	75%	75%	75%	75%
Without Increase	75%	75%	47%	33%	50%	60%	60%

Description: Percent of projected milestones to be completed annually to meet the planned operational date for the GOES-R series (GOES-R, -S, -T, and -U). This includes key decision points, major reviews, testing, and delivery for the spacecraft, instruments (ABI, GLM, EXIS, SUVI, and SEISS), as well as antenna and ground segments.

Performance Measure: Cumulative percent of GOES-R satellite milestones completed on time	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	87%	97%	99%	100%	N/A
Without Increase	73%	73%	79%	87%	97%	99%	100%

Description: Percent of projected milestones to be completed each year for the program to meet the planned operational date of the first GOES-R satellite. This includes key decision points, major reviews, testing, and delivery for the spacecraft, instruments (ABI, GLM, EXIS, SUVI, and SEISS), as well as antenna and ground segments.

Outyear Funding Estimates (\$ in thousands):*

GOES-R	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Change from FY 2014 Base	-	-	-	-	-	-	-	-	-	-
Total Request	3,300	20,162	25,338	15,300	101,778	151,036	219,299	253,040	234,791	465,000

GOES-R	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Change from FY 2014 Base	-	-	-	-	335,862	225,845	162,754	87,352	(40,188)	(207,005)
Total Request	641,500	662,373	615,622	802,000**	954,761	844,744	781,653	706,251	578,711	411,894

GOES-R	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Change from FY 2014 Base	(318,987)	(418,780)	(357,154)	(262,164)	(247,835)	(530,158)	(546,522)	(546,272)	(546,022)	(545,872)
Total Request	299,912	200,119	261,745	356,735	371,064	88,741	72,377	72,627	72,877	73,027

GOES-R	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	Total
Change from FY 2014 Base	(545,547)	(545,572)	(545,647)	(546,772)	(546,772)	(547,672)	(551,822)	
Total Request	73,352	73,327	73,252	72,127	72,127	71,227	67,077	10,860,266

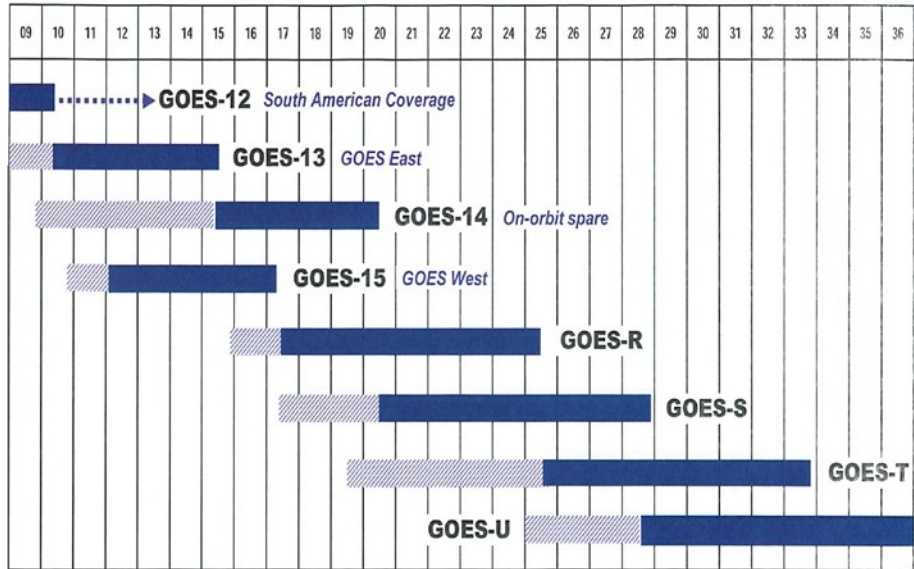
*Outyears are estimates only. Future requests will be determined through the annual budget process.

**The profile assumes the \$802,000,000 necessary in FY 2013 to maintain the GOES-R program schedule and lifecycle cost.

Note: The Change from FY 2014 Base rows reflect changes from the FY 2014 Base number of \$618,899,000.

Continuity of GOES Mission

Fiscal Year As of April 2013



Key

Approved: 
 Assistant Administrator for Satellite and Information Services



PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Systems Acquisition
Program Change: GOES-R Series

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	297,101
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	38,761
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	335,862

Polar-Orbiting Operational Environmental Satellite (POES): POES (Base Funding: \$32,413,000 and 22 FTE; Program Change: -\$2,998,000 and 0 FTE): NOAA requests a decrease of \$2,998,000 and 0 FTE for a total of \$29,415,000 and 22 FTE to delay IT upgrades to the POES ground system.

Proposed Actions:

This one-time decrease will result in a one-year delay to POES IT hardware upgrades for the real-time satellite control and telemetry processing system (Polar Acquisition Control System). Due to the age of the current hardware, NOAA’s ability to meet security and operational requirements will be affected in FY 2014. In particular, the upgrade of the antenna tracking components (both electronic and mechanical) at Fairbanks Command & Data Acquisition Station will be impacted, and could result in multiple days of downtime, should the antenna fail in FY 2014. There is a moderate risk that in the event of a major failure, availability of data within 60 minutes would be reduced to 92 percent.

Base Resources Assessment:

The base resources for this activity are described in the Systems Acquisition base narrative.

Schedule and Milestones:

- FY 2013 - 2015: Support annual reactivation for MetOp-C
- FY 2013 – 2017: Continue ground systems operations support for NOAA-15, 16, 17, 18, 19, MetOp-A and MetOp-B (which was launched in September 2012)
- FY 2016: Prepare to support the launch of MetOp-C
- FY 2017: Post-launch support of MetOp-C

Deliverables:

Engineering support for the on-orbit POES satellites and support to EUMETSAT for U.S. instruments for Metop satellites, either in orbit or waiting to be launched

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percentage of NOAA managed satellite data processed and distributed within 60 minutes							
With Decrease	N/A	N/A	92%*	95%	95%	95%	95%
Without Decrease	95%	95%	95%	95%	95%	95%	95%

Description: Provide the necessary polar observations from the primary polar spacecraft tracked from observation through availability to the user. This measure is used to track timeliness and customer satisfaction. Note that in 2017, NOAA-19 will have exceeded its design life and Suomi NPP will be close to its nominal end of life; for FY 2017 this measure assumes performance from the JPSS program. This measure assumes that the PACS hardware and POES Back-up system will be completed in FY 2015.

*Due to the age of the current hardware, the FY 2014 target could drop as low as 92%.

Outyear Funding Estimates (\$ in thousands):

POES	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		(2,998)	(369)	(4,343)	(26,653)	-		
Total Request	2,473,979	29,415	32,044	28,070	5,704	0	0	2,569,212

*Outyears are estimates only. Future requests will be determined through the annual budget process.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Systems Acquisition
Program Change: POES

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(2,998)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>(2,998)</u>

Jason-3: Jason-3 (Base Funding: \$19,805,000 and 0 FTE: Program Change: +\$17,195,000 and 0 FTE): NOAA requests an increase of \$17,195,000 and 0 FTE for a total of \$37,000,000 and 0 FTE to continue the development of the Jason-3 satellite in partnership with EUMETSAT and CNES, NOAA's European and French partners. Jason-3 will provide continuity of precise measurement of sea surface heights for applications in ocean climatology and ocean weather.

Proposed Actions:

The increase will allow NOAA to complete development and integration activities of the U.S. instruments, including a microwave radiometer, and the precision orbit determination components (e.g., GPS). Funds will also continue to support launch services, launch vehicle procurement, and associated engineering services for Jason-3. EUMETSAT and CNES are providing the spacecraft, altimeter, precision orbit components, ground system, and operations.

NOAA is in the process of completing the mission instruments and is on target to deliver the completed instrument to CNES for satellite integration in May, 2013. Additionally, NASA has started the development of the launch vehicle. This budget request will continue the acquisition of the Jason-3 launch vehicle and launch services. The requested funds will be used for the U.S. space segment components' integration and testing on the spacecraft, performed by our European partners.

Continued funding supports the ongoing acquisition of Jason-3 components and launch services. This will enable NOAA to meet a Quarter 2 FY 2015 launch date. The FY 2014 requested funding is necessary for NOAA to meet its international obligation for this mission and reduce the strain on the international partnership.

Statement of Need and Economic Benefits:

The Jason-3 Altimetry mission is needed to provide continuity of precise measurement of sea surface heights for applications in the areas of Ocean Climatology and Ocean Weather.

Ocean Climatology Benefits From Space Based Altimetry:

- Global sea-level rise: This is a fundamental indicator of climate change. An altimeter time series of several decades will be needed to distinguish signals related to anthropogenic (human impact) warming from those related to natural variability, as well as to clarify whether the rate of sea-level rise is accelerating.
- Decadal variability in the ocean: This has been shown to have an impact on fishery regime changes and correlates with droughts on land and changes in hurricane activity.
- Seasonal/inter-annual variability: On seasonal to inter-annual timescales, ocean-atmosphere interactions in the tropical Pacific, the El Nino / Southern Oscillation (ENSO) phenomena, currently provide much of the signal for seasonal forecasts.

Ocean Weather Benefits From Space Based Altimetry:

- Operational Oceanography: Input to operational integrative services based on global and regional ocean models provide real time and prognostic information on the state of the global ocean. This capability helps its users understand and monitor the world's marine

environment and facilitate a safe, non-polluting and sustainable human exploitation of the ocean environment.

- Surface wave forecasting and evaluation: Accurate surface wave forecasts are a major requirement for offshore operators. Over the last decade altimeter-derived significant wave height data have been critical for improvements in wave prediction systems.
- Hurricane intensity forecasting: The knowledge of the upper ocean heat content (OHC) is a critical factor in forecasting the intensity of hurricanes as they approach the U.S. east and Gulf coasts where high OHC is quite variable.
- Coastal variability and its impact on ecosystems: Satellite altimetry provides observations for modeling the ocean basin and the broader coastal area. Coastal forecasting is needed in responding to environmental problems, such as oil spills and harmful algae blooms, as well as forecasting tides and currents important to commercial shipping.

While its latest projections for Global sea-level rise (GSLR) over the coming century range from 28 to 79 cm, the Intergovernmental Panel for Climate Change (IPCC) states "...the upper values of the ranges given are not to be considered upper bounds..." for GSLR, because existing models are unable to account for uncertainties such as changes in ice sheet flow. Additionally, the U.S. Climate Change Science Program has recently stated that these uncertainties "...will likely lead to sea-level projections for the end of the 21st century that substantially exceed the [latest IPCC] projection." This will impact the 146 million people worldwide living within 1 meter of mean high water, so it is critical that systematic observations of global sea level be collected on a continuing basis until these uncertainties are successfully addressed.

Base Resources Assessment:

The schedule and milestones below assume \$30 million in FY 2013 (the President's request) for the Jason-3 program. NOAA is still assessing the program impacts of its full-year 2013 appropriations. Thus, the program schedule and milestones below may change based on that assessment.

The base resources for this activity are also described in the Systems Acquisition base narrative.

Schedule and Milestones:

FY 2014: Support instrument integration onto spacecraft. Continue launch vehicle development

FY 2015: Launch Jason-3 satellite, perform calibration and validation and begin routine operations

FY 2016- 2020: Continue routine operations

Deliverables:

- NOAA will provide a microwave radiometer, precision orbit determination components (e.g., GPS), launch and launch vehicle services, and associated engineering services
- Continue 20 plus years of sea level observations, a critical climate monitoring variable, and provide operational ocean weather products using Jason 3 observations

Performance Goals and Measurement Data:

Performance Measure: Number of ocean science products produced	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	0	5	5	5	5
Without Increase	0	0	0	0	5	5	5
<p>Description: Jason-3 altimetry products will provide important data for ocean climatology studies and ocean weather forecasting as defined above under the Statement of Need and Economic Benefits. Products are Sea Level Height, El Nino Forecasting, Hurricane Intensity Forecasting, Ocean Waveheight Forecast, and Ocean Surface Current.</p> <p>Note: Jason-2 creates 5 data products currently. These products will be the same 5 that continue to be produced under the Jason-3 mission.</p>							

Outyear Funding Estimates (\$ in thousands):

Jason-3	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Total
Change from FY 2014 Base					17,195	5,851	(12,347)	(12,517)	(12,540)	(12,609)	
Total Request	20,000	19,960	19,700	30,000**	37,000	25,656	7,458	7,288	7,265	7,196	181,523

*Outyears are estimates only. Future requests will be determined through the annual budget process.

**The profile assumes the \$30,000,000 necessary in FY 2013 to maintain the Jason-3 program schedule and lifecycle cost.

Note: The Change from FY 2014 Base rows reflect changes from the FY 2014 Base number of \$19,805,000.

The Jason-3 Life Cycle Cost profile has increased by \$22,523,000 to \$181,523,000, as compared to the Life Cycle Cost estimate in the FY 2013 President's Budget request, \$159,000,000. This increase is due to several factors. The Jason-3 program received \$63,340,000 below the President's Budget requests in the first three years of the program; FY 2010 through FY 2012. This has caused a series of delays to the Launch Readiness Date, and has required an extension in the program's life, now ending in FY 2019. In addition, while NESDIS has found savings in the space segment and launch services, compared to the original cost estimate, the Jason-3 ground system and Operations and Sustainment require additional funding. Together, these changes necessitate an increase to the Life Cycle Cost, as phased above.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Systems Acquisition
Program Change: Jason-3

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	17,195
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	17,195

Joint Polar Satellite System (JPSS): JPSS (Base Funding: \$892,951,000 and 61 FTE: Program Change: -\$68,951,000 and 0 FTE): NOAA requests a decrease of \$68,951,000 and 0 FTE for a total of \$824,000,000 and 61 FTE. The request reflects a number of changes to the JPSS program, including the technical transfer of \$62 million to the Polar Free Flyer program and budget line, a transfer of select climate sensors to NASA, a renewed focus on NOAA's weather mission, and program management and operational efficiencies.

Proposed Actions:

The Administration recognizes the need to find cost savings and efficiencies within NOAA satellite programs, while strengthening satellite management and likelihood of success. Additionally, in July 2012, the Independent Review Team concluded that NOAA should refocus the JPSS program on the weather mission. The 2014 Budget refocuses the JPSS program on NOAA's core weather mission to strengthen the likelihood of mission success and to ensure the National Weather Service receives polar weather satellite observations in a timely manner. The 2013 Budget proposed a life cycle cost estimate of \$12.9 billion through 2028. With this request, NOAA proposes a new lifecycle cost (LCC) of \$11.3 billion or less through 2025 (JPSS-2 development and launch is accelerated to increase robustness of the constellation). \$366 million of the reduction in life-cycle cost is due to moving select climate sensor responsibilities to NASA and \$335 million is due to the transfer of program content to the Polar Free Flyer Program. NOAA will continue to work with OMB and others in the Administration to find opportunities for cost savings.

In order to maintain the JPSS-1 launch readiness date, the JPSS-1 scope and schedule are maintained. NOAA will continue to support the Suomi National Polar-orbiting Partnership (Suomi NPP). The ground systems for JPSS-1, JPSS-2, and Free Flyer-1 (now in a separate PPA) are all funded through the JPSS program.

NOAA will continue to support JPSS-1 and its instruments, including the Visible/Infrared Imager/Radiometer Suite (VIIRS), Cross-track Infrared Sounder (CrIS), Advanced Technology Microwave Sounder (ATMS), Clouds and Earth's Radiant Energy System (CERES), and the Ozone Mapping Profiler Suite-Nadir (OMPS-N). CERES has already reached completion, while CrIS, ATMS, and OMPS-N will be built and delivered in FY 2014. VIIRS is scheduled for completion in early FY 2015.

NOAA proposes to support the build of the JPSS-2 spacecraft and the following instruments: VIIRS, CrIS, ATMS, and OMPS-N.

As discussed in the NESDIS Base Overview, Free Flyer-1 (FF-1) and the Advanced Data Collection System (ADCS)-2 accommodation have been technically transferred to the Polar Free Flyer PPA. This was done to allow the JPSS program to remain focused on the core weather mission. Free Flyer-1 includes the Total Solar Irradiance Sensor-1 (TSIS-1), ADCS-1, and SARSAT-1.

This request does not fund the FF-2 satellite mission, and does not fund CERES-C and OMPS-L on JPSS-2. In an effort to simplify NOAA's mission, the Budget proposes to transfer to NASA responsibility for climate sensors originally planned for follow-on missions to JPSS-1 and Free Flyer-1, including the Clouds and Earth Radiant Energy System (CERES), Ozone Mapping and Profiler Suite-Limb (OMPS-Limb) and the Total Solar Irradiance Sensor (TSIS). Also, NOAA proposes to forgo the build and accommodation of SARSAT-2 in anticipation of U.S. Air Force GPS satellites that are expected to serve the same purpose.

The following are significant program changes to reduce the LCC and improve the robustness of the constellation:

- Reduces program management costs
- Reduces science and algorithm requirements for lower priority data products
- Reduces Operations and Sustainment costs
- Reduces VIIRS and CrIS costs on JPSS-2
- Accelerates the planned launch of JPSS-2 to Q1 FY 2022 to reduce the risk of a gap between JPSS-1 and JPSS-2; this reduces the mission life by 3 years to year 2025

FY 2014 funds will be used to support:

- Completion and integration of JPSS-1 spacecraft bus; an integrated independent review of the spacecraft; and preparations for procurement of the JPSS-2 spacecraft bus;
- Completion and delivery of ATMS, CrIS, OMPS-N and VIIRS instruments; removal of CERES FM-6 from storage and execution of environmental and performance testing on all instruments by the Flight Vehicle Test Suite which supports verification of software products, system requirements validation, mission rehearsal and operations training and anomaly investigations during testing phase; beginning the development of instruments for JPSS-2;
- Continued ground system enhancements to operationalize JPSS-1, and upgrades of IT security and operational robustness to include completion of the Consolidated Backup Unit (CBU) in Fairmont, West Virginia to the NOAA Satellite Operations Facility (NSOF) in Suitland, Maryland and sustainment of S-NPP
- Continue with planning of launch vehicle and launch services for JPSS-1 launch in 2017.

Base Resources Assessment:

The base resources for this activity are described in the Systems Acquisition base narrative.

Schedule and Milestones:

- FY 2014: Complete build of JPSS-1 spacecraft bus; complete build and plan accommodation of select JPSS-1 instruments (VIIRS, CrIS, OMPS-Nadir, ATMS); begin the build of JPSS-2 instruments; continue ground system upgrade development and sustainment of S-NPP operations; plan for the launch of JPSS-1; and begin development of JPSS-2 spacecraft.
- FY 2015: Instruments integration onto JPSS-1; continue to build JPSS-2 spacecraft and JPSS-2 instruments; continue JPSS-1 launch service preparation; complete ground system upgrades to support JPSS-1 and sustain S-NPP operational robustness;
- FY 2016: Execute JPSS-1 integration and testing; continue JPSS-2 spacecraft and instrument build; continue preparation of JPSS-1 launch services; validate ground system readiness of JPSS-1 integrated testing; continue operations and sustainment of JPSS ground including sustaining S-NPP.
- FY 2017: Launch of JPSS-1; commission JPSS-1; begin Calibration/Validation of JPSS-1 instruments; operate and continue build of JPSS-2 and sustaining current mission operations. Continue to operate and sustain SNPP.
- FY 2018: Continue build of JPSS-2 instruments and spacecraft; plan for launch services for the JPSS-2 mission and sustain current mission operations. Continue to operate and sustain SNPP and JPSS-1

Deliverables:

The major activities and outcomes planned in FY 2014 are the continued development of the JPSS-1 spacecraft, VIIRS, CrIS, ATMS, and OMPS-Nadir instruments to support a FY 2017 Quarter 2 JPSS-1 launch.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percent of JPSS Program milestones completed on time.							
Without Decrease	N/A	N/A	75%	75%	75%	75%	75%
With Decrease	75%	75%	75%	75%	75%	75%	75%
Description: Percentage of projected annual program oversight and technical management milestones completed each year to meet the launch readiness dates for JPSS-1 & JPSS-2. This includes key decision points, major reviews, testing, and delivery to the spacecrafts for the following instruments: VIIRS, CrIS, ATMS, CERES, and OMPS-Nadir (JPSS-1 Satellite) and VIIRS, CrIS, ATMS, and OMPS-Nadir (JPSS-2 Satellite), as well as antenna and ground segments.							

Outyear Funding Estimates (\$ in thousands):

JPSS*	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		68,951	TBD	TBD	TBD	TBD	TBD	TBD
Total Request	5,220,772	824,000	TBD	TBD	TBD	TBD	TBD	TBD

*Due to the timing of the Consolidated and Further Continuing Appropriations Act, 2013 that was signed into law on March 26, 2013 and further reductions from the sequestration, we are incorporating the effects of the lower FY 2013 funding level into the phasing of JPSS. Further, the Department is in the final steps of incorporating the results of the latest Independent Cost Estimate (ICE) that has recently been completed. Therefore, in consideration of these recent events, outyear funding estimates are marked as to be determined. Once the reconciliation is complete, the Department will provide the Appropriations Committees the phasing of JPSS outyear funding.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Systems Acquisition
Program Change: JPSS

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(68,951)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(68,951)

Deep Space Climate Observatory (DSCOVR): DSCOVR (Base Funding: \$29,959,000 and 0 FTE: Program Change: -\$6,284,000 and 0 FTE): NOAA requests a decrease of \$6,284,000 and 0 FTE for a total of \$23,675,000 and 0 FTE to complete the refurbishment of the DSCOVR satellite and sensors for solar wind observations, and to deliver the spacecraft for a United States Air Force (USAF) launch.

Proposed Actions:

NASA/Goddard Space Flight Center (GSFC), under a reimbursable agreement, will complete the refurbishment of DSCOVR, which is currently housed at GSFC in Greenbelt, Maryland. FY 2014 funds are necessary to complete the development of the data processing and archive systems, ship the satellite to its launch site, process its payload, and begin satellite operations and data processing operations after the U.S. Air Force launch. DSCOVR solar wind sensors will be checked out during transit to its final orbit. Operations and data processing will continue after the satellite reaches its duty station, the LaGrangian Point (L1), the neutral gravity point between the Sun and the Earth, about 932,000 miles from Earth.

This proposal provides an increase within the lifecycle of the DSCOVR satellite. Because the U.S. Air Force awarded a launch vehicle contract for SpaceX on behalf of DSCOVR two quarters later than expected, the Launch Readiness Date for DSCOVR was delayed from FY 2014 Quarter 3 to FY 2015 Quarter 1. The launch delay requires staff to remain onboard longer than anticipated, resulting in an increased cost of approximately \$9 million. The new costs are spread between FY 2014, \$4,400,000 and FY 2015, \$4,500,000.

Without timely and accurate alerts and warnings, space weather has the demonstrated potential to disrupt virtually every major public infrastructure system, including power grids, transportation systems, GPS and telecommunications. NOAA will provide these critical services by supplying geomagnetic storm warnings to support key industry stakeholders, such as the commercial airline, electric power, and the GPS industries.

Base Resources Assessment:

The base resources for this activity can be found in the Systems Acquisition base narrative.

Schedule and Milestones:

- FY 2014: Perform Spacecraft and Sensor Environmental Testing
- FY 2015: Launch Spacecraft
- FY 2015-2019: Maintenance and Operations

The DSCOVR mission expected end of life is FY 2019.

Deliverables:

- Launch and operate the DSCOVR satellite
- Provide timely access to operational solar wind data for geomagnetic storm warnings

Performance Goals and Measurement Data:

Performance Measure: Lead Time Geomagnetic Storm Warnings	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	40	40	40	40	40
Without Decrease	47	40	40	40	40	40	40
Description: This measure is a Space Weather Prediction Center (SWPC) performance measure that represents the average number of minutes of warning before geomagnetic storm arrival. Once SWPC receives real-time data regarding geomagnetic storm arrival, the alert is posted on their website and email alerts are sent to customers that subscribe. SWPC will also contact high impact customers such as FEMA, Coast Guard, power distributors, airlines, etc. This measure also assumes that NASA's Advanced Composition Explorer satellite continues until the launch of DSCOVR.							

Performance Measure: Percentage of warnings issued prior to geomagnetic storm	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	100%	100%	100%	100%	100%
Without Decrease	100%	100%	100%	100%	100%	100%	100%
Description: This measure is a SWPC performance measure that ensures issuance of warnings for all geomagnetic storms. Once SWPC receives real-time data regarding geomagnetic storm arrival, the alert is posted on their website and email alerts are sent to customers. SWPC will also contact high impact customers such as FEMA, Coast Guard, power distributors, airlines, etc. This measure also assumes NASA's Advanced Composition Explorer satellite continues until the launch of DSCOVR.							

Performance Measure: Percentage of alerts delivered within 10 minutes of onset of geomagnetic storm	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	98%	98%	98%	98%	98%
Without Decrease	94%	98%	98%	98%	98%	98%	98%
Description: This measure is a SWPC performance measure that ensures issuance of warnings for all geomagnetic storms. Once SWPC receives real-time data regarding geomagnetic storm arrival, the alert is posted on their website and email alerts are sent to customers. SWPC will also contact high impact customers such as FEMA, Coast Guard, power distributors, airlines, etc. This measure also assumes NASA's Advanced Composition Explorer satellite continues until the launch of DSCOVR.							

Outyear Funding Estimates (\$ in thousands):

DSCOV	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	Total
Change from FY 2014 Base				(6,284)	(22,159)	(26,759)	(27,559)	(27,617)	
Total Request	2,000	29,800	22,883**	23,675	7,800	3,200	2,400	2,342	94,100

*Outyears are estimates only. Future requests will be determined through the annual budget process.

**The profile assumes the \$22,883,000 necessary in FY 2013 to maintain the DSCOV program schedule and lifecycle cost.

Note: The Change from FY 2014 Base rows reflect changes from the FY 2014 Base number of \$29,959,000.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Systems Acquisition
Program Change: DISCOVER

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(6,284)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(6,284)</u>

Multiple NESDIS PPAs: Legacy Satellite Information Technology (IT) Systems (Program Change: -\$5,983,000 and 0 FTE): NOAA requests a decrease of \$5,983,000 and 0 FTE to reduce satellite legacy ground system maintenance and upgrades. These funds will be reinvested into an integrated ground system for command and control and satellite product generation. See the Enterprise Ground System Program Change Summary below for more detailed information on the reinvestment.

Proposed Actions:

NOAA proposes to reduce satellite legacy ground system maintenance and upgrades in order to reinvest in future integrated ground system command and control and satellite product generation.

Below is a list of impacts resulting from legacy satellite IT system cuts to support the Enterprise Ground System reinvestments. While these programs will realize short term impacts, NOAA believes there is potential for long term benefits to the agency under an Enterprise Ground System. IT reductions to ORF PPAs are not one-time reductions, whereas reductions to PAC PPAs are considered one-time reductions.

ORF Funding

Environmental Satellite Processing Center (ESPC) (-\$1,001,000)

The reduction of \$1,001,000 to ESPC in FY 2014 will include a reduction in contract support for IT security and administration, Plans of Action and Milestones (POA&M) mitigation, and maintenance of ESPC systems. This may effect routine IT system assessments, but will not impact NESDIS' ability to respond to immediate threats. This reduction may result in greater recovery time from system anomalies. Additional impacts may include delays in responding to independent IT audits (POAM mitigation) and delays in implementation of required High impact system security controls.

Satellite Operations Command Center /Command and Data Acquisition (SOCC/CDA) (-\$1,002,000)

The reduction of \$1,002,000 to SOCC/CDA for FY 2014 would reduce contract support for IT security and system administration, security POA&M implementation, and maintenance of SOCC/CDA systems. This may effect routine IT system assessments, but will not impact NESDIS' ability to respond to immediate threats. This reduction may result in greater recovery time from system anomalies. Additional impacts may include delays in responding to independent IT audits (POAM mitigation) and delays in implementation High impact system security controls.

SARSAT (-\$226,000)

A decrease of \$226,000 could result in a reduction in program management services used to mitigate POA&Ms and provide essential documentation changes to the systems. This will delay IT security documentation updates.

A reduction in SARSAT funding could also impact NOAA's ability to meet its obligations under the SARSAT Memorandum of Understanding between NOAA, NASA, USAF, and USCG. Under this inter-agency agreement, NOAA has agreed to equally share the common costs of the SARSAT system.

National Climatic Data Center (NCDC) (-\$900,000)

The reduction of resources in FY 2014 will reduce NCDC customer servicing capability as follows:

- Cost savings in this approach would be realized by moving the 7 User Engagement representatives, who are all Federal employees, to positions currently held by contractors. The savings would then ultimately be in contract labor.
- Redefine contract support positions from highly technical support to customer service assistance, as required.
- All data must be acquired online by customers.
- Certifications for court use, insurance cases, etc. will be reduced.
- Email to customer service personnel will change to a strictly automated response, which will direct users to specific online services for various topical areas.

Impacts of the above actions:

- Overall level of support to the private sector by NCDC will be reduced.
- Revenues generated by postal mail delivery of products will be eliminated
- Customers' maximum average hold time will increase; percentage of customer complaints being resolved will no longer be tracked

National Oceanographic Data Center (NODC) (-\$504,000)

This \$504,000 reduction to NODC in FY 2014 will reduce NODC's IT contract support. The ability for NODC to meet its mission requirements will depend on the successful development and fielding of the Enterprise Ground System and Enterprise Archiving System by FY 2014. Since these systems will require sufficient development time to provide robust common IT services that meet requirements for secure data management and operations, the following impacts will occur in FY 2014 due to the \$504,000 reduction in resources:

- Reduced IT expertise to implement cost reducing activities (e.g., cloud) and efficiencies from consolidation of NODC IT systems;
- Reduced secure data storage and access/dissemination operations; and,
- Reduced IT support for scientists to enhance archive, visualization and web services and provide new capabilities to integrate data.

National Geophysical Data Center (NGDC) (-\$96,000)

This \$96,000 reduction to NGDC in FY 2014 will delay development and migration to the current CLASS. Since, the Enterprise Archive capability will require sufficient development time to provide robust common IT services that meet requirements for secure data management and operations, the following impacts will occur in FY 2014 due to the \$96,000 reduction in resources:

- The current CLASS migration team FTE at NGDC will be transferred to other activities;
- NGDC will continue to rely on existing hardware and hardware refresh cycles until the Enterprise Storage Systems become available in FY 2015; and,
- NGDC will not staff specific data migration campaigns, but will make use of the new Enterprise Archive capabilities which come on-line in late FY 2015 as part of its normal archive refresh cycles.

PAC Funding

Geostationary Operational Environmental Satellite (GOES-N) (-\$627,000)

The most notable impact of this one year reduction to the GOES Ground System IT Budget will be a delay to the planned upgrade of the Spacecraft Information Tracking and Reporting System (SITARS) and the Secure Remote Access Server (SRAS), which monitor spacecraft and ground

system health. Without these upgrades the integrity of the data may be compromised. This would delay availability to users, such as NWS, reducing performance to 97% of data delivered within 15 minutes. These impacts do not assume the additional requested reduction of \$5,692,000 for GOES-N.

Polar Operational Environmental Satellite (POES) (-\$627,000)

The most notable impact to this one year reduction will be the delay to the upgrades of the real-time satellite control and telemetry processing system/Polar Acquisition Control System (PACS). Due to the age of the current hardware, NOAA's ability to meet operational requirements will be affected. In particular, upgrade of the six telemetry recorders that was to begin in FY 2014 would be delayed or only partially completed which could potentially result in loss of downlinked data. A worst case impact could result in a reduction to its 60-minute availability measure to 93%. These impacts do not assume the additional requested reduction of \$2,998,000 for POES.

NPOESS Preparatory Data Exploitation (NDE) (-\$1,000,000)

A one time decrease of \$1,000,000 in FY 2014 to the NDE Project may result in a delay to conduct testing with the JPSS Ground System, but will not impact the production of the most critical weather products. The NDE and JPSS ground systems will be upgraded in FY 2014 to accommodate NPP and future JPSS data flows. If NDE is not ready to conduct testing, the JPSS ground schedule may be impacted. Alternatively, testing activity may be limited, which increases overall risk, but to an acceptable level. A reduced budget would also directly impact contractor labor to prepare for and conduct these tests.

Base Resources Assessment:

The base resources for these activities are described in the base narratives.

Schedule and Milestones:

GOES-N:

GOES-14 has a planned operational date of FY 2015.

POES:

- FY 2013 - 2015: Support annual reactivation for MetOp-C
- FY 2013 – 2017: Continue ground systems operations support for NOAA-15, 16,17,18, 19 and MetOp-A and MetOp-B (which is to be launched September of FY 2012)
- FY 2016-2017: Prepare to support the launch of MetOp-C
- FY 2018: Post-launch support of MetOp-C

Deliverables:

GOES-N: Continued operational support and maintenance of the GOES ground systems and on-orbit assets

POES: Engineering support for the on-orbit POES satellites and support to EUMETSAT for U.S. instruments for Metop satellites, either in orbit or waiting to be launched

Performance Goals and Measurement Data:

Satellite Command and Control

Performance Measure: Percentage of GOES satellite data successfully acquired to meet customer quality and timeliness requirements.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	89.0%	89.0%	89.0%	89.0%	89.0%
Without Decrease	99.6%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%
Description: Data from NOAA's GOES satellites are received on a daily basis and compiled monthly. This measure is the percentage of GOES datasets received against what was scheduled to be completed.							

Performance Measure: Percentage of POES satellite data successfully acquired to meet customer quality and timeliness requirements.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	89.0%	89.0%	89.0%	89.0%	89.0%
Without Decrease	99.9%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%
Description: Data from NOAA's POES satellites are received on a daily basis and compiled monthly. This measure is the percentage of POES datasets received against what was scheduled to be completed.							

Product Processing and Distribution

Performance Measure: Percentage of NOAA-managed satellite data processed and distributed within targeted time	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	88.5%	88.5%	88.5%	88.5%	88.5%
Without Decrease	99.6%	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%
Description: This measure includes data from NOAA's GOES and POES satellites. It tracks the processing and distribution of environmental data to the users. This measure is used to track timeliness and customer satisfaction. The targeted time varies per satellite: GOES is 15 minutes, POES is 180 minutes (which is based on Advanced Television Infra-Red Observation Satellite Operational Vertical Sounder timeliness).							

GOES-N

Performance Measure: Percentage of NOAA-managed geostationary satellite data processed and distributed within 15 minutes	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	97%*	98%	98%	98%	98%
Without Decrease	98%	98%	98%	98%	98%	98%	98%
<p>Description: This measure includes observations from the primary geostationary spacecraft tracked from observation through availability to the user. This measure is used to track timeliness and customer satisfaction. The targeted time for GOES is 15 minutes.</p> <p>*Due to the age of the current hardware, the FY 2014 target could drop as low as 97%</p>							

POES

Performance Measure: Percentage of NOAA managed polar satellite data processed and distributed within 60 minutes	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	93%*	95%	95%	95%	95%
Without Decrease	95%	95%	95%	95%	95%	95%	95%
<p>Description: Provide the necessary polar observations from the primary polar spacecraft tracked from observation through availability to the user. This measure is used to track timeliness and customer satisfaction. Note that in 2017, NOAA-19 will have exceeded its design life and Suomi NPP will be close to its nominal end of life; for FY 2017 this measure assumes performance from the JPSS program. This measure assumes that the PACS hardware will be completed in FY 2015.</p> <p>*Due to the age of the current hardware, the FY 2014 target could drop as low as 93%.</p>							

NDE

Performance Measure: Number of new Science Products Tested within NDE Science Algorithm Development and Integration Environment (SADIE)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	9	15	14	9	3
Without Decrease	7	16	15	15	14	3	3

Description: NDE integrates new science algorithms, provided by NOAA scientists, into the NDE SADIE to conduct functional and end-to-end testing of the products generated from those algorithms. Once it is determined that the code is ready for operations, NDE will transition the algorithms to the Production Environment for routine operations. The process of testing new algorithms and integrating them into operations takes approximately one year. All algorithms listed in FY 2012 to FY 2016 will generate new operational products from Suomi NPP one year later.

Outyear Funding Estimates (\$ in thousands):

GOES-N

GOES-N	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Total
Change from FY 2014 Base		(627)	(2,740)	(2,740)	(7,640)	(7,640)	(7,640)	(22,032)	
Total Request	2,121,394	32,013	29,900	29,900	25,000	25,000	25,000	10,608	2,298,815

POES

POES	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	Total
Change from FY 2014 Base		(627)	(627)	(3,888)	(27,078)	
Total Request	2,473,979	31,786	31,786	28,525	5,335	2,571,411

NDE

NPOESS Data Exploitation	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		(1,000)	-	-	-	(70)		
Total Request	31,552	3,455	4,455	4,455	4,455	4,525	0	52,897

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Multiple
Program Change: Legacy Satellite IT Systems

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	(5,983)
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(5,983)

Enterprise Ground System: Enterprise Ground System: (Base Funding: \$0 and 0 FTE: Program Change: +\$5,983,000 and 0 FTE): NOAA requests an increase of \$5,983,000 and 0 FTE for a total of \$5,983,000 and 0 FTE to establish a NESDIS Enterprise Ground System program.

Proposed Actions:

This increase will begin the conceptual stage that will lay the ground work for establishing an Enterprise Ground System capability within NESDIS. This will position NESDIS to change its current stovepipe architecture into an enterprise architecture based on common ground services. In FY 2014, this funding will refine the concept of common ground services.

During this change, NOAA must continue to implement capabilities to process satellite observations into useful products that meet the requirements of NOAA's operational centers and other external users. The NESDIS Enterprise Ground Pilot Program will complete development of the processing solutions necessary to ingest and add value to current polar and geostationary observations. The program will also procure and integrate an operational backup Production Environment, the processing system required by NESDIS operators to address the needs of the NOAA user community. Once validation and verification of the system and science products are complete, the Production Environment will be turned over to NESDIS Operations which will then assume 24/7 operations.

Statement of Need and Economic Benefits:

This initiative directly links to key findings and recommendations of the 2012 Satellite Enterprise Independent Review Team, namely: establishing a core competency of system engineering, implementing engineering standards and configuration control, and establishing integrated management of the ground enterprise. By doing so, NESDIS will be able to more effectively and efficiently manage satellite throughput across its infrastructure.

This funding request will strengthen NESDIS Systems Engineering and promulgate Enterprise Ground Services & Systems. It will position NESDIS to more effectively and efficiently develop and maintain its core ground systems capabilities while evolving the system to an Enterprise Architecture. NESDIS expects to realize efficiencies in systems development, satellite operations and systems O&M. The premise behind this request is to merge or replace current disparate systems and, via common architectures and shared resources, procure common ground services such as command and control, product generation, distribution and security solutions.

Schedule and Milestones:

FY 2014: Development of a to-be common ground architecture which will include mission management, product generation, product distribution, and archive services; development of level 0 and 1 requirements for satellite ground common services NESDIS Technical Reference Model (TRM).

FY 2015 – FY 2018 milestones are in development. With sufficient funding NESDIS would anticipate performing the following activities: Migrate legacy data distribution to centralized common distribution services; define a common algorithm product generation platform; and centralize, where possible, product generation services.

Deliverables:

- Level 0 and 1 requirements document for satellite common ground services
- To-be NESDIS satellite ground architecture
- Roadmap for to-be architecture implementation
- Develop a quality management system

- Define requirements and conduct a proof of concept for HSPD-12 solution for mission programs.
- Establish configuration control of enterprise technical reference model (TRM) and engineering standards
- Active risk management via end to end ground system readiness management process

Performance Goals and Measurement Data:

Performance Measures are currently in development for this initiative.

Outyear Funding Estimates (\$ in thousands):

Enterprise Ground System	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base	0	5,983	TBD	TBD	TBD	TBD		
Total Request	0	5,983	TBD	TBD	TBD	TBD	TBD	TBD

*Outyears are estimates only. Future requests will be determined through the annual budget process. FY 2014 represents the conceptual stage for this program. Outyear funding is still to be determined.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Systems Acquisition
Program Change: Enterprise Ground System

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	5,983
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	5,983

The following exhibit shows the summary object class detail for Systems Acquisition program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Systems Acquisition
Program Change: Multiple

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(78)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(78)

**APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION, AND CONSTRUCTION
SUB-PROGRAM: CONSTRUCTION**

SATELLITE COMMAND AND DATA ACQUISITION (CDA) FACILITY

The Satellite CDA Facilities Program ensures a robust facility and related infrastructure is available for supporting the continuous collection, processing and distribution of environmental data for the issuance of life saving NWS watches and short-term warnings to the public. NOAA's CDA Infrastructure programs at Wallops, VA, and Fairbanks, AK, enable the continuation of the current 99 percent data availability for NOAA environmental satellite systems. The Wallops and Fairbanks facilities continue to undergo significant infrastructure and building upgrades to replace aging infrastructure installed over 40 years ago. The program plans to update major systems operating well past their design lives based on a Facilities Master Planning Process that began for the Operating Stations in 1998. Both facilities continue to require maintenance, repair, and replacement, to aging systems.

Existing buildings and aging infrastructure continue to require resources to continue reliable operations. The Wallops facility, on the Atlantic coast, is subject to a corrosive salt air environment and lies in the path of hurricanes that hit the U.S. East Coast. The Wallops facility is undergoing major electrical infrastructure upgrades to support the reliability necessary to insure 99 percent of data is captured. Associated infrastructure is planned for maintenance, repair, and rehabilitation to support the various missions integral to both locations. Both stations have been determined to be critical national infrastructure elements by a Presidential Decision Directive.

Funding for this budget line item is for repair and replacement of critical infrastructure components necessary to maintain the operational integrity of facilities. The Program's current activities include replacement of the 13M Antenna(s) Electrical Distribution Shelters and Engineering Design and Construction of the Electrical Distribution System upgrade at the Wallops CDAS. Installation of a Fire Suppression System(s) in the 13M Antenna pedestals at the Fairbanks CDAS is also ongoing.

Schedule and Milestones:

- FY 2014: Complete Electrical Distribution System upgrades at the Wallops CDAS; complete design and begin Electrical Distribution System upgrades at Fairbanks CDAS
- FY 2015: Start design for Operations Building infrastructure upgrades at Wallops CDAS; Complete Electrical Distribution System upgrades at Fairbanks CDAS
- FY 2016-2018: Complete design and begin operations building infrastructure upgrades at Wallops

Deliverables:

The Satellite CDA Infrastructure Program will complete the Electrical Distribution System upgrades at the Wallops CDAS, providing a modernized, robust and reliable Electrical Distribution System with increased capacity to meet current and future mission requirements.

Outyear Funding Estimates (\$ in thousands):*

Satellite CDA	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		-	-	-	-	-		
Total Request	20,004	2,228	2,228	2,228	2,228	2,287	0	31,203

*Outyears are estimates only. Future requests will be determined through the annual budget process.

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

The following exhibit shows the summary object class detail for Construction program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: NESDIS
Sub-program: Construction
Program Change: Satellite CDA Facility

Object Class		2014 Decrease
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	(12)
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	(12)

THIS PAGE INTENTIONALLY LEFT BLANK

NOAA PROGRAM SUPPORT

For FY 2014, NOAA requests a decrease of \$13,469,000 and 5 FTE below the FY 2014 base level for a total of \$253,567,000 and 955 FTE for the Program Support mission area after a technical transfer of \$0 and 55 FTE to the NOAA Working Capital Fund. This includes \$14,685,000 and 0 FTE in inflationary adjustments and \$719,000 in IT savings for reinvestment in DOC Working Capital Fund IT initiatives.

BASE JUSTIFICATION FOR FY 2014:

The Program Support Operations, Research, and Facilities base (\$267,036,000 and 960 FTE) includes the following sub-programs:

- Corporate Services (\$216,755,000 and 894 FTE) includes the Under Secretary and Associate Offices, NOAA Wide Corporate Services & Agency Management, and the Office of the Chief Information Officer
- NOAA Education Program (\$25,402,000 and 21 FTE) includes the Office of Education
- Facilities (\$24,879,000 and 45 FTE) includes NOAA's ongoing facilities management and maintenance activities

NOAA's Program Support provides the planning, administrative, financial, procurement, information technology, human resources, and infrastructure services that are essential to the safe and successful performance of NOAA's mission. Program Support consists of Corporate Services, the NOAA Education Program, and Facilities.

Within Corporate Services there are three line items: 1) NOAA's Under Secretary and Associate Offices; 2) NOAA Wide Corporate Services and Agency Management; and 3) Office of the Chief Information Officer. The Under Secretary and Associate Offices budget line item funds centralized executive management as well as policy formulation and direction. In addition, there are various staff offices, including the offices of the Principal Deputy Under Secretary for Oceans and Atmosphere and the Deputy Under Secretary for Operations; Legislative and Intergovernmental Affairs; Communications and External Affairs; International Affairs; the Federal Coordinator for Meteorology; and the General Counsel. The NOAA Wide Corporate Services and Agency Management line item funds such activities as financial reporting, budgeting, information technology, acquisitions and grants, and human resource services. The Office of the Chief Information Officer funds information technology (IT) leadership, mission assurance, and high-performance computing capabilities.

The second sub-program in Program Support is the NOAA Education Program, which provides expert support on education activities to NOAA Line, Program, and Staff Offices, while promoting NOAA services and products, and their benefits to the public. The Office of Education (OEd) consults within NOAA and with the Department of Commerce (DOC), and identifies opportunities for the deployment of coordinated interagency/intergovernmental policy strategies that recognize the importance of linking education, economic and environmental goals. The Office of Education also manages Competitive Education Grants, Education Partnership Program with Minority Serving Institutions (EPP/MSI) and the Ernest F. Hollings Scholarship Program, which is funded through a legislatively mandated set-aside of one-tenth of one percent of NOAA's annual appropriation.

The third sub-program in Program Support is Facilities, which provides funds to address facilities management; repair, restoration and other construction; and environmental compliance and safety issues NOAA-wide. NOAA is continuing efforts to comply with Executive Order 13327 (Federal Real Property Asset Management) and to effectively manage its facilities portfolio through investments in

strategic long-range facility planning and modernization; annual facility condition assessments; and targeted repair and restoration projects to address facility maintenance, repair, safety, and compliance issues. The goal is to conduct required maintenance and periodic life-cycle replacement of major building systems and components in order to maintain NOAA-owned facilities at a safe and effective operational state. Funds for new construction and selected major facility projects are requested separately in the Procurement, Acquisition and Construction account.

Significant Adjustments-to-Base (ATBs):

NOAA requests an increase of \$14,685,000 and 0 FTE to fund adjustments to current programs for Program Support activities. Increases are requested for the estimated 2014 Federal pay raise of 1.0 percent, payment to the DOC Working Capital Fund and inflationary non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NOAA requests a technical adjustment of \$719,000 from NOAA Wide Corporate Services and Agency Management Base to reflect IT savings. These funds will be reinvested in the DOC Working Capital Fund in order to support three new Department level initiatives: the Enterprise Security Operations Center (ESOC), the new Financial System (BAS) and the Personal Identity Verification (PIV) program.

NOAA also requests the following transfer for a net change of \$0 and 0 FTE to the agency:

From Office	PPA	To Office	PPA	Amount /FTE
PS	Educational Partnership Program/Minority Serving Institutions	PS	Office of Education	\$12,637,000/ 0 FTE
PS	NOAA Wide Corporate Services and Agency Management Base		NOAA Working Capital Fund	\$0/55 FTE

NOAA requests a technical adjustment of \$12,637,000 and 0 FTE from the Educational Partnership Program with Minority Serving Institutions (EPP/MSI) PPA to the Office of Education PPA (renamed from the NOAA Education Program Base) for a net change to NOAA of \$0 and 0 FTE. This will improve the ability of the Office of Education to manage EPP/MSI and sustain office activities.

NOAA requests a technical adjustment of \$0 and 55 FTE from NOAA Wide Corporate Services and Agency Management Base to the NOAA Working Capital Fund for a net change to NOAA of \$0 and 0 FTE.

Headquarters Administrative Costs:

In FY 2014, Program Support Line Office headquarters will use \$181,598,700 to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, Program Support will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2014 Amount	FY 2014 FTE associated with PS HQ
General Management & Direction/Executive Management	Includes Under Secretary's office, public affairs, information services	\$31,887,000	169
Budget & Finance	Includes Budget, Finance and Accounting	\$41,921,500	227
Facilities/Other Administrative Functions (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$48,251,000	184
Human Resources	All HR services, including EEO	\$16,303,700	140
Acquisitions and Grants		\$14,668,400	105
Information Technology	Includes IT-related expenses and other CIO related activities	\$28,567,100	49
Total		\$181,598,700	874

Narrative Information:

Following this section are base justification materials and program change narratives by sub-program for this line office. Please note that no program change narrative is provided for program changes of less than \$100,000, however a summary Exhibit 15 is provided at the end of each sub-program showing the object class detail for the small program changes. Please contact the Department of Commerce if details for any of these changes are required.

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES
SUB-PROGRAM: CORPORATE SERVICES

The objectives of the Corporate Services sub-program are to:

- Develop policies regarding the administration of NOAA programs with Federal agencies, the Congress, and private industry
- Provide oversight of the implementation of information technology policies
- Develop and implement policy, planning ,and program oversight

NOAA conducts activities in several program areas within the Under Secretary and Associate Offices and NOAA Wide Corporate Services and Agency Management to achieve these objectives. These activities are composed of three primary programs:

1. NOAA's Under Secretary and Associate Offices (USAO)

USAO provides the top leadership and management of NOAA, and represents NOAA at the executive level with other Federal agencies, Congress, NOAA stakeholders, and private industry.

The Offices of the Under Secretary/Assistant Secretary and Deputy Under Secretary:

These offices provide the highest level of NOAA leadership. Program activities consist of formulating and executing policies for achieving NOAA objectives, responding to Executive Branch policy decisions, and exercising delegated authority in committing NOAA to courses of action. USAO also consists of the following additional Staff Offices covering specific areas of activities:

Office of Legislative and Intergovernmental Affairs (OLIA): This office is responsible for devising and implementing the legislative strategy to carry out NOAA's initiatives requiring Congressional action. OLIA articulates the views of NOAA, including its components, on Congressional legislative initiatives. OLIA responds to requests and inquiries from Congressional committees, individual congressional members, and their staff. It coordinates Congressional oversight activities involving NOAA, as well as the appearances of NOAA's witnesses and the interagency clearance of all Congressional testimony. OLIA serves as the primary liaison for NOAA with the members and staff of Congress. The office is also responsible for the planning, direction, and coordination of legislative programs that are of immediate concern to the Office of the Under Secretary.

Office of Communications and External Affairs: This office is the principal point of contact for NOAA programs with the public and the news media. Its staff advises NOAA and other Departmental officials on all aspects of media relations and communication issues. The Office ensures that information provided to the news media by NOAA is current, complete, and accurate. It also ensures that all applicable laws, regulations and policies involving the release of information to the public are followed so that maximum disclosure is made without jeopardizing investigations and prosecutions, violating rights of individuals, or compromising national security. Activities address a variety of unique audiences: media relations; non-government organizations; state, tribal, territorial, regional and local government; and the general public.

Office of International Affairs (OIA): This office coordinates NOAA and other leadership officials' relationship with international programs, as directed by the Office of the Under Secretary. The Director of the Office of International Affairs exercises a leadership role in

establishing policies, guidelines, and procedures for NOAA's international programs. Within DOC, NOAA OIA works closely with the International Trade Administration on a broad spectrum of issues including seafood exports, export control issues, and information exchange on countries and regions. Outside of DOC, NOAA OIA works closely with the State Department, the U.S. Agency for International Development, and others, to represent U.S. interests abroad in NOAA mission areas.

Office of the Federal Coordinator for Meteorology (OFCM): This office establishes procedures for systematic and continuing review of national basic specialized meteorological and oceanographic requirements for services and supporting research. It also brings Federal agencies concerned with international activities and programs in meteorological and oceanographic programs into close consultation and coordination.

Office of General Counsel (OGC): NOAA's Office of General Counsel provides legal advice, review, and representation on a host of complex matters arising from the fulfillment of NOAA's mission to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs. In doing so, NOAA OGC ensures NOAA management decisions are made with necessary consideration of proper legal requirements, procedures, and options. NOAA OGC's activities conducted with program resources include Magnuson-Stevens Reauthorization Act implementation; National Marine Sanctuaries Act consistency appeals; enforcement of fisheries and species conservation regulations; natural resource damage assessment and recovery, including litigation to recover damages in connection with the Deepwater Horizon oil spill; support of legislative proposals, including Coral Reef Conservation and Coastal Zone Management legislation; and support of Law of the Sea Convention implementation obligations.

Office of Strategic Initiatives and Partnerships: NOAA's Office of Strategic Initiatives and Partnerships is located under the Office of the Under Secretary, and it focuses on establishing and sustaining current public-private partnership relationships that support NOAA and Department of Commerce interests. The Director engages across Department of Commerce (DOC) bureaus to support NOAA business development, innovation, and infusion activities with existing and emerging markets and identifies specific trade, technology, and science-based partnership activities appropriate to supporting and leveraging NOAA and DOC mission areas. The Director also conducts outreach to high-level constituents in both the business and non-governmental organization communities and forms connections with agencies, on an event-driven basis. The Director works closely with the Office of Communications and External Affairs to leverage its ongoing work in forming strategic partnerships and messages for the Under Secretary.

2. NOAA Wide Corporate Services and Agency Management

Acquisition and Grants Office (AGO): AGO supports NOAA Line and Staff Offices and a number of other DOC bureaus, providing the planning, solicitation, award, administration, and close-out of approximately 15,000 acquisition and 4,000 financial assistance actions annually. Of these, approximately 200 acquisition actions and 250 grant awards are of high societal impact, and involve major systems or are high risk programs. Through these functions, AGO helps NOAA execute its day-to-day responsibilities and assists the agency in providing critical services to the Nation. The success of DOC and NOAA in their accomplishment of missions and goals is largely dependent on AGO's ability to obligate over \$2 billion annually in accordance with statutory and regulatory requirements.

Office of Chief Administrative Officer (OCAO): OCAO is responsible for NOAA's facility management program, including capital investment planning and management for NOAA's substantial facility portfolio totaling over \$5 billion in owned and leased facilities; facility construction and modernization; and real and personal property management. The OCAO manages NOAA's safety, environmental compliance, and energy efficiency programs; ensures continued NOAA-wide compliance with Export Administration Regulations; and oversees NOAA's Office of Inspector General and Government Accountability Office audit coordination and resolution program. The OCAO also manages NOAA's Freedom of Information Act compliance, competitive sourcing program, administrative issuances program, civil rights program, and compliance with Homeland Security Presidential Directive (HSPD-12) requirements.

Office of the Chief Financial Officer (CFO): The CFO serves as the principal financial manager for an organization with appropriated resources of about \$5 billion and whose recorded capital asset value exceeds \$7 billion. The CFO's Office also has the responsibility under the CFO Act to provide the leadership necessary for NOAA to obtain a yearly-unqualified opinion in the audit of its consolidated financial statements. The areas under the direction of the CFO are the Budget Office, the Finance Office, the DOC Working Capital Fund (WCF), and Common Services.

The Budget Office is responsible for the oversight and management of NOAA's budget process. It develops overall guidance, reviews proposals, and prepares supporting justification and documentation. This includes coordinating the preparation of NOAA budget submissions to DOC, OMB and the Congress, including data on budget authority, obligations, outlays, permanent positions, and full-time equivalent employment. The Budget Office also provides for the proper allocation and control of the execution of all budgetary resources as required under the Congressional Budget and Impoundment Act of 1974 (31 U.S.C. 11) and related statutes, and as specified by OMB. The Budget Office also maintains a staff that focuses on outreach and communication, particularly with the staff of Congressional Appropriations committees, as well as other Executive Branch agencies.

The Finance Office works to ensure that NOAA's consolidated financial statements and reports accurately reflect NOAA's fiduciary status at the end of the fiscal year, as required of all government agencies under the CFO Act of 1990. It operates NOAA's financial management system (the Commerce Business System (CBS)) to ensure that NOAA managers have access to timely financial data necessary to make informed programmatic decisions. The Finance Office is also responsible for ensuring that NOAA's bills are paid in a timely manner. In addition, the Finance Office:

- Provides accounting and payments services. The Finance Office plans, designs, and coordinates standards, practices, and procedures on financial operations with the objective of providing financial management service and support to NOAA programs.
- Prepares internal and external accounting and financial reports on NOAA appropriations, including the audited financial statements required by the CFO Act. The objective is to maintain the Department's clean financial opinion without any material weaknesses and to correct any findings.
- Manages NOAA's financial management system. The objective is to plan, develop, and implement changes to CBS throughout NOAA to ensure that NOAA programs have all necessary financial information.

The DOC Accounting System (CBS application) supports the NOAA CFO in ensuring compliance with legal/regulatory/executive requirements, and enables NOAA program managers to execute the budget while enforcing funds control. The CBS application requires that the application, along with associated interfaces and feeder systems, be operated, maintained and enhanced. Based on the maintenance and enhancements that are designed, developed and implemented, these need to be tested to ensure that integrity, availability, and confidentiality are maintained within the context of a secure application environment. The CBS user community, which consists of over 10,000 users across the agency, requires ongoing helpdesk services, training, and, depends on system maintenance and enhancement releases. Ongoing maintenance and support of CBS allows NOAA to maintain compliance with OMB Circular A-123 and the Federal Information Security Management Act (FISMA).

The NOAA implementation of the CBS application develops interfaces, maintains the NOAA Data Warehouse and portal (including associated feeder systems), and conducts quality assurance tests to ensure that the CBS application and all associated feeder systems produce reliable, accurate, and verifiable data. This helps to ensure NOAA compliance with legal, regulatory, and executive requirements; and allows NOAA managers to have access to the financial data necessary to make informed programmatic decisions and perform funds management.

The Common Services (CS) account supports the NOAA CFO in providing resources for NOAA-wide activities and services provided through the DOC and other agencies through Memoranda of Understanding and/or Interagency Agreements. CS funds the entire NOAA Workman's Compensation costs; DOC's Departmental Management Advances and Reimbursements (A&R) accounts consisting of special services and tasks; NOAA-wide Spectrum Management costs; off-site health services at the Census Bureau Health Unit; OPM USAJobs portal usage and maintenance; and other miscellaneous services and products.

Workforce Management Office (WFMO): The Workforce Management Office provides policies, programs, and processes that facilitate the recruitment, hiring, development, and retention of a diverse, highly skilled, motivated, and effective workforce capable of accomplishing the Agency's mission. This office provides NOAA-wide leadership workforce management functions including strategic human capital planning, labor-management and employee relations, performance management and incentive awards, executive resources, distance learning, leadership development, training and career development, as well as human resources data management and automation initiatives.

Program Planning and Integration (PPI): The Office of Program Planning and Integration (PPI) was established in June 2002 to foster integration and strategic management among NOAA Line Offices, Staff Offices, and councils. PPI ensures that agency investments and actions are guided by the NOAA strategic plan; are based on sound social and economic analysis; adhere to executive and legislative science, technology and environmental policy; respond to regionally-specific stakeholder needs; and integrate the full breadth of NOAA's resources, knowledge and talent to meet its stated mission goal.

PPI has several facets that work together to corporately assist the development and execution of NOAA's strategy to achieve NOAA's goals. In particular, PPI leads the development of the strategic plan and promotes cross-NOAA collaborations to achieve objectives. With the implementation of NOAA's Next Generation Strategic Plan in FY 2011, NOAA used the opportunity to reassess the budget formulation process and to take steps to implement processes that provide organizational efficiencies. PPI leads NOAA's

system for Strategy, Execution and Evaluation (SEE) in order to align strategic priorities to the budget and provide meaningful evaluation of the budget execution. In addition, PPI coordinates NOAA's internal and external collaborative networks by promoting coordination of NOAA's diverse assets within eight Regions and encourages collaboration with internal stakeholders and external partners to respond to stakeholders' unique regional challenges and requirements. PPI also coordinates all NOAA activities implementing the National Environmental Policy Act (NEPA) and ecology and environmental conservation matters, and serves as the focal point for Department NEPA compliance and implementation. PPI ensures that information regarding the social science benefits of NOAA's programs is collected corporately and clearly conveyed to the public. In FY 2012, PPI absorbed the staffing and functions of the Program Analysis and Evaluation Office (PA&E). PA&E evaluated programs relative to NOAA's mission and capabilities, identifying the linkage between program requirements and available resources.

Payment to the DOC Working Capital Fund (WCF): The WCF was established to provide centralized services to the Line Offices and Staff Offices in the most efficient and economical manner possible by the DOC to NOAA. Organizational units within DOC provide the administrative, legal, information technology and financial support needed to accomplish NOAA's overall mission. The Working Capital Fund was established pursuant to 5 USC 607 (15 USC 1521). Unlike other DOC bureaus, the NOAA contribution to the WCF is provided by specific allocation within the NOAA appropriation.

3. Office of the Chief Information Officer (OCIO)

OCIO is responsible for providing information technology (IT) leadership, mission assurance, and high-performance computing capabilities. The OCIO:

- Promotes the effective use of IT to accomplish NOAA's mission
- Provides advice to NOAA management on information resources and information systems management
- Promotes and shapes an effective strategic and operational IT planning process for NOAA
- Directs the improvement of NOAA operations and service delivery using IT systems
- Coordinates the preparation of the IT components of NOAA's budget
- Oversees selected NOAA-wide operational IT systems and services
- Strengthens the security posture of NOAA's enterprise IT investments
- Develops policies and procedures and implements the provisions of the Clinger-Cohen Act, the E-Government Act, the Paperwork Reduction Act, and other statutory requirements regarding the acquisition, management, and use of information and IT resources
- Is committed to modernizing the IT infrastructure via the implementation of the Federal Data Center Consolidation Initiative and Cloud First activities as well as improving the cost effectiveness, efficiency, and service of operations to support NOAA's mission

Schedule and Deliverables:

CFO Schedule and Deliverables:

Deliverables	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Provide Enacted Fund Availability Table	Q1	Q1	Q1	Q1	Q1	Q1	Q1
Provide funding allocations to NOAA Line Offices	15 days after enactment	15 days after enactment	15 days after enactment	15 days after enactment	15 days after enactment	15 days after enactment	15 days after enactment
Complete apportionment submission to DOC	10 days after enactment	10 days after enactment	10 days after enactment	10 days after enactment	10 days after enactment	10 days after enactment	10 days after enactment
Identify corrective action plans for Audit Findings	1-30 days after receipt of Final Findings	1-30 days after receipt of Final Findings	1-30 days after receipt of Final Findings	1-30 days after receipt of Final Findings	1-30 days after receipt of Final Findings	1-30 days after receipt of Final Findings	1-30 days after receipt of Final Findings
Review of Execution spend plan for Staff Offices	monthly	monthly	monthly	monthly	monthly	monthly	monthly
Complete Direct Bill analysis and distribution of Direct Bill Funds	Q2	Q2	Q2	Q2	Q2	Q2	Q2
Complete Blue Book for President's Budget Request	Q2	Q2	Q2	Q2	Q2	Q2	Q2
Document and track all Congressional Appropriation Reports	monthly	monthly	monthly	monthly	monthly	monthly	monthly
Complete Congressional Budget Submission	Q2	Q2	Q2	Q2	Q2	Q2	Q2

PPI Schedule and Milestones:

- Corporate Portfolio Analysis – 2nd Quarter
- Annual Guidance Memorandum – 4th Quarter
- Progress to Plan – 4th Quarter
- NEPA Analysis/Reviews – All Quarters
- Economic Statistics – All Quarters
- Performance Measure Analysis – 4th Quarter

PPI Deliverables:

1. Corporate Portfolio Analysis - Analyzes Implementation Plans to identify key issues and corporate priorities for the next budget formulation phase; draws attention to long term concerns for Leadership; concludes with NEP/NEC Decision Memo.
2. Annual Guidance Memorandum - provides NOAA wide annual guidance focusing analytical attention based on the Strategic Plan, Administration priorities, recent execution/evaluation, fiscal and policy environment. It also identifies NOAA's near term priorities and initial fiscal guidance for planning cycles.
3. Progress to Plan - Assesses progress toward NGSP objectives; evaluates executed programs to determine what has been working and what might be changed for better performance.
4. NEPA Analysis and Reviews - NOAA is charged by the White House Council on Environmental Quality (CEQ) regulations with implementing NEPA policy from a corporate (NOAA-wide) perspective. NOAA actions requiring NEPA review include: Fisheries management and regulations, Endangered Species Act/Marine Mammal Protection Act permits/authorizations, Habitat restoration plans, National Marine Sanctuaries and National Estuarine Research Reserves site designation and management, NOAA-wide administered grant programs, and construction activities such as science laboratories, ground stations for, satellites and NWS Weather Forecast Offices.
5. Economic Statistics - Ensures that information regarding the social science benefits of NOAA's programs is corporately collected and clearly conveyed via appropriate media such as Web sites and printed materials.
6. Performance Measure Analysis – The Government Performance and Results Act (GPRA), enacted by Congress in 1993, instituted formal requirements for strategic planning and performance measurement in the Federal government. GPRA requires that agencies develop strategic plans, annual performance plans, and annual program performance reports.

OCIO Schedule and Deliverables:

Activity	Description of Milestone	Planned Completion Date
IT Administration and Regulation	Prepare IT Implementation Plan	Q1 Annually
	Prepare NOAA Operational IT Plan	Q2 Annually
	Prepare NOAA Strategic IT Plan	Q3 Annually
	Maintain and/or improve the overall ratings of NOAA Major Investments on the Federal IT Dashboard	Quarterly
IT Security	Complete Risk Management Framework (RMF) and Continuous Monitoring packages in accordance with the CIO Council-approved schedule	Quarterly
	Complete Contingency Plan updates and testing in accordance with DOC policy, NIST Guidance, and NOAA policy	Quarterly
	Administer annual NOAA IT security awareness training	Q3 Annually
	Complete annual FISMA Report	Q4 Annually
IT Program Management	Implement enterprise-wide IT governance	Quarterly
	Provide cost-effective IT infrastructure services across the enterprise	Quarterly
Enterprise Architecture	Leverage service-based IT across multiple goals and business needs	Quarterly
	Facilitate implementation of an enterprise-wide data management architecture	Quarterly
	Facilitate planning and transition to mission services upon an enterprise infrastructure services architecture	Quarterly
	Update Data Center Consolidation Inventory and Implementation Plan	Q4 Annually
IT Support for Administrative Systems	Communicate efficiently and securely through a modernized infrastructure	Quarterly
	Deliver customer-focused IT services for the enterprise	Quarterly
Homeland Security	Plan & conduct annual NOAA HQ Continuity of Operations (COOP) exercise	Q3 Annually
	Update NOAA COOP Plan	Q4 Annually

Performance Goals and Measurement Data:

AGO

Performance Measure: Timeliness of acquisition actions	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
	Actual	Target	Target	Target	Target	Target	Target
	87%	85%	85%	85%	85%	85%	85%
Description: This measure tracks the percentage of on-time acquisition actions as measured against NOAA's published Procurement Action Lead Time (PALT) schedule. Timeliness is measured against the published procurement action lead time metrics (for each acquisition package) and is measured from the receipt of a requisition to the date of award. The dates are tracked in the CRequest/CBuy procurement system. Percentages represent meeting the published PALT for that transaction.							

Performance Measure: Timeliness of grants actions	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
	Actual	Target	Target	Target	Target	Target	Target
	99%	85%	85%	85%	85%	85%	85%
Description: This measure tracks the percentage of on-time grants actions as measured against NOAA's published Procurement Action Lead Time (PALT) schedule. Timeliness is measured against the published lead time metrics (for each grant application) and is measured from the receipt of an application to the date of award. The dates are tracked in the Grants Online system. Percentages represent meeting the published PALT for that transaction.							

Performance Measure: Customer Satisfaction with Service	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
	Actual	Target	Target	Target	Target	Target	Target
	4.6	3.5	3.5	3.5	3.5	3.5	3.5
Description: This measure is the average customer rating on customer satisfaction surveys. This measure tracks the satisfaction level of AGO customers based on a rating of 1 through 5, with 5 representing the highest satisfaction level. Performance will be tracked through DOC Office of Acquisition Management surveys, semi-annual customer surveys, individual action customer surveys, and outreach by the Director of AGO.							

OGC

Performance Measure: Availability of legal support to programs	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
	Actual	Target	Target	Target	Target	Target	Target
	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%
Description: This measure serves as an indicator of the availability of legal resources to support program requirements.							

CFO

Performance Measure: Complete End of Year Execution Reviews for NOAA Line Offices	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	100%	100%	100%	100%	100%	100%	100%
Description: This performance measure relates to the Target levels for the Budget Office to complete the End of Year Execution Reviews for all NOAA Line Offices.							

Performance Measure: Expend CFO Office Funding by Year End	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%
Description: This performance measure relates to the Target levels for the Budget Office to expend all appropriated funding by the end of Fiscal year.							

Performance Measure: Prompt Payment of Vendor Invoices w/o penalty	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	98%	98%	98%	98%	98%	98%	98%
Description: This performance measure relates to the target levels for the Finance Office to pay all the vendor invoices promptly and without any penalties.							

Performance Measure: Financial Statements and Regulatory reports due date	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	100%	100%	100%	100%	100%	100%	100%
Description: This performance measure relates to the Target levels for the Finance Office to submit all the Financial Statements and Regulatory Reports by the due date. Previously, the performance targets for this measure were reported at 98%, which was an error. This reflects the correct targets.							

OCIO

Performance Measure: Percentage of systems in operation with full Authorization to Operate (ATO)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	100%	100%	*	*	*	*	*
Description: The Certification and Accreditation (C&A) process requires a fully-tested system with a complete set of security documentation (e.g., approved security plan, risk assessment, disaster recovery plans, security testing), prior to being deemed certified. All systems in NOAA (approximately 120-150 at any given point in time) have been inventoried for their relative ranking as National Critical, Mission Critical, or Business Essential. This IT measure reports the percentage of NOAA IT Systems that have completed the C&A process and operate under a Full Authorization to Operate (ATO). Systems with full Authorization to Operate have completed Certification & Accreditation (C&A) prescribed by FISMA – security controls are in place for those systems and their FISMA documentation has been verified. * Target is updated annually in accordance with the DOC Balanced Scorecard (BSC).							

Performance Measure: Percentage of Plans of Action and Milestones (POA&Ms) closed on- time.	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	N/A*	100%	*	*	*	*	*
Description: This IT measure reports the total number of POA&Ms closed as scheduled or ahead of schedule divided by the total number of POA&Ms scheduled to be closed during the quarter, as a percentage, for all of NOAA's FISMA reportable systems. *This is a new measure beginning in FY 2014. Target is updated annually in accordance with the DOC Balanced Scorecard (BSC).							

Performance Measure: Web Operations Center (WOC) Availability	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	100%	99%	99%	99%	99%	99%	99%
Description: This IT measure reports the availability of the Web Operations Center (WOC), which is operated and maintained by OCIO, expressed as the percentage of uptime in a given year. Network engineers monitor the system and measure the percentage of time that it is available. Availability is inversely proportional to the total downtime in a given year, and the total downtime is simply the sum of the duration of each outage. Decreasing the duration and/or frequency of outages increases availability.							

Performance Measure: Availability of Unified Messaging Service (UMS)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%
Description: This IT measure reports the availability of the NOAA Unified Messaging Service (UMS), which is operated and maintained by OCIO, expressed as the percentage of uptime in a given year. Network engineers monitor the system and measure the percentage of time that it is available. Availability is inversely proportional to the total downtime in a given year, and the total downtime is simply the sum of the duration of each outage. Decreasing the duration and/or frequency of outages increases availability.							

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

Under Secretary and Associate Offices: Under Secretary and Associate Offices (USAO) Base (Base Funding: \$27,586,000 and 154 FTE; Program Change: -\$420,000 and 2 FTE): NOAA requests a decrease of \$420,000 and 2 FTE for a total of \$27,166,000 and 152 FTE to reflect on-going efforts to control overhead costs.

Proposed Actions:

NOAA proposes to eliminate two public affairs positions in the Under Secretary and Associate Offices through attrition and position management, as part of larger efforts to control overhead costs. This decrease will not impact NOAA's ability to provide media relations and communications services for NOAA programs, Department officials, and the news media.

NOAA will terminate non-essential travel, contracts, and contracts related to purchasing supplies and other expenses. NOAA will continue to provide the leadership oversight, policies oversight, mission assurance, and proper legal requirements, procedures, and options.

Base Resource Assessment:

The base resources for this activity are described in the base narrative for the NOAA Wide Corporate Services and Agency Management.

Schedule and Milestones:

N/A

Deliverables:

N/A

Performance Goals and Measurement Data:

N/A

PROGRAM CHANGE PERSONNEL DETAIL

Budget Program: Program Support
Sub-Program: Corporate Services
Program Change: Under Secretary and Associate Offices Base: Under Secretary and Associate Offices Decrease

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Public Affairs Specialist	Washington, DC	ZA-IV	-2	89,033	(178,066)
Subtotal			<u>-2</u>		<u>(178,066)</u>
2013 Pay Adjustment (0.5%)					<u>(890)</u>
Total					<u>(178,956)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-2		(178,956)
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(178,956)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-2
Other than full-time permanent	<u>0</u>
Total	-2
Authorized Positions:	
Full-time permanent	-2
Other than full-time permanent	<u>0</u>
Total	-2

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Program Support
Sub-program: Corporate Services
Program Change: Under Secretary and Associate Offices Base: Under Secretary and Associate Offices Decrease

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	(179)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	(179)
12 Civilian personnel benefits	(47)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(194)
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	(420)

THIS PAGE INTENTIONALLY LEFT BLANK

NOAA Wide Corporate Services & Agency Management Base: Acquisitions and Grants Management (Base Funding: \$14,668,400 and 105 FTE; Program Change: \$646,000 and 0 FTE): NOAA requests an increase of \$646,000 and 0 FTE for a total of \$15,314,400 and 105 FTE to support acquisition and grants services for NOAA.

Proposed Actions

With the requested increase, NOAA's Acquisitions and Grants office will increase the timeliness of contract actions by five percent. This increase will be used to augment the Federal AGO workforce with contractor staff to ensure successful obligation of the annual volume of contractual and financial assistance actions. Additionally, the funding will allow retention of contractor staff to provide Government Accountability Office (GAO-06-594, NOAA Acquisition Function) recommended reviews of procurement actions conducted by 47 collateral duty contracting officers and Government Purchase Cardholders, who similarly exercise delegated procurement authority. Effective oversight is essential to ensure adherence to Federal Acquisition Regulation (FAR), Departmental and NOAA policy and to protect NOAA from instances of fraud, waste and abuse.

Statement of Need and Economic Benefits

NOAA AGO provides annual acquisition and financial assistance support to DOC and NOAA valued at approximately \$2 billion (\$1 billion in financial assistance awards and \$1 billion in contract awards). The success of DOC/NOAA's acquisition and grants programs is best described by the ability to obtain the necessary research, equipment and services needed, on time, and at the best value to the taxpayer. This accomplishment is largely dependent on the ability of NOAA AGO to successfully obligate these funds in accordance with statutory and regulatory requirements. Once obligation has occurred, oversight and administration of those contracts and grants is crucial to reduce risk of cost overruns, substandard contractor/grantee performance and agency embarrassment.

DOC also continues to receive intense scrutiny of its acquisition and grants function. In the Department of Commerce Office of Inspector General's *Semi-Annual Report to Congress September 2011*, the number four challenge for 2012 was, "The need to manage acquisition and contract operations more effectively to obtain quality goods and services in a manner most beneficial to taxpayers."

Key issues included:

- developing and retaining a qualified acquisition workforce;
- ensuring high ethical standards in the acquisition workforce and in procurement practices;
- strengthening processes to govern the appropriate use of high-risk contracts and to maximize competition;
- achieving efficiency and savings in acquiring goods and services, and improving oversight and tracking of contract savings;
- and delivering cost savings and efficiency on major IT investments.

Deliverables and Performance Goals

This increase supports the Department of Commerce Strategic Goal of "Organizational Excellence" and the NOAA High Performing Organization objective in NOAA's Strategic Plan.

Performance Measure: Timeliness of contract and grant actions	FY 2012 Actuals	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	90% for contracts 90% for grants	90% for contracts 90% for grants	90 % for contracts 90% for grants	90% for contracts 90% for grants	90% for contracts 90% for grants
Without Increase	87% for contracts 99% for grants	85%+for contracts 85%+for grants	85%+for contracts 85%+for grants	85%+for contracts 85%+for grants	85%+for contracts 85%+for grants	85%+for contracts 85%+for grants	85%+for contracts 85%+for grants
<p>Description: This measure tracks the percentage of on time contract and grants actions as measured against NOAA's published Procurement Action Lead Time (PALT) schedule. Timeliness is measured against the published procurement action lead time metrics (for each acquisition or grants package) and is measured from the receipt of a requisition or application to the date of award. The dates are tracked in the CRequest/CAward procurement system and Grants Online. Percentages represent meeting the published PALT for that transaction.</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Program Support
Subprogram: Corporate Services
Program Change: NOAA Wide Corporate Services and Agency Management Base:
Acquisitions and Grants Management

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	646
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>646</u>

NOAA Wide Corporate Services and Agency Management Base: NOAA Information Technology (IT) Infrastructure (Base Funding: \$28,567,100 and 49 FTE: Program Change: -\$772,000 and 0 FTE): NOAA requests a decrease of \$772,000 and 0 FTE for a total of \$27,795,100 and 49 FTE to support a NOAA-wide IT Efficiency initiative.

Proposed Actions:

The decrease of \$772,000 will be realized as a cost savings within the NOAA IT Infrastructure by the use of enterprise-wide IT Infrastructure initiatives. Initiatives such as gradual transfer of certain IT operations to the Cloud will begin as early as FY 2014 and will include up to five low-impact OCIO Infrastructure FISMA systems. Additionally, participation in at least four strategically-sourced blanket purchase agreements (BPAs) will enable savings.

Base Resources Assessment:

The base resources for this activity are described in the NOAA Wide Corporate Services and Agency Management base narrative.

Schedule and Milestones:

N/A

Deliverables:

- Licensing Blanket Purchase Agreements – more efficient ordering, cost savings
- IT Service desk – simpler infrastructure, quality control, faster service, cost savings
- Enterprise Wide Security Assurance and Accreditation contracts – quality control, greater accountability, efficiency, cost savings
- Database consolidation – simpler infrastructure, easier oversight, cost savings

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target*	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Number of enterprise services operating in the Cloud							
With Decrease	N/A	N/A	3	3	4	4	4
Without Decrease	N/A	N/A	3	3	4	4	4
Description: Enterprise services include, but should not be limited to, Unified Messaging Service (email and collaborative tools) and data center consolidation. *The gradual transfer of certain IT operations to the Cloud will begin as early as FY 2014.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Development, maintenance and use of Blanket Purchase Agreements (BPAs)							
With Decrease	N/A	N/A	2	3	5	5	5
Without Decrease	N/A	N/A	2	3	5	5	5
Description: Blanket purchase agreements (BPAs) allow approved agencies to order and pay for supplies and services that they purchase from approved vendors several times a year. The agreements simplify the government purchasing process.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Program Support
Sub-program: Corporate Services
Program Change: NOAA Wide Corporate Services and Agency Management Base: NOAA
Information Technology (IT) Infrastructure

Object Class		2014 Decrease
11	Personnel compensation	
11.1	Full-time permanent	0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	<u>0</u>
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	(772)
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	<u>0</u>
99	Total obligations	<u>(772)</u>

NOAA Wide Corporate Services and Agency Management Base: Eliminate Warehouse Support in National Capital Area (Base Funding: \$23,548,000 and 133 FTE: Program Change: -\$1,300,000 and 0 FTE): NOAA requests a decrease of \$1,300,000 and 0 FTE for a total of \$22,248,000 and 133 FTE to eliminate warehouse support for NOAA in the Washington, DC, metro area.

Proposed Actions:

NOAA proposes to eliminate warehouse support for the NOAA warehouse in Brandywine, MD, currently managed and paid for by OCAO. NOAA will close the warehouse space, eliminating the need for contractor support, utilities and rent costs. Currently, NOAA CAO sponsors the warehouse space for: AGO, NESDIS, OMAO, NMFS, NOS, NWS, OAR, OCAO, Office of Education, and USAO as well as BIS, ITA, FAA, and FERC. The space is used for storage of various supplies, exhibits, Heritage Assets, publications, equipment (capitalized, accountable or non-accountable) and excess property waiting on disposition instructions from GSA. By eliminating operational warehouse support within Corporate Services base, NOAA Line Offices and other DOC bureaus are exploring alternative storage arrangements and opportunities for re-scoping storage needs.

Base Resources Assessment:

The base resources for this activity are described in the NOAA Wide Corporate Services and Agency Management base narrative.

Schedule and Milestones:

N/A

Deliverables:

N/A

Performance Goals and Measurement Data:

N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Program Support
Sub-program: Corporate Services
Program Change: NOAA Wide Corporate Services and Agency Management Base: Eliminate Warehouse Support

Object Class		2014 Decrease
11	Personnel compensation	
11.1	Full-time permanent	0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	<u>0</u>
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	(1,300)
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	<u>0</u>
99	Total obligations	<u>(1,300)</u>

NOAA Wide Corporate Services and Agency Management Base: Decrease in Core Services (Base funding: \$117,378,000 and 701 FTE; Program Change: -\$1,980,000 and 0 FTE): NOAA requests a decrease of \$1,980,000 and 0 FTE for a total of \$115,398,000 and 701 FTE to reduce services to NOAA internal customers. This reflects on-going efforts to control overhead costs.

Proposed Actions:

With this reduction, NOAA proposes the following actions across the spectrum of core Program Support functions:

- NOAA will terminate and/or reduce contracts associated with purchasing of services, supplies and other expenses.
- NOAA will reduce overall core services to NOAA internal customers resulting in impacts such as cancelled and delayed hires and delayed refresh to IT software.

Base Resources Assessment:

The base resources for this activity are described in the NOAA Wide Corporate Services and Agency Management base.

Schedule and Milestones:

N/A

Deliverables:

N/A

Performance Goals and Measurement Data:

N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Program Support
Sub-program: Corporate Services
Program Change: NOAA Wide Corporate Services and Agency Management Base: Decrease
in Core Services

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(1,980)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	(1,980)

DOC Accounting System: Commerce Business System Operations Increase (Base Funding: \$10,445,000 and 39 FTE; Program Change: +\$510,000 and 0 FTE): NOAA requests an increase of \$510,000 and 0 FTE for a total of \$10,955,000 and 39 FTE to address a shortfall in the CBS program according to the CBS Capital Asset plan.

Proposed Actions:

NOAA requests an increase of \$510,000 to address a shortfall in funding for the Commerce Business System (CBS) program according to the CBS Capital Asset plan.

NOAA owns and supports its own instance of CBS, the Department's financial system. An evaluation in 2012 revealed that NOAA's CBS system was underfunded. The FY 2014 funding is required to effectively operate the system and mitigate the risks of inadequate systems maintenance and support, and delayed generation of financial data and reports. Without additional funding these risks may threaten NOAA's Clean Audit Opinion.

Statement of Need and Economic Benefits:

The FY 2014 request will ensure NOAA's ability to operate and maintain NOAA's instance of the CBS, and provide the ability to:

- apply systems security patches in a timely manner
- ensure that hardware and software maintenance and required technology refreshes are current and supported by the applicable vendors
- improve response to financial management related data calls as NOAA currently receives a data call approximately every two business days
- comply with Federal Financial Management Regulations and Mandates within the required time frames
- support efforts for improving internal controls

Base Resources assessment:

The base resources for this activity are described in the base narrative for the NOAA Wide Corporate Services and Agency Management.

Schedule and Milestones:

N/A

Deliverables:

N/A

Performance Goals and Measurement Data:

Performance Measure: Maintain FISMA Compliance and Clean Audit Opinion	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	FISMA Compliance Maintained	FISMA Compliance Maintained	FISMA Compliance Maintained	FISMA Compliance Maintained	FISMA Compliance Maintained
Without Increase	N/A	N/A	FISMA Compliance Threatened	FISMA Compliance Threatened	FISMA Compliance Threatened	FISMA Compliance Threatened	FISMA Compliance Threatened
Description: FISMA and the NOAA C&A Authority to Operate (ATO) require oversight and review to ensure compliance. Failure to adequately monitor and actively assess controls can create system and security vulnerabilities which would result in FISMA non-compliance and loss of ATO for the application. FISMA compliance is directly related to NOAA's ability to maintain NOAA's Clean Audit Opinion.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Program Support
Sub-program: Corporate Services
Program Change: DOC Accounting System: Commerce Business System Operations Increase

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	332
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	178
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	510

IT Security: Enterprise IT Security Decrease (Base Funding: \$9,311,000 and 0 FTE: Program Change: -\$990,000 and 0 FTE): NOAA requests a decrease of \$990,000 and 0 FTE for a total of \$8,321,000 and 0 FTE to support a NOAA-wide IT Efficiency initiative and cost reduction.

Proposed Actions:

A reduction of \$110,000 to the IT Security budget will be accomplished through NOAA’s IT Efficiency Initiative. This initiative includes consolidated buys of contract labor and hardware through NOAALink and reduced communications costs through various data center and network consolidation efforts.

NOAA expects to achieve savings from a reduction in costs on the NCSC Contract for Security Operations Center Support, a reduction in communications costs to the Fairmont Facility in West Virginia, and a reduction in cost for budgeted IT security Assessment & Authorization activities for systems which support IT security.

The NOAA Security Operations Center (SOC) will continue to add devices at a pace of 700 per quarter and our Security Event logging ability of over 5 billion events per week shall not be impacted by the reduction in the budget. The staffing of the NCSC, by providing the 24x7 coverage at the SOC, will not be impacted by this cost saving

A reduction of \$880,000 to the IT Security budget will be accomplished through cost reduction activities by delaying the purchase of components to enhance security with near “real-time” monitoring of events. The purchase of hardware and professional services to install the devices used to monitor NOAA IT shall be scaled back to provide the cost savings. The initiatives impacted include:

- Trusted Internet Connections (TIC) - Consolidate external Internet traffic and ensure a set of common security capabilities for situational awareness and enhanced monitoring.
- Operations and monitoring of NOAA IT devices.

Base Resources Assessment:

The base resources for this activity are described in the Corporate Services base narrative.

Schedule and Milestones:

Description of Milestone	Planned Completion Date
NCSC: Support 24x7 operations	10/2013
NCSC: Enhance security services at second TIC Access Provider (TICAP)	12/2013
NCSC: Enhance security services at third TICAP	04/2014
NCSC: Enhance security services at fourth TICAP	12/2014

Description of Milestone	Planned Completion Date
Start enhanced monitoring capability of remaining NOAA Moderate Impact FISMA Systems	12/1/2013
Enhanced monitoring capabilities for scheduled NOAA High Impact FISMA Systems	3/1/2014

Deliverables:

- OCIO expects each of the four NOAA Trusted Internet Connection Access Providers (TICAPs) to be 90 percent compliant with the TIC v2.0 set of standards, with the projected bandwidth to support the IT Security Services across the enterprise
- Acquisition Plan for Monitoring Hardware and Professional Services
- Test plan Results Document for backup NOAA Network SIEM
- SLAs for High Impact Systems for NOAA0100 SOC Services
- SLAs for Moderate Impact Systems for NOAA0100 SOC Services

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Percentage of systems in operation with full Authorization to Operate							
With Decrease	N/A	N/A	*	*	*	*	*
Without Decrease	100%	100%	*	*	*	*	*
<p>Description: The Cyber Security Assessment and Authorization (A&A) process requires a fully-tested system with a complete set of security documentation (e.g., approved security plan, risk assessment, disaster recovery plans, security testing), prior to being deemed certified. All systems in NOAA (approximately 100-130 at any given point in time) have been inventoried for their relative ranking as National Critical, Mission Critical, or Business Essential. This IT measure reports the percentage of NOAA IT Systems that have completed the A&A process and operate under a Full Authorization to Operate (ATO). Systems with full Authorization to Operate have completed A&A prescribed by FISMA – security controls are in place for those systems and their FISMA documentation has been verified.</p> <p>* Target is updated annually in accordance with the DOC Balanced Scorecard (BSC).</p>							

Performance Measure: Percentage of Plans of Action and Milestones (POA&Ms) closed on-time	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	*	*	*	*	*
Without Decrease	15%	100%	*	*	*	*	*
<p>Description: This IT measure reports the total number of POA&Ms closed as scheduled or ahead of schedule divided by the total number of POA&Ms scheduled to be closed during the quarter, as a percentage, for all of NOAA's FISMA reportable systems. * Target is updated annually in accordance with the DOC Balanced Scorecard (BSC).</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Program Support
Sub-program: Corporate Services
Program Change: IT Security: Enterprise IT Security

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	(80)
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(250)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	(660)
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	(990)

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES
SUB-PROGRAM: NOAA EDUCATION PROGRAM

The objectives of this sub-program are to:

- Provide advice and counsel to the Under Secretary of Commerce for Oceans and Atmosphere in matters pertaining to education
- Coordinate educational activities across NOAA
- Develop NOAA's Education Strategic Plan and policy to help ensure that NOAA's education programs and activities are based on NOAA science and support the agency's cross-cutting priority of promoting environmental literacy

Office of Education

This activity includes the Office of Education (renamed from NOAA Education Program Base).

The Office of Education coordinates education activities throughout NOAA through the NOAA Education Council and its working groups. The Competitive Education Grants promote public environmental literacy and fund a broad range of informal and formal education projects implemented on state to national scales. Office of Education also supports EPP/MSI, Hollings Scholarships, CSC agreements, and Education Council and Interagency working group efforts.

Educational Partnership Program/Minority Serving Institutions

The Educational Partnership Program/Minority Serving Institutions (EPP/MSI) provides financial assistance, through competitive processes, to students and to Minority Serving Institutions that train students and conduct research in NOAA mission sciences. The program's goal is to increase the number of students, particularly from underrepresented communities, who are trained and graduate in sciences directly related to NOAA's mission. FY 2012, 87 EPP students graduated in NOAA mission fields, including 70 students from underrepresented groups. Forty-two of these students were hired by NOAA, NOAA contractors and other natural resource and science agencies at the Federal, state, local and tribal levels; private sector and academia. The program resulted in 89 collaborative research projects undertaken by NOAA and EPP in support of the NOAA mission.

Ernest F. Hollings Scholarship Program

The National Oceanic and Atmospheric Administration (NOAA) Ernest F. Hollings (Hollings) scholarship program is designed to:

1. increase undergraduate training in oceanic and atmospheric science, research, technology, and education and foster multidisciplinary training opportunities;
2. increase public understanding and support for stewardship of the ocean and atmosphere and improve environmental literacy;
3. recruit and prepare students for public service careers with NOAA and other natural resource and science agencies at the Federal, state and local levels of government; and
4. recruit and prepare students for careers as teachers and educators in oceanic and atmospheric science and to improve scientific and environmental education in the United States.

Based on FY 2014 President's Request of \$5.45 billion, NOAA estimates it will have \$5.45 million for scholarships. Actual funding will be determined as provided in statute at one-tenth of one percent of the annual appropriation. For more information, please visit the Hollings Scholarship website: <http://www.oesd.noaa.gov/scholarships/hollings.html>.

Schedule and Milestones:

FY 2014 – 2018

Educational Partnership Program

- April: Award EPP Undergraduate Scholarships
- August: Fund 4th of 5-Year Cooperative Science Centers financial awards

OED Student Opportunities

- April: Award Hollings Undergraduate Scholarships

Intra/Inter-agency Coordination of STEM Education Activities

- Lead monthly Education Council meetings
- Co-lead monthly Interagency Working Group on Ocean Education meetings
- Lead two monthly education working group meetings
- Participate in 12 meetings of Interagency Working Group on STEM Graduate Fellowships
- Participate in three quarterly meetings of the Committee on Equal Opportunity in Science and Engineering

Competitive Education Grants

- January: Publish Federal Funding Opportunity
- March: Receive and process applications
- May: Conduct peer-review and select subset of applications for funding
- June: Conduct negotiations and submit award packages to Grants Management Division
- September: Issue awards
- October-December: Review progress reports and conduct site visits

Deliverables:

Educational Partnership Program

- Award 9 EPP Undergraduate Scholarships
- Award 4 Cooperative Science Centers Cooperative Agreements

OED Student Opportunities

- Award 110 Hollings Scholarships

Intra/Inter-agency Coordination of STEM Education Activities

- Chair 12 Education Council meetings
- Chair 12 Interagency Working Group on Ocean Education meetings
- Chair 24 education working group meetings

Competitive Education Grants

- Award 12 new competitive education grants
- Review progress reports and conduct sites visits for a portfolio consisting of more than 40 education grants
- Solicit and review more than 150 grant applications annually

Performance Goals and Measurement Data:

Educational Partnership Program Performance Goals and Measurement Data:

Consistent with the recommendations from the National Research Council study of NOAA's education program conducted in 2010, as well as the Department's review through the Balanced Scorecard process, the Office of Education has refined the performance measures for

education programs. FY 2012 data will provide a baseline for these new metrics. The Office of Education has also hired a full-time evaluator responsible for the implementation of NOAA Education's Monitoring and Evaluation framework. As this process progresses it is anticipated that the performance measures will continue to be refined.

Performance Measure: Number of EPP students supported with NOAA funding who are awarded NOAA mission- related STEM post-secondary degrees	FY 2012 Actual	FY 2013 Estimate	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	87	89	76	71	87	50	21
Description: This is a new metric that contributes to NOAA Balanced Score Card measure. This metric represents all components of EPP including the Cooperative Science Centers and Scholarships. The NOAA EPP supports development of programs to educate and graduate students for the next-generation workforce and to increase the number of competent individuals with the knowledge and skills to support NOAA STEM activities. EPP graduates will lead innovation and technologies to enhance NOAA services and stewardship while supporting global competitiveness to advance national economic growth. *Cooperative Science Center Awards end in FY 2016.							

Performance Measure: Number of EPP students from underrepresented communities supported by NOAA funding who are awarded NOAA mission-related STEM post-secondary degrees.	FY 2012 Actual	FY 2013 Estimate	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	70	72	60	64	71	40	20
Description: This is a new metric. It represents all components of EPP using the NOAA-wide Education metrics. In the FY 2013 PB, this metric covered only the CSC component of EPP. This metric contributes to NOAA Balanced Score Card metric. The NOAA EPP funding is developing education/engagement and research programs to increase the number of undergraduate and graduate students, from underrepresented communities, who complete degrees in NOAA mission-relevant STEM disciplines and are prepared to enter NOAA mission-relevant STEM careers or advanced education. http://www.epp.noaa.gov/docs/csc_contributions_STEM_pool.pdf							

Performance Measure: Number of EPP students hired by NOAA, NOAA contractors and other natural resource and science agencies at the Federal, State, local and tribal levels; private sector and academia	FY 2012 Actual	FY 2013 Estimate	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	42	40	40	40	40	30	10
Description: This is a new metric. It represents all components of EPP using the NOAA-wide Education metrics. In the FY 2013 PB, this metric covered only the CSC component of EPP. The EPP aligns with NOAA mission priorities and includes education, engagement, and NOAA STEM research programs to develop students with NOAA mission-critical STEM knowledge and skills. With the collaboration and mentoring by NOAA scientists, program graduates may pursue careers at NOAA and become part of the scientific and technological workforce at resource management agencies, private sector and academia. http://www.epp.noaa.gov							

Performance Measure: Number of collaborative research projects undertaken between NOAA and EPP in support of NOAA mission	FY 2012 Actual	FY 2013 Estimate	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	89	100	90	80	50	30	20
Description: Each NOAA CSC aligns with specific NOAA Line Organizations and collaborates with NOAA scientists and engineers conducting research to better understand the significance of changes in the Earth's oceans, coasts, Great Lakes, weather, and climate. Each Graduate Sciences Program trainee has a NOAA research mentor and works in a NOAA Line Organization supporting the NOAA mission. The data tracked represent the total number of CSC research projects that include a NOAA collaborator, and number of GSP trainee collaborations.							

Competitive Education Grants:

Performance Measure: Institutions served by Competitive Education Grants (actual numbers, NOT in thousands)	FY 2012 Actual	FY 2013 Estimate	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	41	51	60	62	60	48	48
Description: Number of institutions with active multi-year NOAA Competitive Education Grants that support STEM-related education exhibits and programs.							

Performance Measure: K-12 students served by Competitive Education Grants (in thousands)	FY 2012 Actual	FY 2013 Estimate	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	61.7	61.7	61.7	61.7	61.7	61.7	61.7
Description: Number of K-12 students that benefit from learning materials, hands-on experiential activities, and other STEM education programming and resources supported by NOAA's Competitive Education Grants.							

Performance Measure: K-12 teachers and staff served by Competitive Education Grants (in thousands)	FY 2012 Actual	FY 2013 Estimate	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	11.5	11.5	11.5	11.5	11.5	11.5	11.5
Description: Number of K-12 teachers and informal education staff that benefit from professional development opportunities and curriculum materials supported by NOAA's Competitive Education Grants.							

Performance Measure: Number of people that visit informal learning institutions with a NOAA-funded exhibit or program that integrates NOAA sciences, data and other information (in thousands)	FY 2012 Actual	FY 2013 Estimate	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	51,674	50,409	57,296	64,183	71,071	77,958	84,845

Description: This performance measure measures the number of people (annually) that visit museums, zoos and aquariums with high quality and effective STEM exhibits or programs incorporating NOAA's science or services. NOAA's science products and services are unique among the Federal government and academia. The exhibits and programs funded through Competitive Education Grants incorporate these unique assets and capabilities into interactive exhibits that immerse the general public in these real-world and current issues. NOAA's products and services are essential to explaining critical STEM issues such as climate change, oil spills, extreme weather and weather safety, appropriate management of coastal environments, and overfishing.

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

NOAA Education Program: Office of Education (Base Funding: \$17,857,000 and 21 FTE; Program Change: -\$1,586,000 and -3 FTE): NOAA requests a decrease of \$1,586,000 and 3 FTE and for a total of \$16,271,000 and 18 FTE to fund the Office of Education.

Proposed Actions:

NOAA proposes a net reduction of \$1,586,000 and -3 FTE to:

- terminate NOAA's Competitive Education Grants (-\$3,100,000 and -3 FTE);
- decrease funding of the Education Initiative (-\$168,000);
- and increase funding levels for the Educational Partnership Program for Minority Serving Institutions (EPP/MSI) (+\$1,682,000).

The Administration is proposing a comprehensive reorganization to facilitate a cohesive national strategy of STEM education programs to increase the impact of Federal investments in four areas: K-12 instruction; undergraduate education; graduate fellowships; and education activities that typically take place outside the classroom. The reorganization involves consolidating or restructuring 90 programs across 11 agencies and improving the delivery, impact, and visibility of STEM efforts. Nearly \$180 million will be redirected from consolidated programs to the Department of Education, the National Science Foundation (NSF), and the Smithsonian Institution to implement initiatives in the four core reform areas. The Administration will ensure that all science mission agencies have input into the development and implementation of these initiatives so that they align with agency goals while improving STEM education at all levels in a streamlined way.

The Department of Education will lead an initiative to improve K-12 STEM instruction by supporting partnerships between school districts and universities, science agencies, businesses, or other educational entities to transform teaching and learning. NSF will focus on improving the delivery of undergraduate STEM education through evidence-based approaches and reforming graduate fellowships so they reach more students and address national workforce needs. The Smithsonian Institution, which already has strong partnerships with several mission agencies, will improve the reach of federally-supported informal education activities, and help align those activities with State standards so that they are relevant to what students are learning in the classroom.

In accordance with the Administration's STEM education initiative, the Competitive Education Grants will be terminated from NOAA; however, due to the multi-year nature of prior year awards, NOAA will still support teacher development, and formal and informal education initiatives through the existing grant periods (3-5 years).

The Budget provides an increase of \$1,682,000 for the Educational Partnership Program with Minority Serving Institutions (EPP/MSI), which will increase the Agency's ability to recruit, train, graduate, and employ highly qualified students in NOAA mission-related STEM fields.

The Office of Education will take the following actions:

- Initiate a NOAA Graduate Research Training Fellowship opportunity at \$650K. This activity will be administered through the EPP Cooperative Science Centers for 10 – 15 students per year.
- Increase the number of EPP students supported with NOAA funding who are awarded NOAA mission related STEM post-secondary degrees from 76 to 84.
- Increase the number of EPP students from underrepresented communities supported by NOAA funding who are awarded NOAA mission-related STEM post-secondary degrees from 60 to 68.
- Increase the number of collaborative research projects undertaken between NOAA and EPP in support of NOAA mission from 90 to 100.
- Increase number of EPP students hired by NOAA, NOAA contractors and other natural resource management agencies at the Federal, state, local and tribal levels; private sector and academia from 40 to 45.
- Re-instate the faculty/staff exchange between CSC and NOAA to build NOAA mission-capacity at Minority Serving Institutions.

Base Resource Assessment:

The base resources for this activity are described in the base narrative for the NOAA Education Program.

Performance Goals and Measurement Data:

Performance Measure: Number of EPP students supported with NOAA funding who are awarded NOAA mission-related STEM post-secondary degrees	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	87	89	84	78	90	60	58
Without Increase	87	89	76	71	87	50	21
<p>Description: This is a new metric that contributes to NOAA Balanced Score Card measure. This metric represents all components of EPP including the Cooperative Science Centers and Scholarships. The NOAA EPP supports development of programs to educate and graduate students for the next-generation workforce and to increase the number of competent individuals with the knowledge and skills to support NOAA STEM activities. EPP graduates will lead innovation and technologies to enhance NOAA services and stewardship while supporting global competitiveness to advance national economic growth.</p> <p>*Cooperative Science Center Awards end in FY 2016</p>							

Performance Measure: Number of EPP students from underrepresented communities supported by NOAA funding who are awarded NOAA mission-related STEM post-secondary degrees	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	68	68	80	53	50
Without Increase	70	72	60	64	71	40	20
Description: This is a new metric. It represents all components of EPP using the NOAA-wide Education metrics. In the FY 2013 PB, this metric covered only the CSC component of EPP. This metric contributes to NOAA Balanced Score Card metric. The NOAA EPP funding is developing education/engagement and research programs to increase the number of undergraduate and graduate students, from underrepresented communities, who complete degrees in NOAA mission-relevant STEM disciplines and are prepared to enter NOAA mission-relevant STEM careers or advanced education. http://www.epp.noaa.gov/docs/csc_contributions_STEM_pool.pdf							

Performance Measure: Number of EPP students hired by NOAA, NOAA contractors and other natural resource and science agencies at the Federal, State, local and tribal levels; private sector and academia	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	45	45	50	40	40
Without Increase	42	40	40	40	40	30	10
Description: This is a new metric. It represents all components of EPP using the NOAA-wide Education metrics. In the FY 2013 PB, this metric covered only the CSC component of EPP. The EPP aligns with NOAA mission priorities and includes education, engagement, and NOAA STEM research programs to develop students with NOAA mission-critical STEM knowledge and skills. With the collaboration and mentoring by NOAA scientists, program graduates may pursue careers at NOAA and become part of the scientific and technological workforce at resource management agencies, private sector and academia. http://www.epp.noaa.gov							

Performance Measure: Number of collaborative research projects undertaken between NOAA and EPP in support of NOAA mission	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	100	90	50	30	20
Without Increase	89	100	90	80	50	30	20
Description Each NOAA CSC aligns with specific NOAA Line Organizations and collaborates with NOAA scientists and engineers conducting research to better understand the significance of changes in the Earth's oceans, coasts, Great Lakes, weather, and climate. Each Graduate Sciences Program trainee has a NOAA research mentor and works in a NOAA Line Organization supporting the NOAA mission. The data tracked represent the total number of CSC research projects that include a NOAA collaborator, and number of GSP trainee collaborations. *Cooperative Science Center Awards end in FY 2016							

Performance Measure: Institutions served by Competitive Education Grants (actual numbers, NOT in thousands)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	36	26	12	6	3
Without Decrease	41	51	60	62	60	48	48
Description: Number of institutions with active multi-year NOAA Competitive Education Grants that support STEM-related education exhibits and programs.							

Performance Measure: K-12 Students served by Competitive Education Grants (in thousands)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	0	0	0	0	0
Without Decrease	61.7	61.7	61.7	61.7	61.7	61.7	61.7
Description: Number of K-12 students that benefit from learning materials, hands-on experiential activities, and other STEM education programming and resources supported by NOAA's Competitive Education Grants.							

Performance Measure: K-12 teachers and staff served by Competitive Education Grants (in thousands)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	0	0	0	0	0
Without Decrease	11.5	11.5	11.5	11.5	11.5	11.5	11.5
Description: Number of K-12 teachers and informal education staff that benefit from professional development opportunities and curriculum materials supported by NOAA's Competitive Education Grants.							

Performance Measure: Number of people that visit informal learning institutions with a NOAA-funded exhibit or program that integrates NOAA sciences, data and other information (in thousands)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Decrease	N/A	N/A	47,800	39,112	22,912	9,885	6,887
Without Decrease	51,674	50,409	57,296	64,183	71,071	77,958	84,845
Description: This performance measure measures the number of people (annually) that visit museums, zoos and aquariums with high quality and effective STEM exhibits or programs incorporating NOAA's science or services. NOAA's science products and services are unique among the federal government and academia. The exhibits and programs funded through Competitive Education Grants incorporate these unique assets and capabilities into interactive exhibits that immerse the general public in these real-world and current issues. NOAA's products and services are essential to explaining critical STEM issues such as climate change, oil spills, extreme weather and weather safety, appropriate management of coastal environments, and overfishing.							

PROGRAM CHANGE PERSONNEL DETAIL

Budget Program: Program Support
Subprogram: NOAA Education Program
Program Change: Office of Education

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Program Policy Analyst	Washington, DC	ZA-IV	-1	89,033	(89,033)
Program Policy Analyst	Washington, DC	ZA-III	-1	62,467	(62,467)
Education Specialist	Washington, DC	ZA-III	-1	62,467	(62,467)
Subtotal			<u>-3</u>		<u>(213,967)</u>
2013 Pay Adjustment (0.5%)					<u>(1,070)</u>
Total					<u>(215,037)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-3		<u>(215,037)</u>
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(215,037)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-3
Other than full-time permanent	<u>0</u>
Total	-3

Authorized Positions:

Full-time permanent	-3
Other than full-time permanent	<u>0</u>
Total	-3

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Program Support
Subprogram: NOAA Education Program
Program Change: Office of Education

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	(215)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(215)
12 Civilian personnel benefits	(56)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(1,315)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(1,586)

NOAA Education Program: NOAA Bay-Watershed Education and Training (B-WET) Regional Program (Base Funding: \$5,533,000 and 0 FTE; Program Change: -\$5,533,000 and 0 FTE):

NOAA requests a decrease of \$5,533,000 and 0 FTE for a total of \$0 and 0 FTE to consolidate STEM education programs.

As part of the Administration's STEM reorganization proposal, NOAA proposes to terminate some STEM education programs within the Office of Education, including the B-WET Program.

The Administration is proposing a comprehensive reorganization to facilitate a cohesive national strategy of STEM education programs to increase the impact of Federal investments in four areas: K-12 instruction; undergraduate education; graduate fellowships; and education activities that typically take place outside the classroom. The reorganization involves consolidating or restructuring 90 programs across 11 agencies and improving the delivery, impact, and visibility of STEM efforts. Nearly \$180 million will be redirected from consolidated programs to the Department of Education, the National Science Foundation (NSF), and the Smithsonian Institution to implement initiatives in the four core reform areas. The Administration will ensure that all science mission agencies have input into the development and implementation of these initiatives so that they align with agency goals while improving STEM education at all levels in a streamlined way.

The Department of Education will lead an initiative to improve K-12 STEM instruction by supporting partnerships between school districts and universities, science agencies, businesses, or other educational entities to transform teaching and learning. NSF will focus on improving the delivery of undergraduate STEM education through evidence-based approaches and reforming graduate fellowships so they reach more students and address national workforce needs. The Smithsonian Institution, which already has strong partnerships with several mission agencies, will improve the reach of federally-supported informal education activities, and help align those activities with State standards so that they are relevant to what students are learning in the classroom.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Program Support
Sub-program: NOAA Education Program
Program Change: NOAA B-Wet Regional Program

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(900)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(4,633)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(5,533)

NOAA Education Program: Ocean Education Partnerships (Base Funding: \$1,006,000 and 0 FTE; Program Change: -\$1,006,000 and 0 FTE): NOAA requests a decrease of \$1,006,000 and 0 FTE for a total of \$0 and 0 FTE. With these funds NOAA provided competitive grants to aquariums and their partners to build capacity within that community for effectively communicating ocean literacy and related topics that are relevant to NOAA's mission. NOAA is not requesting funds for Ocean Education Partnerships in the FY 2014 President's Budget. In FY 2014, NOAA will continue to provide informal educational experiences for students through other programs, including National Marine Sanctuaries and the National Estuarine Research Reserves.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Program Support
Sub-program: NOAA Education Program
Program Change: Ocean Education Partnerships

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(1,006)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(1,006)

NOAA Education Program: Geographic Literacy (Base Funding: \$1,006,000 and 0 FTE: Program Change: -\$1,006,000 and 0 FTE): NOAA requests a decrease of \$1,006,000 and 0 FTE for a total of \$0 and 0 FTE. With these funds NOAA provided competitive grants to support the integration of NOAA assets into geography education. NOAA is not requesting funds for Geographic Literacy in the FY 2014 President's Budget. In FY 2014, NOAA will continue to provide informal educational experiences for students through other programs, including National Marine Sanctuaries and the National Estuarine Research Reserves.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Program Support
Sub-program: NOAA Education Program
Program Change: Geographic Literacy

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(1,006)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(1,006)

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES
SUB-PROGRAM: NOAA FACILITIES PROGRAM

The objectives of the Facilities Program sub-program are to:

- Provide effective long-range facility planning and capital investment planning
- Manage and execute NOAA's facility assessment and restoration program
- Manage NOAA's safety, environmental compliance, and energy efficiency programs
- Manage NOAA's lease and real property acquisition and disposal program
- Manage and execute NOAA's facility construction and modernization program

The NOAA Facilities Program supports objectives under the DOC Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental stewardship" and the NOAA Next Generation Strategic Plan Goal of "Modern, safe, and sustainable facilities." The program supports NOAA's mission by providing program direction and oversight to NOAA to ensure NOAA's facilities support current and future mission requirements.

The NOAA Facilities Program is the focal point for facility planning, project planning formulation and development, and project management oversight. This program supports an integrated capital investment planning process; integrated facility condition inspection program; systems and technology tools to enable efficiency in project and facility management planning; and investments required to keep facilities in an adequate condition, fix substandard/aging facilities, renovate facilities to meet mission needs, and dispose of facilities that are no longer required.

As NOAA-owned facilities age, investments in maintenance, repairs and modernization increase. NOAA's owned capital assets total more than 400 buildings, in addition to piers and other structures, which are valued at approximately \$3 billion. These facilities are aging, with an average age of 30 years and with more than 100 buildings over 40 years old. NOAA's facilities are often subject to the extremes of weather and climate conditions, and are, therefore, more prone to needing unplanned repairs while simultaneously remaining in operation.

The Facilities Program provides funding to conduct facility condition inspections and supports investments in facility repairs and modernization. Funds also support operations at the David Skaggs Research Center in Boulder, Colorado. This facility houses staff and programs from three NOAA Line Offices (Office of Oceanic and Atmospheric Research, National Environmental Satellite, Data, and Information Service, and National Weather Service) as well as NOAA's Regional corporate services capability. The program also includes funding for security guard services at NOAA headquarters in Silver Spring, Maryland, and at its field locations in Boulder, Colorado and Seattle, Washington.

This program oversees a centrally-managed and integrated national project construction program. The Chief Administrative Officer (CAO) has responsibility for policy development and guidance, long-term facility planning, and construction program planning and execution.

The Facilities Program provides the resources necessary to comply with existing Federal, state, and local laws, regulations and safety requirements; and identify environmental compliance and safety issues requiring remediation. NOAA is responsible for ensuring continued compliance with applicable environmental and safety laws. NOAA continues to implement a management system to increase awareness, oversight and assessment; and ensure compliance with applicable laws and regulations.

Schedule and Milestones:

In FY 2014, the Facilities program will:

- Complete at least 200 lease contract actions.

Performance Goals and Measurement Data:

Performance Measure: Improve NOAA owned facility portfolio Facility Condition Index	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
	81%	81%	80%	79%	78%	77%	76%

Description: This measure shows the average condition of NOAA-owned facilities. It is based on the 2010 real property condition assessment done through the Integrated Facilities Inspection Program (IFIP), a facility assessment model that uses survey data for each facility to identify the characteristics of the current inventory and estimate the deficiencies within the NOAA facility portfolio.

The following exhibit shows the summary object class detail for the Facilities program change less than \$100,000. Please contact the Department of Commerce if details for this change are required.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Program Support
Sub-program: Facilities
Program Change: Facilities

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(32)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(32)

THIS PAGE INTENTIONALLY LEFT BLANK

BUDGET PROGRAM: OFFICE OF MARINE AND AVIATION OPERATIONS

For FY 2014, NOAA requests a net increase of \$31,980,000 and a decrease of 5 FTE from the FY 2014 base for a total of \$249,937,000 and 1,030 FTE for the Office of Marine and Aviation Operations after an increase of \$550,000 to restore program funding affected by the reprogramming of the FY 2012 Spend Plan. This includes a decrease of \$198,000 and 0 FTE in inflationary adjustments and \$32,000 in IT savings for reinvestment in DOC Working Capital Fund initiatives.

BASE JUSTIFICATION FOR FY 2014

NOAA's Office of Marine and Aviation Operations (OMAO) supports an array of specialized ships and aircraft that play a critical role in the in-situ collection of oceanographic, atmospheric, hydrographic, and fisheries data in support of NOAA's environmental and scientific missions. OMAO administers the NOAA-wide Diving Program and Small Boat Program and is composed of civilians and the NOAA Commissioned Corps (NOAA Corps) officers.

The NOAA Fleet operates throughout the world supporting the full range of NOAA missions, such as fisheries research, nautical charting, hurricane reconnaissance and research, snow surveys, and specialized atmospheric and ocean research. Ships range from large oceanographic research vessels capable of exploring the world's deepest ocean to smaller ships responsible for charting the shallow bays and inlets of the United States. Aircraft range from the four engine P-3 capable of penetrating hurricanes to the small twin engine Twin Otters suited to marine mammal surveys where slower airspeeds and higher endurance are essential.

In addition to the research and monitoring activities critical to NOAA's mission, OMAO ships and aircraft provide immediate response capabilities for unpredictable events. Following major natural and environmental disasters, NOAA ships and aircraft can conduct emergency navigation hazard surveys that help ports reopen quickly and obtain aerial images of disaster-torn areas. Emergency hazard surveys enable residents and emergency workers verification of the condition of houses, bridges and roads.

OMAO is charged with the safe and efficient operation and maintenance of the NOAA Fleet. OMAO develops annual fleet allocation plans, conducts life cycle maintenance, and provides centralized fleet management including standard procedures, safety inspections, and medical services in partnership with the Public Health Service. OMAO coordinates the training and certification of officers, crew members, and scientists in at-sea and airborne safety and procedures.

The NOAA Corps commands and supports the fleets, as well as provides support to NOAA Line Offices. OMAO manages the recruitment, training, personnel assignments, and payroll for the NOAA Corps.

The Office of Marine and Aviation Operations has two sub-programs under the Operations, Research and Facilities (ORF) account (\$183,838,000 and 1,030 FTE):

- Marine Operations and Maintenance (\$155,244,000 and 926 FTE)
- Aviation Operations (\$28,594,000 and 104 FTE)

In addition, OMAO also has one sub-program in the Procurement, Acquisition and Construction appropriation (\$3,902,000 and 5 FTE):

- Fleet Replacement (\$3,902,000 and 5 FTE), which includes Fleet Capital Improvements and Tech Infusion and New Vessel Construction

The OMAO budget includes the following other accounts:

- NOAA Corp Commissioned Officers Retirement Pay (\$28,269,000 and 0 FTE)
- Medicare Eligible Retiree Healthcare Fund (\$1,948,000 and 0 FTE)

Research and Development (R&D) Investments:

The NOAA FY 2014 Budget estimates for R&D investments are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. OMAO observing infrastructure investments, such as ships and aircraft, support R&D activities in the FY 2014 budget.

NOAA's R&D planning is tied to the goals, enterprises, and associated objectives outlined in NOAA's Next Generation Strategic Plan. Specifically, NOAA's Science and Technology Enterprise and underlying objectives of developing an holistic understanding of the Earth system through research; accurate and reliable data from observing systems; and an integrated environmental modeling system, provide the basis for a set of internal implementation plans covering a 7-year period which guide NOAA's research and development activities. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - informs the annual updates to these implementation plans, and is developing the next 5-Year Research and Development Plan for NOAA (FY2013- 2017), which will be publicly available when completed. This new plan will reflect NOAA's strategic objectives, provide a single guiding document for our scientists, the public, and our partners, and inform future internal planning efforts.

Significant Adjustments-to-Base (ATBs):

NOAA requests a decrease of \$198,000 and 0 FTE for adjustments to current programs for OMAO activities. This includes the estimated 2014 Federal Civilian pay raise of 1.0 percent and Military pay raise of 1.0 percent. It will also account for inflationary increases for non-labor activities, including ship and aircraft fuel cost increases, service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NOAA requests technical adjustments to restore program funding affected by the reprogramming of the FY 2012 Spend Plan for a net change of \$0 to the agency. See Page OMAO-6 for more information on how this affects OMAO.

NOAA requests a technical adjustment of \$32,000 and 0 FTE from the Marine Operations and Maintenance PPA to reflect IT savings. These funds will be reinvested in the DOC Working Capital Fund in order to support three new Department level initiatives: the Enterprise Security Operations Center (ESOC), the new Financial System (BAS) and the Personal Identity Verification (PIV) program.

NOAA also requests the following transfer for a net change of \$0 and 0 FTE to the agency:

From Office	PPA	To Office	PPA	Amount/FTE
OMAO	Fleet Planning and Maintenance	OMAO	Marine Operations and Maintenance	\$27,113,000/ 3 FTE

NOAA requests a technical adjustment of \$27,113,000 and 3 FTE from the Fleet Planning and Maintenance PPA to the Marine Services PPA, which it renames the Marine Operations and Maintenance PPA to reflect a consolidation of the two PPAs. This transfer is a net change of \$0 and 0 FTE to NOAA. The merger of the two line items will enable OMAO to better facilitate the management of the fleet. The separation of Fleet Planning and Marine Services budgets has not been conducive to integrating the planning and management of fleet operations and associated scheduled maintenance activities. OMAO has found that executing interdependent activities (e.g. ship operations schedule and shipyard repair schedule) to separate predetermined operations and maintenance from year to year is inefficient and presents an unnecessary burden to the effective allocation of fleet resources. Combining them will enable more efficient execution of fleet and maintenance budgets, while not impacting OMAO's ability to report on maintenance costs.

Headquarters Administrative Costs:

In FY 2014, OMAO Line Office headquarters will use \$7,071,000 in funds to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, OMAO will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2014 Amount	FY 2014 FTE associated with OMAO HQ
General Management & Direction/Executive Management	Includes Assistant Administrator's office, Public Affairs, Information Services	\$1,938,000	8.4
Budget & Finance	Includes Budget, Finance and Accounting	\$1,782,000	11.0
Facilities/Other Administrative (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$916,000	0
Human Resources	All HR services, including EEO	\$144,000	1.0
Acquisitions and Grants	Includes Procurement services, Acquisitions, and Grants Management	0	0
Information Technology	Includes IT-related expenses and other CIO related activities	\$2,291,000	9.7
Total		\$7,071,000	30.1

THIS PAGE INTENTIONALLY LEFT BLANK

ADJUSTMENTS RELATED TO THE REPROGRAMMING OF THE FY 2012 SPEND PLAN

Adjustments to the FY 2014 Base are required in order to restore programs affected by reprogrammings made to the FY 2012 Spend Plan. In FY 2012, funds were reprogrammed to sustain the warning and forecast capabilities of the National Weather Service and to delay future improvements to services. These reprogrammings are carried forward into the FY 2013 Annualized Continuing Resolution. NOAA seeks to restore these funds to the FY 2014 base funds.

NOAA requests the following technical adjustments in FY 2014 to restore programs affected by the Reprogramming of the FY 2012 NWS Spend Plan:

Line Office	Account	Page	Program, Project, or Activity	Reprogramming Adjustment
NWS	ORF	NWS-8	Local Warnings and Forecasts Base	(\$24,660,000)
NWS	PAC	NWS-8	Next Generation Weather Radar (NEXRAD)	(\$9,400,000)
NWS	ORF	NWS-8	Air Quality Forecasting	\$2,282,000
NWS	ORF	NWS-8	Sustain Cooperative Observer Network	\$800,000
NWS	ORF	NWS-8	Aviation Weather	\$9,773,000
NWS	ORF	NWS-8	Weather Forecast Office (WFO) Maintenance	\$2,006,000
NWS	ORF	NWS-8	Weather Radio Transmitters Base	\$100,000
NWS	ORF	NWS-8	Central Forecast Guidance	\$1,305,000
NWS	ORF	NWS-8	Next Generation Weather Radar (NEXRAD)	\$347,000
NWS	ORF	NWS-8	Automated Surface Observing System (ASOS)	\$988,000
NWS	ORF	NWS-9	Advanced Weather Interactive Processing System (AWIPS)	\$2,500,000
NWS	PAC	NWS-9	Advanced Weather Interactive Processing System (AWIPS)	\$5,944,000
NWS	PAC	NWS-9	Weather and Climate Supercomputing	\$100,000
NWS	PAC	NWS-9	Cooperative Observer Network-Modernization	\$2,174,000
NWS	PAC	NWS-9	Complete and Sustain NOAA Weather Radio	\$100,000
NWS	PAC	NWS-9	Weather Forecast Construction	\$1,500,000
OAR	ORF	OAR-12	Climate Competitive Research Program	\$1,934,000
NESDIS	ORF	NESDIS-6	Product Processing & Distribution	\$500,000
NESDIS	ORF	NESDIS-6	Archive, Access, and Assessment	\$1,157,000
OMAO	ORF	OMAO-6	Aircraft Services	\$550,000
Total				-

OMAO – Aircraft Services:

The restoration of \$550,000 to Aircraft Services will allow OMAO to increase the capacity of flight hours by approximately 150 (from 2,015 to 2,165) in FY 2014. This level of flight hours will not only support Hurricane Research and Reconnaissance missions on P-3s and the GIV, but also ensure flight hours for snow surveys, winter storm reconnaissance, ocean and coastal mapping, and fisheries surveys.

For information on these adjustments within other Line Offices, please see the page numbers as referenced in the table above.

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUB-PROGRAM: MARINE OPERATIONS AND MAINTENANCE

Marine Operations and Maintenance (MOM) is the consolidation of the Marine Services Data Acquisition and the Fleet Planning and Maintenance PPA s into a single PPA. The creation of a single PPA will provide improved flexibility in the year-to-year planning of ship operations and shipyard repair schedules by allowing OMAO to invest resources based on specific needs and condition of the fleet. In addition, a single PPA will contribute to the simplification of OMAO accounting transactions and the more effective tracking of fleet resources.

MOM funds centralized management for NOAA's 16 active ships including the newest Fisheries Survey Vessel (FSV), *Reuben Lasker* (FSV6), and a new shallow draft hydrographic survey ship the *Ferdinand R. Hassler*. NOAA vessels range in length from 124 to 274 feet and are capable of conducting operations that support NOAA's programs in nautical charting, bathymetric mapping, fisheries research, ecosystem assessments, marine environmental baseline assessments, coastal-ocean circulation, and oceanographic and atmospheric research. In FY 2014, funding will provide approximately 1,890 base funded Days at Sea (DAS)¹ to support NOAA's highest priority programs.

Regular maintenance allows NOAA ships to meet the rigorous demands of scientific, forecasting, and regulatory missions of NOAA. MOM funding provides for general maintenance and repair of NOAA ships including critical scientific and technical equipment necessary to meet stakeholder requirements.

The NOAA Fleet is subject to various requirements and regulations related to safety and emissions put forth by three organizations. The American Bureau of Shipping (ABS) certifies ships as seaworthy. The MOM program uses ABS rules to design its maintenance program and conduct Ship Structure and Machinery Evaluations (SSME), formerly called Material Condition Assessments, on the NOAA Fleet. The Environmental Protection Agency (EPA) promulgates regulations governing airborne emissions under the Clean Air Act that affects engine and exhaust components. The United States Coast Guard (USCG) promulgates regulations on all discharges from ships so that marine environments are protected from harmful discharges. In addition to regulations and requirements from these agencies, as the primary provider of fisheries and marine mammal surveys, the program has a unique operating role in marine sanctuaries that requires additional protections to maintain the pristine nature of these environments.

The objectives of MOM are:

- Ensure the operational readiness and maximum capability of the NOAA fleet in support of present and future NOAA data collection
- Provide properly trained personnel, as well as fuel, warehousing, laboratory and deck equipment, and other scientific equipment necessary to meet user requirements and schedules
- Develop, with the guidance of the Fleet Council, annual ship allocation schedules based on program requirements and available funds
- Provide centralized management and coordination of scheduling, port services, operating procedures, and engineering support for NOAA's ships

¹ DAS assumes a fuel rate of \$3.80 per gallon consistent with the Defense Logistics Agency (DLA) Energy Standard Rate. OMAO purchases around 90% of fuel annually from DLA fuel sources through the SEA Card program and through direct purchases from DLA fuel depots.

- Conduct Work Definition Conferences to prioritize tasks and determine availability for dockside repairs, drydock repairs and Major Repair Periods (MRPs)
- Train and qualify NOAA personnel to ensure safe and effective diving operations
- Train and certify NOAA Commissioned Corps officers, crew, and scientists in at-sea safety requirements for their positions according to the Standards of Training, Certification and Watch keeping for Seafarers and the International Maritime Organization conventions
- Provide NOAA Corp Officers trained as engineers and scientists in NOAA program disciplines to provide mobile operational and other support
- Provide oversight and support to enhance safety of NOAA's small-boat operations
- Support the maintenance activities for the NOAA fleet with appropriate maintenance and repair tracking systems and databases

FY 2012 Program Accomplishments:

- Validation of fleet in situ observation requirements and multi -year fleet composition as part of the development of a new NOAA fleet plan to be completed in Q2 of FY 2013. At the conclusion of FY 2012, OMAO continues to validate mission requirements and is reviewing and analyzing advanced technology and asset capabilities that would best meet the validated mission requirements.
- NOAA Ship *Fairweather* conducted a 30 day mission to survey the Arctic as part of the Arctic Nautical Charting Plan.

NOAA Fleet detail as of FY 2014 is provided below:

Vessel	Length-Class	Mission	Home Port	Status
<i>Ronald H. Brown</i>	274 ft. – I	1,4	Charleston, SC	Active
<i>Rainier</i>	231 ft.- II	3	Newport, OR	Active
<i>Fairweather</i>	231 ft.- II	3	Ketchikan, AK	Active
<i>Ka'imimoana</i> ¹	224 ft.- III	1	Honolulu, HI	Inactive
<i>McArthur II</i> ¹	224 ft.- III	1,2,4	Newport, OR	Inactive
<i>Oregon II</i>	175 ft.- III	2	Pascagoula, MS	Active
<i>Thomas Jefferson</i>	208 ft.- II	3	Norfolk, VA	Active
<i>Gordon Gunter</i>	224 ft.- III	2	Pascagoula, MS	Active
<i>Oscar Elton Sette</i>	224 ft.- III	2	Honolulu, HI	Active
<i>Nancy Foster</i>	187 ft.- III	1,4	Charleston, SC	Active
<i>Hi'ialakai</i>	224 ft.- III	1,4	Honolulu, HI	Active
<i>Oscar Dyson</i>	208 ft. – II	2	Kodiak, AK	Active
<i>Henry B. Bigelow</i>	208 ft. – II	2	Newport, RI ²	Active
<i>Pisces</i>	208 ft. – II	2	Pascagoula, MS	Active
<i>Bell M. Shimada</i>	208 ft. – II	2	Newport, OR	Active
<i>Okeanos Explorer</i>	224 ft.- III	1	Davisville, RI	Active
<i>Ferdinand R. Hassler</i>	124 ft – II	3	New Castle, NH	Active
<i>Reuben Lasker</i>	208.6 ft –II	2	West Coast	Active
Mission: 1= Oceanographic Research 2 = Fisheries Research		3 = Hydrographic Surveys 4 = Environmental Assessment		
¹ These ships are currently proposed to be inactive in the FY 2014 operating plan.				
² OMAO is in discussions with US Navy and US Coast Guard about extending use of the Newport pier into FY 2014. If this is not an option, the ship will be temporarily berthed in Norfolk, VA for winter repairs and will utilize ports of opportunity during the field season until a long term solution is finalized.				

The sub-program also includes:

The Marine Operations Center (MOC): The Marine Operations Center has Atlantic and Pacific regional offices located in Norfolk, Virginia, and Newport, Oregon, respectively. The MOC provide regional fleet management, maintenance, warehousing, supplies, repair facilities, data-processing facilities, operational support, and administrative support for NOAA's vessels. The vessels are assisted by a small support staff at the home port of most ships. NOAA vessels are staffed by NOAA Corps officers, civilian Wage Mariners and civilian Electronics Technicians. NOAA vessels are strategically deployed based on the size, range, laboratory space, equipment, and accommodations necessary to meet project requirements. The Class I and II vessels have the endurance, and equipment to conduct surveys and investigations in the deep ocean outward from the continental shelf or in remote areas such as Alaska and Antarctica. The Class III vessels perform fisheries surveys, climate research and ocean exploration. Programs supported by ships are organizationally housed within NOAA's National Marine Fisheries Services (NMFS), Office of Oceanic and Atmospheric Research (OAR), National Ocean Service (NOS), and National Weather Service (NWS).

The NOAA Commissioned Personnel Center (CPC): CPC, headquartered in Silver Spring, Maryland, is responsible for providing a specialized workforce to NOAA that has the skills to plan, prepare, and execute the acquisition of environmental and scientific data on land, at and under the sea, and in the air. CPC is a unique personnel system within NOAA. CPC is responsible for active duty NOAA Corps officers and associated human resource activities that include recruitment, appointment, training, assignments, promotion, separation, retirement, and officer entitlements.

OMAO Headquarters (HQ): OMAO Headquarters division consists of Executive Affairs Division (EAD), Resource Management Division (RMD), Safety and Environmental Compliance Division (SECD), Information Management Division (IMD) and Health Services. Located in Silver Spring, Maryland, HQ is responsible for the formulation of policies and procedures, development of plans and budgets, and management of the NOAA Corps. Management of the NOAA Corps includes providing direction for labor relations activities, medical affairs, training, safety, and other personnel matters unique to commissioned officers and vessel employees assigned to the fleet.

OMAO Headquarters administers the following NOAA-wide activities including the:

NOAA Dive Program: The NOAA Dive Center (NDC) provides diver training, safety standards, certification, technical advice, a standardized equipment program, and publishes the NOAA Diving Manual. NOAA has more than 400 divers who perform over 15,000 dives annually in support of NOAA's programs. Marine Center divers play a support role for various projects. Fleet diving activities include ship husbandry tasks such as clearing screws and sea strainers, conducting hull surveys for damage, and installing transducers. Ship divers also install tide gauges and other data gathering equipment and investigate multi-beam contacts. These activities provide cost savings to the NOAA fleet, enhance customer service and facilitate self-sufficiency on the seas.

NOAA Small Boat Program (SBP): The SBP is designed to reduce risk, promote standardization, and enhance the safety of NOAA's small boats. NOAA maintains over 400 small boats, which are operated and funded within the Line Office programs. The SBP monitors and conducts small-boat inspections, facilitates small boat activities by hosting workshops and sharing related information, and provides technical and engineering assistance to NOAA Line Offices concerning small boats.

NOAA Teacher at Sea Program (TAS): Up to 30 teachers per year participate in the TAS program. Teachers at the kindergarten through college level spend time on NOAA vessels working with NOAA scientists. The teachers provide a valuable connection between NOAA and their students. The popularity of the program led two alumni to develop the spin-off, Teacher in the Air. NOAA's Teacher in the Air (TIA) program now flies between two to five teachers on NOAA aircraft each year. As of FY 2012, over 630 teachers, from all 50 states, have participated in the programs.

Schedule and Milestones:

- Ships annual schedules and milestones are governed by the Fleet Allocation Plan (<http://www.omaο.noaa.gov/shipallocation.html>) as agreed to and signed by the NOAA Fleet Council. The Fleet Allocation Plan details the objective and duration of individual NOAA projects.
- All ships have a set drydock and dockside repair maintenance period based on ABS scheduling by ship class. In FY 2014, NOAA Ship *Nancy Foster* is scheduled for drydock.

Deliverables:

FY 2014:

- At the requested funding level, the program will provide 1,890 base DAS for 16 Active vessels (assuming a fuel price of \$3.80 per gallon) in FY 2014. Detailed deliverables are determined on a project by project basis as documented in sailing instructions agreed to by OMAO and the respective line office.
- Perform Program Funded DAS (PFD) as scheduled. In addition to the base funded DAS, OMAO conducts missions funded through Service Level Agreements (SLA) with NOAA programs and reimbursable agreements. Program funded days (PFD) are scheduled based on availability of ships and program funds. OMAO does not anticipate future reimbursable DAS.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Days at Sea							
16 Active Ships	2,131	1,950	1,890	1,890	1,890	1,890	1,890
Description: Days at Sea (includes mission days only). A mission day is defined as when ship is at sea incident to the scientific mission. For FY 2014 and forward, NOAA assumes a fuel rate of \$3.80 per gallon consistent with the DLA Energy Standard Rate.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Program funded DAS	493	TBD	TBD	TBD	TBD	TBD	TBD
Description: OMAO conducts missions funded through reimbursable agreements and Service Level Agreements (SLA) with NOAA programs. Program funded days (PFD) are scheduled based on availability of ships and program funds; therefore out year targets are to be determined.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Fleet Utilization							
16 Active Ships	57%	54%	50%	50%	50%	50%	50%
<p>Description: Days at Sea (includes mission days only). A mission day is defined as when a ship is at sea incident to the scientific mission. Fleet utilization rate is calculated by taking the actual days at sea from base Marine Operations and Maintenance funding and dividing it by the maximum operating tempo of 235 days at sea per active ship. In FY 2014 and forward, NOAA assumes 16 active ships at a fuel rate of \$3.80 per gallon consistent with the DLA Energy Standard Rate. Not included in the calculation are the ships proposed for inactive status in FY 2014. This reflects NOAA's practice of reinvesting fixed cost savings from non-active ships into the active fleet, thereby increasing overall days at sea.</p>							

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

Marine Operations and Maintenance: Increase in Marine Operations and Maintenance Days at Sea (Base Funding: \$155,244,000 and 926 FTE; Program Change: \$21,000,000 and 0 FTE):

NOAA requests an increase of \$21,000,000 and 0 FTE for a total of \$176,244,000 and 926 FTE to support additional days at sea (DAS) for fishery, hydrographic, and marine ecosystems surveys.

Proposed Actions:

NOAA requests an increase to Marine Operations and Maintenance (MOM) to more fully utilize its fleet in support of mission-critical nautical charting, bathymetric mapping, fisheries research, ecosystem assessments, coastal-ocean circulation, and oceanographic and atmospheric research. At this funding level, OMAO will conduct approximately 3,517 base DAS with a utilization rate of 94 percent assuming a fuel rate of \$3.80 per gallon². This request adds approximately 1,627 DAS, allowing OMAO to reach a total of 3,517 base funded DAS for FY 2014. The requested funding will ensure full ship crew complements, address maintenance requirements, as well as fund increased variable costs for fuel, crew overtime, ship logistics and provisioning.

Statement of Need and Economic Benefits:

NOAA strives to utilize the fleet at 100 percent utilization rate to maximize the use of these federal capital assets in meeting the agency's mission. NOAA accounts for maintenance schedules, safety inspections, and personnel capacity within utilization rate calculations, so barring unforeseen issues, each ship is capable of meeting its designated maximum operating tempo. Under-utilization of the NOAA fleet directly translates into lost opportunities for in-situ observations that are the foundation of our scientific understanding of the environment. Without a fully funded fleet, program offices pay for additional DAS to meet their research or observing requirements. In FY 2012, programs purchased 493 DAS to supplement OMAO's base funded days at sea. When critical science dollars are spent on ship operations, programs are left with less funding to analyze the data gathered on the ship. This delays the delivery of the research or observational findings to NOAA's stakeholders.

The National Marine Fisheries Services (NMFS), the Office of Oceanic and Atmospheric Research (OAR), the National Ocean Service (NOS), and the National Weather Service (NWS) all rely on OMAO for ship time. Programs related to nautical charting, fish and mammal surveys, climate studies, and ocean health will receive additional ship time with this increase in funding. The final allocation of ship time will be determined by NOAA's Fleet Council using the Prioritization, Allocation and Scheduling (PAS) process. This ensures support to NOAA's highest priority programs. OMAO will continue to conduct NOAA's highest priority missions while utilizing NOAA's fleet in support of science, service and stewardship.

Base Resources Assessment:

The base resources for this activity are described in the Marine Operations and Maintenance base narrative.

² A fuel estimate of \$3.80 per gallon is consistent with the Defense Logistics Agency (DLA) Energy Standard Rate. OMAO purchases around 90% of fuel annually from DLA fuel sources through the SEA Card® program and through direct purchases from DLA fuel depots.

Schedule and Milestones:

- Ships annual schedules and milestones are governed by the Fleet Allocation Plan (<http://www.omaο.noaa.gov/shipallocation.html>) as agreed to and signed by the NOAA Fleet Council. The Fleet Allocation Plan details the objective and duration of individual NOAA projects.
- All ships have a set drydock and dockside repair maintenance period based on American Bureau of Shipping scheduling by ship class.

Deliverables:

FY 2014:

- At the requested funding level, the program will provide approximately 3,517 base DAS in FY 2014 for 16 active vessels, assuming a fuel rate of \$3.80 per gallon. Detailed deliverables are determined on a project by project basis as documented in sailing instructions agreed to by OMAO and the respective line office.
- Perform Program Funded DAS (PFD) as scheduled. In addition to the base funded DAS, OMAO conducts missions funded DAS through Service Level Agreements (SLA) with NOAA programs and reimbursable agreements. PFD are scheduled based on availability of ships and program funds.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Days at Sea assuming fuel costs of \$3.80/gallon							
With Increase	N/A	N/A	3,517	3,517	3,517	3,517	3,517
Without Increase	2,131	1,950	1,890	1,890	1,890	1,890	1,890
Description: Days at Sea (includes mission days only). A mission day is defined as when ship is at sea incident to the scientific mission. For FY 2014 and forward, NOAA assumes a fuel rate of \$3.80 per gallon consistent with the DLA Energy Standard Rate. NOAA historically actualizes a fuel rate consistent with the DLA rate as 90% of fuel is purchased from DLA sources.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Fleet Utilization assuming fuel costs of \$3.80/gallon							
With Increase	N/A	N/A	94%	94%	94%	94%	94%
Without Increase	57%	54%	50%	50%	50%	50%	50%
Description: Days at Sea (includes mission days only). A mission day is defined as when a ship is at sea incident to the scientific mission. Fleet utilization rate is calculated by taking the actual days at sea from base Marine Operations and Maintenance funding and dividing it by the maximum operating tempo of 235 days at sea per active ship. In FY 2014 and forward, NOAA assumes 16 active ships at a fuel rate of \$3.80 per gallon consistent with the DLA Energy Standard Rate. Not included in the calculation are the ships proposed for inactive status in FY 2014. This reflects NOAA's practice of reinvesting fixed cost savings from non-active ships into the active fleet, thereby increasing overall days at sea.							

Performance Measure: Reduce the hydrographic survey backlog within navigationally significant areas (square nautical miles per year) (Measure 18f)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With Increase	N/A	N/A	2,860	2,860	2,860	2,860	2,860
Without Increase	2,947	2,028	2,076	2,076	2,076	2,076	2,076
<p>Description: NOAA ships, the <i>Fairweather</i>, <i>Hassler</i>, <i>Rainier</i>, and <i>Thomas Jefferson</i>, conduct hydrographic surveys to determine bathymetry primarily in U.S. waters significant for navigation. This activity includes the detection, location, and identification of wrecks and obstructions with side scan and multi-beam sonar technology. NOAA uses the data to produce nautical charts in a variety of formats for safe and efficient navigation, in addition to the commercial shipping industry; other user communities that benefit include recreational boaters, the commercial fishing industry, port authorities, coastal zone managers, and marine spatial and emergency planners.</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Office of Marine and Aviation Operations
Sub-program: Marine Operations and Maintenance
Program Change: Increase in Marine Operations and Maintenance Days at Sea

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	5,250
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	5,250
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	3,757
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	11,993
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	21,000

Marine Operations and Maintenance: Environmental Compliance Increase (Base Funding: \$155,244,000 and 0 FTE; Program Change: \$1,017,000 and 0 FTE): NOAA requests an increase of \$1,017,000 and 0 FTE for a total of \$156,261,000 and 0 FTE for activities associated with bringing NOAA fleet and small boats into compliance with Environmental Protection Agency (EPA) and United States Coast Guard (USCG) regulations.

Proposed Actions:

A number of maritime environmental regulations have gone into effect, including stricter emissions requirements from the Environmental Protection Agency (EPA) and stricter discharge requirements from the United States Coast Guard (USCG). These new regulations will require changes to the existing vessel fleet to ensure compliance is maintained and monetary fines are avoided. Proactively ensuring compliance with these new environmental regulations will allow NOAA to maintain its position as a leader in environmental stewardship and in executing the Administration's energy priorities.

Specifically, NOAA will:

- Purchase and install tier upgrade kits for main propulsion engines and ship service generators for vessels undergoing MRP to become tier compliant, as required by EPA 40CFR part 1042.
- Replace top-side hydraulic lines during special survey dry dockings to reduce risk of failure, as required by EPA Vessel General Permit.
- Upgrade or replacement of Oily Water Separators (OWS) to separate free and emulsified oils (black) / waste (grey water) for vessels which OWS is no longer supported by the manufacturer or the technology has advanced as required.
- Conduct greenhouse gas emissions audit and use information to increase vessel efficiency as required by the Energy Independence and Security Act and EO 13514.

Statement of Need and Economic Benefits:

These priorities were selected according to their status as legal requirements with market-ready solutions, as identified by the DRAFT Cost/Benefit Analysis Study for Greening of the NOAA Fleet (researched by Art Anderson Associates, February, 2010).

Base Resource Assessment:

The base resources for this activity are described in the Marine Operations and Maintenance base narrative.

Schedule and Milestones:

FY 2014 – 2018:

- Award contracts and complete work to bring vessels into environmental compliance

Deliverables:

FY 2014 – 2018:

- Install two engine upgrade kits on Oscar Dyson class ship
- Install four engine upgrade kits on NOAA ship *Henry Bigelow*
- Convert four top-side hydraulic piping and hoses to biodegradable hydraulics
- Upgrade five Oily-Water Separators
- Perform Green House Gas/increased efficiency audit

Performance Goals and Measurement Data:

Performance Measure: Ships Compliant with Environmental Regulations (%)	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
With increase	N/A	N/A	11%	15%	19%	23%	26%
Without increase	5%	7%	9%	13%	15%	18%	21%
Discussion: Measures the number of NOAA ships compiling with new environmental regulations for the Environmental Protection Agency and United States Coast Guard now in effect.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Office of Marine and Aviation Operations
Subprogram: Marine Operations and Maintenance
Program Change: Environmental Compliance Increase

Object Class	2014 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	110
25.2 Other services	907
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,017

Marine Operations and Maintenance: Charleston Homeport Closure (Base Funding \$155,244,000 and 926 FTE; Program Change: -\$200,000 and 0 FTE): NOAA requests a decrease of \$200,000 and 0 FTE for a total of \$155,044,000 and 926 FTE associated with the relocation of NOAA ships *Ronald H. Brown* and *Nancy Foster* from the Charleston, SC homeport to the Marine Operations Center-Atlantic and homeport in Norfolk, VA.

Proposed Action:

NOAA proposes to relocate two NOAA vessels from the Charleston, SC homeport to the Marine Operations Center-Atlantic (MOC-A) in Norfolk, VA. Charleston, SC is currently home to NOAA Ships *Ronald H. Brown* and *Nancy Foster* and their crews, a port captain, and a port engineer, all of which will move to Norfolk. The port consolidation will result in annual operating cost savings of \$200,000 which includes the elimination of the cost of dredging the Charleston, SC every three years, at \$150,000 per dredging. The consolidation enables NOAA to increase the efficiency of the fleet in a number of ways. Using the MOC-A as the new location will improve training, logistics and fleet maintenance by concentrating the ships in a central location and allowing easier access for NOAA's fleet engineers.

Statement of Need and Economic Benefits:

The cost savings and efficiency gained through the consolidation will enable OMAO to more effectively manage the Atlantic fleet. Internal NOAA partners will not be affected by the relocation because the programs that the vessels support are not co-located in Charleston, SC. Finally, the US Coast Guard will benefit by having increased pier space available for their National Security Cutters which are expected to arrive in 2015.

Base Resources Assessment:

The base resources for this activity are found in the Marine Operations and Maintenance base narrative.

Schedule and Milestones:

FY 2014:

Achieve vessel and personnel relocation and close the homeport and port office.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Office of Marine and Aviation Operations
Sub-program: Marine Operations and Maintenance
Program Change: Charleston Homeport Closure

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	<u>0</u>
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(200)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	(200)

Marine Operations and Maintenance: IT Cost Savings (Base Funding: \$155,244,000 and 926 FTE; Program Change: -\$353,000 and 0 FTE): NOAA requests a decrease of \$353,000 and 0 FTE for a total of \$154,891,000 and 926 FTE through consolidation of IT support systems and the reduction of IT support during the transition of ships within the fleet.

Proposed Actions:

OMAO will decrease IT spending by removing redundancies in the IT cost structure and reducing IT support during changes in ship status. When a ship changes status, IT support is used to remove technical equipment and to provide assistance during this transition. Cost savings of \$185,000 are realized with the elimination of redundant annual IT security testing (\$80,000) and cost sharing salary and benefits for web management and Information Systems Security Office (ISSO) support with OCIO (\$105,000). Additional IT cost savings of \$168,000 will be fully realized in FY 2014.

Base Resources Assessment:

The base resources for this sub-program are described in the Marine Operations and Maintenance base narrative.

Schedule and Milestones:

FY 2014

- Reduce web maintenance costs
- Eliminate IT security redundancies
- Reduce or eliminate technology resources associated with inactive and decommissioned ships

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Office of Marine and Aviation Operations
Sub-program: Marine Operations and Maintenance
Program Change: IT Cost Savings

Object Class		2014 Decrease
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<u>0</u>
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	(353)
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	<u>0</u>
99	Total obligations	<u>(353)</u>

Marine Operations and Maintenance: Teacher at Sea Program (Base Funding: \$150,000 and 0 FTE; Program Change: - \$150,000 and 0 FTE): OMAO requests a decrease of \$150,000 and 0 FTE to terminate the Teacher at Sea Program at NOAA as part of the Administration's STEM reorganization proposal.

Proposed Actions:

As part of the Administration's comprehensive reorganization of STEM education programs to increase the impact of Federal investments, NOAA proposes to terminate funding for the Teacher at Sea Program. This termination of funding will also eliminate the Teacher in the Air Program which is a part of the larger Teacher at Sea Program.

Scientists and engineers create many of the innovations that drive our nation's global competitiveness. Our nation's capacity to create and innovate must never be limited by a shortage of talent in science, and technology, engineering and mathematics (STEM) fields. To prepare our students for STEM jobs and other high-skilled careers, we must provide them with opportunities to learn and develop knowledge and competencies in these areas.

To meet future workforce needs, and to leverage their expertise and unique assets in support of STEM education, federal agencies have developed a range of education programs. In the absence of a single guiding plan, these efforts have proliferated over many years to include over 220 programs across 13 different agencies at an annual federal investment of almost \$3 billion. Many of these initiatives are not effectively aligned either to the needs of students or to national priorities, and this fragmented approach to investment has made it difficult to reform and improve Federal STEM education efforts. The Administration is proposing a comprehensive reorganization to facilitate a cohesive national strategy of STEM education programs to increase the impact of Federal investments in four areas: K-12 instruction; undergraduate education; graduate fellowships; and education activities that typically take place outside the classroom. The reorganization involves consolidating or restructuring 90 programs across 11 agencies and improving the delivery, impact, and visibility of STEM efforts. Nearly \$180 million will be redirected from consolidated programs to the Department of Education, the National Science Foundation (NSF), and the Smithsonian Institution to implement initiatives in the four core reform areas. The Administration will ensure that all science mission agencies have input into the development and implementation of these initiatives so that they align with agency goals while improving STEM education at all levels in a streamlined way.

The Department of Education will lead an initiative to improve K-12 STEM instruction by supporting partnerships between school districts and universities, science agencies, businesses, or other educational entities to transform teaching and learning. NSF will focus on improving the delivery of undergraduate STEM education through evidence-based approaches and reforming graduate fellowships so they reach more students and address national workforce needs. The Smithsonian Institution, which already has strong partnerships with several mission agencies, will improve the reach of federally-supported informal education activities, and help align those activities with State standards so that they are relevant to what students are learning in the classroom.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Office of Marine and Aviation Operations
Subprogram: Marine Operations and Maintenance
Program Change: Teacher at Sea Program

Object Class		2014 Decrease
11	Personnel compensation	
11.1	Full-time permanent	0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	-150
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	(150)

THIS PAGE INTENTIONALLY LEFT BLANK

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES
SUB-PROGRAM: AVIATION OPERATIONS

OMAO's Aircraft Operations Center (AOC), located at MacDill Air Force Base in Tampa, Florida, operates NOAA's Aircraft Fleet in support of NOAA's mission to promote global environmental assessment, prediction and stewardship of the Earth's environment. The aircraft operate throughout the United States and around the world over open oceans, mountains, coastal wetlands, and the Arctic. AOC provides capable, mission-ready aircraft and professional crews to meet NOAA's mission supporting scientific endeavors studying global climate change and air quality, assessing marine mammal populations, surveying coastal erosion, investigating oil spills, conducting coastal mapping, surveying snowpack levels for flood prediction, and improving hurricane prediction models. AOC flight crews operate in some of the world's most demanding flight regimes including flying into the eye of a hurricane.

The variety and versatility of the aircraft provide scientists with the airborne platforms necessary to collect essential environmental and geographic data. The Fleet is equipped with comprehensive data-collection systems in support of missions related to the Earth's environment, coastal and marine resources, and severe weather. OMAO also ensures that outsourced aviation operations are conducted safely by providing technical support, services and equipment to NOAA programs. In FY 2014, AOC will provide approximately 2,165 base funded flight hours in support of NOAA's mission. In addition to base funded hours, additional flight hours may be funded by programs. These hours are determined in the year of budget execution, based on the availability of aircraft and funds.

The objective of the Aviation Operations sub-program is to:

- Provide NOAA with centralized aircraft systems management and coordination of airborne data collection flight time
- Modify, maintain, and operate the aircraft with a combined work force of specially trained civilians and officers of the NOAA Corps to meet airborne data-collection requirements
- Maintain the airworthiness and operating standards of the aircraft for optimum safety along with standardization of scientific systems and aircraft
- Operate the aircraft safely and in compliance with Federal Aviation Administration regulations regarding use of airspace, control of air traffic, and aircraft registration
- Develop and operate prototype and operational scientific-research instrumentation aboard NOAA aircraft; conduct applied research to ensure validity of data collected; recommend and implement specialized modifications, equipment or personnel for particular missions or projects
- Develop, with the guidance of NOAA's Fleet Council, annual flight-time allocation schedules based on airborne data-collection requirements
- Provide centralized expertise in aviation safety to arrange for safe commercial aviation services for NOAA programs using outsourced aircraft

FY 2012 Program Accomplishments:

- OMAO responded to Hurricane Issac with two NOAA aircraft, one WP-3D Orion (P-3) and one Gulfstream IV-SP (G-IV), providing around-the-clock hurricane research, surveillance and forecast improvement support to the National Hurricane Center. Data collected by the aircraft helped forecasters predict the storm intensity and path. The P-3 flew ten flights over seven days and the G-IV flew seven flights over five days for a total of 132 hours.
- N42RF completed Special Structural Inspection (SSI), in May 2012.

NOAA Aircraft Fleet detail as of FY 2014 is provided below, including information for the current program (missions and support fluctuate based on program priorities):

Aircraft	Type	Mission	Location	Status
HEAVY: (3) Lockheed WP-3	4-engine turbo prop	Air quality (OAR) Hurricane research (OAR) Hurricane reconnaissance (NWS) Ocean winds (NESDIS, NWS) Hurricane intensity forecasting (NWS) Climate research (OAR)	MacDill AFB, FL	N42: Active N43: Active N44: Inactive
MID: (1) Gulfstream G-IV	2-engine turbo jet	Hurricane surveillance (NWS) Winter storm reconnaissance (NWS) Hurricane intensity forecasting (NWS) Atmospheric research (OAR)	MacDill AFB, FL	Active
LIGHT: (4) Dehavilland Twin Otter DHC-6	2-engine turbo prop	Aerial surveys (NMFS) Atmospheric research (OAR)	MacDill AFB, FL	Active
(1) King Air	2-engine turbo prop	Photogrammetry (NOS) Multi-spectral scanner (NOS) Airborne bathymetric LIDAR (NOS, NWS) Post-storm damage assessment (NOS)	MacDill AFB, FL	Active
(1) Jet Prop Commander AC/695	2-engine turbo prop	Snow surveys (NWS) Fisheries observations (NMFS) Marine mammal observations (NMFS)	Minneapolis, MN	Active

Schedule and Milestones:

Aircraft Services annual schedule and milestones are governed by the Aircraft Allocation Plan (<http://www.oma.noaa.gov/airallocation.html>) as agreed to and signed by the NOAA Fleet Council. The Aircraft Allocation Plan details the individual NOAA projects to be conducted on each aircraft, and the timeframe for project.

Deliverables:

- At the requested funding level, the program will provide 2,165 base flight hours in FY 2014. Detailed deliverables are determined on a project by project basis as documented in flight instructions agreed to by OMAO and the contracting line office.

- Perform Program Funded Hours as scheduled. In addition to the base funded flight hours, OMAO conducts missions funded through Service Level Agreements (SLA) with NOAA programs and reimbursable agreements. Program funded hours are scheduled based on availability of planes and program funds. OMAO does not anticipate future reimbursable flight hours.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Base Flight Hours	2,212	2,015	2,165	2,165	2,165	2,165	2,165
Description: Number of base funded flight hours. For FY 2014 and forward, NOAA assumes an aircraft fuel rate of \$3.72 per gallon consistent with OMB economic assumptions.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Program funded flight hours	1,579	TBD	TBD	TBD	TBD	TBD	TBD
Description: OMAO conducts missions funded Service Level Agreements (SLA) with NOAA programs. Program funded hours are scheduled based on availability of planes and program funds, therefore out year targets are to be determined.							

Performance Measure:	FY 2012 Actual	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target	FY 2018 Target
Reimbursable flight hours	469	N/A	N/A	N/A	N/A	N/A	N/A
Description: OMAO conducts reimbursable funded missions based on the availability of planes. NOAA does not anticipate reimbursable flight hours in the outyears.							

THIS PAGE INTENTIONALLY LEFT BLANK

PROGRAM CHANGES FOR FY 2014:

Aircraft Services: Study for Alternatives to WP-3 (Base Funding: \$28,594,000 and 104 FTE; Program Change: \$1,000,000 and 0 FTE): NOAA requests an increase of \$1,000,000 and 0 FTE for a total of \$29,594,000 and 104 FTE to conduct a study of alternatives to the WP-3 as a platform for NOAA research.

Proposed Actions:

NOAA seeks one-time funding to support a third-party study to investigate potential replacement of the WP-3 observing and research platform. The study will include a review of, but will not be limited to, the C130J (an aircraft currently used by the Air Force 53rd Airborne for hurricane reconnaissance) with phased array radar as an alternative to the WP-3 equipped with a Tail Doppler Radar (TDR) and lower fuselage radars. These funds will allow NOAA to explore a wide range of supplemental and replacement data sources, technology and platforms. The study will consider multiple platforms and radar technologies, including development of airborne phased-array technology, to continue its support of OAR Hurricane, Air Chemistry and Climate research, as well as NWS and NESDIS research. NOAA will also investigate potential areas of administrative and program cost savings to be gained through working with Federal partners.

Statement of Need and Economic Benefits:

NOAA owns two active WP-3 hurricane and reconnaissance planes, N42 and N43, which will reach the end of their service life in FY 2033 and FY 2034, respectively. NOAA seeks to reduce the impact of this lost capability to its research missions by identifying future platforms that will meet mission requirements.

NOAA's research, conducted on uniquely configured P-3's with the TDR, results in hurricane intensity forecast improvements. Hurricane intensity categories (CAT 1-5) are based on maximum sustained wind speed and associated storm surge and central pressure. Accurate intensity forecasts are critical for evacuation planning and public response, and contribute to saving lives and property. NOAA's WP-3 aircraft were built specifically for NOAA by Lockheed Martin and placed into service in the mid 1970's. The TDR is not transferable to the C130J due to the profile of the aircraft. NOAA needs a thorough review and analysis of alternatives to make an informed decision on the next generation of hurricane research platforms.

Base Resources Assessment:

There are currently no base resources for this sub-program. Activities currently funded in Aircraft Services can be found in the Aircraft Operations base narrative.

Schedule and Milestones:

- FY 2014 – Provide a Study of Alternatives

Deliverables:

- Study of Alternatives to the WP-3 as a platform for NOAA research

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Office of Marine and Aviation Operations
Sub-program: Aircraft Services
Program Change: Study of Alternatives to the WP-3

Object Class		FY 2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<hr/> 0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	1,000
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<hr/> 1,000

Aircraft Services: Flight Hour Increase (Base Funding: \$28,594,000 and 104 FTE; Program Change: \$1,868,000 and 0 FTE): NOAA requests an increase of \$1,868,000 and 0 FTE for a total of \$30,462,000 and 104 FTE for additional flight hours in support of hurricane reconnaissance and surveillance, high impact weather, and satellite calibration and validation. This will increase the frequency and density of in-situ and remotely sensed data.

Proposed Actions:

AOC will provide an additional 595 flight hours of critical in-situ observations supporting NOAA's mission to promote global environmental assessment, prediction and stewardship of the Earth's environment. The flight hours will support hurricane reconnaissance and research missions to improve hurricane intensity forecasts using the only three tail mounted Doppler radars in the world on the WP-3 and G-IV. Additional hours will provide observations necessary for accurate and reliable winter storm warnings. Further hours will support water resource surveys that allow water managers and forecasters to more accurately forecast spring melts to meet industrial, agricultural, and human needs. International partners rely on AOC to conduct satellite ocean wind sensor calibration and validations. In return, our partners provide ocean wind data that is used to improve hurricane forecasts. NOAA aircraft provide a comprehensive suite of data-collection systems in support of these projects.

Statement of Need and Economic Benefits:

The Aircraft Fleet collects data that impact a broad range of activities in the U.S. AOC provides aircraft with unique observing capabilities including three tail mounted Doppler radars. These radars are designed to observe the structure of severe weather and provide the data necessary to improve severe weather prediction.

The accuracy of hurricane track and intensity forecasts helps mitigate the impact of hurricanes, which average \$10 billion per landfalling storm and \$1 million per mile³ for evacuations. AOC provides NOAA scientists the in-situ observations needed to continue improvements to hurricane track and intensity forecasts. As a member of the Interagency National Hurricane Operations Plan (NHOP), AOC is responsible for augmenting Air Force Reserve capabilities typically flying 10 percent of total hurricane operation flight hours. The increased hours will support NOAA's unique research function to provide more accurate hurricane intensity and track forecasts to help state and federal planners mitigate losses of property and life from these devastating storms.

Severe weather events from tornados to snow storms impact the daily routines of thousands of people. AOC operates aircraft in support of winter storm forecasting and water resource management. Improved forecasts help state and local communities prepare for major wind, rain, and snow events allowing equipment to be pre-positioned and supplies moved into communities before they are needed. Surveys of mountain snow packs inform water managers and forecasters of the volume of water anticipated during spring melts. Improved forecasts allow water managers to better determine water levels in reservoirs and dams reducing flood risks, while still meeting the needs of their customers.

Satellites are multi-billion dollar investments that can only provide their broad coverage and continuous observational capability if they are properly calibrated and validated with Earth based instruments. AOC plays a role in ensuring ocean surface vector winds satellites operated by international partners are regularly calibrated and validated ensuring accurate and reliable data. The

³Whitehead, John C, (2003) One Million Dollars per Mile? The Opportunity Costs of Hurricane Evacuation, *Ocean and Coastal Management* 46 (11-12), 1069-1083.

accuracy of these satellite based observations plays a critical role in marine wind speed and wave height forecasts. In order to meet the calibration and validation requirements, AOC operates aircraft with instruments similar to those on the satellites allowing NOAA personnel to validate satellite data and make any necessary adjustments to their calibration.

Base Resource Assessment:

The base resources for this activity are found in the Aircraft Services base narrative.

Schedule and Milestones:

FY2014 – 2018:

Achieve and maintain Base Flight Hours of 2,165 by annually flying an additional:

- 170 Flight Hours for Hurricane Operations and Research
- 410 Flight Hours for High Impact Weather
- 15 Flight Hours for Calibration and Validation

Deliverables:

- Hurricane Operations and Research
 - Additional 100 Hurricane Reconnaissance Flight Hours
 - Additional 60 Hurricane Surveillance Flight Hours
 - Additional 10 Hurricane Research Flight Hours
- High Impact Weather
 - Additional 145 Winter Storms Reconnaissance Flight Hours
 - Additional 265 Snow Survey Flight Hours
- Calibration and Validation
 - Additional 15 Ocean Winds Winter Flight Hours

Performance Goals and Measurement Data:

Performance Measure:	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Base Flight Hours	Actual	Target	Target	Target	Target	Target	Target
With increase	N/A	N/A	2,760	2,760	2,760	2,760	2,760
Without increase	2,212	2,016	2,165	2,165	2,165	2,165	2,165
Discussion: Base funded mission flight hours.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Office of Marine and Aviation Operations
Subprogram: Aviation Operations
Program Change: Flight Hour Increase

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	39
11.8	Special personnel services payments	0
11.9	Total personnel compensation	39
12	Civilian personnel benefits	10
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	805
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	1,014
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	1,868

THIS PAGE INTENTIONALLY LEFT BLANK

**APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION AND CONSTRUCTION
SUB-PROGRAM: FLEET REPLACEMENT PROGRAM**

The Fleet Replacement Program (FRP) develops requirements, acquisition strategies, and monitors the modernization and construction of the ships in order to meet NOAA's Days at Sea (DAS) in-situ observing requirements. FRP oversees government and contractual resources necessary to design, equip, construct or modernize the ships and ship-board systems. NOAA ships face challenges similar to other observational infrastructure including expanded mission requirements, age and obsolescence, and finite resources for recapitalization. NOAA has successfully developed, adapted, and fielded a number of technologies that have enhanced the capabilities of NOAA ships and is currently evaluating a number of technologies that have the potential to more effectively and efficiently meet collection requirements. FRP receives sustained funding for ongoing activities related to modernization and current ship construction activities as delineated in the 2008 Ship Recapitalization Plan (Ship Recapitalization Plan) and contains two budget lines: Fleet Capital Investment and Technology Infusion and New Vessel Construction.

Fleet Capital Investment and Technology Infusion (FCITI) is designed to maintain and extend the service life of the ship fleet by ensuring required upgrades to ship board systems and mission equipment are in line with the needs of the programs and safety requirements. FCITI monitors the material condition of the ships using a Ship Structure and Machinery Evaluation (SSME), which captures the ship's condition. The SSME documents the results of inspections and identifies future work data, which will guide future capital investment decision making. At the same time, OMAO uses manufacturer provided information for new ships to develop maintenance profiles. As information is gathered through these means, the investment decision model will be continually updated.

New Vessel Construction (NVC) receives sustained funding for ensuring proper oversight of ship construction activities by enabling a cadre of government experts is available to evaluate requirements, review proposals, and monitor progress towards achieving goals. Currently, NVC sustains contract oversight for construction of the newest Fisheries Research Vessel (FSV) 6, *Reuben Lasker*, which was funded primarily under the American Reinvestment and Recovery Act (ARRA).

NOAA Ship Recapitalization Plan

In 2008, NOAA submitted a Ship Recapitalization Plan to Congress (http://www.oma.noaa.gov/publications/08_ship_recap_plan.pdf), which was a comprehensive plan designed to systematically replace or upgrade the fleet in order to meet the ever changing and evolving demands of the scientific community. Specially, the plan examined 10 of the fleet's 19 ships that would reach the end of their useful service life over the next 15 years.

For the past five years the Ship Recapitalization Plan has served as a guide for planned investments, but events since 2008 have lead NOAA to reassess the current recapitalization strategy. Through an internal review process, the NOAA Fleet Plan, NOAA has been evaluating current and future NOAA in-situ ocean observing platforms.

The objectives of the Fleet Replacement Program are:

- Ensure the proper maintenance and safety of NOAA ships within American Bureau of Shipping, U.S. Coast Guard, Environmental Protection Agency, and applicable international requirements.
- Ensure proper oversight of the design and construction of new ships that meet all applicable federal regulations.

FY 2012 Program Accomplishments:

- The newest Fisheries Survey Vessel (FSV), the *Reuben Lasker*, was launched into the Menominee River in Wisconsin on June 16, 2012.
- NOAA ship *Ferdinand R. Hassler* was commissioned on June 8, 2012 at a special ceremony in Norfolk, Virginia.

PROGRAM CHANGES FOR FY 2014:

Fleet Capital Investment and Technology Infusion: Progressive Lifecycle Maintenance Program (Base Funding: \$1.005 and 0 FTE; Program Change: \$10,707,000 and 0 FTE):

NOAA requests \$10,707,000 and 0 FTE for a total of \$11,712,000 and 0 FTE for the establishment of a new Progressive Lifecycle Maintenance program for NOAA’s ship fleet.

Proposed Actions:

NOAA proposes to implement a progressive fleet lifecycle maintenance program to improve the material condition of the NOAA ship fleet by stabilizing capital investment. Specifically, this increased funding will establish a capital budget allowing OMAO to plan and perform cyclic depot-level capital investments across the fleet each year. This progressive lifecycle maintenance model emulates established benchmarks and best practices from industries as diverse as the aviation industry and the United States Coast Guard (USCG) Surface Forces Logistics Centers. The program will initially focus major investments on the aging T-AGOS ships, but ultimately will stabilize and improve the material condition of the Fisheries Survey Vessels (FSVs) and hydrographic survey ships. The notational chart below shows the new approach for ship capital investment rotating the type and intensity of capital investment throughout the fleet.

Under this progressive lifecycle maintenance program, former Major Repair Periods (MRPs) would be broken into smaller components allowing OMAO to focus on key ship board systems throughout the fleet on a regular basis. During the maintenance cycle, each ship in the NOAA fleet would receive regular upgrades and replacements of mission support equipment and technology infusions such as data processing capacity. This approach eliminates the accumulation of capital repairs that would typically occur prior to an MRP. The result is a fleet maintained at a higher state of readiness, extension of ship service life, and avoidance of mechanical, structural, and mission equipment obsolescence. During FY 2013, OMAO will complete Ship Structure and Machinery Evaluations (SSMEs) on the T-AGOS fleet to assess the material conditions of the ships and determine priority repairs. The chart below lists the annual ranges of capital investments in thousands of dollars that will vary from year to year based on the ships and results of SSMEs.

Crew Space Refurbishment	Science/Mission Space Refurbishment	Shipboard Systems	Underwater Body	Mission Systems Refresh
\$3,000 - \$5,000	\$1,000 - \$3,000	\$1,000 - \$3,000	\$500 - \$2,000	\$1,000 - \$3,000
<ul style="list-style-type: none"> Refrigeration systems HVAC refurbishment. Environmental equipment replace 	<ul style="list-style-type: none"> Space renovation Government furnished equipment 	<ul style="list-style-type: none"> Propulsion & generation systems overhaul re-piping; fire suppression upgrades machinery monitoring upgrades 	<ul style="list-style-type: none"> Blast hull refurbish props/shafts; refurbish valves/piping 	<ul style="list-style-type: none"> Multi-beam sonars and sensors Ship-Board electronic data processing and storage, UAS Launch/ Recovery System; Cranes, winches, davit replace

Statement of Need and Economic Benefits:

Currently, fleet capital investment is provided via single year appropriations requested through the budgeting process. The methodology limits the ability of OMAO to plan future investments and acquisitions. The recent premature deactivation of NOAA Ship *Miller Freeman* and the suspension of operations on NOAA Ship *Ka'imimoana* demonstrate how unanticipated pressures on funding levels and the accumulation of capital investment requirements can negatively impact fleet operations. The advantages of a sustained capital investment program are that it:

- Eliminates budget variability in constrained fiscal environment
- Reduces risk and uncertainty ensuring mission function continuity and availability
- Reduces disruption to crews and to operational schedules
- Improves reliability, adds Days at Sea back to operational capacity
- Improves procurement planning, competitiveness, and flexibility
- Avoids accumulation of repairs helping to reduce future liability and costs.

The chart below shows goals and activities supported by the T-AGOS and legacy fleet:

Platform	Goal Supported	Current Activities Supported
<i>Hi'ialakai</i> (T-AGOS)	Resilient Coastal Communities & Economies Weather-Ready Nation	Coral Reef Condition Assessment Ecosystem Characterization Maintain Observing Systems and Produce Key Data Sets
<i>Gordon Gunter</i> (T-AGOS)	Healthy Oceans Resilient Coastal Communities & Economies	Coral Reef Condition Assessment Fish stock assessments Marine mammal and endangered species management
<i>Okeanos Explorer</i> (T-AGOS)	Resilient Coastal Communities & Economies	Ecosystem Characterization
<i>Oscar Elton Sette</i> (T-AGOS)	Healthy Oceans	Ecosystem Characterization Fish stock assessments Marine mammal and endangered species management Outreach and Education
<i>Ronald H. Brown</i>	Climate Adaptation & Mitigation Resilient Coastal Communities & Economies	Coral Reef Condition Assessment Maintain Observing Systems and Produce Key Data Sets Ocean Carbon Operation and maintenance of moored buoys
<i>Nancy Foster</i>	Resilient Coastal Communities & Economies	Coral Reef Condition Assessment Ecosystem Characterization Marine mammal and endangered species management

Maintaining the condition of ships continues to be a challenge for all US Government surface fleets and agencies are identifying strategies to manage the costs of operations and recapitalization. NOAA is carefully tracking US Navy and Coast Guard efforts to adopt and adapt strategies that make sense

for NOAA's fleet. For recapitalization savings, these strategies require an investment of funds to sustain the capability beyond ship's design life.

For NOAA ships, costs increase dramatically as corrosion issues manifest themselves, and the ability to support machinery and equipment becomes difficult as manufacturers move to new technologies. This latter issue has been the greatest challenge of late with new control technologies and added environmental requirements. These costs increase significantly at about 20 -25 years of service life of NOAA ships, but can be seen sooner as OMAO is already experiencing these issues with the newer Fishery Survey Vessels. The progressive maintenance funds will allow OMAO to address these issues on ships, achieve service life extension, and reduce the need for new construction and substantial structural repairs. The funds will also allow for an assessment of available technologies to meet requirements necessary to maintain ship machinery and equipment for the second twenty years of a ship's service life. The costs to fully address corrosion, make needed structural repairs and to update machinery and equipment average around \$15 million per vessel, at least six times less costly than acquiring a new ship of similar capability.

Base Resources Assessment:

Fleet Capital Improvement and Technology Infusion funds have historically been dedicated specifically to major repair periods. In FY 2014, OMAO is requesting the permanent allocation of \$11,680,000 to the Progressive Lifecycle Maintenance Program as described above. This will eliminate the need to request one-time MRP funding in future budget years. These funds will be executed via a competitive solicitation process for ship-yard repair, to be informed through a SSME, work definition conference, and detailed specifications and work-time list with independent government estimates.

Schedule and Milestones:

- FY 2013 – Complete SSMEs on T-AGOS Fleet
- FY 2014 – Begin progressive lifecycle maintenance on T-AGOS ships
- FY 2015 – Begin progressive lifecycle maintenance on Navigation ships
- FY 2017 – Begin progressive lifecycle maintenance on FSVs
- FY 2018 – Begin progressive lifecycle maintenance on multi-purpose ships *Nancy Foster* and *Ronald H. Brown*

Deliverables:

- Cyclic capital investments in the NOAA fleet to improve material condition, prolong service life and ensure continuity of ship mission availability and readiness.

Performance Goals and Measurement Data:

Performance Measure:	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Lost Days at Sea Due to Maintenance	Actual	Target	Target	Target	Target	Target	Target
With Increase	N/A	N/A	264	264	256	248	232
Without Increase	254	264	291	319	336	353	363
Description: Without increase assumes a continued average of 4 percent lost DAS based on historical data from FY 2005 – FY 2011 with an additional 4 percent each year as fleet condition has experienced increased deterioration. With increase assumes a 3 percent improvement on lost DAS in the 3rd and 4th year, FY 2016 and FY 2017, of progressive maintenance, and a 6 percent improvement in FY 2018.							

Outyear Funding Estimates (\$ in thousands):

Progressive Lifecycle Maintenance	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		10,707	0	0	0	0		
Total Request	1,005	11,712	11,712	11,712	11,712	11,712		Recurring

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Office of Marine and Aviation Operations
Subprogram: Fleet Capital Improvements and Technology Infusion
Program Change: Progressive Lifecycle Maintenance Program

Object Class		2014 Increase
11	Personnel compensation	
11.1	Full-time permanent	0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	10,707
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	10,707

New Vessel Construction: Fisheries Survey Vessel 6 Acquisition Decrease for Preliminary Delivery and Post Shipyard Availability Period and Program Management (Base Funding: \$2,897,000 and 5 FTE; Program Change: -\$2,897,000 and -5 FTE): NOAA requests a decrease of \$2,897,000 and 5 FTE for a total of \$0 and 0 FTE representing the completion of the Fisheries Survey Vessel 6 (FSV6) *Reuben Lasker* acquisition and associated post-delivery ship testing and program management activities.

Proposed Actions:

NOAA will take delivery of the *Reuben Lasker* in FY 2013 and will complete final post shipyard ship availability tests, program management activities, and acquisition closeout functions. The funding associated with these activities will therefore not be required after FY 2013. The operations and maintenance costs associated with this ship are factored into the FY 2014 base estimates for total fleet output.

Base Resources Assessment:

The base resources for this activity are described in the New Vessel Construction base narrative.

Outyear Funding Estimates (\$ in thousands):

FSV6	FY 2013 & Prior	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	CTC	Total
Change from FY 2014 Base		(2,897)	N/A	N/A	N/A	N/A		
Total Request	85,594*	0	0	0	0	0	0	85,594*

*Reflects all ARRA and PAC funding, some of which was not included in the FY 2013 PB.

PROGRAM CHANGE PERSONNEL DETAIL

Budget Program: Office of Marine and Aviation Operations
Sub-program: Fleet Capital Improvements and Technology Infusion
Program Change: Completion of the Fisheries Survey Vessel 6 (FSV6) *Reuben Lasker*

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Program Manager	Silver Spring, MD	ZA-V	-1	124,996	(124,996)
Marine Engineer	Silver Spring, MD	ZA-III	-2	63,092	(126,184)
Program Analyst	Silver Spring, MD	ZA-III	-1	62,467	(62,467)
Office Assistant	Silver Spring, MD	ZA-II	-1	42,631	(42,631)
Subtotal			<u>-5</u>		<u>(356,278)</u>
2013 Pay Adjustment (0.5%)					<u>(1,781)</u>
Total					<u>(358,059)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-5		(358,059)
2014 Pay Adjustment (1.0%)					<u>0</u>
TOTAL					<u>(358,059)</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-5
Other than full-time permanent	<u>0</u>
Total	-5
Authorized Positions:	
Full-time permanent	-5
Other than full-time permanent	<u>0</u>
Total	-5

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Budget Program: Office of Marine and Aviation Operations
Sub-program: Fleet Capital Improvements and Technology Infusion
Program Change: Completion of the Fisheries Survey Vessel 6 (FSV6) *Reuben Lasker*

Object Class	2014 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	(358)
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(358)
12 Civilian personnel benefits	(93)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(2,446)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(2,897)

Appropriation Account: NOAA Corps Retirement Pay (Mandatory)

The retirement system for the uniformed services provides a measure of financial security after release from active duty for service members and their survivors. It is an important factor in the choice of a career in the uniformed services, and the legal mandate for rates to be paid is the same for all uniformed services, see 10 USC. Retired pay is an entitlement to NOAA Commissioned Corps officers under 33 USCA 3044, 33 USCA 3045, and 33 USCA 3046. Retired pay funds are transferred to the U.S. Coast Guard, which handles the payments each year as adjusted pursuant to the Department of Defense Authorization legislation. Healthcare funds for non-Medicare-eligible retirees, dependents, and annuitants are administered by OMAO.

Legal authority for retirement of NOAA Commissioned Corps officers is contained in 33 USCA 3044. Retired officers of the NOAA Commissioned Corps receive retirement benefits that are administered by the Commissioned Personnel Center within the Office of Marine and Aviation Operations.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration
 NOAA Corps Retirement Pay (Mandatory)
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Pos itions	FTE	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution	0	0	28,269	28,269
plus: 2014 Adjustments to Base	0	0	0	0
FY 2014 Base	0	0	28,269	28,269
plus: 2014 Program Changes	0	0	0	0
FY 2014 Estimate	0	0	28,269	28,269

		FY 2013									
		FY 2012 Actual		Annualized Continuing Resolution		FY 2014 Base		FY 2014 Estimate		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
NOAA Corps	Pos/BA	0	28,269	0	28,269	0	28,269	0	28,269	0	0
Commissioned Officers Retirement	FTE/OBL	0	24,683	0	28,269	0	28,269	0	28,269	0	0
Total: NOAA Corps	Pos/BA	0	28,269	0	28,269	0	28,269	0	28,269	0	0
Commissioned Officers	FTE/OBL	0	24,683	0	28,269	0	28,269	0	28,269	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
NOAA Corps Retirement Pay (Mandatory)
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	24,683	0	28,269	0	28,269	0	28,269	0	0
Total Obligations	0	24,683	0	28,269	0	28,269	0	28,269	0	0
Adjustments to Obligations:										
Unobligated balance	0	3,586	0	0	0	0	0	0	0	0
Total Budget Authority	0	28,269	0	28,269	0	28,269	0	28,269	0	0
Financing from Transfers and Other:										
Net Appropriation	0	28,269	0	28,269	0	28,269	0	28,269	0	0

Appropriation Account: Medicare-Eligible Retiree Healthcare Fund Contribution - NOAA Corps

The FY 2003 Department of Defense Authorization Act requires all uniformed services, including NOAA, to participate in an accrual fund for Medicare-eligible retirees. Payments into this accrual fund will cover the future health care benefits of present, active-duty NOAA officers and their dependents and annuitants. For FY 2014, payments to the accrual fund are estimated at \$1,936,000.

THIS PAGE INTENTIONALLY LEFT BLANK

Department of Commerce
 National Oceanic and Atmospheric Administration Medicare
 Eligible Retiree Health Fund Contribution - NOAA Corps
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2013 Annualized Continuing Resolution	0	0	1,948	1,948
plus: 2014 Adjustments to Base	0	0	0	0
FY 2014 Base	0	0	1,948	1,948
plus: 2014 Program Changes	0	0	(12)	(12)
FY 2014 Estimate	0	0	1,936	1,936

		FY 2012		FY 2013		FY 2014		FY 2014		Increase/ Decrease	
		Actual		Annualized CR		Base		Estimate		Personnel	Amount
Medicare Eligible Retiree Health Fund Contribution - NOAA Corps	Pos/BA	0	1,802	0	1,948	0	1,948	0	1,936	0	(12)
	FTE/OBL	0	1,802	0	1,948	0	1,948	0	1,936	0	(12)
Total: Medicare Eligible Retiree Health Fund Contribution - NOAA	Pos/BA	0	1,802	0	1,948	0	1,948	0	1,936	0	(12)
	FTE/OBL	0	1,802	0	1,948	0	1,948	0	1,936	0	(12)

Department of Commerce
National Oceanic and Atmospheric Administration Medicare
Eligible Retiree Health Fund Contribution - NOAA Corps
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	FY 2012 Actual		FY 2013 Annualized CR		FY 2014 Base Program		FY 2014 Estimate		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	1,802	0	1,948	0	1,948	0	1,936	0	(12)
Total Obligations	0	1,802	0	1,948	0	1,948	0	1,936	0	(12)
Adjustments to Obligations:										
Total Budget Authority	0	1,802	0	1,948	0	1,948	0	1,936	0	(12)
Financing from Transfers and Other:										
Net Appropriation	0	1,802	0	1,948	0	1,948	0	1,936	0	(12)

Department of Commerce
 National Oceanic and Atmospheric Administration Medicare
 Eligible Retiree Health Fund Contribution - NOAA Corps
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Object Class	FY 2012 Actual	FY 2013 Annualized Continuing Resolution	FY 2014 Base	FY 2014 Estimate	Increase/ (Decrease) over 2014 Base
Other purchases of goods and services from Gov't accounts	1,802	1,948	1,948	1,936	(12)
Total Obligations	1,802	1,948	1,948	1,936	(12)
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Offsetting collections, Mandatory	0	0	0	0	0
Less: Previously Unavail. Unoblig. Bal.	0	0	0	0	0
Total Budget Authority Mandatory	1,802	1,948	1,948	1,936	(12)
 Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0
Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

THIS PAGE INTENTIONALLY LEFT BLANK