

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



**BUDGET
ESTIMATES**

FISCAL YEAR 2021

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 2021
Congressional Submission**

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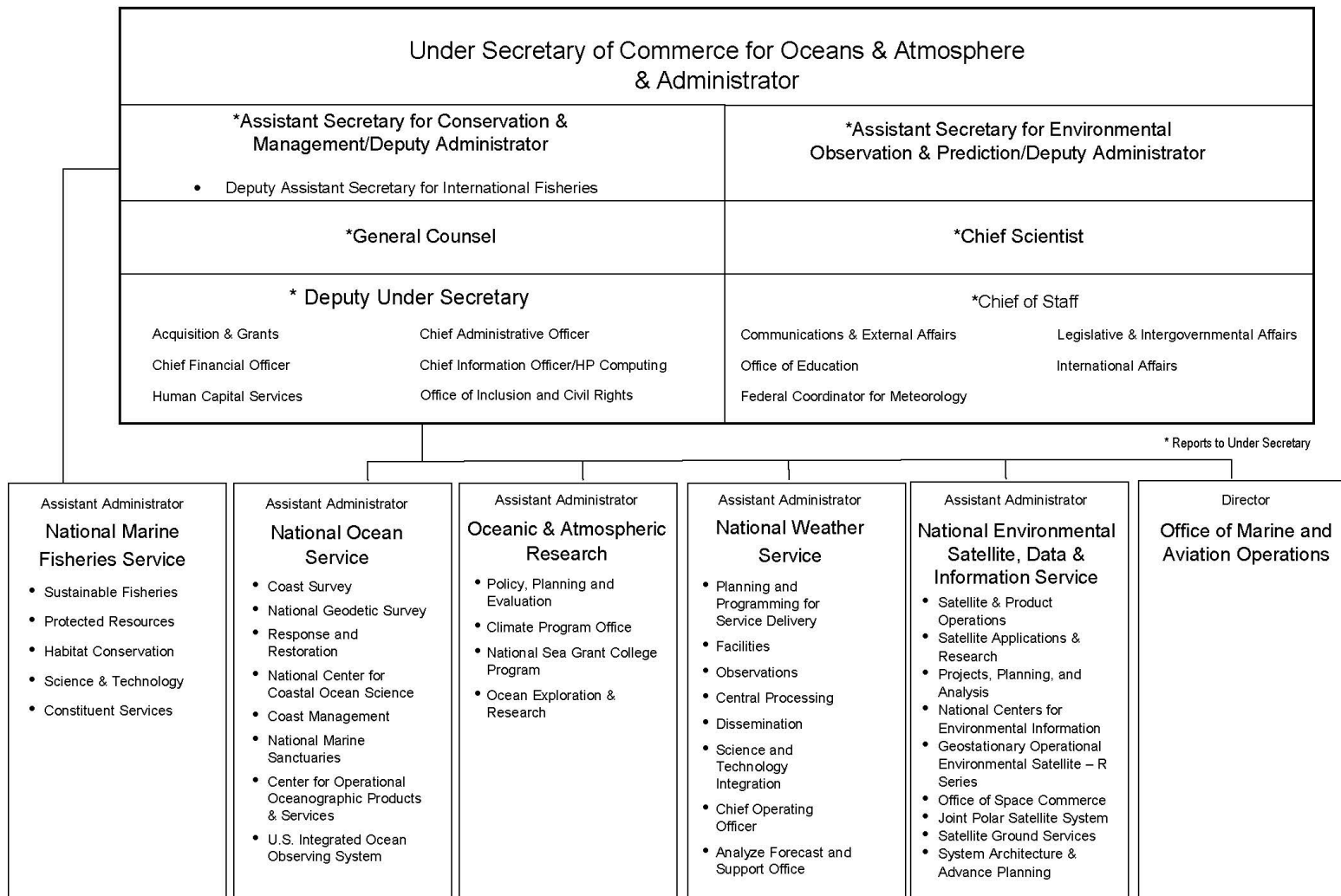
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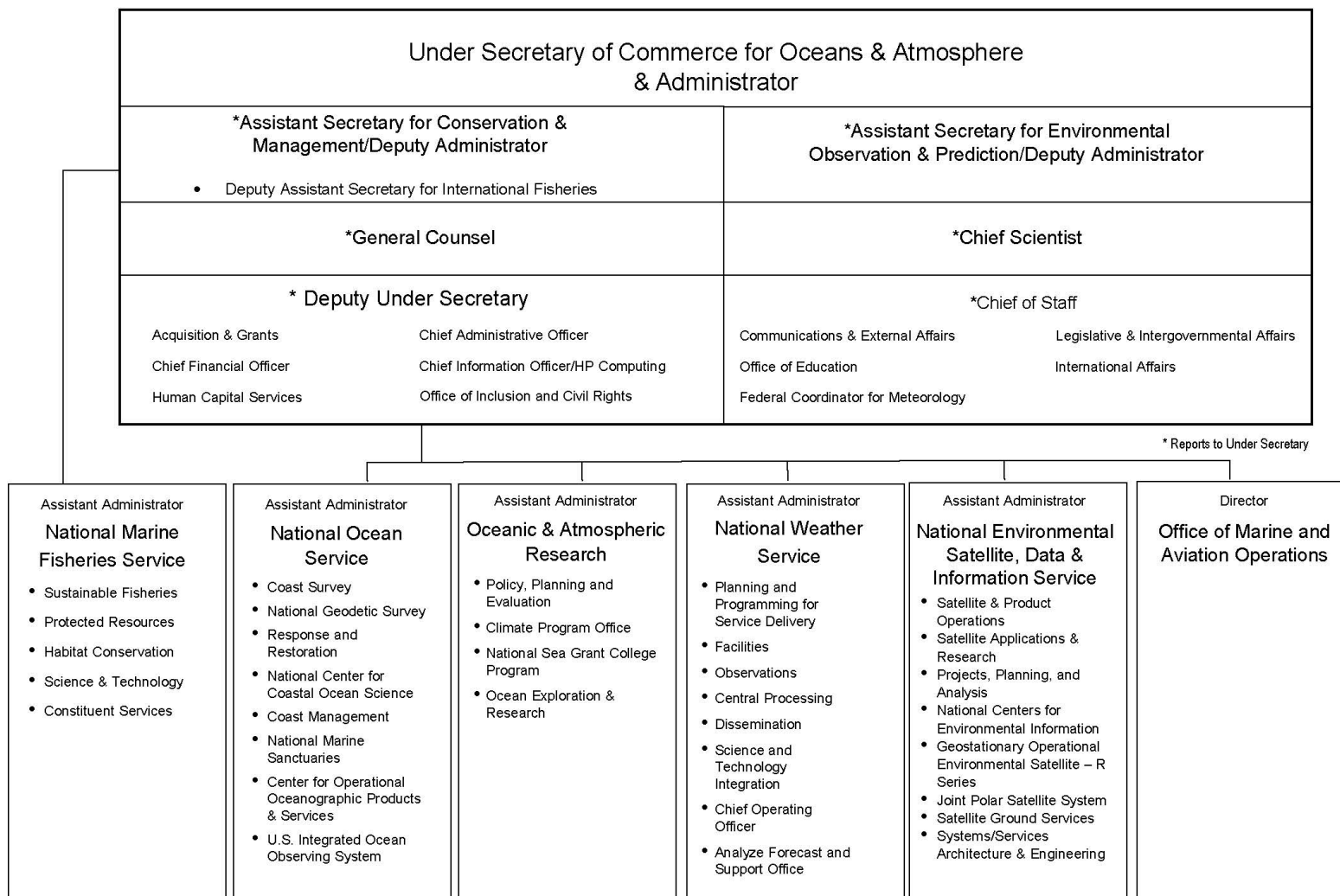
Current Organizational Chart

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION



Proposed Organizational Chart

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION



**Department of Commerce
National Oceanic and Atmospheric Administration
Budget Estimates, Fiscal Year 2021**

EXECUTIVE SUMMARY

For Fiscal Year (FY) 2021, the National Oceanic and Atmospheric Administration (NOAA) proposes a budget of \$4,634,033,000 in discretionary appropriations, a decrease of \$727,642,000 from FY 2020 Enacted. This budget supports NOAA's goals of reducing the impacts of extreme weather and water events to save lives and protect property by continued implementation of the *Weather Research and Forecasting Innovation Act of 2017* (Public Law 115-25) and *National Integrated Drought Information System (NIDIS) Reauthorization Act of 2018* (Public Law 115-423) and maximizing the economic contributions of our ocean and coastal resources by expanding the American Blue Economy.. It also includes additional investments to advance space innovation through new approaches to NOAA's satellite missions and provides for mission support activities essential to accomplishing NOAA/s missions. Some highlights of NOAA's initiatives are provided below.

In FY 2021, NOAA proposes initiatives that will protect lives and property through new research and creative partnerships for data sharing. NOAA requests an increase of \$3,200,000 to establish a Tornado Warning Improvement and Extension Program (TWIEP) to improve the accuracy and timeliness of tornado forecasts, predictions, and warnings. With this increase, the TWIEP will carry out research and leverage existing resources to advance NOAA's tornado observing systems, thunderstorm-scale computer models, and risk communication approaches. An investment of \$4,000,000 to increase observational data sharing with the World Meteorological Organization (WMO) will improve the frequency and reliability of observational data used to generate weather and water forecasts, watches, and warnings; improve interoperability with international partners; and enable the results of successful research and development to be fully transitioned and implemented into NWS operations. This request will also provide an increase of \$7,000,000 for the Earth Prediction Innovation Center (EPIC), allowing EPIC to expand the community support it provides for Unified Forecast System (UFS) applications, accelerating research to operations to research (R2O2R), and leveraging innovation from the Weather Enterprise using a cloud-based development environment.

To make the most of the sustainable economic and social contributions of our ocean and coastal resources, NOAA requests several investments to improve marine transportation, coastal resilience, and to continue the enterprise level coordination of unmanned systems operations which provide a wide variety of data that underpins all NOAA efforts. NOAA requests an increase of \$8,514,000 to support the Presidential Memorandum on Ocean Mapping of the United States Exclusive Economic Zone (EEZ). With these funds NOAA will coordinate the development of the interagency mapping strategy to map, explore, and characterize the U.S. EEZ, Arctic and sub-Arctic shoreline, and nearshore of Alaska. NOAA requests an increase of \$2,500,000 for regional ocean data portals to implement Executive Order 13840, Ocean Policy to Advance the Economic, Security, and Environmental Interest of the United States, through improved access to credible marine data and information. Building upon the FY 2020 investment to establish a centralized Unmanned Systems Program, NOAA requests \$2,000,000 to fund centralized acquisition of UxS systems and platforms. These funds will ensure consistency in the way that NOAA's fleet of ships and aircraft, and UxS are standardized, centrally maintained, and mission ready. Rapidly evolving UxS technology is invaluable in supporting NOAA mission requirements such as:

**Department of Commerce
National Oceanic and Atmospheric Administration
Budget Estimates, Fiscal Year 2021**

hydrographic and habitat mapping, fishery stock assessment, and oceanographic and atmospheric observations that support weather forecasting and extreme weather events.

In FY 2021, NOAA will expand innovations in space enterprises through research to operations, creative partnerships, and cloud architecture. An increase of \$5,015,000 for Data-source Agnostic Common Services allows NOAA to utilize essential data and observations from an increasingly capable and diverse array of partner and commercial systems to meet mission requirements in a cost-effective manner. New and legacy NOAA products and services will be transferred within a cloud architecture to increase end-to-end efficiencies through a more flexible and scalable infrastructure. This budget includes an increase of \$10,000,000 for Commercial Data Purchase of Global Navigation Satellite System (GNSS) Radio Occultation (RO) data for operational use. GNSS RO has the potential to be a cost-effective means to provide atmospheric profiles necessary for accurate weather forecasts. In addition, an increase of \$5,000,000 for the Commercial Weather Data Pilot will continue the execution of pilots for the next available commercial data type. These pilots are critical to NOAA's future satellite architecture as they assess operational viability of possible future commercial capabilities.

NOAA requests an increase of \$44,115,000 for the Space Weather Follow On (SWFO) program. The NOAA SWFO program will ensure continuity of space weather data beyond NOAA's Deep Space Climate Observatory and NASA-European Space Agency research Solar and Heliophysics Observatory, which are well past their design life.

NOAA also requests funds for several initiatives to support and secure NOAA staff, operations, and facilities. In FY 2021, NOAA requests an additional \$1,700,000 to expand its Workplace Violence Response and Prevention Program. NOAA also requests \$20,500,000 to evaluate and address facilities needs in the Northwest region. In addition, NOAA requests an increase of \$7,607,000 for deferred maintenance and repair projects at NOAA-owned properties. These funds will ensure NOAA does not redirect mission resources to address critical maintenance and repairs from a growing backlog when facility failures begin to affect mission accomplishment.

NOAA is undertaking a comprehensive review of organizational staffing needs. The number of positions presented in the FY 2021 President's Budget reflects the number of positions this level of funding will support.

Technical Transfer: The Department of Commerce (DOC) is proposing to transfer nine projects and funding out of the Working Capital Fund and the Advances and Reimbursable account to the Departmental Management Salaries and Expense account as part of its annual review to properly align and account programs and costs. This transfer executes the NOAA portion of the DOC transfer. For more information regarding the specific projects and funding transfers for the Department of Commerce please refer to Exhibit 3 of the Departmental Management FY 2021 Congressional Justification Budget.

Department of Commerce
National Oceanic and Atmospheric Administration
FY 2021 PROGRAM INCREASES / DECREASES / TERMINATIONS
(Dollar amounts in thousands)
(By Budget Program, Largest to Smallest)

Increases

Page No In CJ	Appropriations	Budget Program	Title of Increase	Positions	Budget Authority
NOS-18	ORF	NOS	Ocean Mapping the EEZ and Charting in Alaska and the Arctic	0	8,514
NOS-69	ORF	NOS	Increase Funding for Regional Ocean Data Platforms	0	2,500
NMFS-127	FDAF	NMFS	Fisheries Disaster Assistance	2	300
OAR-62	ORF	OAR	Earth Prediction Innovation Center (EPIC) Increase	0	7,000
OAR-66	ORF	OAR	Establish Tornado Warning Improvement and Extension Program (TWIEP)	0	3,200
OAR-114	ORF	OAR	National Oceanographic Partnership Program (NOPP) Increase	0	534
NWS-16	ORF	NWS	Increase Data Sharing for Integrated Global Observing System and Global Basic Observing Network	0	4,000
NWS-103	ORF	NWS	Establish National Weather Service Pilots	0	2,000
NWS-81	ORF	NWS	Enhancing the World Meteorological Organization Information System	0	1,000
NESDIS-88	PAC	NESDIS	Space Weather Follow On	0	44,115
NESDIS-78	PAC	NESDIS	GOES-R Series Sustainment	0	30,444
NESDIS-104	PAC	NESDIS	Commercial Data Purchase	0	10,000
NESDIS-93	PAC	NESDIS	Data-source Agnostic Common Services (DACs)	0	5,015
NESDIS-101	PAC	NESDIS	Commercial Weather Data Pilot	0	5,000
NESDIS-84	PAC	NESDIS	Cooperative Data and Rescue Services	0	3,500
MS-52	PAC	MS	Evaluate and Address Northwest Facilities Issues	0	20,500
MS-47	ORF	MS	Facilities Maintenance	0	7,607
MS-27	ORF	MS	Workplace Violence Prevention and Response Program	13	1,700

**Department of Commerce
National Oceanic and Atmospheric Administration
FY 2021 PROGRAM INCREASES / DECREASES / TERMINATIONS**

(Dollar amounts in thousands)
(By Budget Program, Largest to Smallest)

MS-32	ORF	MS	Business Applications Solutions (BAS) and Administrative Systems Program Management Office	0	500
OMAO-48	PAC	OMAO	Unmanned Systems Acquisitions	0	2,000
N/A	ORF	NMFS	Increase (non-narrative)	0	126
Subtotal, Increases				15	159,555

Decreases

Page No In CJ	Appropriations	Budget Program	Title of Decrease	Positions	Budget Authority
NOS-33	ORF	NOS	Reduce Integrated Ocean Observing System Regional Observation Grants	0	(19,556)
NOS-30	ORF	NOS	Hydrographic Survey Priorities/Contracts	0	(5,051)
NOS-81	ORF	NOS	Reduce Funding for Coral Reef Restoration and Threat Abatement Initiatives	0	(3,661)
NOS-72	ORF	NOS	Eliminate Funding support for Integrated Water Prediction	0	(2,576)
NOS-90	ORF	NOS	Reduce Sanctuary Operations	0	(2,463)
NOS-52	ORF	NOS	Reduce Marine Debris Program Activities	0	(1,522)
NOS-27	ORF	NOS	Physical Oceanographic Real Time System decrease	0	(1,000)
NOS-43	ORF	NOS	Reduce Response and Restoration Activities	0	(725)
NMFS-83	ORF	NMFS	Columbia River Hatcheries and Pacific Salmon Treaty	0	(21,595)
NMFS-66	ORF	NMFS	Northeast At Sea Monitors and North Pacific Observers	0	(11,241)
NMFS-61	ORF	NMFS	Fisheries Surveys and Stock Assessments	0	(10,442)
NMFS-51	ORF	NMFS	Fisheries Science Activities	0	(6,176)
NMFS-107	ORF	NMFS	Sustainable Habitat Management	0	(4,836)
NMFS-77	ORF	NMFS	National Catch Share Program	0	(3,975)

Department of Commerce
National Oceanic and Atmospheric Administration
FY 2021 PROGRAM INCREASES / DECREASES / TERMINATIONS
(Dollar amounts in thousands)
(By Budget Program, Largest to Smallest)

NMFS-32	ORF	NMFS	Hatchery Genetic Management Plans	0	(3,763)
NMFS-20	ORF	NMFS	ESA and MMPA Permitting	0	(3,392)
NMFS-31	ORF	NMFS	Right Whale Recovery	0	(3,048)
NMFS-68	ORF	NMFS	Fisheries Management Programs and Services	0	(3,029)
NMFS-63	ORF	NMFS	Cooperative Research Program	0	(2,916)
NMFS-71	ORF	NMFS	Electronic Monitoring & Reporting (EM/ER) Implementation	0	(2,700)
NMFS-54	ORF	NMFS	Northeast Groundfish Research	0	(2,500)
NMFS-80	ORF	NMFS	Aquaculture	0	(2,402)
NMFS-86	ORF	NMFS	Regional Councils and Fisheries Commissions	0	(1,878)
NMFS-96	ORF	NMFS	Enforcement	0	(1,862)
NMFS-74	ORF	NMFS	Seafood Import Monitoring Program Implementation	0	(1,200)
NMFS-28	ORF	NMFS	Species Recovery Grants	0	(1,010)
OAR-78	ORF	OAR	Joint Technology Transfer Initiative (JTTI) Decrease	0	(11,997)
OAR-104	ORF	OAR	Ocean Exploration Decrease	0	(10,146)
OAR-111	ORF	OAR	Sustained Ocean Observation and Monitoring Decrease	0	(8,107)
OAR-60	ORF	OAR	Laboratories and Cooperative Institutes Decrease	0	(6,860)
OAR-29	ORF	OAR	Laboratories and Cooperative Institutes Decrease	0	(6,570)
OAR-73	ORF	OAR	U.S. Weather Research Program (USWRP) Decrease	0	(6,486)
OAR-108	ORF	OAR	Integrated Ocean Acidification Decrease	0	(5,947)
OAR-96	ORF	OAR	Laboratories and Cooperative Institutes Decrease	0	(5,335)
OAR-120	ORF	OAR	R&D HPC Cloud Computing Services Decrease	0	(1,609)
OAR-75	ORF	OAR	Tornado Severe Storm Research/PAR Decrease	0	(1,020)

Department of Commerce
National Oceanic and Atmospheric Administration
FY 2021 PROGRAM INCREASES / DECREASES / TERMINATIONS
(Dollar amounts in thousands)
(By Budget Program, Largest to Smallest)

OAR-130	PAC	OAR	Research Supercomputing Decrease	0	(1,000)
NWS-57	ORF	NWS	Reduce NWS Workforce	(248)	(15,000)
NWS-40	ORF	NWS	Establishment of Regional Enterprise Application Development and Integration Teams	(84)	(11,917)
NWS-61	ORF	NWS	Reduce Tsunami Warning Program	(25)	(11,000)
NWS-118	PAC	NWS	Reduce Research and Development High Performance Computing	0	(4,400)
NWS-13	ORF	NWS	National Mesonet Program	0	(4,200)
NWS-94	ORF	NWS	Reduce the Investment in Numerical Weather Prediction Modeling	0	(2,101)
NWS-45	ORF	NWS	Slow Advanced Hydrologic Prediction Services Expansion	0	(2,000)
NWS-84	ORF	NWS	Reduction in NOAA Weather Radio Transmitters	0	(1,750)
NWS-24	ORF	NWS	Reduce Upper Air Observations	0	(1,655)
NWS-71	ORF	NWS	Reduction to Office of Water Prediction Center Staffing Support	0	(1,500)
NWS-19	ORF	NWS	Reduce Marine Observations	0	(1,500)
NWS-21	ORF	NWS	Reduce Marine Observations Tropical Atmosphere Ocean Platform	0	(1,300)
NWS-67	ORF	NWS	Consolidate Climate Prediction Center/Weather Prediction Center Functions	(8)	(1,200)
NWS-33	ORF	NWS	Reduce Weather and Ocean Platform Buoys	0	(1,200)
NWS-30	ORF	NWS	Reduce NEXRAD Radome & Tower Maintenance Services	0	(1,000)
NWS-109	PAC	NWS	Reduce Service Life Extension Program for Next Generation Weather Radar	0	(550)
NWS-27	ORF	NWS	Reduce Ships Observations Data Buy	0	(500)
NESDIS-71	PAC	NESDIS	Polar Weather Satellites Decrease	0	(87,165)
NESDIS-37	ORF	NESDIS	OSPO Deferred and Extended Maintenance	0	(5,032)
NESDIS-50	ORF	NESDIS	NCEI External Grant Reduction	0	(4,589)

**Department of Commerce
National Oceanic and Atmospheric Administration
FY 2021 PROGRAM INCREASES / DECREASES / TERMINATIONS**
(Dollar amounts in thousands)
(By Budget Program, Largest to Smallest)

NESDIS-98	ORF	NESDIS	Satellite Ground Services	0	(4,237)
NESDIS-41	ORF	NESDIS	Decrease Data Products Developed	0	(1,021)
MS-55	PAC	MS	Facilities Maintenance and Construction	0	(35,203)
MS-36	ORF	MS	NMFS Operations Contract	0	(1,000)
OMAO-31	ORF	OMAO	Unmanned Systems	0	(7,563)
OMAO-52	PAC	OMAO	Decrease in Progressive Lifecycle Maintenance	0	(6,300)
OMAO-16	ORF	OMAO	Reduce DAS Performed	0	(2,760)
OMAO-38	ORF	OMAO	Reduce Pilot Training and Recruitment	0	(1,500)
OMAO-26	ORF	OMAO	Eliminate Atmospheric Rivers Flight Hours	0	(1,500)
OMAO-24	ORF	OMAO	Reduce Aircraft Operations	0	(762)
N/A	ORF	NOS	Decrease (non-narrative)	0	(752)
N/A	ORF	NMFS	Decrease (non-narrative)	0	(248)
N/A	ORF	NWS	Decrease (non-narrative)	0	(747)
N/A	PAC	NWS	Decrease (non-narrative)	0	(431)
N/A	ORF	MS	Decrease (non-narrative)	0	(249)
Subtotal, Decreases				(365)	(413,428)

Terminations

Page No In CJ	Appropriations	Budget Program	Title of Termination	Positions	Budget Authority
NOS-75	ORF	NOS	Eliminate Coastal Zone Management Grants	0	(77,000)
NOS-46	ORF	NOS	Termination of the National Centers for Coastal Ocean Science	(110)	(37,103)

Department of Commerce
National Oceanic and Atmospheric Administration
FY 2021 PROGRAM INCREASES / DECREASES / TERMINATIONS
(Dollar amounts in thousands)
(By Budget Program, Largest to Smallest)

NOS-78	ORF	NOS	Eliminate Federal Funding Support for the Title IX Fund	0	(33,000)
NOS-84	ORF	NOS	Eliminate Federal Funding Support for NERRS	0	(27,500)
NOS-54	ORF	NOS	Eliminate NCCOS Competitive Funding Support for Research on Ecological Threats	0	(19,000)
NOS-24	ORF	NOS	Eliminate Congressionally Directed Regional Geospatial Modeling Grants	0	(8,000)
NOS-95	PAC	NOS	Eliminate Federal Funding Support for NERRS Construction	0	(4,500)
NOS-22	ORF	NOS	Eliminate and Reduce Congressionally Directed Grants to Joint Ocean and Coastal Mapping Centers	0	(2,500)
NOS-87	ORF	NOS	Eliminate Research Grants for Monuments	0	(1,000)
NMFS-118	PCSRF	NMFS	Pacific Coastal Salmon Recovery Fund	(2)	(65,000)
NMFS-99	ORF	NMFS	Cooperative Enforcement Program	0	(18,500)
NMFS-110	ORF	NMFS	Fisheries Habitat Grants	0	(14,723)
NMFS-23	ORF	NMFS	Prescott Grant Program	0	(4,000)
NMFS-88	ORF	NMFS	Interjurisdictional Fisheries Grants	(2)	(3,365)
NMFS-57	ORF	NMFS	Antarctic Research	(12)	(2,967)
OAR-99	ORF	OAR	National Sea Grant College Program Terminations	(18)	(87,198)
OAR-40	ORF	OAR	Eliminate Climate Competitive Research Subactivity	(15)	(43,087)
OAR-35	ORF	OAR	Eliminate Climate Competitive Research Funding	(10)	(22,797)
OAR-127	ORF	OAR	Mississippi State Partnership Termination	0	(15,000)
OAR-25	ORF	OAR	AOML Climate Research Termination	(20)	(5,057)
OAR-52	ORF	OAR	Air Resources Laboratory Closure	(35)	(4,979)
OAR-57	ORF	OAR	Vortex-Southeast Termination	0	(4,966)
OAR-32	ORF	OAR	Arctic Research Elimination	0	(3,745)

Department of Commerce
National Oceanic and Atmospheric Administration
FY 2021 PROGRAM INCREASES / DECREASES / TERMINATIONS
(Dollar amounts in thousands)
(By Budget Program, Largest to Smallest)

OAR-22	ORF	OAR	Arctic Research Elimination	0	(1,940)
OAR-93	ORF	OAR	Genomics Termination	0	(1,880)
OAR-70	ORF	OAR	Infrasonic Weather Monitoring Research Termination	0	(1,000)
NWS-97	ORF	NWS	Terminate Hydrology and Additional Water Resources	0	(6,000)
NWS-99	ORF	NWS	Terminate COASTAL Act	0	(5,000)
NWS-115	PAC	NWS	Eliminate Integrated Water Prediction High Performance Computing	0	(4,172)
NWS-65	ORF	NWS	Terminate Aviation Science Research to Operations (AFS)	0	(1,806)
NWS-101	ORF	NWS	Terminate Aviation Science Research to Operations (STI)	0	(1,000)
NESDIS-53	ORF	NESDIS	Regional Climate Services Termination	0	(6,000)
MS-38	ORF	MS	Office of Education Grants	(7)	(21,434)
MS-43	ORF	MS	NOAA Bay-Watershed Education and Training Regional Programs	(4)	(7,750)
Subtotal, Terminations				(235)	(562,969)

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Department of Commerce
National Oceanic and Atmospheric Administration
FY 2021 TRANSFER SUMMARY TABLE
(Dollar amounts in thousands)
(Grouped by Title of Transfer, Largest to Smallest)

Page No In CJ	Budget Program	Appropriations	Title of Transfer	Positions	Budget Authority
OMAO-3	OMAO	ORF	NOAA Corps Transfer (From Marine Operations and Maintenance, Aviation Operations and Aircraft Services, and Unmanned Systems Operations)	272	43,148
OMAO-3	OMAO	ORF	Marine Operations and Maintenance Transfer (To NOAA Corps)	(223)	(34,326)
OMAO-3	OMAO	ORF	Aviation Operations and Aircraft Services Transfer (To NOAA Corps)	(47)	(8,423)
OMAO-3	OMAO	ORF	Unmanned Systems Operations Transfer (To NOAA Corps)	(2)	(399)
NESDIS-8	NESDIS	ORF	Office of Satellite and Product Operations Transfer (From Satellite Ground Services, Projects, Planning, and Analysis, and Cooperative Data and Rescue Services)	13	22,375
NESDIS-8	NESDIS	PAC	Satellite Ground Services Transfer (To Office of Satellite and Product Operations)	(13)	(17,198)
NESDIS-8	NESDIS	PAC	Projects, Planning, and Analysis Transfer (To Office of Satellite and Product Operations)	0	(4,727)
NESDIS-10	NESDIS	PAC	Cooperative Data and Rescue Services Transfer (To Office of Satellite and Product Operations)	0	(450)
MS-2	MS	PAC	MS NOAA Construction Transfer (From Facilities Construction and Major Repairs and Marine Sanctuaries Construction Base)	0	15,988
NWS-3	NWS	PAC	Facilities Construction and Major Repairs Transfer (To MS NOAA Construction)	0	(10,000)
NOS-2	NOS	PAC	Marine Sanctuaries Construction Base Transfer (To MS NOAA Construction)	0	(2,538)
NESDIS-9	NESDIS	PAC	Satellite CDA Facility Transfer (To MS NOAA Construction)	0	(2,450)
MS-2	MS	ORF	Mission Services and Management Transfer (To MS NOAA Construction)		(1,000)
OAR-6	OAR	ORF	Transfer to Climate Laboratories and Cooperative Institutes (From Climate Competitive Research)	29	14,932

Department of Commerce
National Oceanic and Atmospheric Administration
FY 2021 TRANSFER SUMMARY TABLE

(Dollar amounts in thousands)

(Grouped by Title of Transfer, Largest to Smallest)

OAR-6	OAR	ORF	Climate Competitive Research Transfer (To Climate Laboratories and Cooperative Institutes)	(29)	(14,932)
NESDIS-8	NESDIS	PAC	Systems/Services Architecture & Engineering Transfer (From Projects, Planning, and Analysis	11	10,332
NESDIS-8	NESDIS	PAC	Projects, Planning, and Analysis Transfer (To Systems/Services Architecture & Engineering)	(11)	(10,332)
NESDIS-8	NESDIS	PAC	Geostationary Earth Orbit (GEO) Transfer (From Systems/Services Architecture & Engineering (SAE))	0	10,000
NESDIS-8	NESDIS	PAC	Systems/Services Architecture & Engineering (SAE) Transfer (To Geostationary Earth Orbit (GEO))	0	(10,000)
OAR-6	OAR	ORF	U.S. Weather Research Program Transfer (From Climate Competitive Research)	0	5,676
OAR-6	OAR	ORF	Climate Competitive Research Transfer (To U.S. Weather Research Program)	0	(5,676)
NMFS-4	NMFS	ORF	Regional Councils and Fisheries Commissions Transfer (From Fisheries Data Collection, Surveys and Assessments and Fisheries Management Programs and Services)	0	4,851
NMFS-4	NMFS	ORF	Fisheries Management Programs and Services Transfer (To Regional Councils and Fisheries Commissions)	0	(4,317)
NMFS-4	NMFS	ORF	Fisheries Data Collections, Surveys and Assessments Transfer (To Regional Councils and Fisheries Commissions)	0	(534)
MS-2	MS	ORF	Facilities Maintenance Transfer (From Fisheries and Ecosystem Science Programs and Services, Habitat Conservation and Restoration, Marine Mammals, Sea Turtles, and Other Species)	0	2,044
NMFS-3	NMFS	ORF	Fisheries and Ecosystem Science Programs and Services Transfer (To MS Facilities Maintenance)	0	(1,536)
NMFS-3	NMFS	ORF	Habitat Conservation and Restoration Transfer (To MS Facilities Maintenance)	0	(255)
NMFS-3	NMFS	ORF	Marine Mammals, Sea Turtles, and Other Species Transfer (To MS Facilities Maintenance)	0	(253)

Department of Commerce
National Oceanic and Atmospheric Administration
FY 2021 TRANSFER SUMMARY TABLE
(Dollar amounts in thousands)
(Grouped by Title of Transfer, Largest to Smallest)

NOS-2	NOS	ORF	Sanctuaries and Marine Protected Areas Transfer (From Marine Sanctuaries Construction Base)	0	462
NOS-2	NOS	PAC	Marine Sanctuaries Construction Base Transfer (To Sanctuaries and Marine Protected Areas)	0	(462)
NESDIS-9	NESDIS	ORF	Office of Space Commerce Transfer (To DOC)	(5)	(2,300)
NESDIS-9	NESDIS	ORF	Commercial Remote Sensing and Regulatory Affairs Transfer (To DOC)	(6)	(1,800)
MS-2	MS	ORF	Working Capital Fund Transfer (To DOC)	0	(1,421)
MS-2	MS	ORF	Mission Services and Management Transfer (To DOC)	0	(799)
Subtotal, Transfers				(11)	(6,320)

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Department of Commerce
National Oceanic and Atmospheric Administration
NOAA Headquarters Administrative Costs
(Dollar amounts in thousands)

In FY 2021, NOAA's Line/Staff Office Headquarters will use \$358,642,283 and 1,205.1 FTE to support general management activities, financial and budgeting, and IT-related expenses, as well as to support facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the GSA. Specifically, NOAA's Line/Staff Office Headquarters will use administrative funds to support the following:

Headquarters Administrative Support Type	Description	NOS Amount	NOS FTE	NMFS Amount	NMFS FTE	OAR Amount	OAR FTE	NWS Amount	NWS FTE	NESDIS Amount	NESDIS FTE	MS Amount	MS FTE	OMAO Amount	OMAO FTE	Total Amount	Total FTE
General Management & Direction/Executive Management	Includes Assistant Administrator's office, public affairs, information services	\$9,284,637	31.7	\$13,131,660	39.0	\$6,262,530	22.0	\$20,609,074	67.0	\$11,237,509	33.4	\$28,969,000	124	\$2,520,870	12.0	\$92,015,280	329.1
Budget & Finance	Includes Budget, Finance and Accounting	\$3,391,995	13.7	\$9,105,215	27.6	\$3,958,298	21.0	\$5,580,983	15.9	\$6,102,682	21.4	\$53,267,000	119	\$2,776,235	14.0	\$84,182,408.29	232.6
Facilities/Other Administrative (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$1,482,902	1.0	\$2,280,436	6.4	\$2,631,243	8.0	\$4,807,099	13.8	\$2,192,675	8.1	\$39,997,000	196	\$881,546	0.0	\$54,272,901.13	233.3
Human Resources	All HR services, including Equal Employment Opportunity	\$1,395,287	6.4	\$2,356,315	9.6	\$1,877,921	10.0	\$8,050,845	26.9	\$3,850,539	10	\$25,076,000	99	\$1,996,212	12.0	\$44,603,119.42	173.9
Acquisitions and Grants	Contracts, grants and procurement implementation	\$354,822	2.0	\$1,375,318	7.2	\$2,000,000	0.0	\$0	0.0	\$576,632	2.6	\$16,744,000	62	\$0	0.0	\$21,050,772	73.8
Information Technology	Includes IT-related expenses and other CIO related activities	\$8,577,464	11.4	\$7,174,056	19.6	\$2,064,327	6.0	\$3,968,246	14.8	\$11,698,172	24.6	\$27,356,000	78	\$1,679,538	8.0	\$62,517,802.30	162.4
Total		24,487,107	66.3	35,423,000	109.4	18,794,319	67.0	43,016,246	138.4	35,658,209	100.1	191,409,000	678.0	9,854,401	46.0	358,642,283	1205.1

*Amounts above to not include NOAA's Direct Bill

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Department of Commerce
National Oceanic and Atmospheric Administration
Research and Development (R&D) Investments
(Dollar amounts in thousands)

The NOAA FY 2021 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.

The NOAA Research Council - an internal body composed of senior scientific personnel from every Line Office in the agency - developed NOAA's most recent Five-Year Research and Development Plan (FY 2013-2017). This plan guides NOAA's R&D activities and provides a common understanding among NOAA's leadership, its workforce, its partners, constituents and Congress on the value of NOAA's R&D activities.

NOAA requests \$473 million for investments (excluding equipment and facilities) in R&D in the FY 2021 Budget. The distribution by line offices is provided in the table below.

Line Office	Research	Development	Total R&D (excluding Equipment and Facilities)	Equipment and Facilities	Total R&D with Equipment and Facilities
NOS	24,785	24,694	49,479	0	49,479
NMFS	43,427	13,791	57,218	0	57,218
OAR	279,640	41,865	321,505	31,240	352,745
NWS	2,850	14,500	17,350	0	17,350
NESDIS	27,886	0	27,886	0	27,886
OMAO	0	0	0	165,660	165,660
Total	\$378,588	\$94,850	\$473,438	\$196,900	\$670,338

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Department of Commerce
National Oceanic and Atmospheric Administration
NOAA Environmental Security Computing Center (NESCC) Funding Profile
(Dollar amounts in thousands)

The table below includes estimated funding for the NOAA Environmental Security Computing Center (NESCC) from FY 2020-2025. These estimates include both facilities operations related costs as well as the programmatic costs for the systems housed at this facility.

Line/Staff Office	Account	PPA	FY 2020	FY2021	FY 2022	FY 2023	FY 2024	FY 2025
OAR	ORF	High Performance Computing Initiatives	4,797	4,951	5,044	5,130	5,212	5,299
OAR	ORF	Direct Bill	1,341	1,500	1,700	1,800	1,900	2,000
OAR	PAC	Research Supercomputing/CCRI	9,975	9,752	9,979	10,314	10,702	11,094
NWS	PAC	Central Processing	5,220	5,220	5,220	5,220	5,220	5,220
NESDIS	ORF	Satellite and Product Operations	4,868	4,905	4,433	4,472	4,512	4,553
NESDIS	PAC	GOES-R	618	6,198	656	675	696	716
NESDIS	PAC	JPSS	831	852	873	895	917	940
NESDIS	PAC	Satellite Ground Services	106	6	6	6	6	6
MS	ORF	Direct Bill/Service Level Agreements	2,085	2,050	2,055	2,059	265	270
Total			29,841	35,434	29,966	30,571	29,430	30,098

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NATIONAL OCEAN SERVICE
 Direct Obligations
 (\$ in Thousands)

FY 2021 Proposed Operating Plan	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
Navigation, Observations and Positioning																
Navigation, Observations and Positioning	612	599	159,456	0	0	5,367	0	612	599	164,823	0	0	(3,540)	612	599	161,283
Hydrographic Survey Priorities/Contracts	23	23	32,000	0	0	0	0	23	23	32,000	0	0	(5,051)	23	23	26,949
IOOS Regional Observations	0	0	39,000	0	0	0	0	0	0	39,000	0	0	(19,556)	0	0	19,444
Total, Navigation, Observations and Positioning	635	622	230,456	0	0	5,367	0	635	622	235,823	0	0	(28,147)	635	622	207,676
Coastal Science and Assessment																
Coastal Science, Assessment, Response and Restoration	278	268	82,000	0	0	3,412	0	278	268	85,412	(110)	(104)	(39,350)	168	164	46,062
Competitive Research	0	0	19,000	0	0	0	0	0	0	19,000	0	0	(19,000)	0	0	0
Total, Coastal Science and Assessment	278	268	101,000	0	0	3,412	0	278	268	104,412	(110)	(104)	(58,350)	168	164	46,062
Ocean and Coastal Management and Services																
Coastal Zone Management and Services	111	108	45,000	0	0	1,543	0	111	108	46,543	0	0	(274)	111	108	46,269
Coastal Management Grants	0	0	77,000	0	0	0	0	0	0	77,000	0	0	(77,000)	0	0	0
Title IX Fund	0	0	33,000	0	0	0	0	0	0	33,000	0	0	(33,000)	0	0	0
Coral Reef Program	24	24	29,500	0	0	268	0	24	24	29,768	0	0	(3,661)	24	24	26,107
National Estuarine Research Reserve System	0	0	27,500	0	0	0	0	0	0	27,500	0	0	(27,500)	0	0	0
Sanctuaries and Marine Protected Areas	195	182	55,500	0	0	2,423	462	195	182	58,385	0	0	(3,463)	195	182	54,922
Total, Ocean and Coastal Management and Services	330	314	267,500	0	0	4,234	462	330	314	272,196	0	0	(144,898)	330	314	127,298
Total, NOS - Discretionary ORF	1,243	1,204	598,956	0	0	13,013	462	1,243	1,204	612,431	(110)	(104)	(231,395)	1,133	1,100	381,036
Total, NOS - Discretionary PAC	0	0	7,500	0	0	0	(3,000)	0	0	4,500	0	0	(4,500)	0	0	0
Total, NOS - Other Discretionary Accounts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Discretionary Total - NOS	1,243	1,204	606,456	0	0	13,013	(2,538)	1,243	1,204	616,931	(110)	(104)	(235,895)	1,133	1,100	381,036
Total, NOS - Mandatory Accounts	31	31	210,618	0	0	0	(187,561)	31	31	23,057	0	0	0	31	31	23,057
GRAND TOTAL NOS	1,274	1,235	817,074	0	0	13,013	(190,099)	1,274	1,235	639,988	(110)	(104)	(235,895)	1,164	1,131	404,093

NATIONAL MARINE FISHERIES SERVICE
 Direct Obligations
 (\$ in Thousands)

FY 2021 Proposed Operating Plan	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
Protected Resources Science and Management																
Marine Mammals, Sea Turtles, and Other Species	487	464	122,164	0	0	4,113	(253)	487	464	126,024	0	0	(10,440)	487	464	115,584
Species Recovery Grants	3	3	7,000	0	0	10	0	3	3	7,010	0	0	(1,010)	3	3	6,000
Atlantic Salmon	23	22	6,500	0	0	135	0	23	22	6,635	0	0	(248)	23	22	6,387
Pacific Salmon	338	321	65,000	0	0	2,999	0	338	321	67,999	0	0	(3,763)	338	321	64,236
Total, Protected Resources Science and Management	851	810	200,664	0	0	7,257	(253)	851	810	207,668	0	0	(15,461)	851	810	192,207
Fisheries Science and Management																
Fisheries and Ecosystem Science Programs and Services	629	599	146,427	0	0	5,127	(1,536)	629	599	150,018	(12)	(12)	(11,643)	617	587	138,375
Fisheries Data Collections, Surveys, and Assessments	482	459	173,709	0	0	4,235	(534)	482	459	177,410	0	0	(13,358)	482	459	164,052
Observers and Training	156	149	54,968	0	0	1,104	0	156	149	56,072	0	0	(11,115)	156	149	44,957
Fisheries Management Programs and Services	463	441	123,836	0	0	4,085	(4,317)	463	441	123,604	0	0	(10,904)	463	441	112,700
Aquaculture	28	27	15,250	0	0	273	0	28	27	15,523	0	0	(2,402)	28	27	13,121
Salmon Management Activities	33	32	58,043	0	0	260	0	33	32	58,303	0	0	(21,595)	33	32	36,708
Regional Councils and Fisheries Commissions	13	8	40,247	0	0	1,357	4,851	13	8	46,455	0	0	(1,878)	13	8	44,577
Interjurisdictional Fisheries Grants	2	2	3,365	0	0	0	0	2	2	3,365	(2)	(2)	(3,365)	0	0	0
Total, Fisheries Science and Management	1,806	1,717	615,845	0	0	16,441	(1,536)	1,806	1,717	630,750	(14)	(14)	(76,260)	1,792	1,703	554,490
Enforcement																
Enforcement	253	240	74,023	0	2	2,269	0	253	242	76,292	0	0	(20,362)	253	242	55,930
Total, Enforcement	253	240	74,023	0	2	2,269	0	253	242	76,292	0	0	(20,362)	253	242	55,930
Habitat Conservation and Restoration																
Habitat Conservation and Restoration	172	164	57,125	0	0	1,737	(255)	172	164	58,607	0	0	(19,559)	172	164	39,048
Subtotal, Habitat Conservation & Restoration	172	164	57,125	0	0	1,737	(255)	172	164	58,607	0	0	(19,559)	172	164	39,048
Total, NMFS - Discretionary ORF	3,082	2,931	947,657	0	2	27,704	(2,044)	3,082	2,933	973,317	(14)	(14)	(131,642)	3,068	2,919	841,675
Total, NMFS - Discretionary PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, NMFS - Other Discretionary Accounts	2	2	65,349	0	0	0	0	2	2	65,349	0	(1)	(64,700)	2	1	649
Discretionary Total - NMFS	3,084	2,933	1,013,006	0	2	27,704	(2,044)	3,084	2,935	1,038,666	(14)	(15)	(196,342)	3,070	2,920	842,324
Total, NMFS - Mandatory Accounts	43	43	42,030	(3)	(3)	0	(14,604)	40	40	27,426	0	0	0	40	40	27,426
GRAND TOTAL NMFS	3,127	2,976	1,055,036	(3)	(1)	27,704	(16,648)	3,124	2,975	1,066,092	(14)	(15)	(196,342)	3,110	2,960	869,750

OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH
 Direct Obligations
 (\$ in Thousands)

FY 2021 Proposed Operating Plan	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
Climate Research																
Laboratories & Cooperative Institutes	197	196	66,500	43	43	2,976	14,392	240	239	83,868	(20)	(20)	(13,567)	220	219	70,301
Regional Climate Data & Information	28	28	40,000	(14)	(14)	144	0	14	14	40,144	(10)	(10)	(26,542)	4	4	13,602
Climate Competitive Research	44	43	63,000	(29)	(29)	155	(20,068)	15	14	43,087	(15)	(14)	(43,087)	0	0	0
Total, Climate Research	269	267	169,500	0	0	3,275	(5,676)	269	267	167,099	(45)	(44)	(83,196)	224	223	83,903
Weather & Air Chemistry Research																
Laboratories & Cooperative Institutes																
Laboratories & Cooperative Institutes	237	236	82,000	0	0	2,469	0	237	236	84,469	(35)	(34)	(16,805)	202	202	67,664
Subtotal, Laboratories & Cooperative Institutes	237	236	82,000	0	0	2,469	0	237	236	84,469	(35)	(34)	(16,805)	202	202	67,664
Weather & Air Chemistry Research Programs																
U.S. Weather Research Program (USWRP)	13	13	23,000	0	0	77	5,676	13	13	28,753	0	0	2,714	13	13	31,467
Tornado Severe Storm Research / Phased Array Radar	3	3	13,634	0	0	33	0	3	3	13,667	0	0	(1,020)	3	3	12,647
Joint Technology Transfer Initiative	2	2	15,000	0	0	11	0	2	2	15,011	0	0	(11,997)	2	2	3,014
Subtotal, Weather & Air Chemistry Research Programs	18	18	51,634	0	0	121	5,676	18	18	57,431	0	0	(10,303)	18	18	47,128
Total, Weather & Air Chemistry Research	255	254	133,634	0	0	2,590	5,676	255	254	141,900	(35)	(34)	(27,108)	220	220	114,792
Ocean, Coastal, and Great Lakes Research																
Laboratories & Cooperative Institutes																
Laboratories & Cooperative Institutes	114	113	35,500	0	0	1,300	0	114	113	36,800	0	0	(7,215)	114	113	29,585
Subtotal, Laboratories & Cooperative Institutes	114	113	35,500	0	0	1,300	0	114	113	36,800	0	0	(7,215)	114	113	29,585
National Sea Grant College Program																
National Sea Grant College Program Base	17	17	74,000	0	0	187	0	17	17	74,187	(17)	(17)	(74,187)	0	0	0
Marine Aquaculture Program	1	1	13,000	0	0	11	0	1	1	13,011	(1)	(1)	(13,011)	0	0	0
Subtotal, National Sea Grant College Program	18	18	87,000	0	0	198	0	18	18	87,198	(18)	(18)	(87,198)	0	0	0
Ocean Exploration and Research	37	36	42,000	0	0	242	0	37	36	42,242	0	0	(10,146)	37	36	32,096
Integrated Ocean Acidification	14	14	14,000	0	0	174	0	14	14	14,174	0	0	(5,947)	14	14	8,227
Sustained Ocean Observations and Monitoring	42	42	45,000	0	0	408	0	42	42	45,408	0	0	(8,107)	42	42	37,301
National Oceanographic Partnership Program	1	1	5,000	0	0	11	0	1	1	5,011	0	0	534	1	1	5,545
Total, Ocean, Coastal, & Great Lakes Research	226	224	228,500	0	0	2,333	0	226	224	230,833	(18)	(18)	(118,079)	208	206	112,754
Innovative Research & Technology																
High Performance Computing Initiatives	14	14	16,750	0	0	155	0	14	14	16,905	0	0	(1,609)	14	14	15,296
Total, Innovative Research & Technology	14	14	16,750	0	0	155	0	14	14	16,905	0	0	(1,609)	14	14	15,296
Total, OAR - Discretionary ORF	764	759	548,384	0	0	8,353	0	764	759	556,737	(98)	(96)	(229,992)	666	663	326,745
Total, OAR - Discretionary PAC	0	0	42,000	0	0	0	0	0	0	42,000	0	0	(16,000)	0	0	26,000
Total, OAR - Other Discretionary Accounts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Discretionary Total - OAR	764	759	566,060	0	0	8,353	0	764	759	598,737	(98)	(96)	(245,992)	666	663	352,745

NATIONAL WEATHER SERVICE
Direct Obligations
 (\$ in Thousands)

FY 2021 Proposed Operating Plan																
	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
Observations	698	688	229,862	0	0	7,782	0	698	688	237,644	0	0	(7,355)	698	688	230,289
Central Processing	228	227	97,980	0	0	4,558	0	228	227	102,538	(84)	(84)	(14,166)	144	143	88,372
Analyze, Forecast and Support	2,861	2,846	513,556	0	0	17,979	0	2,861	2,846	531,535	(281)	(143)	(30,755)	2,580	2,703	500,780
Dissemination	81	79	76,843	0	0	2,269	0	81	79	79,112	0	0	(750)	81	79	78,362
Science and Technology Integration	414	412	147,460	0	0	3,963	0	414	412	151,423	0	0	(12,350)	414	412	139,073
Total, NWS - Discretionary ORF	4,282	4,252	1,065,701	0	0	36,551	0	4,282	4,252	1,102,252	(365)	(227)	(65,376)	3,917	4,025	1,036,876
Total, NWS - Discretionary PAC	23	23	102,945	0	0	0	(10,000)	23	23	92,945	0	0	(9,553)	23	23	83,392
Total, NWS - Other Discretionary Accounts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Discretionary Total - NWS	4,305	4,275	1,168,646	0	0	36,551	(10,000)	4,305	4,275	1,195,197	(365)	(227)	(74,929)	3,940	4,048	1,120,268

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

FY 2021 Proposed Operating Plan																
	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
Environmental Satellite Observing Systems																
Office of Satellite and Product Operations (OSPO)																
Office of Satellite and Product Operations	313	308	166,063	13	13	5,693	22,375	326	321	194,131	0	0	(5,032)	326	321	189,099
Subtotal, Office of Satellite and Product Operations (OSPO)	313	308	166,063	13	13	5,693	22,375	326	321	194,131	0	0	(5,032)	326	321	189,099
Product Development, Readiness & Application																
Product Development, Readiness & Application	99	97	28,434	0	0	473		99	97	28,907	0	0	(1,021)	99	97	27,886
Subtotal, Product Development, Readiness & Application	99	97	28,434	0	0	473	0	99	97	28,907	0	0	(1,021)	99	97	27,886
Commercial Remote Sensing Regulatory Affairs	6	6	1,800	(6)	(6)	0	(1,800)	0	0	0	0	0	0	0	0	0
Office of Space Commerce	5	3	2,300	(5)	(3)	0	(2,300)	0	0	0	0	0	0	0	0	0
U.S. Group on Earth Observations (USGEO)	0	0	500	0	0	0	0	0	0	500	0	0	0	0	0	500
Total, Environmental Satellite Observing Systems	423	414	199,097	2	4	6,166	18,275	425	418	223,538	0	0	(6,053)	425	418	217,485
National Centers for Environmental Information																
National Centers for Environmental Information	225	222	61,642	0	0	1,454	0	225	222	63,096	0	0	(10,589)	225	222	52,507
Total, National Centers for Environmental Information	225	222	61,642	0	0	1,454	0	225	222	63,096	0	0	(10,589)	225	222	52,507
Total, NESDIS - Discretionary ORF	648	636	260,739	2	4	7,620	18,275	650	640	286,634	0	0	(16,642)	650	640	269,992
Total, NESDIS - Discretionary PAC	349	345	1,252,143	(13)	(13)	0	(24,825)	336	332	1,227,318	0	0	6,672	336	332	1,233,990
Total, NESDIS - Other Discretionary Accounts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Discretionary Total - NESDIS	997	981	1,512,882	(11)	(9)	7,620	(6,550)	986	972	1,513,952	0	0	(9,970)	986	972	1,503,982

**MISSION SUPPORT
Direct Obligations
(\$ in Thousands)**

FY 2021 Proposed Operating Plan	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
Executive Leadership	125	119	27,078	0	0	1,195	0	125	119	28,273	0	0	(249)	125	119	28,024
Mission Services and Management	585	554	155,934	0	0	5,828	(1,799)	585	554	159,963	13	10	1,200	598	564	161,163
IT Security	20	14	15,079	0	0	299	0	20	14	15,378	0	0	0	20	14	15,378
Payment to the DOC Working Capital Fund	0	0	62,070	0	0	5,740	(1,421)	0	0	66,389	0	0	0	0	0	66,389
Office of Education	16	16	30,200	0	0	92	0	16	16	30,292	(11)	(11)	(29,184)	5	5	1,108
Facilities Maintenance	0	0		0	0	0	2,044	0	0	2,044	0	0	7,607	0	0	9,651
Total, MS - Discretionary ORF	746	703	290,361	0	0	13,154	(1,176)	746	703	302,339	2	(1)	(20,626)	748	702	281,713
Total, MS - Discretionary PAC	0	0	40,000	0	0	0	15,988	0	0	55,988	0	0	(14,703)	0	0	41,285
Total, MS - Other Discretionary Accounts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Discretionary Total - MS	746	703	330,361	0	0	13,154	14,812	746	703	358,327	2	(1)	(35,329)	748	702	322,998
Total, MS - Mandatory Accounts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRAND TOTAL MS	746	703	330,361	0	0	13,154	14,812	746	703	358,327	2	(1)	(35,329)	748	702	322,998

OFFICE OF MARINE AND AVIATION OPERATIONS
Direct Obligations
 (\$ in Thousands)

FY 2021 Proposed Operating Plan	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
Marine Operations and Maintenance	853	805	194,000	(223)	(223)	6,425	(34,326)	630	582	166,099	0	0	(2,760)	630	582	163,339
Aviation Operations and Aircraft Services	120	117	37,750	(47)	(47)	1,139	(8,423)	73	70	30,466	0	0	(2,262)	73	70	28,204
Unmanned Systems Operations	10	6	12,665	(2)	(2)	527	(399)	8	4	12,793	0	0	(7,563)	8	4	5,230
NOAA Corps	0	0	0	272	272	0	43,148	272	272	43,148	0	0	(1,500)	272	272	41,648
Total, OMAO - Discretionary ORF	983	928	244,415	0	0	8,091	0	983	928	252,506	0	0	(14,085)	983	928	238,421
Total, OMAO - Discretionary PAC	24	24	98,000	0	0	0	0	24	24	98,000	0	0	(4,300)	24	24	93,700
Total, OMAO - Other Discretionary Accounts	0	0	1,497	0	0	0	94	0	0	1,591	0	0	0	0	0	1,591
Discretionary Total - OMAO	1,007	952	343,912	0	0	8,091	94	1,007	952	352,097	0	0	(18,385)	1,007	952	333,712
Total, OMAO - Mandatory Accounts	0	0	30,075	0	0	0	0	0	0	30,075	0	0	0	0	0	30,075
GRAND TOTAL OMAO	1,007	952	373,987	0	0	8,091	94	1,007	952	382,172	0	0	(18,385)	1,007	952	363,787

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

FY 2021 Proposed Operating Plan	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
National Ocean Service	1,243	1,204	598,956	0	0	13,013	462	1,243	1,204	612,431	(110)	(104)	(231,395)	1,133	1,100	381,036
National Marine Fisheries Service	3,082	2,931	947,657	0	2	27,704	(2,044)	3,082	2,933	973,317	(14)	(14)	(131,642)	3,068	2,919	841,675
Office of Oceanic and Atmospheric Research	764	759	548,384	0	0	8,353	0	764	759	556,737	(98)	(96)	(229,992)	666	663	326,745
National Weather Service	4,282	4,252	1,065,701	0	0	36,551	0	4,282	4,252	1,102,252	(365)	(227)	(65,376)	3,917	4,025	1,036,876
National Environmental Satellite, Data and Information Service	648	636	260,739	2	4	7,620	18,275	650	640	286,634	0	0	(16,642)	650	640	269,992
Mission Support	746	703	290,361	0	0	13,154	(1,176)	746	703	302,339	2	(1)	(20,626)	748	702	281,713
Office of Marine and Aviation Operations	983	928	244,415	0	0	8,091	0	983	928	252,506	0	0	(14,085)	983	928	238,421
SUBTOTAL LO DIRECT DISCRETIONARY ORF OBLIGATIONS	11,748	11,413	3,956,213	2	6	114,486	15,517	11,750	11,419	4,086,216	(585)	(442)	(709,758)	11,165	10,977	3,376,458

ORF ADJUSTMENTS
(\$ in Thousands)

FY 2021 Proposed Operating Plan	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
SUBTOTAL ORF DIRECT OBLIGATIONS	11,748	11,413	3,956,213	2	6	114,486	15,517	11,750	11,419	4,086,216	(585)	(442)	(709,758)	11,165	10,977	3,376,458
FINANCING																
Deobligations	0	0	(17,500)	0	0	0	(10,000)	0	0	(27,500)	0	0	0	0	0	(27,500)
Total ORF Financing	0	0	(17,500)	0	0	0	(10,000)	0	0	(27,500)	0	0	0	0	0	(27,500)
SUBTOTAL ORF BUDGET AUTHORITY	11,748	11,413	3,938,713	2	6	114,486	5,517	11,750	11,419	4,058,716	(585)	(442)	(709,758)	11,165	10,977	3,348,958
TRANSFERS																
Transfer from P&D to ORF	0	0	(174,774)	0	0	0	(9,060)	0	0	(183,834)	0	0	0	0	0	(183,834)
Total ORF Transfers	0	0	(174,774)	0	0	0	(9,060)	0	0	(183,834)	0	0	0	0	0	(183,834)
SUBTOTAL ORF APPROPRIATION	11,748	11,413	3,763,939	2	6	114,486	(3,543)	11,750	11,419	3,874,882	(585)	(442)	(709,758)	11,165	10,977	3,165,124

PROCUREMENT, ACQUISITION, AND CONSTRUCTION
Direct Discretionary Obligations
 (\$ in Thousands)

FY 2021 Proposed Operating Plan																
	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
NOS																
Construction																
National Estuarine Research Reserve Construction (NERRS)	0	0	4,500	0	0	0	0	0	0	4,500	0	0	(4,500)	0	0	0
Marine Sanctuaries Construction Base	0	0	3,000	0	0	0	(3,000)	0	0	0	0	0	0	0	0	0
Subtotal, NOS Construction	0	0	7,500	0	0	0	(3,000)	0	0	4,500	0	0	(4,500)	0	0	0
Total, NOS - PAC	0	0	7,500	0	0	0	(3,000)	0	0	4,500	0	0	(4,500)	0	0	0
Total, NMFS - PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OAR																
Systems Acquisition																
Research Supercomputing/ CCRI	0	0	42,000	0	0	0	0	0	0	42,000	0	0	(16,000)	0	0	26,000
Subtotal, OAR Systems Acquisition	0	0	42,000	0	0	0	0	0	0	42,000	0	0	(16,000)	0	0	26,000
Total, OAR - PAC	0	0	42,000	0	0	0	0	0	0	42,000	0	0	(16,000)	0	0	26,000
NWS																
Systems Acquisition																
Observations	0	0	16,250	0	0	0	0	0	0	16,250	0	0	(732)	0	0	15,518
Central Processing	23	23	66,761	0	0	0	0	23	23	66,761	0	0	(8,821)	23	23	57,940
Dissemination	0	0	9,934	0	0	0	0	0	0	9,934	0	0	0	0	0	9,934
Subtotal, NWS Systems Acquisition	23	23	92,945	0	0	0	0	23	23	92,945	0	0	(9,553)	23	23	83,392
Construction																
Facilities Construction and Major Repairs	0	0	10,000	0	0	0	(10,000)	0	0	0	0	0	0	0	0	0
Subtotal, NWS Construction	0	0	10,000	0	0	0	(10,000)	0	0	0	0	0	0	0	0	0
Total, NWS - PAC	23	23	102,945	0	0	0	(10,000)	23	23	92,945	0	0	(9,553)	23	23	83,392

PROCUREMENT, ACQUISITION, AND CONSTRUCTION
Direct Discretionary Obligations
 (\$ in Thousands)

FY 2021 Proposed Operating Plan																
	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
NESDIS																
Systems Acquisition																
Geostationary Systems - R	68	67	304,056	0	0	0	0	68	67	304,056	0	0	30,444	68	67	334,500
Polar Weather Satellites	142	140	745,000	0	0	0	0	142	140	745,000	0	0	(87,165)	142	140	657,835
Cooperative Data and Rescue Services (CDARS)	4	4	11,350	0	0	0	(450)	4	4	10,900	0	0	3,500	4	4	14,400
Space Weather Follow On	11	11	64,000	0	0	0	0	11	11	64,000	0	0	44,115	11	11	108,115
COSMIC 2/GNSS RO	2	2	5,892	0	0	0	0	2	2	5,892	0	0	0	2	2	5,892
Satellite Ground Services	73	72	55,707	(13)	(13)	0	(17,198)	60	59	38,509	0	0	778	60	59	39,287
Projects, Planning and Analysis	25	25	31,000	(11)	(11)	0	(15,059)	14	14	15,941	0	0	0	14	14	15,941
Geostationary Earth Orbit (GEO)	0	0	0	0	0	0	10,000	0	0	10,000	0	0	0	0	0	10,000
Systems/Services Architecture, and Engineering (SAE)	24	24	33,990	11	11	0	332	35	35	34,322	0	0	15,000	35	35	49,322
Subtotal, NESDIS Systems Acquisition	349	345	1,250,995	(13)	(13)	0	(22,375)	336	332	1,228,620	0	0	6,672	336	332	1,235,292
Construction																
Satellite CDA Facility			2,450	0	0	0	(2,450)	0	0	0	0	0	0	0	0	0
Subtotal, NESDIS Construction	0	0	2,450	0	0	0	(2,450)	0	0	0	0	0	0	0	0	0
Transfer to OIG			(1,302)	0	0	0	0	0	0	(1,302)	0	0	0	0	0	(1,302)
Total, NESDIS - PAC	349	345	1,252,143	(13)	(13)	0	(24,825)	336	332	1,227,318	0	0	6,672	336	332	1,233,990
Mission Support																
Construction																
NOAA Construction	0	0	40,000	0	0	0	15,988	0	0	55,988	0	0	(14,703)	0	0	41,285
Subtotal, Mission Support Construction	0	0	40,000	0	0	0	15,988	0	0	55,988	0	0	(14,703)	0	0	41,285
Total, Mission Support - PAC	0	0	40,000	0	0	0	15,988	0	0	55,988	0	0	(14,703)	0	0	41,285
OMAO																
Marine and Aviation Capital Investments																
Platform Capital Improvements & Tech Infusion	11	11	23,000	0	0	0	0	11	11	23,000	0	0	(4,300)	11	11	18,700
Vessel Recapitalization	13	13	75,000	0	0	0	0	13	13	75,000	0	0	0	13	13	75,000
Aircraft Recapitalization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, Marine and Aviation Capital Investments	24	24	98,000	0	0	0	0	24	24	98,000	0	0	(4,300)	24	24	93,700
Total, OMAO - PAC	24	24	98,000	0	0	0	0	24	24	98,000	0	0	(4,300)	24	24	93,700
GRAND TOTAL PAC DISCRETIONARY OBLIGATIONS	396	392	1,542,588	(13)	(13)	0	(21,837)	383	379	1,520,751	0	0	(42,384)	383	379	1,478,367

PAC ADJUSTMENTS
(\$ in Thousands)

FY 2021 Proposed Operating Plan	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
SUBTOTAL PAC DIRECT OBLIGATIONS	396	392	1,542,588	(13)	(13)	0	(21,837)	383	379	1,520,751	0	0	(42,384)	383	379	1,478,367
FINANCING																
Deobligations	0	0	(13,000)	0	0	0	0	0	0	(13,000)	0	0	0	0	0	(13,000)
Total PAC Financing	0	0	(13,000)	0	0	0	0	0	0	(13,000)	0	0	0	0	0	(13,000)
SUBTOTAL PAC BUDGET AUTHORITY	396	392	1,529,588	(13)	(13)	0	(21,837)	383	379	1,507,751	0	0	(42,384)	383	379	1,465,367
TRANSFERS																
Transfer to OIG	0	0	1,302	0	0	0	0	0	0	1,302	0	0	0	0	0	1,302
Total PAC Transfers	0	0	1,302	0	0	0	0	0	0	1,302	0	0	0	0	0	1,302
SUBTOTAL PAC APPROPRIATION	396	392	1,530,890	(13)	(13)	0	(21,837)	383	379	1,509,053	0	0	(42,384)	383	379	1,466,669

OTHER ACCOUNTS DISCRETIONARY
(\$ in Thousands)

FY 2021 Proposed Operating Plan																
	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
NMFS																
Fishermen's Contingency Fund Obligations	0	0	349	0	0	0	0	0	0	349	0	0	0	0	0	349
Fishermen's Contingency Fund Budget Authority	0	0	349	0	0	0	0	0	0	349	0	0	0	0	0	349
Fishermen's Contingency Fund Appropriations	0	0	349	0	0	0	0	0	0	349	0	0	0	0	0	349
Foreign Fishing Observer Fund Obligations	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
Foreign Fishing Observer Fund Appropriation	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
Fisheries Finance Program Account Budget Authority	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
Promote and Develop Fisheries Obligations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Promote and Develop Fisheries Budget Authority	0	0	(174,774)	0	0	0	(9,060)	0	0	(183,834)	0	0	0	0	0	(183,834)
Promote and Develop Fisheries Appropriation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pacific Coastal Salmon Recovery Fund Obligations	2	2	65,000	0	0	0	0	2	2	65,000	(2)	(2)	(65,000)	0	0	0
Pacific Coastal Salmon Recovery Fund Budget Authority	2	2	65,000	0	0	0	0	2	2	65,000	(2)	(2)	(65,000)	0	0	0
Pacific Coastal Salmon Recovery Fund Appropriation	2	2	65,000	0	0	0	0	2	2	65,000	(2)	(2)	(65,000)	0	0	0
Marine Mammal Unusual Mortality Event Fund Obligations	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
Marine Mammal Unusual Mortality Event Fund Appropriation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fisheries Disaster Assistance Fund Obligations	0	0	0	0	0	0	0	0	0	0	2	1	300	2	1	300
Fisheries Disaster Assistance Fund Budget Authority	0	0	0	0	0	0	0	0	0	0	2	1	300	2	1	300
Fisheries Disaster Assistance Fund Appropriation	0	0	0	0	0	0	0	0	0	0	2	1	300	2	1	300
Subtotal, NMFS Other Discretionary Direct Obligations	2	2	65,349	0	0	0	0	2	2	65,349	0	(1)	(64,700)	2	1	649
Subtotal, NMFS Other Discretionary Budget Authority	2	2	(109,425)	0	0	0	(9,060)	2	2	(118,485)	0	(1)	(64,700)	2	1	(183,185)
Subtotal, NMFS Other Discretionary Appropriation	2	2	65,349	0	0	0	0	2	2	65,349	0	(1)	(64,700)	2	1	649
OMAO																
Medicare Eligible Retiree Healthcare Fund Obligations	0	0	1,497	0	0	0	94	0	0	1,591	0	0	0	0	0	1,591
Medicare Eligible Retiree Healthcare Fund Budget Authority	0	0	1,497	0	0	0	94	0	0	1,591	0	0	0	0	0	1,591
Medicare Eligible Retiree Healthcare Fund Appropriation	0	0	1,497	0	0	0	94	0	0	1,591	0	0	0	0	0	1,591
Subtotal, OMAO Other Discretionary Direct Obligations	0	0	1,497	0	0	0	94	0	0	1,591	0	0	0	0	0	1,591
Subtotal, OMAO Other Discretionary Budget Authority	0	0	1,497	0	0	0	94	0	0	1,591	0	0	0	0	0	1,591
Subtotal, OMAO Other Discretionary Appropriation	0	0	1,497	0	0	0	94	0	0	1,591	0	0	0	0	0	1,591
TOTAL, OTHER DISCRETIONARY DIRECT OBLIGATIONS	2	2	66,846	0	0	0	94	2	2	66,940	0	(1)	(64,700)	2	1	2,240
TOTAL, OTHER DISCRETIONARY BUDGET AUTHORITY	2	2	(107,928)	0	0	0	(8,966)	2	2	(116,894)	0	(1)	(64,700)	2	1	(181,594)
TOTAL, OTHER DISCRETIONARY APPROPRIATION	2	2	66,846	0	0	0	94	2	2	66,940	0	(1)	(64,700)	2	1	2,240

GRAND TOTAL SUMMARY DISCRETIONARY APPROPRIATIONS
(\$ in Thousands)

FY 2021 Proposed Operating Plan																
	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
Operations, Research, and Facilities	11,748	11,413	3,763,939	2	6	114,486	(3,543)	11,750	11,419	3,874,882	(585)	(442)	(709,758)	11,165	10,977	3,165,124
Procurement, Acquisition, and Construction	396	392	1,530,890	(13)	(13)	0	(21,837)	383	379	1,509,053	0	0	(42,384)	383	379	1,466,669
Fisherman's Contingency Fund	0	0	349	0	0	0	0	0	0	349	0	0	0	0	0	349
Pacific Coastal Salmon Recovery Fund	2	2	65,000	0	0	0	0	2	2	65,000	(2)	(2)	(65,000)	0	0	0
Fisheries Disaster Assistance Fund	0	0	0	0	0	0	0	0	0	0	2	1	300	2	1	300
Marine Mammal Unusual Mortality Event Fund	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Medicare Eligible Retiree Health Care Fund	0	0	1,497	0	0	0	94	0	0	1,591	0	0	0	0	0	1,591
GRAND TOTAL DISCRETIONARY APPROPRIATION	12,146	11,807	5,361,675	(11)	(7)	114,486	(25,286)	12,135	11,800	5,450,875	(585)	(443)	(816,842)	11,550	11,357	4,634,033

SUMMARY OF DISCRETIONARY RESOURCES
(\$ in Thousands)

FY 2021 Proposed Operating Plan																
	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
<u>Direct Discretionary Obligations</u>																
ORF Direct Obligations	11,748	11,413	3,956,213	2	6	114,486	15,517	11,750	11,419	4,086,216	(585)	(442)	(709,758)	11,165	10,977	3,376,458
PAC Direct Obligations	396	392	1,542,588	(13)	(13)	0	(21,837)	383	379	1,520,751	0	0	(42,384)	383	379	1,478,367
OTHER Direct Obligations	2	2	66,846	0	0	0	94	2	2	66,940	0	(1)	(64,700)	2	1	2,240
TOTAL Direct Discretionary Obligations	12,146	11,807	5,565,647	(11)	(7)	114,486	(6,226)	12,135	11,800	5,673,907	(585)	(443)	(816,842)	11,550	11,357	4,857,065
<u>Discretionary Budget Authority</u>																
ORF Budget Authority	11,748	11,413	3,938,713	2	6	114,486	5,517	11,750	11,419	4,058,716	(585)	(442)	(709,758)	11,165	10,977	3,348,958
PAC Budget Authority	396	392	1,529,588	(13)	(13)	0	(21,837)	383	379	1,507,751	0	0	(42,384)	383	379	1,465,367
OTHER Budget Authority	2	2	(107,928)	0	0	0	(8,966)	2	2	(116,894)	0	(1)	(64,700)	2	1	(181,594)
TOTAL Discretionary Budget Authority	12,146	11,807	5,360,373	(11)	(7)	114,486	(25,286)	12,135	11,800	5,449,573	(585)	(443)	(816,842)	11,550	11,357	4,632,731
<u>Discretionary Appropriations</u>																
ORF Appropriation	11,748	11,413	3,763,939	2	6	114,486	(3,543)	11,750	11,419	3,874,882	(585)	(442)	(709,758)	11,165	10,977	3,165,124
PAC Appropriation	396	392	1,530,890	(13)	(13)	0	(21,837)	383	379	1,509,053	0	0	(42,384)	383	379	1,466,669
OTHER Appropriation	2	2	66,846	0	0	0	94	2	2	66,940	0	(1)	(64,700)	2	1	2,240
TOTAL Discretionary Appropriation	12,146	11,807	5,361,675	(11)	(7)	114,486	(25,286)	12,135	11,800	5,450,875	(585)	(443)	(816,842)	11,550	11,357	4,634,033

OTHER ACCOUNTS MANDATORY
(\$ in Thousands)

FY 2021 Proposed Operating Plan																
	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
NOS																
Damage Assessment and Restoration Revolving Fund Obligations	30	30	204,853	0	0	0	(188,853)	30	30	16,000	0	0	0	30	30	16,000
Damage Assessment and Restoration Revolving Fund Budget Authority	30	30	5,853	0	0	0	147	30	30	6,000	0	0	0	30	30	6,000
Damage Assessment and Restoration Revolving Fund Appropriation	30	30	0	0	0	0	0	30	30	0	0	0	0	30	30	0
Sanctuaries Enforcement Asset Forfeiture Fund Obligations	0	0	120	0	0	0	0	0	0	120	0	0	0	0	0	120
Sanctuaries Enforcement Asset Forfeiture Fund Budget Authority	0	0	120	0	0	0	0	0	0	120	0	0	0	0	0	120
Sanctuaries Enforcement Asset Forfeiture Fund Appropriation	0	0	120	0	0	0	0	0	0	120	0	0	0	0	0	120
Gulf Coast Ecosystem Restoration Fund Obligations	1	1	5,645	0	0	0	1,292	1	1	6,937	0	0	0	1	1	6,937
Gulf Coast Ecosystem Restoration Fund Budget Authority	1	1	0	0	0	0	0	1	1	0	0	0	0	1	1	0
Gulf Coast Ecosystem Restoration Fund Appropriation	1	1	0	0	0	0	0	1	1	0	0	0	0	1	1	0
Subtotal, NOS Other Mandatory Direct Obligations	31	31	210,618	0	0	0	(187,561)	31	31	23,057	0	0	0	31	31	23,057
Subtotal, NOS Other Mandatory Budget Authority	31	31	5,973	0	0	0	147	31	31	6,120	0	0	0	31	31	6,120
Subtotal, NOS Other Mandatory Appropriation	31	31	120	0	0	0	0	31	31	120	0	0	0	31	31	120
NMFS																
Promote and Develop Fisheries Obligations	3	3	8,009	(3)	(3)	0	(8,009)	0	0	0	0	0	0	0	0	0
Promote and Develop Fisheries Budget Authority	3	3	182,783	(3)	(3)	0	1,051	0	0	183,834	0	0	0	0	0	183,834
Promote and Develop Fisheries Appropriation	3	3	0	(3)	(3)	0	0	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Obligations	0	0	4,841	0	0	0	(4,841)	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Budget Authority	0	0	4,841	0	0	0	(4,841)	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Appropriation	0	0	4,841	0	0	0	(4,841)	0	0	0	0	0	0	0	0	0
Federal Ship Financing Fund Obligations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Federal Ship Financing Fund Budget Authority	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Federal Ship Financing Fund Appropriation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Improvement & Restoration Fund Obligations	0	0	6,883	0	0	0	(2,522)	0	0	4,361	0	0	0	0	0	4,361
Environmental Improvement & Restoration Fund Budget Authority	0	0	6,883	0	0	0	(2,522)	0	0	4,361	0	0	0	0	0	4,361
Environmental Improvement & Restoration Fund Appropriation	0	0	7,315	0	0	0	(2,681)	0	0	4,634	0	0	0	0	0	4,634
Limited Access System Administration Fund Obligations	40	40	14,468	0	0	0	125	40	40	14,593	0	0	0	40	40	14,593
Limited Access System Administration Fund Budget Authority	40	40	14,468	0	0	0	125	40	40	14,593	0	0	0	40	40	14,593
Limited Access System Administration Fund Appropriation	40	40	14,456	0	0	0	146	40	40	14,602	0	0	0	40	40	14,602

OTHER ACCOUNTS MANDATORY
(\$ in Thousands)

FY 2021 Proposed Operating Plan																
	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
Western Pacific Sustainable Fisheries Fund Obligations	0	0	384	0	0	0	203	0	0	587	0	0	0	0	0	587
Western Pacific Sustainable Fisheries Fund Budget Authority	0	0	384	0	0	0	203	0	0	587	0	0	0	0	0	587
Western Pacific Sustainable Fisheries Fund Appropriation	0	0	375	0	0	0	225	0	0	600	0	0	0	0	0	600
Fisheries Enforcement Asset Forfeiture Fund Obligations	0	0	3,941	0	0	0	(27)	0	0	3,914	0	0	0	0	0	3,914
Fisheries Enforcement Asset Forfeiture Fund Budget Authority	0	0	3,941	0	0	0	(27)	0	0	3,914	0	0	0	0	0	3,914
Fisheries Enforcement Asset Forfeiture Fund Appropriation	0	0	3,914	0	0	0	0	0	0	3,914	0	0	0	0	0	3,914
North Pacific Observer Fund Obligations	0	0	3,504	0	0	0	467	0	0	3,971	0	0	0	0	0	3,971
North Pacific Observer Fund Budget Authority	0	0	3,504	0	0	0	467	0	0	3,971	0	0	0	0	0	3,971
North Pacific Observer Fund Appropriation	0	0	3,500	0	0	0	500	0	0	4,000	0	0	0	0	0	4,000
Subtotal, NMFS Other Mandatory Direct Obligations	43	43	42,030	(3)	(3)	0	(14,604)	40	40	27,426	0	0	0	40	40	27,426
Subtotal, NMFS Other Mandatory Budget Authority	43	43	216,804	(3)	(3)	0	(5,544)	40	40	211,260	0	0	0	40	40	211,260
Subtotal, NMFS Other Mandatory Appropriation	43	43	34,401	(3)	(3)	0	(6,651)	40	40	27,750	0	0	0	40	40	27,750
OMAO																
NOAA Corps Commissioned Officers Retirement Obligations	0	0	30,075	0	0	0	0	0	0	30,075	0	0	0	0	0	30,075
NOAA Corps Commissioned Officers Retirement Budget Authority	0	0	30,075	0	0	0	0	0	0	30,075	0	0	0	0	0	30,075
NOAA Corps Commissioned Officers Retirement Appropriation	0	0	30,075	0	0	0	0	0	0	30,075	0	0	0	0	0	30,075
Subtotal, OMAO Other Mandatory Direct Obligations	0	0	30,075	0	0	0	0	0	0	30,075	0	0	0	0	0	30,075
Subtotal, OMAO Other Mandatory Budget Authority	0	0	30,075	0	0	0	0	0	0	30,075	0	0	0	0	0	30,075
Subtotal, OMAO Other Mandatory Appropriation	0	0	30,075	0	0	0	0	0	0	30,075	0	0	0	0	0	30,075
TOTAL, OTHER MANDATORY DIRECT OBLIGATIONS	74	74	282,723	(3)	(3)	0	(202,165)	71	71	80,558	0	0	0	71	71	80,558
TOTAL, OTHER MANDATORY BUDGET AUTHORITY	74	74	252,852	(3)	(3)	0	(5,397)	71	71	247,455	0	0	0	71	71	247,455
TOTAL, OTHER MANDATORY APPROPRIATION	74	74	64,596	(3)	(3)	0	(6,651)	71	71	57,945	0	0	0	71	71	57,945

NOAA SUMMARY
(\$ in Thousands)

FY 2021 Proposed Operating Plan	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
TOTAL Direct Obligations (Discretionary & Mandatory)	12,220	11,881	5,848,370	(14)	(10)	114,486	(208,391)	12,206	11,871	5,754,465	(585)	(443)	(816,842)	11,621	11,428	4,937,623
TOTAL Budget Authority (Discretionary & Mandatory)	12,220	11,881	5,613,225	(14)	(10)	114,486	(30,683)	12,206	11,871	5,697,028	(585)	(443)	(816,842)	11,621	11,428	4,880,186
TOTAL Appropriation (Discretionary & Mandatory)	12,220	11,881	5,426,271	(14)	(10)	114,486	(31,937)	12,206	11,871	5,508,820	(585)	(443)	(816,842)	11,621	11,428	4,691,978
Reimbursable Financing	496	468	242,000	0	0	0	0	496	468	242,000	0	0	0	496	468	242,000
TOTAL OBLIGATIONS (Direct & Reimbursable)	12,716	12,349	6,090,370	(14)	(10)	114,486	(208,391)	12,702	12,339	5,996,465	(585)	(443)	(816,842)	12,117	11,896	5,179,623
Offsetting Receipts	0	0	(3,114)	0	0	0	(4,512)	0	0	(7,626)	0	0	0	0	0	(7,626)
TOTAL OBLIGATIONS (Direct, Reimbursable & Offsetting Receipts)	12,716	12,349	6,087,256	(14)	(10)	114,486	(212,903)	12,702	12,339	5,988,839	(585)	(443)	(816,842)	12,117	11,896	5,171,997

LINE OFFICE SUMMARY
(\$ in Thousands)

FY 2021 Proposed Operating Plan	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
National Ocean Service																
ORF	1,243	1,204	598,956	0	0	13,013	462	1,243	1,204	612,431	(110)	(104)	(231,395)	1,133	1,100	381,036
PAC	0	0	7,500	0	0	0	(3,000)	0	0	4,500	0	0	(4,500)	0	0	0
OTHER	31	31	210,618	0	0	0	(187,561)	31	31	23,057	0	0	0	31	31	23,057
TOTAL, NOS	1,274	1,235	817,074	0	0	13,013	(190,099)	1,274	1,235	639,988	(110)	(104)	(235,895)	1,164	1,131	404,093
National Marine Fisheries Service																
ORF	3,082	2,931	947,657	0	2	27,704	(2,044)	3,082	2,933	973,317	(14)	(14)	(131,642)	3,068	2,919	841,675
PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	45	45	107,379	(3)	(3)	0	(14,604)	42	42	92,775	0	(1)	(64,700)	42	41	28,075
TOTAL, NMFS	3,127	2,976	1,055,036	(3)	(1)	27,704	(16,648)	3,124	2,975	1,066,092	(14)	(15)	(196,342)	3,110	2,960	869,750
Oceanic and Atmospheric Research																
ORF	764	759	548,384	0	0	8,353	0	764	759	556,737	(98)	(96)	(229,992)	666	663	326,745
PAC	0	0	42,000	0	0	0	0	0	0	42,000	0	0	(16,000)	0	0	26,000
TOTAL, OAR	764	759	590,384	0	0	8,353	0	764	759	598,737	(98)	(96)	(245,992)	666	663	352,745
National Weather Service																
ORF	4,282	4,252	1,065,701	0	0	36,551	0	4,282	4,252	1,102,252	(365)	(227)	(65,376)	3,917	4,025	1,036,876
PAC	23	23	102,945	0	0	0	(10,000)	23	23	92,945	0	0	(9,553)	23	23	83,392
TOTAL, NWS	4,305	4,275	1,168,646	0	0	36,551	(10,000)	4,305	4,275	1,195,197	(365)	(227)	(74,929)	3,940	4,048	1,120,268
National Environmental Satellite, Data and Information Service																
ORF	648	636	260,739	2	4	7,620	18,275	650	640	286,634	0	0	(16,642)	650	640	269,992
PAC	349	345	1,252,143	(13)	(13)	0	(24,825)	336	332	1,227,318	0	0	6,672	336	332	1,233,990
TOTAL, NESDIS	997	981	1,512,882	(11)	(9)	7,620	(6,550)	986	972	1,513,952	0	0	(9,970)	986	972	1,503,982
Mission Support																
ORF	746	703	290,361	0	0	13,154	(1,176)	746	703	302,339	2	(1)	(20,626)	748	702	281,713
PAC	0	0	40,000	0	0	0	15,988	0	0	55,988	0	0	(14,703)	0	0	41,285
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL, Mission Support	746	703	330,361	0	0	13,154	14,812	746	703	358,327	2	(1)	(35,329)	748	702	322,998
Office of Marine and Aviation Operations																
ORF	983	928	244,415	0	0	8,091	0	983	928	252,506	0	0	(14,085)	983	928	238,421
PAC	24	24	98,000	0	0	0	0	24	24	98,000	0	0	(4,300)	24	24	93,700
OTHER	0	0	31,572	0	0	0	94	0	0	31,666	0	0	0	0	0	31,666
TOTAL, OMAO	1,007	952	373,987	0	0	8,091	94	1,007	952	382,172	0	0	(18,385)	1,007	952	363,787
DIRECT DISCRETIONARY OBLIGATIONS																
ORF	11,748	11,413	3,956,213	2	6	114,486	15,517	11,750	11,419	4,086,216	(585)	(442)	(709,758)	11,165	10,977	3,376,458
PAC	396	392	1,542,588	(13)	(13)	0	(21,837)	383	379	1,520,751	0	0	(42,384)	383	379	1,478,367
OTHER	76	76	349,569	(3)	(3)	0	(202,071)	73	73	147,498	0	(1)	(64,700)	73	72	82,798
TOTAL, DIRECT DISCRETIONARY OBLIGATIONS	12,220	11,881	5,848,370	(14)	(10)	114,486	(208,391)	12,206	11,871	5,754,465	(585)	(443)	(816,842)	11,621	11,428	4,937,623

LINE OFFICE SUMMARY
(\$ in Thousands)

FY 2021 Proposed Operating Plan	POS	FTE	FY 2020 Enacted	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	FY 2021 Base	POS	FTE	FY 2021 Program Changes	POS	FTE	FY 2021 Estimate
ORF Adjustments (Deobligations/Rescissions)	0	0	(17,500)	0	0	0	(10,000)	0	0	(27,500)	0	0	0	0	0	(27,500)
ORF Transfers	0	0	(174,774)	0	0	0	(9,060)	0	0	(183,834)	0	0	0	0	0	(183,834)
PAC Adjustments (Deobligations/Rescissions)	0	0	(13,000)	0	0	0	0	0	0	(13,000)	0	0	0	0	0	(13,000)
PAC Transfers	0	0	1,302	0	0	0	0	0	0	1,302	0	0	0	0	0	1,302
OTHER Discretionary Adjustments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mandatory Accounts Excluded	(74)	(74)	(282,723)	3	3	0	202,165	(71)	(71)	(80,558)	0	0	0	(71)	(71)	(80,558)
TOTAL, DISCRETIONARY APPROPRIATIONS	12,146	11,807	5,361,675	(11)	(7)	114,486	(25,286)	12,135	11,800	5,450,875	(585)	(443)	(816,842)	11,550	11,357	4,634,033

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
Enacted, 2020	11,748	11,413	3,938,713	3,956,213
Plus: Inflationary adjustments to base	0	2	114,486	114,486
Plus: Technical adjustments to base	2	4	5,517	15,517
2021 Base	11,750	11,419	4,058,716	4,086,216
Less: 2021 Program Changes	(585)	(442)	(709,758)	(709,758)
2021 Estimate	11,165	10,977	3,348,958	3,376,458

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

Comparison by program		2019 Actual		2020 Enacted		2021 Base Program		2021 Estimate		Increase/Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Ocean Service	Pos/BA	1,102	675,944	1,243	598,956	1,243	612,431	1,133	381,036	(110)	(231,395)
	FTE/Obl	1,096	622,438	1,204	598,956	1,204	612,431	1,100	381,036	(104)	(231,395)
National Marine Fisheries Service	Pos/BA	2,656	905,793	3,082	947,657	3,082	973,317	3,068	841,675	(14)	(131,642)
	FTE/Obl	2,641	879,005	2,931	947,657	2,933	973,317	2,919	841,675	(14)	(131,642)
Oceanic and Atmospheric Research	Pos/BA	634	527,248	764	548,384	764	556,737	666	326,745	(98)	(229,992)
	FTE/Obl	631	539,831	759	548,384	759	556,737	663	326,745	(96)	(229,992)
National Weather Service	Pos/BA	4,249	1,025,463	4,282	1,065,701	4,282	1,102,252	3,917	1,036,876	(365)	(65,376)
	FTE/Obl	4,225	1,038,057	4,252	1,065,701	4,252	1,102,252	4,025	1,036,876	(227)	(65,376)
National Environmental Satellite, Data, & Info Service	Pos/BA	470	246,380	648	260,739	650	286,634	650	269,992	0	(16,642)
	FTE/Obl	467	251,877	636	260,739	640	286,634	640	269,992	0	(16,642)
Mission Support	Pos/BA	670	272,569	746	290,361	746	302,339	748	281,713	2	(20,626)
	FTE/Obl	666	267,888	703	290,361	703	302,339	702	281,713	(1)	(20,626)
Office of Marine & Aviation Operations	Pos/BA	929	224,160	983	244,415	983	252,506	983	238,421	0	(14,085)
	FTE/Obl	912	225,311	928	244,415	928	252,506	928	238,421	0	(14,085)
ORF Financing	Pos/BA	0	0	0	(17,500)	0	(27,500)	0	(27,500)	0	0
	FTE/Obl	0	0	0	0	0	0	0	0	0	0
Total	Pos/BA	10,710	3,877,557	11,748	3,938,713	11,750	4,058,716	11,165	3,348,958	(585)	(709,758)
	FTE/Obl	10,638	3,824,407	11,413	3,956,213	11,419	4,086,216	10,977	3,376,458	(442)	(709,758)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	2019		2020		2021		2021		Increase/Decrease	
	FTE	Actual Amount	FTE	Enacted Amount	FTE	Base Program Amount	FTE	Estimate Amount	FTE	from 2021 Base Amount
Direct Discretionary Obligation	10,638	3,824,407	11,413	3,956,213	11,419	4,086,216	10,977	3,376,458	(442)	(709,758)
Total Obligations	10,638	3,824,407	11,413	3,956,213	11,419	4,086,216	10,977	3,376,458	(442)	(709,758)
Adjustments to Obligations:										
Deobligations	0	(41,015)	0	0	0	0	0	0	0	0
Unobligated Balance, Adj SOY	0	(203,423)	0	(17,500)	0	(27,500)	0	(27,500)	0	0
Unobligated Balance, Expiring	0	9,081	0	0	0	0	0	0	0	0
Unobligated Balance, EOY	0	294,587	0	0	0	0	0	0	0	0
Unobligated Balance, Transferred	0	(6,000)	0	0	0	0	0	0	0	0
Collections	0	(80)	0	0	0	0	0	0	0	0
Total Budget Authority	10,638	3,877,557	11,413	3,938,713	11,419	4,058,716	10,977	3,348,958	(442)	(709,758)
Financing from Transfers and Other:										
Transfer from PAC to ORF	0	(1,780)	0	0	0	0	0	0	0	0
Transfer from P&D to ORF	0	(157,980)	0	(174,774)	0	(183,834)	0	(183,834)	0	0
Transfer from PCSRF to ORF	0	(65)	0	0	0	0	0	0	0	0
Transfer from FDAF to ORF	0	(165)	0	0	0	0	0	0	0	0
Net Appropriation	10,638	3,717,567	11,413	3,763,939	11,419	3,874,882	10,977	3,165,124	(442)	(709,758)

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

Comparison by program		2019		2020		2021		2021		Increase/Decrease	
		Actuals		Enacted		Base		Estimate		from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Ocean Service	Pos./BA	11	17,680	11	24,000	11	24,000	11	24,000	0	0
	FTE/Obl	11	18,106	11	40,103	11	24,000	11	24,000	0	0
National Marine Fisheries Service	Pos./BA	229	79,282	257	95,000	257	95,000	257	95,000	0	0
	FTE/Obl	229	81,192	229	93,708	229	95,000	229	95,000	0	0
Oceanic and Atmospheric Research	Pos./BA	22	47,048	22	50,000	22	50,000	22	50,000	0	0
	FTE/Obl	22	48,181	22	98,018	22	50,000	22	50,000	0	0
National Weather Service	Pos./BA	162	69,180	162	44,000	162	44,000	162	44,000	0	0
	FTE/Obl	162	70,847	162	79,661	162	44,000	162	44,000	0	0
National Environmental Satellite, Data, and Information Service	Pos./BA	29	39,748	25	15,000	25	15,000	25	15,000	0	0
	FTE/Obl	29	40,706	25	165,608	25	15,000	25	15,000	0	0
Mission Support	Pos./BA	19	15,305	19	12,000	19	12,000	19	12,000	0	0
	FTE/Obl	19	15,674	19	18,896	19	12,000	19	12,000	0	0
Office of Marine and Aviation Operations	Pos./BA	0	615	0	2,000	0	2,000	0	2,000	0	0
	FTE/Obl	0	630	0	916	0	2,000	0	2,000	0	0
Total	Pos./BA	472	268,859	496	242,000	496	242,000	496	242,000	0	0
	FTE/Obl	472	275,336	468	496,910	468	242,000	468	242,000	0	0

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

	2019 Actual	2020 Enacted	2021 Base Program	2021 Estimate	Increase/ (Decrease)
Direct Discretionary Obligation	3,824,407	3,956,213	4,086,216	3,376,458	(709,758)
Direct Mandatory Obligation	36,858	34,825	48,361	48,361	0
Reimbursable Obligation	275,336	242,000	242,000	242,000	0
Total Obligations	4,136,601	4,233,038	4,376,577	3,666,819	(709,758)
Adjustments and Obligations:					
Federal funds	(220,725)	(194,760)	(194,760)	(194,760)	0
Non-Federal Sources	(35,873)	(47,240)	(47,240)	(47,240)	0
Change Uncollected Customer Pmts from Fed. Collections	(12,261)	0	0	0	0
	(80)	0	0	0	0
Deobligation/Recoveries	(41,824)	(17,500)	(27,500)	(27,500)	0
Unobligated balance adjusted, SOY (Direct Disc.)	(203,423)		0	0	0
Unobligated balance adjusted, SOY (Mand.)	(47,819)	(42,496)	(37,746)	(37,746)	0
Unobligated balance, EOY (Direct Disc.)	294,587		0	0	0
Unobligated balance, EOY (Mand.)	42,496	37,746	19,460	19,460	0
Unobligated balance, Expiring Direct	9,081	0	0	0	0
Unobligated balance, SOY Reimbursable	(121,414)	0	0	0	0
Unobligated balance, EOY Reimbursable	114,937	0	0	0	0
Unobligated balance, transferred	(6,000)	0	0	0	0
Total Budget Authority	3,908,283	3,968,788	4,088,791	3,379,033	(709,758)
Financing from Transfers and Other:					
Transfer from P&D to ORF	(157,980)	(174,774)	(183,834)	(183,834)	0
Transfer from PCSRF to ORF	(65)	0	0	0	0
NOAA Corps Retirement Pay (Mand)	(28,926)	(30,075)	(30,075)	(30,075)	0
Spectrum Relocation Fund (Mand)	(1,800)	0	0	0	0
Transfer from PAC to ORF	(1,780)	0	0	0	0
Transfer from FDAF to ORF	(165)	0	0	0	0
Net Appropriation	3,717,567	3,763,939	3,874,882	3,165,124	(709,758)

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Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
ADJUSTMENTS TO BASE
(Dollar amounts in thousands)

	FTE	Amount
Transfers of Estimates	4	15,517
Adjustment		17,500
Financing		(27,500)
<hr/>		
Other Changes		
2020 Pay raise		43,892
2021 Pay raise		11,377
Awards		7,216
Full-year cost in 2021 of positions financed for part-year in 2020	2	712
Change in compensable days		(5,656)
Civil Service Retirement System (CSRS)		(1,111)
Federal Employee Retirement System (FERS)		17,220
Thrift Savings Plan		317
Federal Insurance Contribution Act (FICA) - OASDI		1,317
Health Insurance		3,906
Employees Compensation Fund		(469)
Travel:		
Per Diem		284
Rental payments to GSA		2,516
Postage		9
NARA Storage & Maintenance		(48)
PEPCO		7
Water		1
Steam		1
Working Capital Fund		4,164
Grants		1,288
General Pricing Level Adjustment		24,098
Federal Protective Service		2
Commerce Business System		436

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
ADJUSTMENTS TO BASE
 (Dollar amounts in thousands)

Ship and Aircraft Fuel Costs		1,226	
Continuous Diagnostics and Mitigation Charges		1,576	
Enterprise Services		205	
Subtotal, other changes	2	114,486	
Total, adjustments to base	6	120,003	

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

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
11.1 Full-time permanent compensation	1,109,276	1,221,912	1,237,612	1,185,868	(51,744)
11.3 Other than full-time permanent	6,176	6,408	6,431	6,293	(138)
11.5 Other personnel compensation	63,920	66,595	73,704	73,670	(34)
11.7 Military Personnel	35,149	37,281	37,764	37,764	0
11.9 Total personnel compensation	1,214,522	1,332,196	1,355,511	1,303,595	(51,916)
12.1 Civilian personnel benefits	387,517	446,578	469,020	455,701	(13,319)
12 Military personnel benefits	2,618	2,706	2,750	2,750	0
13 Benefits for former personnel	26,788	28,279	28,279	28,279	0
21 Travel and transportation of persons	45,545	47,375	47,659	45,140	(2,519)
22 Transportation of things	12,867	13,356	13,621	13,134	(487)
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	90,900	84,636	87,152	83,151	(4,001)
23.2 Rental payments to others	28,562	29,628	30,219	29,177	(1,042)
23.3 Communications, utilities, and misc. charges	63,685	66,255	67,585	61,495	(6,090)
24 Printing and reproduction	3,808	4,046	4,124	3,422	(702)
25 Other contractual services					
25.1 Advisory and assistance services	249,221	217,635	219,717	202,631	(17,086)
25.2 Other services from non-Federal sources	614,513	597,184	655,269	540,164	(115,105)
25.3 Other goods and services from Federal sources	129,874	125,334	151,336	147,363	(3,973)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	7,052	7,228	7,228	9,687	2,459
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	101,919	104,916	108,539	102,123	(6,416)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
31 Equipment	38,770	39,891	40,693	38,358	(2,335)
32 Lands and structures	315	323	323	323	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	842,504	843,001	845,256	358,030	(487,226)
42 Insurance claims and indemnities	8	8	8	8	0
43 Interest and dividends	277	288	288	288	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	3,861,264	3,990,863	4,134,577	3,424,819	(709,758)
Less Mandatory Obligations	(36,858)	(34,825)	(48,361)	(48,361)	0
Total Discretionary Obligations	3,824,406	3,956,213	4,086,216	3,376,458	(709,758)
Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	10,638	11,413	11,419	10,977	(442)
Other than full-time permanent	0	0	0	0	0
Total	10,638	11,413	11,419	10,977	(442)
Authorized Positions:					
Full-time permanent	10,710	11,748	11,750	11,165	(585)
Other than full-time permanent	0	0	0	0	0
Total	10,710	11,748	11,750	11,165	(585)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
National Ocean Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
11.1 Full-time permanent compensation	127,544	143,023	144,753	131,508	(13,245)
11.3 Other than full-time permanent	944	908	912	912	0
11.5 Other personnel compensation	2,418	2,326	3,549	3,549	0
11.7 Military Personnel	2,624	2,705	2,750	2,750	0
11.9 Total personnel compensation	133,529	148,963	151,965	138,720	(13,245)
12.1 Civilian personnel benefits	42,227	49,026	51,416	48,264	(3,152)
12 Military personnel benefits	0	0	0	0	0
13 Benefits for former personnel	19	18	18	18	0
21 Travel and transportation of persons	7,207	6,935	6,980	6,846	(134)
22 Transportation of things	718	691	706	703	(3)
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	11,730	10,094	10,419	7,444	(2,975)
23.2 Rental payments to others	2,043	1,966	2,008	1,186	(822)
23.3 Communications, utilities, and misc. charges	4,033	3,881	3,960	1,358	(2,602)
24 Printing and reproduction	267	257	263	263	0
25 Other contractual services					
25.1 Advisory and assistance services	59,036	43,984	43,984	43,076	(908)
25.2 Other services from non-Federal sources	87,196	73,885	81,242	63,786	(17,456)
25.3 Other goods and services from Federal sources	2,730	2,527	2,527	3,152	625
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	134	129	129	129	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	6,641	5,428	5,550	5,384	(166)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
National Ocean Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
31 Equipment	4,437	3,709	3,801	3,630	(171)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	260,457	247,431	247,431	57,045	(190,386)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	33	32	32	32	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	622,437	598,956	612,431	381,036	(231,395)
Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	1,096	1,204	1,204	1,100	(104)
Other than full-time permanent	0	0	0	0	0
Total	1,096	1,204	1,204	1,100	(104)
Authorized Positions:					
Full-time permanent	1,102	1,243	1,243	1,133	(110)
Other than full-time permanent	0	0	0	0	0
Total	1,102	1,243	1,243	1,133	(110)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
National Marine Fisheries Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
11.1 Full-time permanent compensation	296,285	335,108	339,231	337,956	(1,275)
11.3 Other than full-time permanent	2,501	2,696	2,705	2,705	0
11.5 Other personnel compensation	8,422	9,080	11,519	11,519	0
11.7 Military Personnel	1,495	1,542	1,567	1,567	0
11.9 Total personnel compensation	308,703	348,426	355,022	353,747	(1,275)
12.1 Civilian personnel benefits	104,772	122,674	128,591	128,157	(434)
12 Military personnel benefits	0	0	0	0	0
13 Benefits for former personnel	20	21	21	21	0
21 Travel and transportation of persons	14,125	15,228	15,316	14,171	(1,145)
22 Transportation of things	1,904	2,053	2,092	2,006	(86)
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	15,565	15,197	15,625	15,625	0
23.2 Rental payments to others	2,363	2,547	2,596	2,596	0
23.3 Communications, utilities, and misc. charges	16,110	17,368	17,700	17,700	0
24 Printing and reproduction	2,907	3,134	3,192	3,192	0
25 Other contractual services					
25.1 Advisory and assistance services	39,317	39,388	42,080	33,725	(8,355)
25.2 Other services from non-Federal sources	146,697	134,768	141,221	79,089	(62,132)
25.3 Other goods and services from Federal sources	10,365	9,564	9,564	8,464	(1,100)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	77	83	83	83	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	16,036	16,538	17,153	16,310	(843)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
National Marine Fisheries Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
31 Equipment	6,656	7,176	7,314	7,049	(265)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	193,336	213,436	215,691	159,684	(56,007)
42 Insurance claims and indemnities	2	2	2	2	0
43 Interest and dividends	48	52	52	52	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	879,005	947,657	973,317	841,675	(131,642)
Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	2,641	2,931	2,933	2,919	(14)
Other than full-time permanent	0	0	0	0	0
Total	2,641	2,931	2,933	2,919	(14)
Authorized Positions:					
Full-time permanent	2,656	3,082	3,082	3,068	(14)
Other than full-time permanent	0	0	0	0	0
Total	2,656	3,082	3,082	3,068	(14)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
Office of Oceanic and Atmospheric Research
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
11.1 Full-time permanent compensation	79,439	97,688	98,842	88,622	(10,220)
11.3 Other than full-time permanent	1,232	1,251	1,256	1,118	(138)
11.5 Other personnel compensation	1,931	1,961	2,607	2,598	(9)
11.7 Military Personnel	674	695	708	708	0
11.9 Total personnel compensation	83,276	101,596	103,414	93,047	(10,367)
12.1 Civilian personnel benefits	25,203	30,979	32,441	29,383	(3,058)
12 Military personnel benefits	0	0	0	0	0
13 Benefits for former personnel	21	21	21	21	0
21 Travel and transportation of persons	4,748	4,823	4,853	3,825	(1,028)
22 Transportation of things	936	951	970	697	(273)
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	8,832	8,073	8,317	7,351	(966)
23.2 Rental payments to others	4,947	5,025	5,127	5,127	0
23.3 Communications, utilities, and misc. charges	4,286	4,354	4,440	3,510	(930)
24 Printing and reproduction	345	351	358	(323)	(681)
25 Other contractual services					
25.1 Advisory and assistance services	20,995	15,078	15,078	11,795	(3,283)
25.2 Other services from non-Federal sources	57,636	48,571	52,720	40,020	(12,700)
25.3 Other goods and services from Federal sources	6,408	4,010	4,010	2,012	(1,998)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	3,418	3,473	3,473	5,932	2,459
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	15,358	15,601	15,898	13,994	(1,904)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
Office of Oceanic and Atmospheric Research
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
31 Equipment	6,735	6,842	6,981	5,362	(1,619)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	296,656	298,606	298,606	104,962	(193,644)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	30	31	31	31	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	539,831	548,384	556,737	326,745	(229,992)
Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	631	759	759	663	(96)
Other than full-time permanent	0	0	0	0	0
Total	631	759	759	663	(96)
Authorized Positions:					
Full-time permanent	634	764	764	666	(98)
Other than full-time permanent	0	0	0	0	0
Total	634	764	764	666	(98)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
National Weather Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
11.1 Full-time permanent compensation	431,622	442,407	448,382	421,781	(26,601)
11.3 Other than full-time permanent	957	982	986	986	0
11.5 Other personnel compensation	33,203	34,057	35,084	35,084	0
11.7 Military Personnel	341	351	358	358	0
11.9 Total personnel compensation	466,123	477,798	484,811	458,210	(26,601)
12.1 Civilian personnel benefits	159,230	174,522	183,748	177,232	(6,516)
12 Military personnel benefits	0	0	0	0	0
13 Benefits for former personnel	379	419	419	419	0
21 Travel and transportation of persons	10,275	10,549	10,613	10,513	(100)
22 Transportation of things	7,216	7,408	7,557	7,437	(120)
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	29,093	26,908	27,714	27,714	0
23.2 Rental payments to others	11,792	12,106	12,350	12,350	0
23.3 Communications, utilities, and misc. charges	28,465	29,224	29,824	27,324	(2,500)
24 Printing and reproduction	35	35	37	37	0
25 Other contractual services					
25.1 Advisory and assistance services	72,785	64,723	64,723	60,122	(4,601)
25.2 Other services from non-Federal sources	149,081	165,667	182,823	172,655	(10,168)
25.3 Other goods and services from Federal sources	6,729	5,908	5,908	5,908	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	63	65	65	65	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	37,675	38,678	39,703	38,253	(1,450)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
National Weather Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
31 Equipment	12,838	13,180	13,446	13,626	180
32 Lands and structures	315	323	323	323	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	45,894	38,116	38,116	24,616	(13,500)
42 Insurance claims and indemnities	6	6	6	6	0
43 Interest and dividends	64	66	66	66	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	1,038,057	1,065,701	1,102,252	1,036,876	(65,376)
Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	4,225	4,252	4,252	4,025	(227)
Other than full-time permanent	0	0	0	0	0
Total	4,225	4,252	4,252	4,025	(227)
Authorized Positions:					
Full-time permanent	4,249	4,282	4,282	3,917	(365)
Other than full-time permanent	0	0	0	0	0
Total	4,249	4,282	4,282	3,917	(365)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
National Environmental Satellite, Data and Information Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
11.1 Full-time permanent compensation	57,393	80,235	81,021	81,021	0
11.3 Other than full-time permanent	350	363	364	364	0
11.5 Other personnel compensation	4,521	4,680	5,322	5,322	0
11.7 Military Personnel	450	467	475	475	0
11.9 Total personnel compensation	62,714	85,745	87,182	87,182	0
12.1 Civilian personnel benefits	18,915	28,100	29,182	29,182	0
12 Military personnel benefits	0	0	0	0	0
13 Benefits for former personnel	2	2	2	2	0
21 Travel and transportation of persons	1,661	1,719	1,729	1,714	(15)
22 Transportation of things	124	129	132	132	0
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	15,967	14,905	15,351	15,351	0
23.2 Rental payments to others	377	390	398	398	0
23.3 Communications, utilities, and misc. charges	4,792	4,961	5,064	5,014	(50)
24 Printing and reproduction	104	108	110	109	(1)
25 Other contractual services					
25.1 Advisory and assistance services	36,114	31,384	30,774	30,552	(222)
25.2 Other services from non-Federal sources	64,205	54,243	55,800	44,036	(11,764)
25.3 Other goods and services from Federal sources	16,567	12,150	33,833	33,833	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	3,355	3,473	3,473	3,473	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	2,697	2,792	2,845	2,844	(1)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
National Environmental Satellite, Data and Information Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
31 Equipment	5,875	6,082	6,203	6,203	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	18,371	14,517	14,517	9,928	(4,589)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	38	40	40	40	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	251,877	260,739	286,634	269,992	(16,642)
Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	467	636	640	640	0
Other than full-time permanent	0	0	0	0	0
Total	467	636	640	640	0
Authorized Positions:					
Full-time permanent	470	648	650	650	0
Other than full-time permanent	0	0	0	0	0
Total	470	648	650	650	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
Mission Support
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
11.1 Full-time permanent compensation	74,027	79,363	80,387	79,984	(403)
11.3 Other than full-time permanent	99	107	107	107	0
11.5 Other personnel compensation	1,130	1,214	2,222	2,197	(25)
11.7 Military Personnel	453	467	475	475	0
11.9 Total personnel compensation	75,708	81,151	83,191	82,763	(428)
12.1 Civilian personnel benefits	19,779	22,499	23,640	23,481	(159)
12 Military personnel benefits	0	0	0	0	0
13 Benefits for former personnel	82	89	89	89	0
21 Travel and transportation of persons	1,780	1,914	1,925	1,828	(97)
22 Transportation of things	170	183	186	181	(5)
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	8,805	8,572	8,815	8,755	(60)
23.2 Rental payments to others	1,796	1,931	1,968	1,748	(220)
23.3 Communications, utilities, and misc. charges	1,962	2,110	2,155	2,147	(8)
24 Printing and reproduction	141	151	154	134	(20)
25 Other contractual services					
25.1 Advisory and assistance services	14,942	16,066	16,066	16,349	283
25.2 Other services from non-Federal sources	48,324	52,744	70,554	75,775	5,221
25.3 Other goods and services from Federal sources	75,527	78,707	83,026	83,026	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	3	4	4	4	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	1,613	1,735	1,758	1,733	(25)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
Mission Support
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
31 Equipment	691	743	757	749	(8)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	24,461	26,301	26,301	1,201	(25,100)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	35	37	37	37	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	275,820	294,936	320,625	299,999	(20,626)
Less Mandatory Obligations	(7,932)	(4,575)	(18,286)	(18,286)	0
Total Discretionary Obligations	267,888	290,361	302,339	281,713	(20,626)
Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	666	703	703	702	(1)
Other than full-time permanent	0	0	0	0	0
Total	666	703	703	702	(1)
Authorized Positions:					
Full-time permanent	670	746	746	748	2
Other than full-time permanent	0	0	0	0	0
Total	670	746	746	748	2

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
Office of Marine and Aviation Operations
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
11.1 Full-time permanent compensation	42,966	44,088	44,996	44,996	0
11.3 Other than full-time permanent	93	101	101	101	0
11.5 Other personnel compensation	12,296	13,275	13,399	13,399	0
11.7 Military Personnel	29,112	31,053	31,430	31,430	0
11.9 Total personnel compensation	84,468	88,517	89,926	89,926	0
12.1 Civilian personnel benefits	17,391	18,776	20,000	20,000	0
12 Military personnel benefits	2,618	2,706	2,750	2,750	0
13 Benefits for former personnel	26,266	27,709	27,709	27,709	0
21 Travel and transportation of persons	5,748	6,206	6,242	6,242	0
22 Transportation of things	1,797	1,940	1,977	1,977	0
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	907	887	911	911	0
23.2 Rental payments to others	5,245	5,663	5,772	5,772	0
23.3 Communications, utilities, and misc. charges	4,036	4,358	4,443	4,443	0
24 Printing and reproduction	10	10	10	10	0
25 Other contractual services					
25.1 Advisory and assistance services	6,031	7,012	7,012	7,012	0
25.2 Other services from non-Federal sources	61,374	67,306	70,909	64,803	(6,106)
25.3 Other goods and services from Federal sources	11,549	12,469	12,469	10,969	(1,500)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	1	1	1	1	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	21,900	24,144	25,632	23,605	(2,027)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
Office of Marine and Aviation Operations
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
31 Equipment	1,537	2,160	2,192	1,740	(452)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	3,329	4,594	4,594	594	(4,000)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	29	31	31	31	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	254,236	274,490	282,581	268,496	(14,085)
Less Mandatory Obligations	(28,926)	(30,075)	(30,075)	(30,075)	0
Total Discretionary Obligations	225,311	244,415	252,506	238,421	(14,085)
 Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	912	928	928	928	0
Other than full-time permanent	0	0	0	0	0
Total	912	928	928	928	0
 Authorized Positions:					
Full-time permanent	929	983	983	983	0
Other than full-time permanent	0	0	0	0	0
Total	929	983	983	983	0

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

	Positions	FTE	Budget Authority	Direct Obligations
Appropriation Available, 2020	396	392	1,529,588	1,542,588
Less: Other adjustments to base	(13)	(13)	(21,837)	(21,837)
Less: Carryover	0	0	0	0
2021 Base	383	379	1,507,751	1,520,751
Less: 2021 Program Changes	0	0	(42,384)	(42,384)
2021 Estimate	383	379	1,465,367	1,478,367

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

Comparison by activity/subactivity		2019		2020		2021		2021		Increase/Decrease	
		Actual		Enacted		Base		Estimate		from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Ocean Service	Pos/BA	1	3,864	0	7,500	0	4,500	0	0	0	(4,500)
	FTE/OBL	1	19,077	0	7,500	0	4,500	0	0	0	(4,500)
National Marine Fisheries 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
Oceanic and Atmospheric Research	Pos/BA	3	40,949	0	42,000	0	42,000	0	26,000	0	(16,000)
	FTE/OBL	3	64,173	0	42,000	0	42,000	0	26,000	0	(16,000)
National Weather Service	Pos/BA	28	165,604	23	102,945	23	92,945	23	83,392	0	(9,553)
	FTE/OBL	28	150,245	23	102,945	23	92,945	23	83,392	0	(9,553)
National Environmental Satellite, Data, & Information Service	Pos/BA	287	1,442,676	349	1,252,143	336	1,227,318	336	1,233,990	0	6,672
	FTE/OBL	285	1,446,576	345	1,252,143	332	1,227,318	332	1,233,990	0	6,672
Mission Support	Pos/BA	0	24,939	0	40,000	0	55,988	0	41,285	0	(14,703)
	FTE/OBL	0	15,471	0	40,000	0	55,988	0	41,285	0	(14,703)
Office of Marine Aviation & Operations	Pos/BA	26	99,235	24	98,000	24	98,000	24	93,700	0	(4,300)
	FTE/OBL	26	215,826	24	98,000	24	98,000	24	93,700	0	(4,300)
Other	Pos/BA	0	0	0	(13,000)	0	(13,000)	0	(13,000)	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Total	Pos/BA	345	1,777,267	396	1,529,588	383	1,507,751	383	1,465,367	0	(42,384)
	FTE/OBL	343	1,911,368	392	1,542,588	379	1,520,751	379	1,478,367	0	(42,384)

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

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/Decrease from 2021 Base	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	343	1,911,368	392	1,542,588	379	1,520,751	379	1,478,367	0	(42,384)
Total Obligations	343	1,911,368	392	1,542,588	379	1,520,751	379	1,478,367	0	(42,384)
Adjustments to Obligations:										
Deobligations	0	(20,470)	0	(13,000)	0	(13,000)	0	(13,000)	0	0
Unobligated balance, Expiring end of	0	398	0	0	0	0	0	0	0	0
Unobligated Balance, EOY	0	268,381	0	0	0	0	0	0	0	0
Unobligated Balance Adj. SOY (start of	0	(387,705)	0	0	0	0	0	0	0	0
Unobligated Balance, Transferred	0	6,000	0	0	0	0	0	0	0	0
Collections	0	(705)	0	0	0	0	0	0	0	0
Total Budget Authority	343	1,777,267	392	1,529,588	379	1,507,751	379	1,465,367	0	(42,384)
Financing from Transfers and Other:										
Unoblig Balance Rescission Adj Appn	0	0	0	0	0	0	0	0	0	0
Transfer from ORF to PAC	0	0	0	0	0	0	0	0	0	0
Transfer from PAC to ORF	0	1,780	0	0	0	0	0	0	0	0
Transfer to OIG	0	1,302	0	1,302	0	1,302	0	1,302	0	0
Net Appropriation	343	1,780,349	392	1,530,890	379	1,509,053	379	1,466,669	0	(42,384)

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

	2019 Actual	2020 Enacted	2021 Base Program	2021 Estimate	Increase/Decrease from 2021 Base
Direct Discretionary Obligation	1,911,368	1,542,588	1,520,751	1,478,367	(42,384)
Direct Mandatory Obligation	37,158	23,880	21,756	21,756	0
Total Obligations	1,948,526	1,566,468	1,542,507	1,500,123	(42,384)
Adjustments and Obligations:					
Deobligations	(21,304)	(13,000)	(13,000)	(13,000)	0
Unobligated balance, Expiring end of year	398	0	0	0	0
Unobligated Balance, EOY	268,381	0	0	0	0
Unobligated Balance Adj. SOY Disc	(387,705)	0	0	0	0
Unobligated Balance, SOY Mandatory	(112,563)	(76,239)	(52,359)	(52,359)	0
Unobligated Balance, EOY Mandatory	76,239	52,359	30,603	30,603	0
Unobligated Balance, Transferred	6,000	0	0	0	0
Collections	(705)	0	0	0	0
Total Budget Authority	1,777,267	1,529,588	1,507,751	1,465,367	(42,384)
Financing from Transfers and Other:					
Transfer from PAC to ORF	1,780	0	0	0	0
Transfer from ORF to PAC	0	0	0	0	0
Transfer to OIG	1,302	1,302	1,302	1,302	0
Unobligated Balance, Rescission	0	0	0	0	0
Net Appropriation	1,780,349	1,530,890	1,509,053	1,466,669	(42,384)

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Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
ADJUSTMENTS TO BASE
 (Dollar amounts in thousands)

	FTE	Amount
Transfers of Estimates	(13)	(21,837)
Adjustment		13,000
Financing		(13,000)
Total, adjustments to base	(13)	(21,837)

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

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
11.1 Full-time permanent compensation	46,571	40,297	40,297	39,827	(470)
11.3 Other than full-time permanent	61	44	44	44	0
11.5 Other personnel compensation	2,081	1,765	1,765	1,680	(85)
11.7 Military Personnel	843	868	868	868	0
11.9 Total personnel compensation	49,556	42,974	42,974	42,419	(555)
12.1 Civilian personnel benefits	18,259	16,780	16,780	16,665	(115)
12 Military personnel benefits	14	6	6	6	0
13 Benefits for former personnel	1	1	1	1	0
21 Travel and transportation of persons	2,657	1,970	1,966	1,966	0
22 Transportation of things	877	656	656	656	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	7,194	5,699	5,692	5,692	0
23.2 Rental payments to others	12	8	7	232	225
23.3 Communications, utilities, and misc. charges	21,705	18,062	18,061	18,061	0
24 Printing and reproduction	529	508	508	508	0
25 Other contractual services	0	0	0	0	0
25.1 Advisory and assistance services	456,063	362,356	362,245	358,568	(3,677)
25.2 Other services from non-Federal sources	220,755	179,361	156,154	148,506	(7,648)
25.3 Other goods and services from Federal sources	779,138	623,930	623,925	603,059	(20,866)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	17,907	14,482	14,482	14,482	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	11,243	8,797	8,770	8,770	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	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
31 Equipment	287,317	230,857	230,770	231,287	517
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	75,060	59,824	59,313	49,048	(10,265)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	239	196	196	196	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	1,948,526	1,566,468	1,542,507	1,500,123	(42,384)
Less Mandatory Obligations	(37,158)	(23,880)	(21,756)	(21,756)	0
Total Discretionary Obligations	1,911,368	1,542,588	1,520,751	1,478,367	(42,384)
 Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	343	392	379	379	0
Other than full-time permanent	0	0	0	0	0
Total	343	392	379	379	0
 Authorized Positions:					
Full-time permanent	345	396	383	383	0
Other than full-time permanent	0	0	0	0	0
Total	345	396	383	383	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
National Ocean Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
11.1 Full-time permanent compensation	118	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	3	0	0	0	0
11.7 Military Personnel	0	0	0	0	0
11.9 Total personnel compensation	120	0	0	0	0
12.1 Civilian personnel benefits	37	0	0	0	0
12 Military personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	10	4	0	0	0
22 Transportation of things	0	0	0	0	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	17	7	0	0	0
23.2 Rental payments to others	4	2	0	0	0
23.3 Communications, utilities, and misc. charges	2	1	0	0	0
24 Printing and reproduction	0	0	0	0	0
25 Other contractual services	0	0	0	0	0
25.1 Advisory and assistance services	283	111	0	0	0
25.2 Other services from non-Federal sources	1,739	2,246	0	0	0
25.3 Other goods and services from Federal sources	11	4	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
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	67	26	0	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
National Ocean Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
31 Equipment	224	88	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	16,562	5,011	4,500	0	(4,500)
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
99.9 Total obligations	19,077	7,500	4,500	0	(4,500)
 Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	1	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	1	0	0	0	0
 Authorized Positions:					
Full-time permanent	1	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	1	0	0	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
Office of Oceanic and Atmospheric Research
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
11.1 Full-time permanent compensation	277	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	6	0	0	0	0
11.7 Military Personnel	0	0	0	0	0
11.9 Total personnel compensation	283	0	0	0	0
12.1 Civilian personnel benefits	79	0	0	0	0
12 Military personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	6	0	0	0	0
22 Transportation of things	0	0	0	0	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	24	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Communications, utilities, and misc. charges	309	202	202	202	0
24 Printing and reproduction	10	0	0	0	0
25 Other contractual services	0	0	0	0	0
25.1 Advisory and assistance services	148	0	0	0	0
25.2 Other services from non-Federal sources	7,695	6,024	6,024	6,024	0
25.3 Other goods and services from Federal sources	21,503	20,000	20,000	9,765	(10,235)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	2,383	2,000	2,000	2,000	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
Office of Oceanic and Atmospheric Research
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
31 Equipment	19,518	774	774	774	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	12,216	13,000	13,000	7,235	(5,765)
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
99.9 Total obligations	64,174	42,000	42,000	26,000	(16,000)
 Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	3	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	3	0	0	0	0
 Authorized Positions:					
Full-time permanent	3	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	3	0	0	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
National Weather Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
11.1 Full-time permanent compensation	3,893	3,030	3,030	3,030	0
11.3 Other than full-time permanent	47	32	32	32	0
11.5 Other personnel compensation	221	151	151	151	0
11.7 Military Personnel	4	3	3	3	0
11.9 Total personnel compensation	4,166	3,217	3,217	3,217	0
12.1 Civilian personnel benefits	3,436	3,455	3,455	3,455	0
12 Military personnel benefits	0	0	0	0	0
13 Benefits for former personnel	1	1	1	1	0
21 Travel and transportation of persons	552	378	378	378	0
22 Transportation of things	65	45	45	45	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	2,260	1,549	1,549	1,549	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Communications, utilities, and misc. charges	20,830	17,272	17,272	17,272	0
24 Printing and reproduction	102	70	70	70	0
25 Other contractual services	0	0	0	0	0
25.1 Advisory and assistance services	14,294	9,794	9,794	9,794	0
25.2 Other services from non-Federal sources	87,760	52,169	42,169	32,616	(9,553)
25.3 Other goods and services from Federal sources	3,059	2,096	2,096	2,096	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	60	41	41	41	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	4,815	3,299	3,299	3,299	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
National Weather Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
31 Equipment	4,713	5,229	5,229	5,229	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	4,107	4,314	4,314	4,314	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	26	18	18	18	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	150,245	102,945	92,945	83,392	(9,553)
Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	28	23	23	23	0
Other than full-time permanent	0	0	0	0	0
Total	28	23	23	23	0
Authorized Positions:					
Full-time permanent	28	23	23	23	0
Other than full-time permanent	0	0	0	0	0
Total	28	23	23	23	0

Department of Commerce
National Oceanic and Atmospheric Administration
National Environmental Satellite, Data and Information Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
11.1 Full-time permanent compensation	39,153	47,722	47,722	47,722	0
11.3 Other than full-time permanent	13	11	11	11	0
11.5 Other personnel compensation	1,739	1,505	1,505	1,505	0
11.7 Military Personnel	0	0	0	0	0
11.9 Total personnel compensation	40,906	49,238	49,238	49,238	0
12.1 Civilian personnel benefits	13,508	16,853	16,853	16,853	0
12 Military personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	1,760	1,523	1,523	1,523	0
22 Transportation of things	6	5	5	5	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	4,728	4,092	4,092	4,092	0
23.2 Rental payments to others	8	7	7	7	0
23.3 Communications, utilities, and misc. charges	561	585	585	585	0
24 Printing and reproduction	314	342	342	342	0
25 Other contractual services	0	0	0	0	0
25.1 Advisory and assistance services	303,398	261,339	261,339	260,662	(677)
25.2 Other services from non-Federal sources	63,952	58,475	33,650	51,385	17,735
25.3 Other goods and services from Federal sources	751,722	599,684	599,684	589,053	(10,631)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	17,778	14,388	14,388	14,388	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	1,238	1,072	1,072	1,072	0

Department of Commerce
National Oceanic and Atmospheric Administration
National Environmental Satellite, Data and Information Service
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
31 Equipment	204,413	206,938	206,938	207,183	245
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	42,110	37,450	37,450	37,450	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	175	152	152	152	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	1,446,576	1,252,143	1,227,318	1,233,990	6,672
Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	285	345	332	325	0
Other than full-time permanent	0	0	0	0	0
Total	285	345	332	332	0
Authorized Positions:					
Full-time permanent	287	349	336	336	0
Other than full-time permanent	0	0	0	0	0
Total	287	349	336	336	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
Mission Support
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
11.1 Full-time permanent compensation	379	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	8	0	0	0	0
11.7 Military Personnel	0	0	0	0	0
11.9 Total personnel compensation	388	0	0	0	0
12.1 Civilian personnel benefits	101	0	0	0	0
12 Military personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	187	0	0	0	0
22 Transportation of things	785	596	596	596	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	52	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Communications, utilities, and misc. charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25 Other contractual services	0	0	0	0	0
25.1 Advisory and assistance services	7,659	12,821	12,821	9,821	(3,000)
25.2 Other services from non-Federal sources	35,781	44,629	58,493	47,993	(10,500)
25.3 Other goods and services from Federal sources	2,793	2,123	2,123	2,123	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	69	53	53	53	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	507	385	385	385	0

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
Mission Support
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
31 Equipment	4,211	3,201	3,201	1,998	(1,203)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	65	49	49	49	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	30	23	23	23	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	<u>52,629</u>	<u>63,880</u>	<u>77,744</u>	<u>63,041</u>	<u>(14,703)</u>
Less mandatory obligations	(37,158)	(23,880)	(21,756)	(21,756)	0
Total discretionary obligations	<u>15,471</u>	<u>40,000</u>	<u>55,988</u>	<u>41,285</u>	<u>(14,703)</u>
 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	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
 Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
Office of Marine and Aviation Operations
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
11.1 Full-time permanent compensation	2,750	2,686	2,686	2,216	(470)
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	105	108	108	23	(85)
11.7 Military Personnel	839	865	865	865	0
11.9 Total personnel compensation	3,694	3,659	3,659	3,104	(555)
12.1 Civilian personnel benefits	1,098	1,114	1,114	999	(115)
12 Military personnel benefits	14	6	6	6	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	142	65	65	65	0
22 Transportation of things	22	10	10	10	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	113	52	52	52	0
23.2 Rental payments to others	0	0	0	225	225
23.3 Communications, utilities, and misc. charges	4	2	2	2	0
24 Printing and reproduction	104	97	97	97	0
25 Other contractual services	0	0	0	0	0
25.1 Advisory and assistance services	130,281	65,510	65,510	65,510	0
25.2 Other services from non-Federal sources	23,826	10,819	10,819	5,489	(5,330)
25.3 Other goods and services from Federal sources	50	23	23	23	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	2,232	2,014	2,014	2,014	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
Office of Marine and Aviation Operations
SELECT ACTIVITIES BY OBJECT CLASS
(Dollar amounts in thousands)**

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
31 Equipment	54,238	14,628	14,628	16,103	1,475
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	7	3	3	3	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	215,826	98,000	98,000	93,700	(4,300)
Personnel Data					
Full-time Equivalent Employment					
Full-time permanent	26	24	24	24	0
Other than full-time permanent	0	0	0	0	0
Total	26	24	24	24	0
Authorized Positions:					
Full-time permanent	26	24	24	24	0
Other than full-time permanent	0	0	0	0	0
Total	26	24	24	24	0

**Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service
Budget Estimates, Fiscal Year 2021**

Executive Summary

For FY 2021, NOAA requests a total of \$404,093,000 and 1,131 FTE/ 1,164 positions for the National Ocean Service (NOS), including a net decrease of \$235,895,000 and 104 FTE/ 110 positions in program changes.

NOS enables safe, sustainable, and efficient use of marine and coastal resources across a range of significant economic sectors. Those sectors include maritime commerce and marine transportation, fishing and aquaculture, energy development, coastal recreation, and inland export and import industries, which depend on the flow of goods through seaports. NOS's products and services sustain livelihoods, reduce risk, and facilitate adaptation to change. Its earth observations and navigation products are used daily by ship pilots, port managers, surveyors, resource managers, and airports. When oil spills, chemical releases, and marine debris damage coastal resources, NOS's scientific expertise is essential to emergency response and long-term recovery.

Coastal and Great Lakes counties (less than 10 percent of the land area of the U.S.) are home to over 40 percent of our country's population.¹ Supporting them and other communities across the nation, the U.S. oceans and Great Lakes economy consists of 154,000 business establishments, employing 3.3 million people, paying \$129 billion in wages, and producing \$304 billion in gross domestic product.² These communities and their economies depend on marine resources, but also face unique environmental threats. Coastal storms threaten lives and destroy property. Tidal flooding damages infrastructure and forces costly adaptations. Ecological hazards, such as harmful algal blooms, disrupt fishing, water supplies, and tourism. Production and transport of fossil fuels, while essential to the U.S. economy, creates a constant risk of spills, including catastrophic ones like the Deepwater Horizon oil spill. The same coastal industries that are the engines of thriving ocean economies also generate port congestion, marine pollution, and navigation hazards. Coastal communities, governments, and businesses need reliable data and tools to help make informed decisions in the face of these threats.

NOS also plays a leading role in protecting the Nation's special marine places:

- National Marine Sanctuaries System
- National Estuarine Research Reserve System
- National System of Marine Protected Areas

NOS promotes smart resource management through technical assistance, applied research, and partnership building.

¹ U.S. National Oceanic and Atmospheric Administration (NOAA). American Community Survey Five-Year Estimates for Coastal Geographies. Charleston, SC: NOAA Office for Coastal Management. Available at: <https://coast.noaa.gov/digitalcoast/data/acs.html>.

² National Oceanic and Atmospheric Administration (NOAA), Office for Coastal Management. 2019. "NOAA Report on the U.S. Ocean and Great Lakes Economy." Charleston, SC: NOAA Office for Coastal Management. Available at <http://coast.noaa.gov/digitalcoast/training/econreport.html>.

**Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service
Budget Estimates, Fiscal Year 2021**

Significant Adjustments:

Inflationary Adjustments

NOAA’s FY 2021 Base includes an increase of \$13,013,000 and 0 FTE/0 positions to account for the full funding requirements for certain inflationary adjustments to current programs for NOS activities. This includes the 2020 civilian pay raise of 3.1 percent, the estimated 2021 civilian pay raise of 1.0 percent and 2021 military pay raise of 3.0 percent, as well as inflationary increases for labor and non-labor activities, including benefits, and rent charges from the General Services Administration (GSA).

Technical Adjustments

From Office	Subactivity	To Office	Subactivity	Amount
NOS	Marine Sanctuaries Construction Base (PAC)	MS	NOAA Construction (PAC)	\$2,538,000 / 0 FTE / 0 positions

NOAA requests a technical adjustment to transfer \$2,538,000 and 0 FTE/0 positions from the NOS PAC Marine Sanctuaries Construction Base subactivity to the NOAA Construction subactivity in Mission Support PAC to consolidate facilities maintenance and construction funding within Mission Support for a more centralized approach to the funding and management of these activities. Routine operations and maintenance of facilities typically funded by field offices, such as janitorial services and minor repairs, will continue to be funded through the Line Offices. This consolidation leverages NOAA’s recent efforts for more consistent, corporate approaches to facilities management and planning and reflects NOAA’s commitment to advancing the Department’s strategic objective to achieve cost savings through consolidated functions.

From Office	Subactivity	To Office	Subactivity	Amount
NOS	Marine Sanctuaries Construction Base (PAC)	NOS	Sanctuaries and Marine Protected Areas (ORF)	\$462,000 / 0 FTE / 0 positions

NOAA requests to transfer \$462,000 and 0 FTE/0 positions from the Marine Sanctuaries and Construction Base (PAC) subactivity to the Sanctuaries and Marine Protected Areas (ORF) subactivity to more holistically manage the sanctuary resources. This transfer is consistent with how similar activities are funded in other parts of NOAA. Consolidating funding within one subactivity will allow the Office of National Marine Sanctuaries to balance its growing operational needs with its vessel maintenance backlog and network of

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Budget Estimates, Fiscal Year 2021**

exhibits as well as provide flexibility to meet the requirements of a given year.

Narrative Information:

NOAA requests a total net decrease of \$235,895,000 and 104 FTE/ 110 positions in program changes for NOS. Following this section are base justification materials by activity and program change narratives for each subactivity that represent program changes of \$250,000 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-1 and 11). Please contact NOAA if details for any of these changes are required.

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Procurement, Acquisition, and Construction
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: NOS Construction
Subactivity: Marine Sanctuaries Construction Base (PAC) Transfer to Mission Support NOAA Construction (PAC)

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base</u>
11.1 Full-time permanent compensation	0	0	0
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	0	0	0
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	0	0	0
12 Civilian personnel benefits	0	0	0
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	4	(4)	0
22 Transportation of things	0	0	0
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	7	(7)	0
23.2 Rental Payments to others	2	(2)	0
23.3 Communications, utilities and misc charges	1	(1)	0
24 Printing and reproduction	0	0	0
25.1 Advisory and assistance services	111	(111)	0
25.2 Other services from non-Federal sources	2,246	(1,784)	0
25.3 Other goods and services from Federal sources	0	0	0
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	0	0	0
31 Equipment	0	0	0
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	629	(629)	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	3,000	(2,538)	0

* The 2021 Base column reflects the full 2021 Base for the subactivity, including calculated ATBs and any additional transfers.

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Procurement, Acquisition, and Construction
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: NOS Construction
Subactivity: Marine Sanctuaries Construction Base (PAC) Transfer to Sanctuaries and Marine Protected Areas (ORF)

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base</u>
11.1	0	0	0
11.3	0	0	0
11.5	0	0	0
11.8	0	0	0
11.9	0	0	0
12	0	0	0
13	0	0	0
21	4	0	0
22	0	0	0
23	0	0	0
23.1	7	0	0
23.2	2	0	0
23.3	1	0	0
24	0	0	0
25.1	111	0	0
25.2	2,246	(462)	0
25.3	0	0	0
25.4	0	0	0
25.5	0	0	0
25.6	0	0	0
25.7	0	0	0
25.8	0	0	0
26	0	0	0
31	0	0	0
32	0	0	0
33	0	0	0
41	629	0	0
42	0	0	0
43	0	0	0
44	0	0	0
99	3,000	(462)	0

* The 2021 Base column reflects the full 2021 Base for the subactivity, including calculated ATBs and any additional transfers.

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Operations, Research, and Facilities
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Ocean and Coastal Management and Services

Subactivity: Sanctuaries and Marine Protected Areas (ORF) Transfer from Sanctuaries Construction Base (PAC)

Object Class		2020 Enacted	2021 Transfer	2021 Base
11.1	Full-time permanent compensation	21,616	0	26,647
11.3	Other than full-time permanent	163	0	192
11.5	Other personnel compensation	405	0	478
11.8	Special personnel services payments	576	0	680
11.9	Total personnel compensation	22,759	0	27,997
12	Civilian personnel benefits	7,596	0	165
13	Benefits for former personnel	0	0	0
21	Travel and transportation of persons	1,349	0	1,592
22	Transportation of things	162	0	191
23	Rent, communications, and utilities	0	0	0
23.1	Rental payments to GSA	1,575	0	1,859
23.2	Rental Payments to others	809	0	955
23.3	Communications, utilities and misc charges	1,041	0	1,229
24	Printing and reproduction	76	0	89
25.1	Advisory and assistance services	3,701	0	4,368
25.2	Other services from non-Federal sources	9,360	462	11,591
25.3	Other goods and services from Federal sources	248	0	293
25.4	Operation and maintenance of facilities	0	0	0
25.5	Research and development contracts	0	0	0
25.6	Medical care	0	0	0
25.7	Operation and maintenance of equipment	0	0	0
25.8	Subsistence and support of persons	0	0	0
26	Supplies and materials	1,241	0	1,465
31	Equipment	324	0	382
32	Lands and structures	0	0	0
33	Investments and loans	0	0	0
41	Grants, subsidies and contributions	5,260	0	6,208
42	Insurance claims and indemnities	0	0	0
43	Interest and dividends	0	0	0
44	Refunds	0	0	0
77	Overhead	0	0	0
99	Total obligations	55,500	462	58,385

* The 2021 Base column reflects the full 2021 Base for the subactivity, including calculated ATBs and any additional transfers.

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National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar amounts in thousands)

		2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
NATIONAL OCEAN SERVICE											
Navigation, Observations and Positioning	Pos/BA	566	260,244	635	230,456	635	235,823	635	207,676	0	(28,147)
	FTE/OBL	563	244,307	622	230,456	622	235,823	622	207,676	0	(28,147)
Coastal Science and Assessment	Pos/BA	245	107,125	278	101,000	278	104,412	168	46,062	(110)	(58,350)
	FTE/OBL	244	112,185	268	101,000	268	104,412	164	46,062	(104)	(58,350)
Ocean and Coastal Management and Services	Pos/BA	291	308,575	330	267,500	330	272,196	330	127,298	0	(144,898)
	FTE/OBL	289	265,946	314	267,500	314	272,196	314	127,298	0	(144,898)
TOTAL NOS - ORF	Pos/BA	1,102	675,944	1,243	598,956	1,243	612,431	1,133	381,036	(110)	(231,395)
	FTE/OBL	1,096	622,438	1,204	598,956	1,204	612,431	1,100	381,036	(104)	(231,395)
NOS Construction	Pos/BA	1	3,864	0	7,500	0	4,500	0	0	0	(4,500)
	FTE/OBL	1	19,077	0	7,500	0	4,500	0	0	0	(4,500)
TOTAL NOS - PAC	Pos/BA	1	3,864	0	7,500	0	4,500	0	0	0	(4,500)
	FTE/OBL	1	19,077	0	7,500	0	4,500	0	0	0	(4,500)
Damage Assessment and Restoration Revolving Fund	Pos/BA	30	3,526	30	5,853	30	6,000	30	6,000	0	0
	FTE/OBL	30	32,078	30	249,000	30	60,000	30	60,000	0	0
Sanctuaries Asset Forfeiture Fund	Pos/BA	0	14	0	113	0	120	0	120	0	0
	FTE/OBL	0	50	0	448	0	120	0	120	0	0
Gulf Coast Ecosystem Restoration Fund	Pos/BA	1	0	1	0	1	0	1	0	0	0
	FTE/OBL	1	7,876	1	6,672	1	6,937	1	6,937	0	0
TOTAL NOS	Pos/BA	1,134	683,348	1,274	612,422	1,274	623,051	1,164	387,156	(110)	(235,895)
	FTE/OBL	1,128	681,519	1,235	862,576	1,235	683,988	1,131	448,093	(104)	(235,895)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Navigation, Observations and Positioning

Goal Statement

NOAA's Navigation, Observations and Positioning programs produce physical oceanographic observations and applications for the safe and efficient use of coastal waterways. In addition, this foundational data informs many other NOAA mission areas and essential activities, such as hazard and inundation forecasting, emergency response, habitat restoration, fishing, recreation and coastal energy development.

Base Program

The following offices comprise the Navigation, Observation, and Positioning activity structured as follows:

- **Office of Coast Survey (OCS)** – is responsible for surveying and producing navigation charts in the Nation's waters. OCS is America's oldest scientific agency and NOAA's oldest mission, dating to the administration of Thomas Jefferson in 1807.
- **National Geodetic Survey (NGS)** – provides the authoritative U.S. positioning framework, delineates the national shoreline and sets standards for all foundational positioning, geodesy, and coastal mapping activities.
- **Center for Operational Oceanographic Products and Services (CO-OPS)** – produces oceanographic observations and forecasts of tides, currents, and water levels. CO-OPS also provides the vertical framework for tidal datums across the U.S., and maintains long term sea level trends for the nation.
- **Integrated Ocean Observing System (IOOS)** – NOAA IOOS leads the implementation and administration of a network of Federal and non-Federal observing systems that fulfill regional, national, and global needs. U.S. IOOS is a partnership of 17 Federal agencies and 11 Regional Associations (RAs).

Statement of Operating Objectives

Schedule and Milestones:

- Progressively implement data archive capability for ocean mapping data from University-National Oceanographic Laboratory System and NOAA non-hydrographic vessel projects (FY 2021)
- Partner with NOAA/OAR/Ocean Acidification Program to deploy and operate ocean acidification sensors (buoys, shore stations, gliders) on regional IOOS platforms (ongoing)
- Transition demonstrated marine sensor tools and technologies into operations (ongoing)

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Deliverables:

- Nine new editions of Coast Pilot published annually and updated weekly for download
- 2,279 square nautical miles of hydrographic data
- 120 hydrographic surveys (conducted by NOAA survey units, contractors, and other sources) evaluated and approved
- Enhanced procedures and technology to improve hydrographic survey efficiency via ellipsoidally-referenced surveying
- U.S. Tide Predictions and Current Predictions
- Greater than 95 percent of water level data made available to the public annually
- A highly-accurate gravity-based geoid based on Gravity for the Redefinition of the American Vertical Datum (GRAV-D) data (FY 2022)
- Foundation Continuously Operating Reference Stations (CORS) Network established (FY 2022)
- “Quality Assurance of Real Time Oceanographic Data” manuals issued for IOOS core variables (ongoing)
- Annual analysis of high frequency radar system performance and operational readiness
- 6.6 percent of the National Shoreline and 33 percent of Priority Ports Shoreline updated with new aerial imagery and 1,200 square nautical miles of nearshore bathymetric data from topographic-bathymetric (topobathy) Light Detection and Ranging (LIDAR)

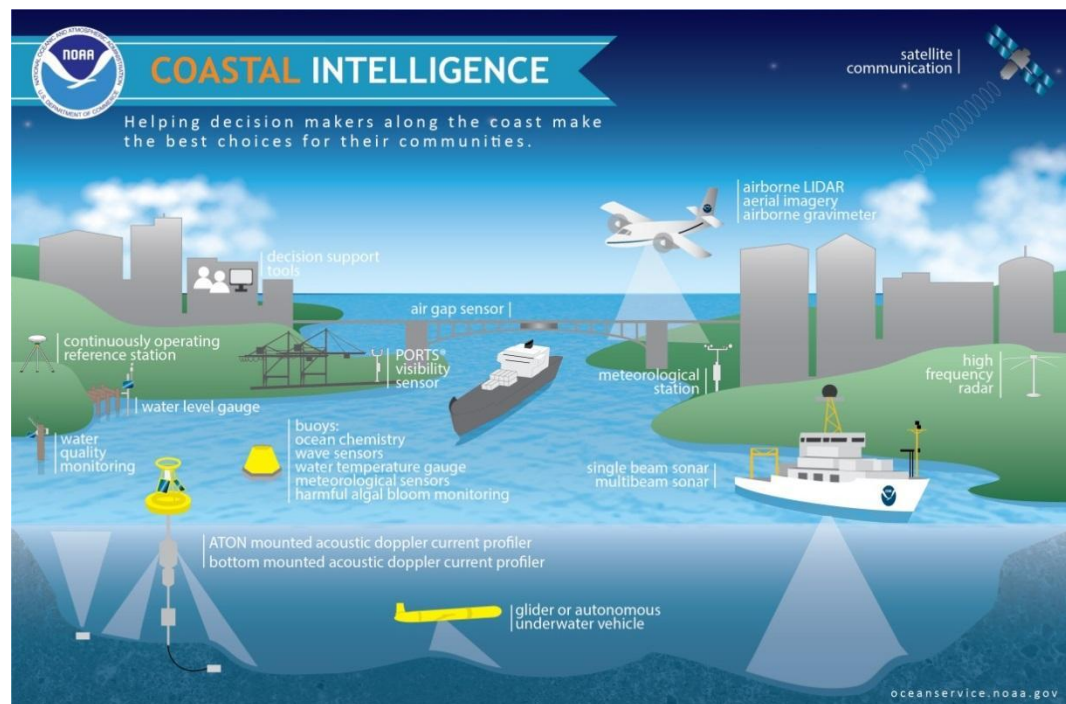
Explanation and Justification

Line Item		2019 Actual		2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Navigation, Observations and Positioning	Pos/BA	545	187,298	612	159,456	612	164,823
	FTE/OBL	542	171,236	599	159,456	599	164,823
Hydrographic Survey/Priorities Contracts	Pos/BA	21	31,968	23	32,000	23	32,000
	FTE/OBL	21	31,594	23	32,000	23	32,000
IOOS Regional Observations	Pos/BA	0	40,978	0	39,000	0	39,000
	FTE/OBL	0	41,477	0	39,000	0	39,000
Total Navigation, Observations and Positioning	Pos/BA	566	260,244	635	230,456	635	235,823
	FTE/OBL	563	244,307	622	230,456	622	235,823

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Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Navigation Services

Just as highways and railways are the backbone of U.S. surface transportation, NOAA's navigation products and services are the information-based infrastructure for safe and efficient marine transportation. In 2018, U.S. seaports moved over \$538 billion of goods in international cargo³, supporting agriculture, manufacturing, retail trade and other activities. The total economic impact to the national economy exceeded \$5 trillion in 2018, providing over 30 million jobs⁴. Commercial shippers, fishers, the U.S. Navy, the U.S. Coast Guard, state and local governments, recreational boaters, and many others rely on NOAA's charts and oceanographic services. The importance of timely, accurate and reliable oceanographic data and charts is increasing rapidly as vessel traffic and cargo value is expected to double between 2015 and 2021 and double again shortly after 2030⁵. NOAA uses all resources available to meet this demand, including initiatives such as the Integrated Ocean and Coastal Mapping program. Through this program, NOAA leads the National coordination on acquisition and management of ocean and coastal mapping data to maximize return on mapping resources. NOAA's suite of navigation products and services comprises the following:



³ U.S. Department of Commerce, Census Bureau. (2018). FT920 U.S. Merchandise Trade: Selected Highlights, December 2018, Total Vessel Annual Value. p.1. Retrieved July 30, 2019 from <https://www.census.gov/foreign-trade/Press-Release/2019pr/11/ft920/ft920.pdf>

⁴ Martin Associates. (2019, March). 2018 National Economic Impact of the U.S. Coastal Port System. Report prepared for the American Association of Port Authorities. Retrieved July 26, 2018 from http://aapa.files.cms-plus.com/Martin%20study_executive%20summary%202018%20US%20coastal%20port%20impacts%20final.docx.

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Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE
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- **Marine Charts and Hydrographic Surveys:** NOAA cartographers develop and maintain approximately 2,000 navigation products, including over 1,000 nautical charts, to ensure safe navigation in the 511,000 square nautical miles of navigationally significant U.S. waters. NOAA surveys these waters for depths and hazards to navigation. This hydrographic data is also useful for many other applications such as water modeling, fisheries management, marine debris mitigation, and coastal planning. Surveys using NOAA platforms and NOAA personnel are essential to maintaining the technical expertise necessary to oversee contracts, quality control data, develop survey technologies, and coordinate with the International Hydrographic Organization. At the same time, NOAA also depends on private sector surveyors to provide critical capacity for meeting survey needs. In 2018, NOAA released its first chart that was digital from inception, breaking the longstanding practice of creating digital charts based on paper charts. This electronic navigational chart of the Merrimack River, Massachusetts, was the first of its kind and offered a traditional depiction of the nautical chart for use with GPS-enabled electronic chart systems or other display systems to provide real-time vessel positioning for recreational mariners. NOAA intends to incorporate all future charts only as Electronic Navigational Charts, making updates weekly, as necessary; customers with compatible applications will get the updates automatically.
- **Navigation Response Teams (NRTs) and Regional Services:** Navigation Response Teams conduct hydrographic surveys in shallow waters and busy port areas. NRTs also conduct rapid response surveys after maritime emergencies and natural disasters, minimizing costly impacts of port closures and draft restrictions. In September 2018, NRTs conducted hydrographic surveys following Hurricane Florence and identified hazardous obstructions in the Cape Fear River Channel, North Carolina. NOAA updated its nautical charts in less than 24 hours to help safely reopen the port. NOAA regional navigation managers engage with customers and stakeholders to improve NOAA's responsiveness to their charting and navigation needs.
- **Tide and Tidal Current Predictions:** NOAA maintains and updates the official U.S. tide and current prediction tables, with over 3,000 entries each. The U.S. Coast Guard requires large vessels to carry these tide tables along with NOAA navigation charts when transiting through U.S. ports. NOAA makes annual updates to each table and incorporates new observations from NOAA's long-term and short-term water level gauges and current meters. In addition, NOAA uses real-time observations, meteorological forecasts, and astronomical predictions to produce forecasts and "nowcasts" (predictions of current conditions where there are gaps in real-time observations) of tides, currents and other oceanographic parameters.
- **Applied Research and Development:** NOAA supports research and development on the cartographic, hydrographic and oceanographic sciences that underpin mapping efforts. This research and development leads to new survey technologies, models, and geospatial products and tools. For example, NOAA's Joint Hydrographic Center develops remote sensing technologies and processes to improve data acquisition, processing, and charting. It also supports definition of the U.S. Extended Continental Shelf and sovereign rights beyond 200 nautical miles.

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- **Shoreline Mapping:** The Coastal Mapping Program defines the Nation's 95,000-mile shoreline and near-shore bathymetry. These data are essential for nautical charts and the determination of U.S. maritime boundaries such as the exclusive economic zone. These data are also used for other applications, such as inundation modeling, benthic habitat mapping, marine debris detection, and coastal zone management. NOAA maps the shoreline with tide coordinated, geo-referenced data from aerial photographs, high-resolution satellite imagery, and aerial topobathy LIDAR. LIDAR has the ability to provide shallow water bathymetry in areas difficult and dangerous to survey by boat. Coastal Mapping equipment and personnel are also used to collect post-event (hurricane, flooding, tornado, etc.) aerial imagery to assess damage and support emergency response efforts.
- **Physical Oceanographic Real-Time System (PORTS®):** PORTS® is a public-private partnership that provides users with data from real-time environmental observations, nowcasts, and forecasts to facilitate safe marine navigation and other uses. The program is described further under "Ocean and Coastal Observations" below.
- **Precision Navigation:** Precision Navigation is a coordinated effort amongst NOAA programs and partners to address port-specific requirements, including updated navigational charts, real-time oceanographic and geospatial observations, and hydrographic models that forecast key conditions days in advance. NOAA is currently developing Precision Navigation projects for several locations. In December 2018, NOAA began developing Precision Navigation projects for the Port of New York New Jersey and the five ports making up the Lower Mississippi River. In FY 2020, NOAA continued improving marine transportation services through development of a national dissemination site for NOAA data and products. A centralized, cloud-based national dissemination site for all authoritative, interoperable NOAA data streams and products will provide maritime users a new way of viewing and using data and provide a platform for data from future Precision Navigation projects.

NOAA's work in the Port of Long Beach is a prime example of how innovation and public-private partnerships can lead to the next generation of marine transportation infrastructure. In 2015, NOAA collaborated with the Port of Long Beach, the Southern California Coastal Ocean Observing System, California Office of Spill Prevention and Response, the Coastal Data Information Program at the University of California, San Diego, vendors and users to pilot Precision Navigation through the development of a third-party custom under keel clearance prediction system. The system, relying on high-resolution foundational data and observations from NOAA-supported assets, has enabled port authorities to ease vessel draft restrictions from 65 feet to 66 feet in 2016, to 67 feet in 2017, and to 69 feet in 2018. At 69 feet of draft, offshore lightering is no longer required. Lightering, the ship-to-ship transfer of cargo while underway, is a major driver of cost and safety and environmental risks. For every extra foot of draft, tankers can load 40,000 additional barrels of crude oil, valued at \$2 million.

NOS produces critical oceanographic observations and forecasts through two main program groups: the Tides and Currents Data

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Program and the IOOS. These observing programs are core components of the information infrastructure that makes safe navigation and accurate positioning possible in marine environments. In addition, emergency response and management agencies use NOS's oceanographic observations to inform their responses to oil spills, storms, tsunamis and other coastal hazards.

The Tides and Currents Data Program operates two primary coastal observing programs that the maritime community relies upon for safe and efficient navigation: the National Water Level Observation Network (NWLON) and the National Current Observation Program. NOAA's infrastructure and expertise with these two systems are essential to operating NOAA's PORTS®.

NOAA's Tides and Currents activities include:

- **Water Level Observations.** The NWLON consists of over 200 long-term, continuously operating water level stations throughout the coastal U.S., the Great Lakes, and island possessions and territories. Information from the NWLON ranges from real-time, high frequency data (e.g., tsunami 1-minute data and storm surge) to long-term datasets (e.g., sea level and lake level trends). NWLON provides the framework for the national tidal datum network. Reference datums (such as the International Great Lakes Datum or Mean Lower Low Water) are essential for a variety of uses: navigation products, vertical control for the dredging federally maintained channels, and shoreline and marine boundaries. Additional applications of water level information include habitat restoration, emergency management, dredging, coastal planning and management, and construction projects.
- **Current Observations.** The National Current Observation Program collects, analyzes, and disseminates predictions of currents for navigation products and hazardous materials response. NOAA acquires data through deployments of current surveys of varying sampling durations. Channel dredging and changes in the configuration of ports and harbors over time significantly alter the physical oceanography of many coastal areas, thereby necessitating continuous surveying to maintain data accuracy. The principal products generated by this program are tidal current predictions, published annually in the Tidal Current Tables and on the NOAA Current Predictions website, and raw observations provided to universities, engineers, and hydrodynamic modelers to validate models and improve the understanding of bay and estuarine circulation.
- **Modeling and Forecasting.** NOAA operates 14 regional forecast and nowcast models to produce predictions of future conditions and interpolated data where direct observations are not available. The National Operational Coastal Modeling Program (NOCMP) develops and maintains a national network of Operational Forecast Systems (OFS). These forecasts inform decision-making, particularly for vessel transit planning and execution, and support issuing of special marine weather statements to alert ships at risk of grounding. The models are incorporated into the Coastal Inundation Dashboard, an online tool that provides real-time, forecast, and historical water level information to understand near-term inundation risks, such as

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impacts from tropical cyclones or nor'easters, and longer-term risks, such as high tide flooding and sea level rise. These operational forecasts are also the engine for ecological forecasts of harmful algal blooms and other ecological hazards. In FY 2019, NOAA implemented the Cook Inlet OFS, and upgraded the Lake Michigan OFS and Lake Huron OFS with a combined Lake Michigan Huron OFS, providing users with forecast guidance on water levels, currents, water temperature, and salinity. NOAA plans to operationalize models for the West Coast shelf in FY 2020 and upgrade the Northern Gulf of Mexico model in FY 2021.

- **PORTS®.** PORTS® provides real-time information to help mariners navigate safely and efficiently among U.S. seaports. For example, three current meters were placed on Aids-to-Navigation buoys at the entrance to the Miami shipping channel in 2018, providing real-time data to allow local pilots to bring large Post-Panamax vessels into Miami. This real-time currents data is necessary to safely navigate incoming vessels out of the Gulf Stream, align into the ship channel filling its entire width, around a coral reef, and into Port Miami. PORTS® systems in operation serve 76 of the busiest seaports in the Nation. Individual systems are designed to meet local needs with site-specific data and sensors; systems typically provide water levels, currents, salinity and meteorological data (e.g., wind, atmospheric pressure, visibility, and air and water temperatures) with some locations including sensors for waves and bridge clearance. PORTS® is a cost-shared program; local partners (for example, local port authorities, pilot associations, shippers, and the Department of Defense) provide funding for the sensor systems and ongoing maintenance. NOAA provides technical expertise for systems design, 24/7 quality control, data management and dissemination infrastructure, and ongoing data management. In FY 2020, NOAA will implement several enhancements to Delaware Bay, Tampa Bay, and Cape Cod PORTS®. The PORTS® program now provides real-time observations for all of the nation's top 20 seaports by tonnage.

The NOAA IOOS is a national-regional partnership working to provide new tools and forecasts to improve safety, enhance the economy, and protect our environment. Integrated ocean information is available in near real time, as well as retrospectively. Easier and better access to this information is improving our ability to understand and predict coastal events - such as storms, wave heights, and sea level change. Such knowledge is needed for everything from retail to development planning.

The IOOS program serves the dual functions of providing technical and funding support for non-Federal regional observing systems and of improving compatibility between Federal and regional observations. By improving the accessibility and interoperability of ocean data, IOOS enables users of ocean data (modelers, researchers, meteorologists, and others) to focus their resources on developing products. Observations by NOS and NOAA assets and partners are critical components of IOOS and the Global Ocean Observing System.

The IOOS Regional component supports observing requirements of local communities and complements Federal ocean

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observations and models. NOAA supports IOOS RAs through cooperative agreements for operations and maintenance, capital projects, and new sensor technology. IOOS RAs deploy observing assets in accordance with nationally coordinated build-out plans, which identify highest-priority gaps and needs. Recent focuses for investment include:

- Buoys, gliders, coastal high frequency radar, animal telemetry (data from electronic tags attached to marine animals) and models to support hurricane storm surge, inundation and intensity forecasting;
- The Ocean Technology Transition program to support research, development, testing, and evaluation of new sensor technology and observing strategies; and
- Advances in modeling through the Coastal and Ocean Modeling Testbed, which coordinates among the research community and IOOS RAs to ensure that new observations improve operational models and forecasts.

During FY 2018, all RAs earned their IOOS certification through a detailed review and assessment process. Certification provides NOAA and its interagency partners a means to verify that a Regional Association's organizational and operational practices, including data management, meet recognized and established standards set by NOAA. Certification improves confidence in the network and has increased opportunities for partnering with other Federal and non-Federal data providers.

Positioning and Geodesy

NOAA's Geodesy program defines and maintains the National Spatial Reference System (NSRS), the common reference framework for all positioning activities in the Nation. Accurate positioning underpins all transportation and infrastructure activity in the Nation, as well as all NOAA's earth observations and mapping activities. The foundational elements of this coordinate-based system—latitude, longitude, elevation, scale, gravity, and orientation – and their changes over time are essential to mapping, navigation, flood risk determination, transportation, land use, and ecosystem management. NOAA's authoritative spatial data, models, and tools are vital for the protection and management of natural resources and built infrastructure.

The NSRS improves the availability and accuracy of positional information necessary for accurate geographic information systems (GIS), active Global Positioning System (GPS) navigation and surveying, and better understanding of the Earth's geophysical dynamics. As examples, farmers use GPS applications that rely on NSRS to improve crop yields and mariners use GPS to position ships in navigation channels. In the future, autonomous vehicles will use GPS to navigate the air, land, and sea. NOAA improves the

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quality and accessibility of the NSRS by participating in the development of international geodetic standards and guidelines.

A 2009 study estimated that the NSRS provides more than \$2.4 billion in potential annual benefits to the national economy.⁶ The estimated economic benefits of the NOAA CORS network (described below) alone were \$758 million per year. The same study estimated that a new geoid-based vertical reference system through the GRAV-D initiative would yield \$522 million in annual economic benefits, with approximately \$240 million from improved floodplain management alone.

The NOAA Geodesy program is modernizing the NSRS and is composed of four major elements:

- **NOAA CORS and Passive Control Infrastructure.** CORS are a publicly available network of permanent GPS receivers that enable highly accurate positioning relative to the NSRS for surveyors and engineers. NOAA is working to establish a network of NOAA-owned CORS (known as Foundation CORS) using the most modern GPS receivers and antennas, which will enhance the connection of the NSRS to the International Terrestrial Reference Frame (ITRF), creating a more consistent worldwide spatial reference frame to improve forecasts of global sea level rise and inform coastal infrastructure planning. NOAA analyzes GPS satellites and ground station positions daily to ensure precise orbits of GPS satellites. NOAA also maintains a network of over one million permanent geodetic survey markers as part of the NSRS.
- **Gravity Program.** NOAA's Gravity Program leads the Nation's efforts to enhance the vertical aspect of the NSRS through its GRAV-D initiative. GRAV-D is a long-term project to collect airborne gravity data and build the Nation's gravimetric geoid model. GRAV-D will ultimately lead to a new, highly accurate national vertical datum, allowing GPS to establish more accurate elevations for all positioning needs. This system can help communities improve resilience by determining where water flows, allowing them to make accurate inundation models and assessments.
- **Data Access and Tools.** NOAA provides access to geodetic, shoreline, and aerial survey data, including data from partner organizations through a variety of tools and models. These tools and models are crucial to scientific and commercial positioning activities.
- **Research, Capacity Building, and Outreach.** NOAA researches and develops standards, guidelines, and best practices for the surveying and positioning industry. As part of its outreach efforts, NOAA conducts workshops and hosts constituent forums around the country. In 2019, for example, NOAA hosted a Geospatial Summit attended by hundreds of stakeholders to learn about the planned modernization of the NSRS and how it will benefit public safety and the economy. NOAA also runs the Regional Geodetic Advisor Program which provides training and assistance to state and local geodetic and survey programs, GIS users, and coastal managers. A 2018 study estimated the economic benefits of the Regional Geodetic Advisor

⁶ Socio-Economic Benefits Study: Scoping the Value of CORS and GRAV-D, Leveson, 2009.

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Program to be between \$18.6 million and \$39.7 million annually.

PROGRAM CHANGES FOR FY 2021:

NOAA requests a total net decrease of \$28,147 and 0 FTE/ 0 positions in program changes for the Navigation, Observations, and Positioning activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-1).

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(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Increase from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Navigation, Observations and Positioning	Pos./BA	612	164,823	612	173,337	0	8,514
	FTE/OBL	599	164,823	599	173,337	0	8,514

Ocean Mapping the EEZ and Charting in Alaska and the Arctic (\$8,514, 0 FTE/0 Positions) – NOAA requests additional funds to support the Presidential Memorandum (PM) on Ocean Mapping of the U.S. Exclusive Economic Zone (EEZ) and the Shoreline and Nearshore of Alaska. NOAA’s work will be guided by the National Strategy for mapping, exploring, and characterizing the U.S. EEZ that is required by the PM and is currently being developed by the Ocean Policy Committee for release in spring 2020. This strategy will lay out a coordinated Federal process for mapping the U.S. EEZ, identifying priority areas within the U.S. EEZ, and exploring and characterizing the priority areas. Additionally, the PM requires that NOAA develop a proposed strategy to map the shoreline and nearshore of Alaska, coordinating, as appropriate, with the State of Alaska and Alaska Mapping Executive Committee to develop a proposed strategy to map the shoreline and nearshore of Alaska.

The funding will be split as follows:

- \$4,070 for the OCS to implement elements of interagency national mapping, exploration, and characterization strategy, and assist with mapping the Arctic and sub-Arctic shoreline and nearshore of Alaska as needed. They will use the hydrographic health model for the highest priority areas for mapping the U.S. EEZ and award hydrographic survey contracts to non-governmental entities to conduct survey work. Hydrographic survey contracts will include the use of unmanned systems as force-multipliers to gather even more hydrographic data while underway. OCS will coordinate efforts with the co-chairs of the Ocean Policy Committee - the Director of the Office of Science and Technology Policy and the Chairman of the Council on Environmental Quality - pursuant to Executive Order 13840 of June 19, 2018.
- \$4,444 for the NGS to map the shoreline and nearshore of Alaska. In consultation with the State of Alaska and the Alaska Mapping Executive Committee, NGS will identify priority areas, conduct airborne LIDAR and imagery surveys, and deliver updated national shoreline for the inclusion in nautical charts.

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Schedule and Milestones:

FY 2021

- Identify priority areas for shoreline and near-shore data collection in Alaska in support of the PM
- Award one additional contract, for a total of 8 contracts awarded annually, to survey all priority areas
- Develop and execute a Federal funding opportunity to address mapping gaps and increase awareness of Coast Survey contract survey services
- Design and execute an outreach strategy for Federal and state mapping partners to increase awareness of the Coast Survey hydrographic contracting capability
- Perform geospatial observations in support of VDatum transformation tool

FY2022 – FY2025

- Award eight contracts annually to survey all priority areas
- Conduct annual updates to the data on priority areas for shoreline and near-shore Alaska in support of the PM
- Increase the use of external source data contributions to nautical charts and inform survey prioritization
- Perform geospatial observations in support of VDatum transformation tool

Deliverables:

- Collect an additional 150 square nautical miles of hydrographic survey data, for a total of 2,429 square nautical miles, in priority areas annually starting in FY 2021
- Collect 1,125 square miles (4,125 - 5,625 linear miles) of LIDAR/imagery data in Alaska priority areas annually
- Expand collection of LIDAR/imagery data to three additional priority ports in Alaska each year
- Release VDatum transformation tool for Alaska in 2025

Performance Measures	2021	2022	2023	2024	2025
Annual Percent of the National Shoreline updated with current/new aerial imagery and elevation data to improve navigational safety					
With Increase	8.9%	8.9%	8.9%	8.9%	8.9%
Without Increase	6.6%	6.6%	6.6%	6.6%	6.6%

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Hydrographic data acquired to support safe and efficient maritime commerce and for community resilience to storms and other coastal hazards (square nautical miles)

With Increase	2,429	2,429	2,429	2,429	2,429
Without Increase	2,279	2,279	2,279	2,279	2,279
Outyear Costs:					
Direct Obligations	8,514	8,514	8,514	8,514	8,514
Uncapitalized	8,514	8,514	8,514	8,514	8,514
Budget Authority	8,514	8,514	8,514	8,514	8,514
Outlays	5,279	5,279	5,279	5,279	5,279
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Navigation, Observations, and Positioning
Subactivity: Navigation, Observations, and Positioning

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1 Full-time permanent compensation	\$60,482	59,835	63,134	63,134	\$0
11.3 Other than full-time permanent	87	160	161	161	0
11.5 Other personnel compensation	1,162	1,299	1,311	1,311	0
11.8 Special personnel services payments	1,747	1,931	1,999	1,999	0
11.9 Total personnel compensation	63,478	63,225	66,606	66,606	0
12 Civilian personnel benefits	17,733	19,599	20,894	20,894	0
13 Benefits for former personnel	5	0	0	0	0
21 Travel and transportation of persons	2,984	3,118	3,147	3,147	0
22 Transportation of things	327	321	324	324	0
23 Rent, communications, and utilities	0				0
23.1 Rental payments to GSA	6,330	6,930	6,992	6,992	0
23.2 Rental Payments to others	984	1,019	1,028	1,028	0
23.3 Communications, utilities and misc charges	1,578	1,631	1,645	1,645	0
24 Printing and reproduction	0	36	36	36	0
25.1 Advisory and assistance services	19,883	14,636	14,769	14,769	0
25.2 Other services from non-Federal sources	21,640	25,811	26,044	34,558	8,514
25.3 Other goods and services from Federal sources	1,542	1,749	1,765	1,765	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,242	2,577	2,601	2,601	0
31 Equipment	1,880	1,529	1,542	1,542	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	19,757	17,275	17,431	17,431	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	15	0	0	0	0
44 Refunds	0	0	0	0	0
77 Overhead	9,858	0	0	0	0
99 Total obligations	\$171,236	\$159,456	\$164,823	\$173,337	\$8,514

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		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Navigation,	Pos./BA	612	164,823	612	162,323	0	(2,500)
Observations and Positioning	FTE/OBL	599	164,823	599	162,323	0	(2,500)

Eliminate and Reduce Congressionally Directed Grants to Joint Ocean and Coastal Mapping Centers (-\$2,500, 0 FTE/0 Positions) – NOAA proposes to discontinue new funding awards of \$2.0 million for the joint ocean and coastal mapping center in Mississippi. NOAA will also reduce the additional funding of \$0.5 million provided in the FY 2020 appropriations for the joint ocean and coastal mapping center in New Hampshire. The centers, funded by a cooperative agreement with academic institutions, investigate the use of unmanned systems for hydrographic surveys. NOAA will continue to support these efforts through its Coast Survey Development Laboratory, which explores and develops survey, geospatial data management, and cartographic technologies, and other Navigation, Observation and Positioning programs.

Schedule and Milestones:

FY 2021 – FY 2025

- Partner with Acquisition and Grants Office to ensure timely closeout of existing awards (FY 2021)

Performance Measures	2021	2022	2023	2024	2025
Number of new or existing projects					
With Decrease	0	0	0	0	0
Without Decrease	10	10	10	10	10

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(Direct Obligations amounts in thousands)

Activity: Navigation, Observations, and Positioning
Subactivity: Navigation, Observations, and Positioning

Object Class		2019	2020	2021	2021	Decrease
		Actual	Enacted	Base	Estimate	from 2021 Base
11.1	Full-time permanent compensation	\$60,482	59,835	63,134	63,134	\$0
11.3	Other than full-time permanent	87	160	161	161	0
11.5	Other personnel compensation	1,162	1,299	1,311	1,311	0
11.7	Military personnel compensation	1,747	1,931	1,999	1,999	0
11.9	Total personnel compensation	63,478	63,225	66,606	66,606	0
12	Civilian personnel benefits	17,733	19,599	20,894	20,894	0
13	Benefits for former personnel	5	0	0	0	0
21	Travel and transportation of persons	2,984	3,118	3,147	3,147	0
22	Transportation of things	327	321	324	324	0
23	Rent, communications, and utilities					
23.1	Rental payments to GSA	6,330	6,930	6,992	6,992	0
23.2	Rental Payments to others	984	1,019	1,028	1,028	0
23.3	Communications, utilities and misc charges	1,578	1,631	1,645	1,645	0
24	Printing and reproduction	0	36	36	36	0
25.1	Advisory and assistance services	19,883	14,636	14,769	14,769	0
25.2	Other services from non-Federal sources	21,640	25,811	26,044	26,044	0
25.3	Other goods and services from Federal sources	1,542	1,749	1,765	1,765	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	0	0	0	0	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	3,242	2,577	2,601	2,601	0
31	Equipment	1,880	1,529	1,542	1,542	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	19,757	17,275	17,431	14,931	(2,500)
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	15	0	0	0	0
44	Refunds	0	0	0	0	0
77	Overhead	9,858	0	0	0	0
99	Total obligations	\$171,236	\$159,456	\$164,823	\$162,323	(2,500)

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		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Navigation, Observations, and Positioning	Pos./BA	612	164,823	612	156,823	0	(8,000)
	FTE/OBL	599	164,823	599	156,823	0	(8,000)

Eliminate Congressionally Directed Regional Geospatial Modeling Grants (-\$8,000, 0 FTE/ 0 Positions) – NOAA proposes to terminate the Regional Geospatial Modeling Grants program. NOAA will continue to support a range of other regional geospatial requirements through NOS’s Coastal Zone Management and Services and Navigation, Observations and Positioning program activities. These activities include the National Spatial Reference System, CORS, data access, and capacity building.

Schedule and Milestones:

- Partner with Acquisition and Grants Office to ensure timely closeout of existing awards (FY 2021)

Performance Measures	2021	2022	2023	2024	2025
Number of CORS managed by grant partners in the Gulf of Mexico and operating at 80% reliability.					
With Decrease	0	0	0	0	0
Without Decrease	40	40	40	40	40

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Number of person hours of training provided on concepts and software systems associated with geographic information systems.

With Decrease	0	0	0	0	0
Without Decrease	1,500	1,500	1,500	1,500	1,500
Outyear Costs:					
Direct Obligations	(8,000)	(8,000)	(8,000)	(8,000)	(8,000)
Uncapitalized	(8,000)	(8,000)	(8,000)	(8,000)	(8,000)
Budget Authority	(8,000)	(8,000)	(8,000)	(8,000)	(8,000)
Outlays	(4,960)	(4,960)	(4,960)	(4,960)	(4,960)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Navigation, Observations, and Positioning
Subactivity: Navigation, Observations, and Positioning

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11 Personnel compensation					
11.1 Full-time permanent	\$60,482	59,835	63,134	63,134	\$0
11.3 Other than full-time permanent	87	160	161	161	0
11.5 Other personnel compensation	1,162	1,299	1,311	1,311	0
11.7 NOAA Corps	1,747	1,931	1,999	1,999	0
11.9 Total personnel compensation	63,478	63,225	66,606	66,606	0
12 Civilian personnel benefits	17,733	19,599	20,894	20,894	0
13 Benefits for former personnel	5	0	0	0	0
21 Travel and transportation of persons	2,984	3,118	3,147	3,147	0
22 Transportation of things	327	321	324	324	0
23.1 Rental payments to GSA	6,330	6,930	6,992	6,992	0
23.2 Rental Payments to others	984	1,019	1,028	1,028	0
23.3 Communications, utilities and misc charges	1,578	1,631	1,645	1,645	0
24 Printing and reproduction	0	36	36	36	0
25.1 Advisory and assistance services	19,883	14,636	14,769	14,769	0
25.2 Other services from non-Federal sources	21,640	25,811	26,044	26,044	0
25.3 Other goods and services from Federal sources	1,542	1,749	1,765	1,765	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,242	2,577	2,601	2,601	0
31 Equipment	1,880	1,529	1,542	1,542	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	19,757	17,275	17,431	9,431	(8,000)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	15	0	0	0	0
44 Refunds	0	0	0	0	0
77 Overhead	9,858	0	0	0	0
99 Total obligations	\$171,236	\$159,456	\$164,823	\$156,823	(8,000)

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(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Navigation, Observations and Positioning	Pos./BA	612	164,823	612	163,823	0	(1,000)
	FTE/OBL	599	164,823	599	163,823	0	(1,000)

Physical Oceanographic Real-Time System (PORTS®) Decrease (-\$1,000, 0 FTE/0 Positions) – NOAA proposes to decrease additional funds provided in FY 2020 Appropriations for its PORTS® program. As a result, NOAA will meet local maritime community partner requests for new PORTS® on a delayed schedule. Efforts initiated in FY 2020, such as the request for a new PORTS® in Kings Bay, GA, and the enhancement of six pre-existing PORTS® in Cape Cod, NY/NJ, Chesapeake Bay South, Tampa Bay, Houston/Galveston, and Port Fourchon, will continue, but will do so on a delayed schedule.

Schedule and Milestones:

FY 2021 – FY 2025

- Operationalize a new PORTS® in Valdez, AK in partnership with the Prince William Sound Regional Citizens' Advisory Council through partner funding (FY 2023)
- Operationalize a new PORTS® in Portsmouth, NH in partnership with the U.S. Navy through partner funding (FY 2025)

Performance Measures	2021	2022	2023	2024	2025
Percent of top 175 U.S. Seaports with access to a PORTS®, which improves the safety and efficiency of marine transportation					
With Decrease	44%	44%	45%	44%	45%
Without Decrease	45%	45%	46%	48%	49%

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Outyear Costs:					
Direct Obligations	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Uncapitalized	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Budget Authority	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Outlays	(620)	(620)	(620)	(620)	(620)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Navigation, Observations, and Positioning
Subactivity: Navigation, Observations, and Positioning

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	\$60,482	59,835	63,134	63,134	\$0
11.3 Other than full-time permanent	87	160	161	161	0
11.5 Other personnel compensation	1,162	1,299	1,311	1,311	0
11.7 Military personnel benefits	1,747	1,931	1,999	1,999	0
11.9 Total personnel compensation	63,478	63,225	66,606	66,606	0
12 Civilian personnel benefits	17,733	19,599	20,894	20,894	0
13 Benefits for former personnel	5	0	0	0	0
21 Travel and transportation of persons	2,984	3,118	3,147	3,147	0
22 Transportation of things	327	321	324	324	0
23 Rent, communications, and utilities				0	0
23.1 Rental payments to GSA	6,330	6,930	6,992	6,992	0
23.2 Rental Payments to others	984	1,019	1,028	1,028	0
23.3 Communications, utilities and misc charges	1,578	1,631	1,645	1,645	0
24 Printing and reproduction	0	36	36	36	0
25.1 Advisory and assistance services	19,883	14,636	14,769	14,769	0
25.2 Other services from non-Federal sources	21,640	25,811	26,044	25,044	(1,000)
25.3 Other goods and services from Federal sources	1,542	1,749	1,765	1,765	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,242	2,577	2,601	2,601	0
31 Equipment	1,880	1,529	1,542	1,542	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	19,757	17,275	17,431	17,431	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	15	0	0	0	0
44 Refunds	0	0	0	0	0
77 Overhead	9,858	0	0	0	0
99 Total obligations	\$171,236	\$159,456	\$164,823	\$163,823	(1,000)

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(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Hydrographic							
Survey	Pos./BA	23	32,000	23	26,949	0	(5,051)
Priorities/Contracts	FTE/OBL	23	32,000	23	26,949	0	(5,051)

Hydrographic Survey Priorities / Contracts (-\$5,051, 0 FTE/ 0 Positions) – NOAA proposes continued support for this program. While a reduction from enacted, NOAA will continue to acquire hydrographic survey data from contract surveyors with the remaining funds in support of safe and efficient transportation and commerce. In particular, NOAA will focus on supporting the PM on ocean mapping and will prioritize contracts that enable the Federal government to meet the goals of the PM.

Schedule and Milestones:

- Partner with Acquisition and Grants Office to ensure timely award/modification of contracts (FY 2021)

Performance Measures	2021	2022	2023	2024	2025
Hydrographic data acquired to support safe and efficient maritime commerce and for community resilience to storms and other coastal hazards (SNM)					
With Decrease	2,093	2,093	2,093	2,093	2,093
Without Decrease	2,279	2,279	2,279	2,279	2,279
Outyear Costs:					
Direct Obligations	(5,051)	(5,051)	(5,051)	(5,051)	(5,051)
Uncapitalized	(5,051)	(5,051)	(5,051)	(5,051)	(5,051)

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Budget Authority	(5,051)	(5,051)	(5,051)	(5,051)	(5,051)
Outlays	(3,132)	(3,132)	(3,132)	(3,132)	(3,132)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Navigation, Observations, and Positioning
Subactivity: Hydrographic Survey Priorities / Contracts

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
Personnel compensation					
Full-time permanent	\$1,140	\$1,734	\$1,734	\$1,734	\$0
Other than full-time permanent	22	0	0	0	0
Other personnel compensation	21	0	0	0	0
NOAA Corps	0	0	0	0	0
Special personnel services payments	0	0	0	0	0
Total personnel compensation	1,183	1,734	1,734	1,734	0
Civilian personnel benefits	387	555	555	555	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
Communications, utilities and misc charges	0	0	0	0	0
Printing and reproduction	0	0	0	0	0
Advisory and assistance services	0	0	0	0	0
Other services from non-Federal sources	27,403	29,711	29,711	24,660	(5,051)
Other goods and services from Federal	38	0	0	0	0
Operation and maintenance of facilities	0	0	0	0	0
Research and development contracts	0	0	0	0	0
Medical care	0	0	0	0	0
Operation and maintenance of equipment	0	0	0	0	0
Subsistence and support of persons	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	0	0	0	0	0
Insurance claims and indemnities	0	0	0	0	0
Interest and dividends	0	0	0	0	0
Refunds	0	0	0	0	0
Overhead	2,583	0	0	0	0
Total obligations	\$31,594	\$32,000	\$32,000	\$26,949	(5,051)

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		<u>2021 Base</u>		<u>2021 Estimate</u>		<u>Decrease</u>	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel Amount</u>	
IOOS Regional Observations	Pos./BA	0	39,000	0	19,444	0	(19,556)
	FTE/OBL	0	39,000	0	19,444	0	(19,556)

Reduce IOOS Regional Observation Grants (-\$19,556, 0 FTE/ 0 Positions) – NOAA proposes to reduce grants to the IOOS Regional Observations Program. NOAA will continue to support the 11 IOOS RAs at the reduced funding level.

The IOOS RAs support observing requirements of local communities and complement Federal ocean observations and models. Funding supports the deployment, operation, and maintenance of over 300 observing assets that collect oceanographic data to help improve safety, enhance the economy, and protect the environment. The RAs engage with local and regional user communities to understand information needs and to transform raw observation data into useful tools. They provide over 11 million meteorological and wave observations per year to the NWS and World Meteorological Organization.

NOAA currently provides funding for 11 IOOS RAs through a competitive, merit-based grant process. Matching is not a requirement of this grant; however, RAs do leverage grant funding to obtain additional funding in support of the regional observing systems.

Schedule and Milestones:

- Partner with Acquisition and Grants Office to ensure timely modification of grants (FY 2021)

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Performance Measures	2021	2022	2023	2024	2025
Number of million meteorological and wave observations per year to the NWS and World Meteorological Organization in support of the 2017 Weather Act (observations in millions)					
With Decrease	4.5	4.5	4.5	4.5	4.5
Without Decrease	11	11	11	11	11
Number of High Frequency Radar which measure surface currents for search and rescue, oil spill response, marine navigation, and tracking harmful algal blooms					
With Decrease	130	120	110	90	70
Without Decrease	152	155	159	160	160
Outyear Costs:					
Direct Obligations	(19,556)	(19,556)	(19,556)	(19,556)	(19,556)
Uncapitalized	(19,556)	(19,556)	(19,556)	(19,556)	(19,556)
Budget Authority	(19,556)	(19,556)	(19,556)	(19,556)	(19,556)
Outlays	(12,125)	(12,125)	(12,125)	(12,125)	(12,125)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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(Direct Obligations amounts in thousands)

Activity: Navigation, Observations, and Positioning
Subactivity: IOOS Regional Observations

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 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
11.7 NOAA Corps	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 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	7	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	22	0	0	0	0
23.3 Communications, utilities and misc charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.1 Advisory and assistance services	249	0	0	0	0
25.2 Other services from non-Federal sources	872	0	0	0	0
25.3 Other goods and services from Federal sources	92	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
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	88	0	0	0	0
31 Equipment	33	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	40,089	39,000	39,000	19,444	(19,556)
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
77 Overhead	25	0	0	0	0
99 Total obligations	\$41,477	\$39,000	\$39,000	\$19,444	(19,556)

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Activity: Coastal Science and Assessment

Goal Statement

Under Coastal Science and Assessment, NOAA conducts applied research and delivers scientific information for disaster response and management, protection, and restoration of ocean and coastal resources. NOAA also provides coastal managers information and tools for aquaculture, and to protect fisheries and drinking water from harmful algal blooms.

Base Program

The following program offices are responsible for carrying out the Coastal Science and Assessment program:

- **National Centers for Coastal Ocean Science (NCCOS)** – builds the applied science foundation and delivers solutions for coastal management and resilient coastal ecosystems.
- **Office of Response and Restoration (OR&R)** – center of expertise in preparing for and responding to threats to coastal environments: oil and chemical releases, abandoned and grounded vessels, and marine debris. When coastal and marine natural resources suffer damages, OR&R assesses the damage and ensures that response and recovery actions mitigate harm to those resources and surrounding economies.

Statement of Operating Objectives

Schedule and Milestones:

- Sustain operational ecological forecasting services; develop enhanced forecasting capabilities for HABs, (ongoing)
- Increase capacity for long-term coastal planning by improving tools and products for modeling impacts of sea-level rise and assessing vulnerabilities of marshes and beaches to sea level rise and coastal storms (ongoing)
- Validate and transition HAB detection and monitoring products to provide identification and toxicity measurements for regional observing networks, states, municipalities and tribal nations (ongoing)
- Develop marine debris emergency response planning guides with partners in the Caribbean (U.S. Virgin Islands and Puerto Rico), Mid-Atlantic, Northeast, Pacific Islands, and Pacific Coast states
- Resolve liability for four natural resource damage assessment cases annually (ongoing)

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- Release updates to three publicly available emergency response tools annually (ongoing)
- Train 2,000 emergency responders annually
- Remove 400 tons of marine debris annually
- Create and execute a multi-year Incident Exercise Plan to include an annual NOAA Concept of Operations level exercise focused on mission support

Deliverables:

- National guidelines for developing aquaculture monitoring protocols that are consistent nationally, regionally appropriate and environmentally responsible
- Operational forecasts for HABs in Lake Erie and the Gulf of Mexico, and for pathogens forecasts in the Chesapeake Bay, and Pacific Northwest (ongoing)
- Geospatial data, mapping products, and integrated assessments to inform management, restoration, and research plans in the Gulf of Mexico (FY 2021)
- Up to two research projects funded annually that address marine debris research and development priorities (ongoing)
- Public release of updated and enhanced environmental sensitivity indexes (ESIs) that aid public decision making during coastal disasters from oil spills to nuisance flooding (FY 2021-2024)

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Explanation and Justification

Line Item		2019		2020		2021	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Coastal Science, Assessment, Response and Restoration	Pos/BA	242	89,143	278	82,000	278	85,412
	FTE/OBL	241	94,748	268	82,000	268	85,412
Competitive Research	Pos/BA	3	17,982	0	19,000	0	19,000
	FTE/OBL	3	17,437	0	19,000	0	19,000
Total Coastal Science and Assessment	Pos/BA	245	107,125	278	101,000	278	104,412
	FTE/OBL	244	112,185	268	101,000	268	104,412

Coastal Science and Monitoring

NOAA’s applied research, ecological assessment, and tool development build the scientific foundation for community, business, and regulatory decision-making. These activities inform coastal management through research on aquaculture siting and sustainability, biogeographic assessments, and habitat mapping. Ecological forecasts for hazards such as harmful algal blooms and pathogens help communities safeguard drinking water and commercial and recreational fisheries. Research on contaminants (including oil, hazardous chemicals, and microplastics) improves disaster response and restoration. Vulnerability assessments and shoreline stabilization tools help communities prepare for inundation and storms.

NOAA intramural research programs have longstanding expertise in key areas that assist critical partners in the emergency and resource management communities. For example, when natural resource damage occurs, NOAA’s long-term monitoring datasets establish a baseline of ecosystem conditions that existed before the event for assessing the extent of damages. The research in these areas also enables NOAA to develop resource protection strategies for National Marine Sanctuaries and other NOAA-managed areas.

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The NOAA Coastal Science and Monitoring Program has four focus areas:

- **Marine Ecology.** NOAA provides information that communities, state and Federal stewards, and industries (such as aquaculture, energy and tourism) use to make decisions balancing the trade-offs between resource use and conservation.
- **Stressor Impacts and Mitigation.** NOAA's research in ecological forecasting, stressor detection, and understanding of stressor impacts on coastal resources help communities protect their water supplies, local fishing and shellfishing industries, public health, and coastal and lakefront tourism.
- **Coastal Change.** NOAA research efforts seek to understand the ecosystem services that improve a community's adaptation to changing conditions. This knowledge will help coastal communities take action and address the persistent threats from coastal storms, flooding, and rising seas.
- **Social Science.** All coastal and marine management decisions affect multiple communities. NOAA's coastal science and monitoring social science portfolio studies connections between people and the environment.

The NCCOS Competitive Research Program conducts research, monitoring, and assessment activities in support of NOAA coastal mission areas. Executed through competitive extramural grants, this program maintains the only national and regional scale grant programs dedicated to research topics under the Harmful Algal Bloom and Hypoxia Research and Control Act (HABHRCA). Grantee-developed detection tools and forecast models for harmful algal blooms (HABs) have helped to protect public health and economic activities from poisonous seafood, unsafe drinking water supplies, and beachgoers' exposure to algal toxins. The grants also address a variety of other threats, such as hypoxia, habitat loss, impacts and solutions to coastal flooding, shoreline modification, invasive species, and how they affect economically significant natural resources.

Close coordination among NOAA, grantee researchers, and user communities ensures that research findings and new technologies developed through this program are applied to resource management decisions. For example, the Mississippi River/Gulf of Mexico Hypoxia Task Force, which is composed of 18 Federal, state, and tribal agencies, uses monitoring and modeling from these grant-funded projects as the basis for hypoxia mitigation. The Great Lakes states use grantee research to evaluate prevention and control strategies for zebra mussels and other invasive species. Eleven states are using grantee-developed capabilities to address substantial inundation risks and impacts on the East Coast and Gulf Coast.

The funding currently supports a diverse portfolio of six programs with 62 awards to 160 institutions and over 316 principal investigators. Topics include:

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- Harmful algal bloom (HAB) prediction and tools to prevent, control, or mitigate their occurrence and impacts;
- The causes and biological impacts of hypoxia (low oxygen) in coastal waters;
- Coastal ecosystems changes from inundation, coastal storms, and erosion;
- The economic value of protecting the shoreline from coastal storms using natural infrastructure;
- The combined effects of ocean acidification and hypoxia on economically and ecologically significant species and habitats.

NCCOS extramural research grants are responsible for much of the science that underpins NOAA forecasts of ecological hazards. NOAA currently produces operational forecasts for HABs off the Texas coast and West Florida Shelf, operational HAB bulletins for Lake Erie and the Pacific Northwest and operational hypoxia models for the Gulf of Mexico. In addition, NOAA has experimental research models for HABs, hypoxia and marine pathogens in vulnerable coastal and Great Lakes areas around the country. In addition, these research grants provide science on the impacts and solutions to sea level rise and coastal flooding.

Emergency Response, Assessment and Restoration of NOAA Trust Resources

Federal, state, and local agencies across the country depend on NOAA's scientific advice and training of responders to minimize harm to economically significant natural resources from hazards. These hazards can include oil and chemical spills, vessel groundings, hazardous waste releases, and national security events. NOAA also addresses persistent coastal hazards such as marine debris. NOAA's emergency services include spill trajectory modeling, shoreline cleanup assessment, impacts identification, and information management. NOAA also partners with EPA to support first responders with critical on the ground decision-support tools across the country and the world.

In 2017, NOAA consolidated its interagency and intergovernmental responder training, preparedness and response activities under a Disaster Preparedness Program (DPP). The DPP includes, and will continue to build on, the activities at the Gulf of Mexico Disaster Response Center (DRC), to improve National preparedness for and response to all hazard types. During the 2018 hurricane seasons, the DPP and the DRC coordinated across all NOS program offices to gather information on NOS mission support, logistical needs, and impacts to NOS personnel and infrastructure.

After the initial response to an acute or chronic pollution event or grounding, NOAA and other natural resource trustees are responsible for determining the extent of damages to natural resources and for seeking compensation on behalf of the public for the loss of ecosystem services. NOS's Office of Response and Restoration works with NOAA's General Counsel for Natural Resources and the NMFS Office of Habitat Conservation to carry out the NOAA Damage Assessment, Remediation and Restoration Program

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(DARRP). NOS's role in the DARRP is to assess ecological risk and environmental and economic injury from pollution events and ship groundings. NOS also ensures that cleanup actions protect resources from further damage.

Through the DARRP, NOAA and co-trustees have secured more than \$10.4 billion⁷ for restoration from responsible parties at over 268 oil spills, Superfund sites and ship groundings, since 1998. NOAA and co-trustees collected \$34.3 million from settlements in FY 2018 alone. As of February 2020, FY 2020 settlements have recovered \$1.3 million for restoration. These funds are reserved for ecosystem restoration and restoration of passive and active recreational use of the damaged resources. Funds are not applied to third party or private claims for property damage and lost business. In addition to securing resources for restoration, NOAA has also ensured that protection and restoration have been integrated into 500+ waste site cleanups to reduce further injuries and promote recovery. All these restoration projects provide economic benefits in the form of tourism, recreation (fishing, etc.), green jobs, coastal resiliency, property values and quality of life. There are currently over 100 cases in the DARRP docket; as of October 2020, 43 cases were in active injury assessment and restoration planning. Each case represents an oil spill, chemical spill, hazardous waste site, or ship grounding that may have damaged natural resources or reduced recreational opportunities.

NOS, through the Marine Debris Program, is the Federal lead for addressing marine debris affecting the ocean and coastal environment and navigation safety in the U.S. The program scope comprises prevention, research and monitoring, emergency response, removal, and regional coordination. The program provided technical assistance to local, state, and Federal partners during responses to hurricanes Harvey, Irma, and Maria and has since distributed \$18 million in disaster relief funding to support marine debris assessment, removal, and disposal in the impacted areas of Florida, Texas, South Carolina, Georgia, Puerto Rico, and the U.S. Virgin Islands. NOAA also chairs the Interagency Marine Debris Coordinating Committee which helps inform and coordinate action across the U.S. Government to more effectively address this issue.

In October 2018, the Save our Seas Act was signed into law which reauthorized the NOAA Marine Debris Program through 2022. A key part of this legislation was to advance NOAA and U.S. Government efforts to work collaboratively with foreign governments on this issue. NOAA is working with the Department of State through key venues and regional organizations such as the Asia-Pacific Economic Cooperation (APEC) forum and the Association of Southeast Asian Nations (ASEAN) to provide technical expertise to help the governments of major marine plastic waste source countries more effectively reduce the incidence of marine debris. NOAA also demonstrates U.S. international leadership in several key global efforts (e.g., Global Partnership on Marine Litter, Global Ghost Gear Initiative) that coordinate action across governments, private industry, civil society and other stakeholders to holistically address marine debris.

⁷ This amount includes \$8.8 billion from the April 2016 settlement with BP for the Deepwater Horizon spill.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

PROGRAM CHANGES FOR FY 2021:

NOAA requests a total decrease of \$58,350 and 104 FTE/ 110 positions in program changes for the Coastal Science and Assessment activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-1).

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease	
		<u>Personnel</u>		<u>Personnel</u>		<u>Personnel</u>	<u>Amount</u>
			Amount		Amount		
Coastal Science, Assessment, Response and Restoration	Pos./BA	111	85,412	111	84,687	0	(725)
	FTE/OBL	108	85,412	108	84,687	0	(725)

Reduce Response and Restoration activities (-\$725, 0 FTE/0 Positions) – NOAA proposes to decrease funding for response and restoration activities, specifically for the training program. NOAA will reduce the planning and execution of the training and preparedness exercises. While this will result in a decrease of the quantity of staff trained and quality of their training, NOAA will continue to prioritize response to oil spills, chemical accidents, and other emergencies in coastal areas to the greatest extent possible.

Schedule and Milestones:

- Plan and execute trainings on a reduced schedule for NOAA staff and partners in the response community

Deliverables:

- Deliver two trainings annually that build response capacity in support of the NOS / NOAA mission
- Deliver training to 1,000 internal and external partners annually

Performance Measures	2021	2022	2023	2024	2025
Number of responders trained in technical and scientific elements and tools of incident response					
With Decrease	1,000	1,000	1,000	1,000	1,000
Without Decrease	2,000	2,000	2,000	2,000	2,000

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Number of training courses provided and exercises with NOS participation that build response capacity in support of NOS/NOAA mission and the NOAA CONOPS Plan

With Decrease	1	1	1	1	1
Without Decrease	4	5	5	6	6
Outyear Costs:					
Direct Obligations	(725)	(725)	(725)	(725)	(725)
Uncapitalized	(725)	(725)	(725)	(725)	(725)
Budget Authority	(725)	(725)	(725)	(725)	(725)
Outlays	(450)	(450)	(450)	(450)	(450)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Coastal Science, Assessment, Response and Restoration

Subactivity: Reponse and Restoration Base

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2020 Base
11 Personnel compensation					
11.1 Full-time permanent	26,559	39,231	41,092	41,092	0
11.3 Other than full-time permanent	474	754	755	755	0
11.5 Other personnel compensation	422	1,117	1,119	1,119	0
11.7 NOAA Corps	313	314	315	315	0
11.8 Special personnel services payments	27,768	41,416	43,281	43,281	0
11.9 Total personnel compensation	8,778	12,928	13,532	13,532	0
12 Civilian personnel benefits	3	0	0	0	0
13 Benefits for former personnel	1,324	535	536	536	0
21 Travel and transportation of persons	117	45	45	45	0
22 Transportation of things	0	0	0	0	0
23.1 Rental payments to GSA	1,583	2,336	2,341	2,341	0
23.2 Rental Payments to others	56	754	755	755	0
23.3 Communications, utilities and misc charges	818	1,884	1,888	1,888	0
24 Printing and reproduction	52	53	53	53	0
25.1 Advisory and assistance services	3,274	1,138	1,140	1,140	0
25.2 Other services from non-Federal sources	17,770	15,562	16,480	15,755	(725)
25.3 Other goods and services from Federal	260	53	53	53	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	27	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	1,125	178	178	178	0
31 Equipment	766	247	248	248	0
32 Lands and structures	0	98	98	98	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	22,103	4,772	4,782	4,782	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	7	0	0	0	0
44 Refunds	0	0	0	0	0
77 Overhead	8,917	0	0	0	0
99 Total obligations	94,748	82,000	85,412	84,687	(725)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Coastal Science, Assessment, Response and Restoration	Pos./BA	278	85,412	168	48,309	(110)	(37,103)
	FTE/OBL	268	85,412	164	48,309	(104)	(37,103)

Termination of the National Centers for Coastal Ocean Science (-\$37,103, -104 FTE/-110 Positions) – NOAA proposes to terminate the National Centers for Coastal Ocean Science (NCCOS) in FY 2021 while continuing to provide \$8.9 million to sustain its most important research areas. NCCOS supports the stewardship of the Nation’s ocean and coastal resources by providing coastal managers with the scientific information to decide how best to protect environmental resources and public health, preserve valued habitats, and improve the way communities interact with coastal ecosystems. NOAA will develop a plan to implement the termination of NCCOS, seeking to minimize the use of a reduction in force through attrition and workforce restructuring. As part of this plan, NOAA will pursue disposition of laboratory facilities. NOAA will continue to offer Voluntary Early Retirement and Voluntary Separation Incentive Program options in reshaping its workforce and make use of other workforce flexibilities in implementing these actions.

Additionally, some of NCCOS’s efforts may be undertaken by other research entities. NOAA will seek to ease that transition by coordinating with research partners. NCCOS will eliminate its scientific support for identifying areas appropriate for offshore energy development, and reassign the administrative and programmatic responsibilities for the RESTORE Act Science Program within NOAA.

The funding and personnel remaining in NCCOS after this reduction will be enough to sustain key components of the NCCOS science portfolio; specifically, harmful algal bloom, hypoxia, and pathogen research, prevention, and forecasting; habitat and species forecasting; and marine aquaculture siting science and tool development. Other funds from the Coastal, Science, Response and Restoration subactivity will complement these efforts, while others will be hosted within other NOAA programs.

Schedule and Milestones:

- Partner with Workforce Management to ensure the appropriate transition for affected staff (FY 2021)
- Partner with Acquisition and Grants Office to ensure timely modification of contracts (FY 2021)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

- Implement the laboratory facilities disposition and attrition/workforce restructuring plan (FY2021)

Deliverables:

- Applicable research projects transferred to research partners (FY 2021)

Performance Measures	2021	2022	2023	2024	2025
Cumulative number of coastal, marine and Great lakes forecasts capabilities developed and used for management					
With Decrease	6	6	6	6	6
Without Decrease	7	7	7	7	7
Annual number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for management					
With Decrease	4	0	0	0	0
Without Decrease	10	10	8	8	8
Outyear Costs:					
Direct Obligations	(37,103)	(42,757)	(46,121)	(46,121)	(46,121)
Uncapitalized	(37,103)	(42,757)	(46,121)	(46,121)	(46,121)
Budget Authority	(37,103)	(42,757)	(46,121)	(46,121)	(46,121)
Outlays	(23,004)	(26,509)	(28,595)	(28,595)	(28,595)
FTE	(104)	(111)	(0)	(0)	(0)
Positions	(110)	(157)	(0)	(0)	(0)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Coastal Science and Assessment

Subactivity: Coastal Science, Assessment, Response and Restoration

Title	Location	Grade	Number	Annual Salary	Total Salaries
Director	Silver Spring,MD	ES	(1)	(175,218)	(175,218)
Deputy Director	Silver Spring,MD	ZP-05	(1)	(166,500)	(166,500)
Program Analyst	Silver Spring,MD	ZA-05	(1)	(166,500)	(166,500)
Support Services Specialist	various	ZA-03	(2)	(77,442)	(154,884)
Support Services Specialist	various	ZA-04	(2)	(130,050)	(260,100)
Supervisory IT Specialist	Silver Spring,MD	ZP-05	(1)	(166,500)	(166,500)
Supervisory Oceanographer	Silver Spring,MD	ZP-05	(1)	(166,500)	(166,500)
Supervisory Physical Scientist	Charleston, SC	ZP-05	(1)	(166,500)	(166,500)
Supervisory Env. Scientist	Beaufort, NC	ZP-05	(1)	(165,700)	(165,700)
Financial Manager	Silver Spring, MD	ZA-04	(1)	(148,676)	(148,676)
Acquisition Management Specialist	Beaufort, NC	ZA-03	(1)	(81,707)	(81,707)
Biological Science Technician	Beaufort, NC	ZT-02	(1)	(59,112)	(59,112)
Biologist	Various	ZP-03	(2)	(98,854)	(197,708)
Biologist	Various	ZP-04	(5)	(132,831)	(664,155)
Biologist	Various	ZP-05	(5)	(166,500)	(832,500)
Budget Analyst	Various	ZA-03	(2)	(98,998)	(197,996)
Budget Analyst	Silver Spring, MD	ZA-04	(1)	(102,147)	(102,147)
Chemist	Charleston, SC	ZP-03	(1)	(96,978)	(96,978)
Ecologist	Various	ZP-03	(3)	(79,494)	(238,482)
Ecologist	Various	ZP-04	(4)	(122,663)	(490,652)
Ecologist	Silver Spring, MD	ZP-05	(1)	(166,500)	(166,500)
Economist	Silver Spring, MD	ZP-03	(1)	(93,459)	(93,459)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE PERSONNEL DETAIL**

Economist	Silver Spring, MD	ZP-03	(1)	(93,459)	(93,459)
Engineering Technician	Charleston, SC	ZT-02	(1)	(60,543)	(60,543)
Environmental Protection Specialist	Silver Spring, MD	ZA-04	(1)	(131,483)	(131,483)
Facilities Operations Specialist	various	ZA-03	(3)	(83,163)	(249,489)
Fish Biologist	Various	ZP-03	(2)	(91,850)	(183,700)
Fish Biologist	Various	ZP-04	(4)	(136,598)	(546,392)
General Engineer	Charleston, SC	ZP-04	(1)	(132,588)	(132,588)
Geneticist	Charleston, SC	ZP-04	(1)	(131,050)	(131,050)
IT Specialist	Various	ZP-03	(2)	(93,639)	(187,278)
IT Specialist	Various	ZP-04	(4)	(113,940)	(455,760)
IT Specialist (Security)	Silver Spring, MD	ZP-03	(1)	(90,300)	(90,300)
Lead Funds Management Specialist	Silver Spring, MD	ZA-04	(1)	(152,352)	(152,352)
Management & Program Analyst	Silver Spring, MD	ZA-02	(3)	(79,021)	(237,063)
Management & Program Analyst	Various	ZA-03	(3)	(100,351)	(301,053)
Management & Program Analyst	Various	ZA-04	(4)	(136,901)	(547,604)
Management Specialist	Various	ZA-03	(2)	(103,305)	(206,610)
Microbiologist	Charleston, SC	ZP-03	(1)	(88,627)	(88,627)
Microbiologist	Various	ZP-04	(3)	(140,161)	(420,483)
Oceanographer	Various	ZP-02	(2)	(75,172)	(150,344)
Oceanographer	Various	ZP-04	(5)	(141,858)	(709,290)
Oceanographer	Seldovia, AK	ZP-05	(1)	(166,500)	(166,500)
Physical Science Technician	Charleston, SC	ZT-03	(1)	(66,779)	(66,779)
Physical Scientist	Silver Spring, MD	ZP-03	(4)	(108,422)	(433,688)
Physical Scientist	Various	ZP-04	(10)	(140,312)	(1,403,120)
Physical Scientist	Silver Spring, MD	ZP-05	(2)	(165,520)	(331,040)
Program Specialist	Charleston, SC	ZA-03	(1)	(94,500)	(94,500)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE PERSONNEL DETAIL**

Program Specialist	Silver Spring, MD	ZA-04	(1)	(133,820)	(133,820)
Program Support Assistant	Silver Spring, MD	ZS-03	(1)	(53,380)	(53,380)
Purchasing Agent	Beaufort, NC	ZS-04	(1)	(52,455)	(52,455)
Safety & Occupational Health Specialist	Beaufort, NC	ZA-03	(1)	(75,383)	(75,383)
Social Scientist	Silver Spring, MD	ZP-04	(1)	(148,957)	(148,957)
Statistician	Silver Spring, MD	ZP-04	(1)	(139,036)	(139,036)
Wildlife Biologist	Charleston, SC	ZP-03	(1)	(96,978)	(96,978)
Writer/Editor	Silver Spring, MD	ZA-03	(1)	(108,422)	(108,422)
Total			(110)		(13,244,541)
Less Lapse	0.00%		0		0
Total full-time permanent (FTE)			(104)		(13,244,541)
2020 Pay Adjustment (0%)	0.00%				0
Total					(13,244,541)

Personnel Data Summary

Full-time Equivalent Employment (FTE)	
Full-time permanent	(104)
Part-time permanent	0
Full-time temporary	0
Part-time temporary	0
<hr/> Total FTE	<hr/> (104)

Authorized Positions:

Full-time permanent	(110)
Part-time permanent	0
Full-time temporary	0
Part-time temporary	0
<hr/> Total Positions	<hr/> (110)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Coastal Science and Assessment
Subactivity: Coastal Science, Assessment, Response and Restoration

	2019	2020	2021	2021	Decrease
Object Class	Actual	Enacted	Base	Estimate	from 2021 Base
11.1	26,559	39,545	41,407	28,162	(13,245)
11.3	474	754	755	755	0
11.5	422	1,117	1,119	1,119	0
11.7	313	0	0	0	0
11.9	27,768	41,416	43,281	30,036	(13,245)
12	8,778	12,928	13,532	10,380	(3,152)
13	3	0	0	0	0
21	1,324	535	536	536	0
22	117	45	45	42	(3)
23	0	0	0	0	0
23.1	1,583	2,336	2,341	(633)	(2,975)
23.2	56	754	755	(66)	(822)
23.3	818	1,884	1,888	(714)	(2,602)
24	52	53	53	53	0
25.1	3,274	1,138	1,140	932	(208)
25.2	17,770	15,562	16,480	2,555	(13,925)
25.3	260	53	53	53	0
25.4	0	0	0	0	0
25.5	27	0	0	0	0
25.6	0	0	0	0	0
25.7	0	0	0	0	0
25.8	0	0	0	0	0
26	1,125	178	178	178	0
31	766	247	248	248	0
32	0	98	98	98	0
33	0	0	0	0	0
41	22,103	4,772	4,782	4,611	(171)
42	0	0	0	0	0
43	7	0	0	0	0
44	0	0	0	0	0
77	8,917	0	0	0	0
99	94,748	82,000	85,412	48,309	(37,103)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Coastal Science, Assessment, Response and Restoration	Pos./BA	278	85,412	278	83,890	0	(1,522)
	FTE/OBL	268	85,412	268	83,890	0	(1,522)

Reduce Marine Debris Program activities (-\$1,522, 0 FTE/0 Positions) – NOAA proposes to decrease additional funds provided in FY 2020 appropriations for the Marine Debris Program. This decrease would reduce the funding available for removal and research marine debris grants in FY 2021. NOAA will leverage its National Oceanographic Partnership Program to mitigate this decrease, and will work to find efficiencies to continue its important marine debris reduction, prevention, research, monitoring, and removal activities with the remaining funds available.

Schedule and Milestones:

- Develop planning guides with partners in the Mid-Atlantic, Pacific Islands, and Puerto Rico
- Remove 200 tons of marine debris annually

Deliverables:

- Fund one research project to address marine debris research and development priorities

The magnitude of this reduction is not sufficient to affect the performance targets. NOS will evaluate the best approach to streamlining key activities to achieve the desired efficiencies.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Coastal Science and Assessment
Subactivity: Coastal Science, Assessment, Response and Restoration

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	26,559	39,231	41,407	41,407	0
11.3	474	754	755	755	0
11.5	422	1,117	1,119	1,119	0
11.7	313	314	0	0	0
11.9	27,768	41,416	43,281	43,281	0
12	8,778	12,928	13,532	13,532	0
13	3	0	0	0	0
21	1,324	535	536	536	0
22	117	45	45	45	0
23	0	0	0	0	0
23.1	1,583	2,336	2,341	2,341	0
23.2	56	754	755	755	0
23.3	818	1,884	1,888	1,888	0
24	52	53	53	53	0
25.1	3,274	1,138	1,140	1,140	0
25.2	17,770	15,562	16,480	16,480	0
25.3	260	53	53	53	0
25.4	0	0	0	0	0
25.5	27	0	0	0	0
25.6	0	0	0	0	0
25.7	0	0	0	0	0
25.8	0	0	0	0	0
26	1,125	178	178	178	0
31	766	247	248	248	0
32	0	98	98	98	0
33	0	0	0	0	0
41	22,103	4,772	4,782	3,260	(1,522)
42	0	0	0	0	0
43	7	0	0	0	0
44	0	0	0	0	0
77	8,917	0	0	0	0
99	94,748	82,000	85,412	83,890	(1,522)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u>	<u>Amount</u>
Competitive Research	Pos./BA	0	19,000	0	0	0	(19,000)
	FTE/OBL	0	19,000	0	0	0	(19,000)

Eliminate NCCOS competitive funding support for research on ecological threats (-\$19,000, 0 FTE/ 0 Positions) – NOAA proposes to eliminate NCCOS competitive grants to academic research institutions, which provide grants to conduct ecological research that advance NOAA's missions. The program expects to begin FY 2021 with 40 open awards that received funding in FY 2020. FY 2021 is scheduled to be the final year of funding for 29 of these 40 awards. In addition, NOAA expects to initiate eight to 12 awards in FY 2020 under the baseline budget. All open awards will need to find alternative sources of funding to finish their research and technology transitions.

Schedule and Milestones:

- Partner with Acquisition and Grants Office to ensure timely modification of contracts (FY 2021-2022)

Performance Measures	2021	2022	2023	2024	2025
Cumulative number of coastal, marine and Great lakes forecasts capabilities developed and used for					
With Decrease	6	6	6	6	6
Without Decrease	7	7	7	7	7
Annual number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for					
With Decrease	4	0	0	0	0
Without Decrease	10	10	8	8	8

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Outyear Costs:					
Direct Obligations	(19,000)	(19,000)	(19,000)	(19,000)	(19,000)
Uncapitalized	(19,000)	(19,000)	(19,000)	(19,000)	(19,000)
Budget Authority	(19,000)	(19,000)	(19,000)	(19,000)	(19,000)
Outlays	(11,160)	(11,160)	(11,160)	(11,160)	(11,160)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Coastal Science and Assessment
Subactivity: Coastal Science, Assessment, Response and Restoration

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 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	9	0	0	0	0
11.7 NOAA Corps	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	9	0	0	0	0
12 Civilian personnel benefits	1	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	6	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 Communications, utilities and misc charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.1 Advisory and assistance services	200	0	0	0	0
25.2 Other services from non-Federal sources	49	0	0	0	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	49	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	53	0	0	0	0
31 Equipment	10	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	15,908	19,000	19,000	0	(19,000)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	1	0	0	0	0
44 Refunds	0	0	0	0	0
77 Overhead	1,151	0	0	0	0
99 Total obligations	\$17,437	\$19,000	\$19,000	\$0	(19,000)

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Activity: Ocean and Coastal Management and Services

Goal Statement

Activities and programs under the Ocean and Coastal Management and Services use place-based, community, and regional approaches to achieve sound management and sustainable use of coastal and marine resources. These approaches emphasize collaboration across governments and sectors.

Base Program

The following program offices carry out the activities within the Ocean and Coastal Management and Services activity:

- **Office for Coastal Management (OCM)** – supports implementation of states’ coastal management programs and the National Estuarine Research Reserve System (NERRS), including technical assistance such as NOAA’s Digital Coast, under the Coastal Zone Management Act (CZMA). The office also administers the Coral Reef Conservation Program and supports regional partnerships of coastal states. The office supports implementation of E.O. 13840, Ocean Policy to Advance the Economic, Security, and Environmental Interest of the U.S. (June 2018) through information and funding for regional data portals. The office also supports activities under the Ocean Thermal Energy Conversion Act and the Deep Seabed Hard Mineral Resources Act.
- **Office of National Marine Sanctuaries (ONMS)** – is responsible for the stewardship and management of the National Marine Sanctuary System and two marine national monuments: Papahānaumokuākea and Rose Atoll. Within ONMS, the National Marine Protected Areas (MPAs) Center is responsible for developing and coordinating a national system of MPAs to advance national conservation goals and to identify additional areas in need of protection.

Statement of Operating Objectives

Schedule and Milestones:

- Analyze coastal land cover in coastal regions (in each region every five years) to better understand trends in and impacts of land use and other management decisions
- Provide training and workshops to build skills within coastal management communities and promote transparent decision-making (FY 2021-2025)
- Deliver technical assistance to coastal communities to use Digital Coast for decisions (FY 2021-2025)

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- Implement best practices to reduce pollutant loadings in U.S. Coral Reef Task Force priority watershed sites and NOAA Habitat Focus Areas (FY 2021-2025)
- Implement new tools that improve regional stakeholders' ability to use and apply data to inform management decisions (FY 2021-2022)
- Add new data and functionality to Ocean Reports to enhance site selection and assist with environmental review (FY 2021-2022)
- Conduct coral reef assessment and monitoring cruises in the Pacific and Atlantic/Caribbean (FY 2021-2025)
- Expand certification type programs for additional national marine sanctuaries and recreational operators (e.g., boating, charter fishing and commercial snorkel and dive operations) (FY 2021-2025)
- Engage recreational fishing associations in the promotion of sustainable recreational activities in national marine sanctuaries, and other MPAs (FY 2021-2025)
- Assess the type, distribution, and intensity of uses in national marine sanctuaries (FY 2021-2025)
- Assess and document status and trends of natural and cultural resources in conjunction with management plan review processes (FY 2021-2025)
- Conduct critical capital construction activities on sanctuary facilities and vessels, construction of exhibits, signage, and kiosks, and funding for limited emergency and required major small boat repairs (ongoing)

Deliverables:

- Data, mapping, tools, and information resources made available through Digital Coast to address competing uses of coastal resources and adaptation to coastal hazards (on-going)
- On-site and interactive webinar training to introduce successful approaches and best practices to address future risks from coastal storms or other hazards (on-going)
- Annual updates of Economics - National Ocean Watch data to characterize the economic and job impacts of ocean and coastal activity (on-going)
- Nine Regional Ocean Partnerships or equivalents with enhanced data sharing capabilities (e.g. data portals, metadata, and analytical tools)
- New data and functionality available via Ocean Reports
- Forecasts and models that enable reef managers' monitoring of and response to coral bleaching events (on-going)
- Improved coral bleaching forecasts and ocean acidification models (on-going)
- Management strategies to improve coral reef protection through targeted research to better understand the impacts of stressors to coral reefs (on-going)

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- Complete assessments on management effectiveness of 20 MPAs in priority coral reef sites
- A virtual classroom that increases the accessibility of science-based learning for sanctuary communities.
- A voluntary education and recognition program, modeled after the current Blue Star program, for charter fishing operators working in national marine sanctuaries (e.g., Florida Keys)
- Publications on visitation and uses of various National Marine Sanctuaries
- Assessments of the resources in each sanctuary, pressures on those resources, the current condition and trends, and management responses to the threats to the marine environment for sanctuaries completing management plan review processes
- Complete construction of exhibits, signage, and kiosks

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Explanation and Justification

Line Item		2019		2020		2021	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Coastal Zone Management and Services	Pos/BA	104	43,375	111	45,000	111	46,543
	FTE/OBL	103	47,625	108	45,000	108	46,543
Coastal Management Grants	Pos/BA	0	75,425	0	77,000	0	77,000
	FTE/OBL	0	75,317	0	77,000	0	77,000
Title IX Fund	Pos/BA	0	79,920	0	33,000	0	33,000
	FTE/OBL	0	30,186	0	33,000	0	33,000
Coral Reef Program	Pos/BA	24	27,535	24	29,500	24	29,768
	FTE/OBL	24	29,872	24	29,500	24	29,768
National Estuarine Research Reserve System	Pos/BA	0	27,056	0	27,500	0	27,500
	FTE/OBL	0	27,259	0	27,500	0	27,500
Sanctuaries and Marine Protected Areas	Pos/BA	163	55,264	195	55,500	195	58,385
	FTE/OBL	162	55,687	182	55,500	182	58,385
Total, Ocean and Coastal Management and Services	Pos/BA	291	308,575	330	267,500	330	272,196
	FTE/OBL	289	265,946	314	267,500	314	272,196

Coastal Zone Management and Services

While NOAA and other Federal agencies possess significant science and data capabilities to support coastal resource management, most decisions that affect the resilience of coastal communities occur at state and local levels. NOAA makes its significant scientific expertise and data capabilities available to state and local decision-makers through Coastal Zone Management and Services.

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National Coastal Zone Management (CZM) Program

The Nation's coasts are managed through coastal and Great Lakes states' and territories' voluntary partnerships with NOAA. Authorized by the CZMA of 1972, the National CZM Program provides the basis for protecting, restoring, and responsibly developing the nation's diverse coastal zone. The 34 participating states' management plans balance competing demands of resource use, economic development, and conservation for 61,567 miles of coastline. This includes coastal access and tourism, as well as important decisions about where and how coastal homes, businesses, and infrastructure are built.

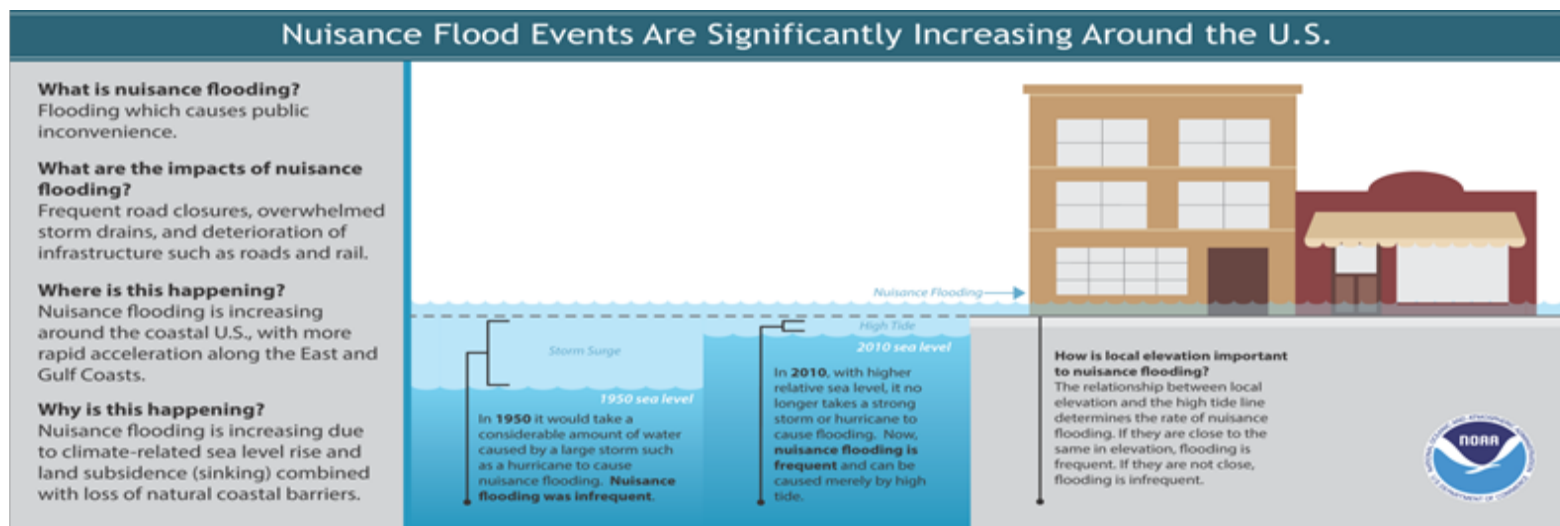
State coastal management programs lead this decision making process, weighing economic and environmental considerations. NOAA provides policy guidance and technical assistance, helping states, businesses, and stakeholders to navigate complex sets of laws and regulations that govern our coasts. NOAA also assesses the performance of each state program approximately every seven years, measuring progress toward individual state and national program goals. Participating states gain authority to review Federal activities, which have reasonably foreseeable effects on any coastal use or natural resource of the coastal zone and ensure that they are consistent with enforceable policies of their state programs.

NOAA's training, geospatial resources and decision support tools, are critical components of the CZM Program that ensure that coastal resources continue to be an engine for economic growth. One such product is the Digital Coast, a NOAA-sponsored set of information, tools, and training that helps communities address coastal issues. It is one of the most-used resources in the coastal management community. A NOAA study estimated cost-benefit ratio of 1:3 for Digital Coast, with net benefits of \$25 million.⁸ One tool in the Digital Coast portfolio, the Sea Level Rise Viewer tool, integrates flood projection maps, digital elevation models, and realistic visualizations to show planners and engineers how flooding affects landmarks and infrastructure. City planners for Charleston, South Carolina, used the tool to formulate their sea level rise strategy, which the city council adopted in May 2016. The city prioritized future investments that would reduce dramatic economic losses from flooding-related coastal property damage and tourism impacts. Zillow recently completed a study using NOAA's Digital Coast tools that showed six feet of sea level rise would affect 1.9 million homes and \$882 billion in real estate value along the East and Gulf Coasts.⁹

⁸ Projected Benefits and Costs of the Digital Coast. NOAA, 2015. <https://coast.noaa.gov/data/digitalcoast/pdf/benefits-costs.pdf>

⁹ Rao, K. 2017. "Climate Change and Housing: Will a Rising Tide Sink All Homes?" Published by Zillow. Available at <https://www.zillow.com/research/climate-change-underwater-homes-12890/>

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Nuisance flooding is among the many increasing threats to coastal communities that NOAA addresses through CZM technical assistance activities

NOAA's technical assistance resources help states to protect economically significant infrastructure, which is increasingly at risk. A 2019 study by the Congressional Budget Office estimates that losses to the U.S. economy caused by hurricane winds and storm-related flooding, result in annual costs of \$54 billion.¹⁰ In California, the CZM Program worked with NOAA to assess flood and seismic vulnerabilities of transportation assets in Alameda and Contra Costa counties. Implementing the resulting plan will better protect at least \$6 billion in transportation infrastructure¹¹ and four refineries that produce 800,000 barrels of gasoline a day—a quarter of the state's total refining capacity.¹² A similar plan developed by Texas coastal management agencies with NOAA assistance will protect critical energy infrastructure and waterborne commerce passing through the Gulf Intracoastal Waterway valued at \$25 billion annually,¹³ including 29 percent of the Nation's refining capacity (more than 5.1 billion barrels of crude oil per

¹⁰ Congressional Budget Office, Expected Costs of Damage From Hurricane Winds and Storm-Related Flooding (April 2019) <http://www.cbo.gov/publication/55019>

¹¹ San Francisco Bay Conservation and Development Commission. 2011. Adapting to Rising Tides Transportation Vulnerability and Risk Assessment Pilot Project Technical Report. Available at http://www.adaptingtorisingtides.org/wp-content/uploads/2015/04/RisingTides_TechnicalReport_sm.pdf

¹² Tam, L. 2017. "How Can the Bay Area's Aging Oil Refineries Meet California's New Climate Goals?" Published by SPUR. Available at <http://www.spur.org/news/2017-02-08/how-can-bay-area-s-aging-oil-refineries-meet-california-s-new-climate-goals>

¹³ Texas General Land Office. 2016. Shoring Up The Future for the Texas Gulf Coast.

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day) that resides in 27 Texas refineries.¹⁴ The Georgia CZM program raised a causeway—the only road to Tybee Island—to mitigate flood risks that it identified using NOAA tools. The road is essential to recreation and tourism in the area. NOAA's support for regional data sharing and integration will continue to provide ocean-related Federal data and information to the public to inform regional, coastal, and ocean management decision-making across the U.S. NOAA will work with non-Federal regional ocean entities to identify and address data and capacity gaps in each region and enhance development of the Marine Cadastre to manage the additional data streams and enhance accessibility for users nationwide.

Coastal Management Grants

Coastal Zone Management Grants assist states with their participation in the CZM Program. Over the 46-year history of the Program, participating states and Federal agencies have partnered to streamline permitting and regulatory processes, reduce the costs associated with disasters, and address environmental risks with potentially catastrophic economic impacts. Steady support for these functions has helped states to balance multiple priorities along the coast in a transparent way, reducing regulatory uncertainty that might otherwise have hampered economic activity. States with more modest CZM Programs have especially benefited from consistent resources for these functions. Another major use of the Grants has been public infrastructure projects, such as beach access facilities, boat ramps, and fishing piers.

Title IX Fund

National Coastal Resilience Fund (NCRF) Grants, supported by the Title IX Fund, assist states, academic institutions, and nonprofits to restore or expand natural features, such as coastal wetlands, dune systems, forests, and barrier islands that help minimize the impacts of storms, rising sea levels, and other extreme events on nearby communities and infrastructure. Investments through this national program build on significant coordination and planning that has already been done in many coastal communities and advance the implementation of projects that will have greatest benefit to both human community resilience and fish and wildlife. FY 2018 was the inaugural year for the grants. The program was preceded by the Regional Coastal Resilience Grant program. The grants are awarded in partnership with the National Fish and Wildlife Foundation (NFWF). In FY 2019, NOAA and NFWF awarded 44 projects a total of \$29.3 million in NCRF grants in 22 states and territories. The NCRF leveraged an additional \$60.0 million in matching funds and in-kind support, for a total investment of more than \$89.0 million.

National Estuarine Research Reserve System (NERRS)

The NERRS is a national network of state-managed protected areas established under the CZMA. The NERRS is a partnership

Available at <http://www.glo.texas.gov/coast/coastal-management/forms/files/shoring-up-our-future.pdf>

¹⁴ Texas General Land Office. 2017. Coastal Resiliency Master Plan. Available at <http://www.glo.texas.gov/coastal-grants/projects/files/Master-Plan.pdf>

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between participating states and NOAA; NOAA provides 70 percent of the funding for NERRS and states provide the remaining 30 percent of the funding for reserve operations, research, monitoring, training and education¹⁵. NOAA provides national guidance and technical assistance while state agencies and universities perform day-to-day operations and management of individual reserves with input from local partners.

The network of 29 unique reserves, located in 23 states and territories, protects over 1.3 million acres of state-owned estuarine lands and waters. They are economically significant areas that attract recreation and tourism activity, support commercial and recreational fisheries, and provide natural infrastructure for coastal protection and water quality. The NERRS have contributed billions of dollars to the shellfish and seafood industry in participating states and tens of billions of dollars in ocean-dependent industries. Coastal wetlands, such as those protected by the NERRS, provide \$26 billion in storm protection each year.¹⁶

Federal grants also support the NERR System-Wide Monitoring Program (SWMP) and the NERRS Science Collaborative. The SWMP generates long-term datasets on water quality, meteorological time series data, and habitat data important to local and state decision-makers and Federal agencies. The NERRS Science Collaborative is the competitive grant program through which most of the NOAA-funded research undertaken at the Reserves is accomplished. NOAA awards an average of \$4.0 million each year in competitive grants that fund user-driven collaborative research, assessment, and transfer activities that address coastal management needs identified by the reserves.

Coral Reef Conservation Program

NOAA's Coral Reef Conservation Program brings together multidisciplinary expertise from across NOAA to conserve and restore coral reefs. The program has partnerships with state, jurisdictional and international coastal resource managers. Coral reefs are among the most biologically diverse ecosystems in the world, providing a range of economic benefits and vital ecosystem services such as food, recreation, marine habitat, medicines, coastal protection, climate regulation, and biodiversity. A study in 2009 estimated the average annual value of these ecosystem services at \$352,000 per hectare of reef.¹⁷ More recently, a 2019 U.S. Geological Survey report estimated that coral reefs along the coast of the U.S. annually avoided flooding to more than 18,000 people, worth more than \$825 million to more than 5,500 buildings. They avoided flooding to more than 33 critical infrastructure

¹⁵ In FY 2019, states provided approximately \$9.5 million in matching funds.

¹⁶ Costanza, R., Pérez-Maqueo, O., Martinez, M. L., Sutton, P., Anderson, S. J., & Mulder, K. (2008). The value of coastal wetlands for hurricane protection. *AMBIO: A Journal of the Human Environment*, 37(4), 241-248. Available at [https://doi.org/10.1579/0044-7447\(2008\)37\[241:TVOCWF\]2.0.CO;2](https://doi.org/10.1579/0044-7447(2008)37[241:TVOCWF]2.0.CO;2)

¹⁷ Costanza, R., R. de Groot, P. Sutton, S. van der Ploeg, S.J. Anderson, I. Kubiszewski, S. Farber, and R.K. Turner. 2014 Changes in the global value of ecosystem services. *Global Environmental Change* 26: 152-158. (pdf, 508k) <http://www.reefresilience.org/coral-reefs/reefs-and-resilience/value-of-reefs/>

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facilities, including utilities and transportation systems, and indirect damages of almost \$700 million in economic activity.¹⁸ Rapid declines in coral reefs – 19 percent of the world’s reefs are effectively lost¹⁹ and up to 75 percent are seriously threatened – have dire consequences for approximately one billion people who depend on coral reefs for their food and livelihoods.²⁰

The Coral Reef Conservation Program integrates coral protection efforts across NOAA and other agencies to address overfishing, harmful fishing practices, ocean temperature changes, ocean acidification, land-based sources of pollution, and other threats. The program’s approaches include ecosystem-based management initiatives to build marine protected area management capacity; monitoring and forecasting of threats to coral reefs; and partnerships to address and reduce impacts of land-based sources of pollution. Land-based sources of pollution are major threats to coral reef ecosystems. NOAA works with jurisdictions that are upstream of coral reefs to develop ‘ridge to reef’ watershed management plans. These plans ensure that coral reef ecosystems are integrated into watershed planning processes.

Sanctuaries and Marine Protected Areas

National Marine Sanctuaries

NOAA serves as the trustee for a system of 13 national marine sanctuaries and two marine national monuments. These underwater parks range in size from the one square mile Monitor National Marine Sanctuary near Cape Hatteras, North Carolina, to the 582,000 square mile Papahānaumokuākea Marine National Monument along the northwestern portion of the Hawaiian Archipelago. Together these areas encompass over 621,000 square miles of ecologically significant marine habitats and maritime heritage assets (such as shipwrecks). Across all National Marine Sanctuaries, about \$8 billion annually is generated in local coastal and ocean dependent economic activities such as commercial fishing, research and recreation/tourism-related activities.²¹

In 2019, NOAA designated the Mallows Bay-Potomac River National Marine Sanctuary, the first national marine sanctuary designated since 2000. The Mallows Bay-Potomac River National Marine Sanctuary protects more than 100 historically-significant shipwrecks and related maritime heritage resources in an 18-square mile stretch. NOAA continues to work with interested local communities on several other potential sanctuaries; new sanctuaries designated with program funds will have broad-based community support, protect and celebrate the nation’s maritime cultural heritage and natural resources, and, expand economic

¹⁸ Stortazzi, C.D., Reguero, B.G., Cole, A.D., Lowe, E., Shope, J.B., Gibbs, A.E., Nickel, B.A., McCall, R.T., van Dongeren, A.R., and Beck, M.W., 2019, Rigorously valuing the role of U.S. coral reefs in coastal hazard risk reduction: U.S. Geological Survey Open-File Report 2019–1027, 42 p., <https://doi.org/10.3133/ofr20191027>.

¹⁹ “Coral Reef Loss Suggests Global Extinction Event.” Available at <http://www.worldwatch.org/node/5960>

²⁰ United Nations Ocean Conference <https://oceanconference.un.org/coa/CoralReefs>

²¹ Leeworthy, V.R. 2015. Economic Impact of National Marine Sanctuaries on Local Economies. Silver Spring, MD: National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries.

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development, recreation and tourism, and educational opportunities.

NOS protects these ecological and cultural assets through community engagement, applied resource protection and management, research and monitoring, education, and public outreach activities. It develops and implements comprehensive management plans to ensure the protection and sustainable use of resources. NOAA tailors each plan to the specific goals of each national marine sanctuary, which in turn reflect the unique resources and needs of each sanctuary's respective community. NOAA's partnerships facilitate research and monitoring and enforce the laws and regulations that protect sanctuary resources. Community engagement is a cornerstone of a site's management. Sites build and rely on volunteer participation and community input to manage the resource.

In FY 2018, NOAA continued to engage and expand its connection with local communities. NOAA expanded its Ocean Guardian Schools program to three new states - adding 2,000 students to the program. Ocean Guardian Schools receive grants to work with students on local conservation projects. Additionally, volunteers logged almost 128,000 hours supporting science, education, and public engagement programs to raise awareness and meet science needs of the sanctuaries.

NOAA also demonstrated how partnering with private businesses can enhance the health of the resources it protects. After Hurricane Irma, Florida Keys National Marine Sanctuary and local dive businesses, who are a part of the Blue Star program, worked together to remove nearly 3,000 pounds of marine debris and over 2,800 feet of fishing line throughout the site, restoring the natural beauty of the Florida Keys. NOAA also worked with public and private partners, including a local oil company, to remove the upper portion of a decommissioned oil rig in the Flower Garden Banks National Marine Sanctuary. The lower portion was left as an artificial reef for divers and anglers to enjoy. Such partnerships improve the sanctuary for everyone and contribute to the local blue economy.

Vessels for research, monitoring, enforcement and emergency response are essential to site management, especially in areas such as the Florida Keys National Marine Sanctuary. NOS maintains and repairs a fleet of small boats to access protected areas for research, monitoring, outreach, and emergency support. Periodic assessments help to determine whether any refurbishments or upgrades are needed to maintain vessel safety and legal compliance, mission effectiveness, or extend vessels' service life. Upgrades can include vessel hull form modification, propulsion system revision and replacement, and upgrades of scientific, navigational, load handling, and auxiliary systems. NOS periodically performs large scale maintenance, refurbishments, or upgrades to maintain vessel safety, mission effectiveness, or to extend vessels' service life.

In order to establish better understanding and appreciation for sanctuary and other ocean resources by the public, NOAA develops and maintains a network of exhibits, signage, and kiosks. Whenever possible, NOAA develops cooperative centers at existing aquaria, museums and other appropriate facilities to engage the public and environmental decision-makers on conservation issues.

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MPA Coordination

NOAA's MPA Center, develops science, policy, and management tools to advance the effective use of MPAs for national conservation and management objectives. The MPA Center coordinates various Federal, state, and tribal MPA programs to better integrate the national system of MPAs, including national estuarine research reserves and national marine sanctuaries. This coordination focuses on developing curricula, trainings, and virtual tools to improve management capacity of MPA programs around the world. The Center also coordinates internationally with agencies that manage sites which share migratory species with the U.S. or have similar habitat and management challenges.

PROGRAM CHANGES FOR FY 2021:

NOAA requests a total net decrease of \$144,898 and 0 FTE/ 0 positions in program changes for the Ocean and Coastal Management and Services activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-1).

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		2021 Base		2021 Estimate		Increase from 2021 Base	
		<u>Personnel</u>		<u>Personnel</u>		<u>Personnel</u>	<u>Amount</u>
		Amount		Amount		Amount	
Coastal Zone							
Management and Services	Pos./BA	111	46,543	111	49,043	0	2,500
	FTE/OBL	108	46,543	108	49,043	0	2,500

Increase funding for Regional Ocean Data Platforms (+\$2,500, 0 FTE / 0 Positions) – NOAA requests an increase for regional ocean data portals to implement Executive Order 13840, Ocean Policy to Advance the Economic, Security, and Environmental Interest of the U.S. (June 2018). Executive Order 13840 is intended to advance the economic, security, and environmental interests of the U.S. through improved access to credible marine data and information. Specifically, the order calls for the Federal government to “coordinate the timely public release of unclassified data and other information related to the oceans, coasts, and Great Lakes that agencies collect, and support the common information management systems, such as the Marine Cadastre, that organize and disseminate this information.”

Regional ocean data portals will provide ocean-related Federal data and information to the public to inform regional, coastal, and ocean management decision-making across the U.S. These platforms will also support analysis and siting of ocean infrastructure and other activities through the use of data. Funding will primarily support grants to non-Federal regional ocean entities to build their capacity to administer ocean data portals as well as address their other regional ocean data acquisition and management needs as identified in a November 2019 study conducted by NOAA and the Department of Interior’s Bureau of Ocean Energy Management. In addition, NOAA will enhance development of the Marine Cadastre to be able to manage the additional data streams and enhance accessibility for users nationwide.

Schedule and Milestones:

- Partner with the Ocean Resource Management Subcommittee and appropriate Federal agencies to implement the scoping study’s recommendations; provide Federally-sourced geospatial data to regional partners to inform management decisions (FY 2021)
- Partner with Ocean Resource Management Subcommittee and their Data Work Group to continue to specify data requirements on additional data themes for Federal agencies to meet regional needs (FY 2021)
- Provide grants and other assistance to nine regions to increase capacity and collaboration within regions (FY 2021)

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- Develop new data tools and other capabilities based on regional needs; test and evaluate with stakeholders (FY 2021)
- Implement new tools and help transfer existing tools across geographies that improve regional stakeholders' ability to use and apply data to inform management decisions (FY 2021-2022)
- Provide new Automated Identification System (AIS) data to regional stakeholders and enhance the AIS data distribution platform to make it easier to access and use (FY 2021-2022)
- Add new, more regionally-focused data and functionality to Ocean Reports to enhance site selection and assist with environmental review (FY 2021-2022)
- Refresh versions of tools through continued stakeholder engagements (FY 2023-2024)
- Provide a testing platform via Marine Cadastre on which data can be prepared, tested, and openly disseminated to national, state, and regional data sharing platforms (FY 2021)
- Gather stakeholder requirements to improve MarineCadastre.gov and other data and tools (FY 2021)

Deliverables:

- Enhanced Federal geospatial data available for access and use by regional stakeholders
- Nine Regional Ocean Partnerships or equivalents with enhanced data sharing and management capabilities (e.g. data portals, metadata, and analytical tools)
- Regional partners are well connected and transferring knowledge and tools through a Data Sharing Network;
- AIS data available to regional stakeholders
- New data and functionality available via Ocean Reports

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Performance Measures	2021	2022	2023	2024	2025
Number of data roundtable workshops conducted to define scale and scope of priority data needed in regions. (annual)					
With Increase	3	3	3	3	3
Without Increase	1	1	1	1	1
Number of new data sets/products developed by the responsible Federal agencies.(annual)					
With Increase	27	27	27	27	27
Without Increase	9	9	9	9	9
Number of new themes addressed through Ocean Reports (cumulative)					
With Increase	1	2	3	4	5
Without Increase	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Ocean and Coastal Management and Services

Subactivity: Coastal Management and Services

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11 Personnel compensation					
11.1 Full-time permanent	\$11,853	\$14,164	\$15,050	\$15,050	\$0
11.3 Other than full-time permanent	183	\$0	\$0	\$0	0
11.5 Other personnel compensation	195	\$0	\$0	\$0	0
11.7 Military personnel benefits	2	\$0	\$0	\$0	0
11.8 Special personnel services payments	0	\$0	\$0	\$0	0
11.9 Total personnel compensation	12,233	14,164	15,050	15,050	0
12 Civilian personnel benefits	4,013	\$4,675	\$5,020	5,020	0
13 Benefits for former personnel	0	\$0	\$0	0	0
21 Travel and transportation of persons	1,063	\$972	\$984	984	0
22 Transportation of things	19	\$21	\$21	21	0
23.1 Rental payments to GSA	848	\$1,104	\$1,117	1,117	0
23.2 Rental Payments to others	116	\$138	\$139	139	0
23.3 Communications, utilities and misc charges	375	\$507	\$513	513	0
24 Printing and reproduction	128	\$70	\$71	71	0
25.1 Advisory and assistance services	621	\$597	\$604	604	0
25.2 Other services from non-Federal sources	18,244	\$19,645	\$19,879	19,879	0
25.3 Other goods and services from Federal	166	\$326	\$330	955	625
25.4 Operation and maintenance of facilities	0	\$0	\$0	0	0
25.5 Research and development contracts	0	\$0	\$0	0	0
25.6 Medical care	0	\$0	\$0	0	0
25.7 Operation and maintenance of equipment	0	\$0	\$0	0	0
25.8 Subsistence and support of persons	0	\$0	\$0	0	0
26 Supplies and materials	399	\$400	\$405	405	0
31 Equipment	583	\$340	\$344	344	0
32 Lands and structures	0	\$0	\$0	0	0
33 Investments and loans	0	\$0	\$0	0	0
41 Grants, subsidies and contributions	4,045	\$2,041	\$2,065	3,940	1,875
42 Insurance claims and indemnities	0	\$0	\$0	0	0
43 Interest and dividends	1	\$0	\$0	0	0
44 Refunds	0	\$0	\$0	0	0
77 Overhead	4,771	\$0	\$0	0	0
99 Total obligations	47,625	45,000	46,543	49,043	2,500

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel Amount</u>	
Coastal Zone Management and Services	Pos./BA	111	46,543	111	43,967	0	(2,576)
	FTE/OBL	108	46,543	108	43,967	0	(2,576)

Eliminate funding support for Integrated Water Prediction (-\$2,576, 0 FTE/ 0 Positions) – NOAA proposes to eliminate funding for the NOS portion of the Integrated Water Prediction (IWP) project. IWP specifically brings together the NWS, NOS and the other NOAA line offices to transform the Nation’s water prediction capabilities. The IWP program develops interdisciplinary water forecasts and decision support products for resource managers and emergency managers. The predictions and tools under development address both acute events and day-to-day water management challenges in changing environmental conditions. With this reduction, NOS will continue to participate as a member of the NOAA Water Team, providing guidance and in kind support as resources are available.

Schedule and Milestones:

- Transfer projects to other NOAA programs and partners where applicable
- Partner with Acquisition and Grants Office to ensure timely closeout of existing awards (FY 2021)

Performance Measures	2021	2022	2023	2024	2025
Number of communities with completed analyses and community impact assessments (cumulative)					
With Decrease	4	4	4	4	4
Without Decrease	15	25	35	45	55

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Percent of coastal population that will receive integrated water forecasts (i.e. forecasts coupled with terrestrial and marine models), and socioeconomic risk assessments, that did not as of FY 2017

With Decrease	4%	4%	4%	4%	4%
Without Decrease	21%	35%	50%	55%	60%

Outyear Costs:

Direct Obligations	(2,576)	(2,576)	(2,576)	(2,576)	(2,576)
Uncapitalized	(2,576)	(2,576)	(2,576)	(2,576)	(2,576)
Budget Authority	(2,576)	(2,576)	(2,576)	(2,576)	(2,576)
Outlays	(1,597)	(1,597)	(1,597)	(1,597)	(1,597)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Ocean and Coastal Management and Services
Subactivity: Coastal Zone Management and Services

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11 Personnel compensation					
11.1 Full-time permanent	\$11,853	\$14,164	\$15,050	\$15,050	\$0
11.3 Other than full-time permanent	183	\$0	\$0	\$0	0
11.5 Other personnel compensation	195	\$0	\$0	\$0	0
11.7 NOAA Corps	2	\$0	\$0	\$0	0
11.8 Special personnel services payments	0	\$0	\$0	\$0	0
11.9 Total personnel compensation	12,233	14,164	15,050	15,050	0
12 Civilian personnel benefits	4,013	\$4,675	\$5,020	5,020	0
13 Benefits for former personnel	0	\$0	\$0	0	0
21 Travel and transportation of persons	1,063	\$972	\$984	974	(10)
22 Transportation of things	19	\$21	\$21	21	0
23.1 Rental payments to GSA	848	\$1,104	\$1,117	1,117	0
23.2 Rental Payments to others	116	\$138	\$139	139	0
23.3 Communications, utilities and misc charges	375	\$507	\$513	513	0
24 Printing and reproduction	128	\$70	\$71	71	0
25.1 Advisory and assistance services	621	\$597	\$604	404	(200)
25.2 Other services from non-Federal sources	18,244	\$19,645	\$19,879	18,713	(1,166)
25.3 Other goods and services from Federal	166	\$326	\$330	330	0
25.4 Operation and maintenance of facilities	0	\$0	\$0	0	0
25.5 Research and development contracts	0	\$0	\$0	0	0
25.6 Medical care	0	\$0	\$0	0	0
25.7 Operation and maintenance of equipment	0	\$0	\$0	0	0
25.8 Subsistence and support of persons	0	\$0	\$0	0	0
26 Supplies and materials	399	\$400	\$405	405	0
31 Equipment	583	\$340	\$344	344	0
32 Lands and structures	0	\$0	\$0	0	0
33 Investments and loans	0	\$0	\$0	0	0
41 Grants, subsidies and contributions	4,045	\$2,041	\$2,065	865	(1,200)
42 Insurance claims and indemnities	0	\$0	\$0	0	0
43 Interest and dividends	1	\$0	\$0	0	0
44 Refunds	0	\$0	\$0	0	0
77 Overhead	4,771	\$0	\$0	0	0
99 Total obligations	47,625	45,000	46,543	43,967	(2,576)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>		<u>Personnel</u>		<u>Personnel</u>	
		Amount		Amount		Amount	
Coastal Zone							
Management Grants	Pos./BA	0	77,000	0	0	0	(77,000)
	FTE/OBL	0	77,000	0	0	0	(77,000)

Eliminate Coastal Zone Management (CZM) Grants (-\$77,000, 0 FTE/ 0 Positions) – NOAA proposes to eliminate grants within the CZM Program that support actions of states and other grantees authorized under the CZMA. NOAA will continue to support state participation in the National CZM Program by reviewing and supporting implementation of states’ management plans, supporting Federal consistency reviews, and providing technical assistance services.

Schedule and Milestones:

- Partner with Acquisition and Grants Office to ensure timely closeout of existing awards (FY 2021)
- Provide technical assistance to states with National CZM programs (FY 2021-2025)

Performance Measures	2021	2022	2023	2024	2025
Annual number of new or improved public access sites through CZM program					
With Decrease	0	0	0	0	0
Without Decrease	225	225	225	225	225

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**

(Dollar amounts in thousands)

Number of coastal communities that complete projects to reduce future damage from or increase public awareness of hazards with assistance from OCM funding or staff (annual)

With Decrease	0	0	0	0	0
Without Decrease	115	115	115	115	115

Number of participants in training events offered through CZM programs (annual)

With Decrease	1,500	1,500	1,500	1,500	1,500
Without Decrease	20,000	20,000	20,000	20,000	20,000

Outyear Costs:

Direct Obligations	(77,000)	(77,000)	(77,000)	(77,000)	(77,000)
Uncapitalized	(77,000)	(77,000)	(77,000)	(77,000)	(77,000)

Budget Authority	(77,000)	(77,000)	(77,000)	(77,000)	(77,000)
Outlays	(47,470)	(47,470)	(47,470)	(47,470)	(47,470)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Ocean and Coastal Management and Services
Subactivity: Coastal Management Grants

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 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
11.7 NOAA Corps	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 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 Communications, utilities and misc charges	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	0	0	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
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	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	75,317	77,000	77,000	0	(77,000)
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
77 Overhead	0	0	0	0	0
99 Total obligations	\$75,317	\$77,000	\$77,000	\$0	(\$77,000)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Title IX	Pos./BA	0	33,000	0	0	0	(33,000)
Fund	FTE/OBL	0	33,000	0	0	0	(33,000)

Eliminate Federal Funding Support for the Title IX Fund (-\$33,000, 0 FTE/ 0 Positions) – NOAA proposes to eliminate Federal funding support for Title IX of the National Oceans and Coastal Security Act, which allows grants to be awarded through a partnership between the National Fish and Wildlife Foundation (NFWF) and NOAA. These grants are awarded through the National Coastal Resilience Fund (NCRF). Under this request, NOAA will continue to administer the cooperative agreement with NFWF to implement the FY 2018, 2019, and 2020 grants until closed out.

Schedule and Milestones:

- Partner with Acquisition and Grants Office to ensure timely closeout of existing awards (FY 2021)

Performance Measures	2021	2022	2023	2024	2025
Number of U.S. coastal states and territories restoring or expanding natural features that help minimize the impacts of storms, rising sea levels and other extreme events (annual)					
With Decrease	0	0	0	0	0
Without Decrease	23	23	23	23	23

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Outyear Costs:					
Direct Obligations	(33,000)	(33,000)	(33,000)	(33,000)	(33,000)
Uncapitalized	(33,000)	(33,000)	(33,000)	(33,000)	(33,000)
Budget Authority	(33,000)	(33,000)	(33,000)	(33,000)	(33,000)
Outlays	(20,460)	(20,460)	(20,460)	(20,460)	(20,460)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Ocean and Coastal Management and Services

Subactivity: Title IX Fund

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 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
11.7 NOAA Corps	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 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	3	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 Communications, utilities and misc charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.1 Advisory and assistance services	57	0	0	0	0
25.2 Other services from non-Federal sources	130	0	0	0	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
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	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	29,990	33,000	33,000	0	(33,000)
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
77 Overhead	6	0	0	0	0
99 Total obligations	\$30,186	\$33,000	\$33,000	\$0	(33,000)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personne</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Coral Reef Program	Pos./BA	24	29,768	24	26,107	0	(3,661)
	FTE/OBL	24	29,768	24	26,107	0	(3,661)

Reduce funding for Coral Reef Restoration and Threat Abatement Initiatives (-\$3,661, 0 FTE/0 Positions) – NOAA proposes to decrease additional funds provided in FY 2020 appropriations for coral reef restoration and threat abatement initiatives. NOAA will continue work to reduce threats to coral reefs and will work with academia, non-governmental organizations, and private industry to explore innovative approaches to conserve and restore coral populations and intervention techniques to create resilient, genetically diverse, and reproductively viable populations of key coral species. In FY 2021, NOAA will continue to protect and restore coral reefs, prioritizing traditional methods of coral reef restoration that are the most affordable. NOAA will eliminate direct funding for innovative approaches to coral reef restoration, however, it will continue to support and encourage its academic, non-governmental and industry partners to advance these innovative approaches to conserve and restore coral reef populations and intervention techniques. NOAA will also discontinue support for coral disease diagnosis and treatment, discontinue its partnership with USGS supporting research and epidemiology of coral disease, discontinue the NOAA Ruth Gates Restoration and Innovation Grant Program, and discontinue support for legal fellowships and learning exchanges that focus on reducing threats to coral reefs.

Schedule and Milestones:

- Partner with Acquisition and Grants Office to ensure timely closeout of existing awards (FY 2021)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

Performance Measures	2021	2022	2023	2024	2025
Number of projects completed to restore coral reefs					
With Decrease	10	9	7	6	4
Without Decrease	31	30	28	27	25
Number of projects completed to abate coral threats					
With Decrease	28	25	22	19	16
Without Decrease	48	45	42	39	36
Outyear Costs:					
Direct Obligations	(3,661)	(3,661)	(3,661)	(3,661)	(3,661)
Uncapitalized	(3,661)	(3,661)	(3,661)	(3,661)	(3,661)
Budget Authority	(3,661)	(3,661)	(3,661)	(3,661)	(3,661)
Outlays	(2,270)	(2,270)	(2,270)	(2,270)	(2,270)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Ocean and Coastal Management and Services
Subactivity: Coral Reef Program

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11 Personnel compensation					
11.1 Full-time permanent	\$2,089	\$3,497	\$3,645	\$2,053	\$0
11.3 Other than full-time permanent	60	61	61	61	0
11.5 Other personnel compensation	0	0	0	0	0
11.7 Military personnel benefits	0	0	0	0	0
11.9 Total personnel compensation	2,149	3,558	3,706	2,114	0
12 Civilian personnel benefits	737	1,136	1,256	759	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	390	450	450	450	0
22 Transportation of things	8	12	12	12	0
23.1 Rental payments to GSA	99	235	235	235	0
23.2 Rental Payments to others	6	20	20	20	0
23.3 Communications, utilities and misc charges	8	100	100	100	0
24 Printing and reproduction	3	20	20	20	0
25.1 Advisory and assistance services	1,354	1,849	1,849	1,849	0
25.2 Other services from non-Federal sources	7,272	7,400	7,400	5,828	(1,661)
25.3 Other goods and services from Federal sources	0	140	140	140	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	54	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	295	340	340	340	0
31 Equipment	163	240	240	240	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	15,189	14,000	14,000	14,000	(2,000)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	1	0	0	0	0
44 Refunds	0	0	0	0	0
77 Overhead	1,628	0	0	0	0
99 Total obligations	\$29,356	\$29,500	\$29,768	\$26,107	(3,661)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from the 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel Amount</u>	
National Estuarine							
Research Reserve	Pos./BA	0	27,500	0	0	0	(27,500)
System	FTE/OBL	0	27,500	0	0	0	(27,500)

Eliminate Federal Funding Support for NERRS (-\$27,500, 0 FTE/ 0 Positions) – NOAA proposes to eliminate NOAA’s portion of funding support to states for the operations and management of the NERRS authorized under the CZMA.

NOAA proposes to discontinue NOAA grants to state agencies and academic institutions that support operations of NERRS. Under this proposal, NOAA will continue to provide national-level system coordination and in-kind support to state agencies and academic institutions that choose to continue operating the reserves using state funds.

Schedule and Milestones:

- Partner with Acquisition and Grants Office to ensure timely closeout of existing awards (FY 2021)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Annual number of data points collected in national estuarine research reserves via monitoring stations (millions)					
With Decrease	0.0	0.0	0.0	0.0	0.0
Without Decrease	50.0	50.0	50.0	50.0	50.0
Direct Obligations	(27,500)	(27,500)	(27,500)	(27,500)	(27,500)
Uncapitalized	(27,500)	(27,500)	(27,500)	(27,500)	(27,500)
Budget Authority	(27,500)	(27,500)	(27,500)	(27,500)	(27,500)
Outlays	(17,050)	(17,050)	(17,050)	(17,050)	(17,050)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Ocean and Coastal Management and Services
Subactivity: National Estuarine Research Reserve System

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 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
11.7 NOAA Corps	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 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	2	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 Communications, utilities and misc charges	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	26	0	0	0	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
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	2	0	0	0	0
31 Equipment	38	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	27,146	27,500	27,500	0	(27,500)
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
77 Overhead	45	0	0	0	0
99 Total obligations	\$27,259	\$27,500	\$27,500	\$0	(27,500)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Sanctuaries and Marine Protected Areas	Pos./BA	195	58,385	195	56,029	0	(1,000)
	FTE/OBL	182	58,385	182	56,029	0	(1,000)

Eliminate Research Grants for Monuments (-\$1,000, 0 FTE/ 0 Positions) – NOAA proposes a decrease to eliminate Federal funding for Marine Sanctuaries research grants for Marine National Monuments. These Congressionally directed grants provide funding for competitive research and management grants for the Papahānaumokuākea Marine National Monument. ONMS granted funding for this single year award for the first time in FY 2017.

Schedule and Milestones:

- Partner with Acquisition and Grants Office to ensure timely closeout of existing awards (FY 2021)

Performance Measures	2021	2022	2023	2024	2025
Sanctuary and monument reporting areas that can adequately assess resource condition					
With Decrease	82%	82%	82%	82%	82%
Without Decrease	82%	82%	82%	82%	82%

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Outyear Costs:					
Direct Obligations	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Uncapitalized	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
 Budget Authority	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Outlays	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
FTE	(620)	(620)	(620)	(620)	(620)
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Ocean and Coastal Management and Services

Subactivity: Sanctuaries and Marine Protected Areas

	Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	Full-time permanent compensation	18,185	21,616	26,647	26,647	0
11.3	Other than full-time permanent	122	163	192	192	0
11.5	Other personnel compensation	327	405	478	478	0
11.7	NOAA Corp	552	0	0	0	0
11.8	Special personnel services payments	0	576	680	680	0
11.9	Total personnel compensation	19,186	22,759	27,996	27,996	0
12	Civilian personnel benefits	6,384	7,596	165	165	0
13	Benefits for former personnel	8	0	0	0	0
21	Travel and transportation of persons	1,088	1,349	1,592	1,592	0
22	Transportation of things	243	162	191	191	0
23	Rent, communications, and utilities	0	0	0	0	0
23.1	Rental payments to GSA	1,335	1,575	1,859	1,859	0
23.2	Rental Payments to others	858	809	955	955	0
23.3	Communications, utilities and misc charges	847	1,041	1,229	1,229	0
24	Printing and reproduction	93	76	89	89	0
25.1	Advisory and assistance services	2,846	3,701	4,368	4,368	0
25.2	Other services from non-Federal sources	6,241	9,360	11,591	11,591	0
25.3	Other goods and services from Federal sources	115	248	293	293	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	0	0	0	0	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	750	1,241	1,465	1,465	0
31	Equipment	336	324	382	382	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	9,655	5,260	6,208	5,208	(1,000)
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	2	0	0	0	0
44	Refunds	0	0	0	0	0
77	Overhead	5,700	0	0	0	0
99	Total obligations	55,687	55,500	58,385	57,385	(1,000)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Sanctuaries and Marine	Pos./BA	195	58,385	195	55,922	0	(2,463)
Protected Areas	FTE/OBL	182	58,385	182	55,922	0	(2,463)

Reduce Sanctuary Operations (-\$2,463, 0 FTE/0 Positions) – NOAA proposes a decrease to the Sanctuaries and MPAs Program. The program would reduce scalable costs in areas such as contracts and supplies. Specific cuts would vary across the system according to management plan priorities. At this funding level, NOAA will support all its authorizations, maintain its unique capabilities, support continued implementation of management plans across the National Marine Sanctuary System, and continue engaging coastal communities and stakeholders to promote science-based stewardship of designated areas.

Performance Measures	2021	2022	2023	2024	2025
Sanctuary and monument reporting areas that can adequately assess resource condition					
With Decrease	82%	82%	80%	78%	75%
Without Decrease	82%	82%	82%	82%	82%
Number of volunteer hours supporting science, education, and public engagement programs to raise awareness and meet science needs of national marine sanctuaries					
With Decrease	119,000	118,000	118,000	117,000	117,000
Without Decrease	125,000	125,000	125,000	125,000	125,000

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Outyear Costs:					
Direct Obligations	(2,463)	(2,463)	(2,463)	(2,463)	(2,463)
Uncapitalized	(2,463)	(2,463)	(2,463)	(2,463)	(2,463)
Budget Authority	(2,463)	(2,463)	(2,463)	(2,463)	(2,463)
Outlays	(1,527)	(1,527)	(1,527)	(1,527)	(1,527)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Ocean and Coastal Management and Services

Subactivity: Sanctuaries and Marine Protected Areas

	Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	Full-time permanent compensation	18,185	21,616	26,647	26,647	0
11.3	Other than full-time permanent	122	163	192	192	0
11.5	Other personnel compensation	327	405	478	478	0
11.7	NOAA Corp	552	0	0	0	0
11.8	Special personnel services payments	0	576	680	680	0
11.9	Total personnel compensation	19,186	22,759	27,996	27,996	0
12	Civilian personnel benefits	6,384	7,596	165	165	0
13	Benefits for former personnel	8	0	0	0	0
21	Travel and transportation of persons	1,088	1,349	1,592	1,468	(124)
22	Transportation of things	243	162	191	191	0
23	Rent, communications, and utilities	0	0	0	0	0
23.1	Rental payments to GSA	1,335	1,575	1,859	1,859	0
23.2	Rental Payments to others	858	809	955	955	0
23.3	Communications, utilities and misc charges	847	1,041	1,229	1,229	0
24	Printing and reproduction	93	76	89	89	0
25.1	Advisory and assistance services	2,846	3,701	4,368	4,368	0
25.2	Other services from non-Federal sources	6,241	9,360	11,591	9,418	(2,173)
25.3	Other goods and services from Federal sources	115	248	293	293	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	0	0	0	0	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	750	1,241	1,465	1,299	(166)
31	Equipment	336	324	382	382	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	9,655	5,260	6,208	6,208	0
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	2	0	0	0	0
44	Refunds	0	0	0	0	0
77	Overhead	5,700	0	0	0	0
99	Total obligations	55,687	55,500	58,385	55,922	(2,463)

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Construction

Goal Statement

The NOS Construction activity provides construction and acquisition support for the National Estuarine Research Reserve System (NERRS) and the National Marine Sanctuaries.

Base Program

The NERRS is a Federal-state partnership established under the CZMA designed to protect and understand valuable estuarine resources through research and education. NOAA funds NERRS construction and land acquisition projects on a competitive basis. For PAC, NERRS funding has been matched 70:30 (Federal: state) for facilities construction and 1:1 for land acquisition.

Statement of Operating Objectives

Schedule and Milestones:

- Publish a federal funding opportunity to solicit proposals for construction and land acquisition projects (e.g., visitor center and laboratories, dormitories, green upgrades, public access, and critical habitats) across the NERRS
- Coordinate review and scoring of proposals to inform selections, and provide final recommendations to NOAA's Grants Management Division
- Finalize selection of approximately 12 projects and distribute funds to successful applicants.

Deliverables:

- Advance construction of NERRS projects and facilities enhancements once selected in FY 2020

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
JUSTIFICATION OF PROGRAM AND PERFORMANCE**
(Dollar amounts in thousands)

Explanation and Justification

Line Item		2019		2020		2021	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
National Estuarine Research Reserve Construction	Pos/BA	0	1,888	0	4,500	0	4,500
	FTE/OBL	0	16,817	0	4,500	0	4,500
Marine Sanctuaries Construction	Pos/BA	1	1,976	0	3,000	0	0
	FTE/OBL	1	2,258	0	3,000	0	0
Other NOS Construction	Pos/BA	0	0	0	0	0	0
	FTE/OBL	0	2	0	0	0	0
Total Construction	Pos/BA	1	3,864	0	7,500	0	4,500
	FTE/OBL	1	19,077	0	7,500	0	4,500

NERRSs are state-owned lands and onsite facilities operated and managed by the states. They provide opportunities for researchers as well as the public to better understand these estuarine areas. Facilities investments at the reserves aligned with system-wide construction plans that consider requirements for implementing core NERRS programs and external opportunities for partnerships. States also used these grants to acquire additional nearby critical habitat within, or adjacent to, reserve boundaries to increase protection and provide places for conducting long-term science, education, and demonstration programs.

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
National Estuarine Research Reserve	Pos./BA	0	4,500	0	0	0	(4,500)
System Construction	FTE/OBL	0	4,500	0	0	0	(4,500)

Eliminate Federal Funding Support for NERRS Construction (-\$4,500, 0 FTE/ 0 Positions) – NOAA requests to eliminate Federal funding support to states for NERRS land acquisition and construction. NOAA proposes to discontinue grants to state agencies and academic institutions for construction and land acquisition activities within the NERRS. Under this proposal, NOAA will continue to provide national-level system coordination and in-kind support to state governments that choose to continue operating the reserves using state funds.

Schedule and Milestones:

- Partner with Acquisition and Grants Office to ensure timely closeout of existing awards (FY 2021)

	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
Performance Measures:					
Annual number of NERRS facility construction projects that improve safety or environmental sustainability					
With Decrease	0	0	0	0	0
Without Decrease	12	12	12	12	12

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Outyear Costs:					
Direct Obligations	(4,500)	(4,500)	(4,500)	(4,500)	(4,500)
Uncapitalized	(4,500)	(4,500)	(4,500)	(4,500)	(4,500)
Budget Authority	(4,500)	(4,500)	(4,500)	(4,500)	(4,500)
Outlays	(1,575)	(1,575)	(1,575)	(1,575)	(1,575)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: NOS Construction

Subactivity: National Estuarine Research Reserve System (NERRS)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 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
11.7 NOAA Corps	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 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 Communications, utilities and misc charges	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	0	0	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
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	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	1,900	4,500	4,500	0	(4,500)
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
77 Overhead	0	0	0	0	0
99 Total obligations	\$1,900	\$4,500	\$4,500	\$0	(4,500)

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**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
2020 Enacted	30	30	5,853	249,000
2021 Adjustments to base:				
less: Obligations from prior year balances	0	0	0	0
plus: Technical ATBs	0	0	147	(189,000)
2021 Base	30	30	6,000	60,000
plus: program changes	0	0	0	0
2021 Estimate	30	30	6,000	60,000

		2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Damage Assessment and Restoration Revolving Fund	Pos/BA	30	3,526	30	5,853	30	6,000	30	6,000	0	0
	FTE/OBL	30	32,078	30	249,000	30	60,000	30	60,000	0	0
Total: Damage Assessment and Restoration Revolving Fund	Pos/BA	30	3,526	30	5,853	30	6,000	30	6,000	0	0
	FTE/OBL	30	32,078	30	249,000	30	60,000	30	60,000	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Damage Assessment and Restoration Revolving Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	30	32,078	30	249,000	30	60,000	30	60,000	0	0
Total Obligations	30	32,078	30	249,000	30	60,000	30	60,000	0	0
Adjustments to Obligations:										
Federal funds	0	0	0	0	0	0	0	0	0	0
Offsetting collections, mandatory	0	(8,924)	0	(199,000)	0	(10,000)	0	(10,000)	0	0
Change in uncollected payments, Fed Recoveries	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(137,657)	0	(136,988)	0	(132,841)	0	(132,841)	0	0
Unobligated balance transferred (from DOI)	0	(16,149)	0	(20,000)	0	(20,000)	0	(20,000)	0	0
Unobligated balance, transferred (to ORF)	0	0	0	0	0	0	0	0	0	0
Unobligated balance, unapportioned	0	0	0	0	0	0	0	0	0	0
Unobligated balance, EOY	0	136,988	0	132,841	0	128,841	0	128,841	0	0
Total Budget Authority	30	3,526	30	5,853	30	6,000	30	6,000	0	0
Financing from Transfers:										
Appropriation (previously unavailable)	0	(394)	0	(207)	0	(354)	0	(354)	0	0
Transfer from DOI – CY	0	(3,339)	0	(6,000)	0	(6,000)	0	(6,000)	0	0
Appropriation temporarily reduced	0	207	0	354	0	354	0	354	0	0
Net Appropriation	30	0	30	0	30	0	30	0	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Damage Assessment and Restoration Revolving Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE**

Activity: Damage Assessment and Restoration Revolving Fund

Goal Statement

The Damage Assessment and Restoration Revolving Fund facilitates the spill response, damage assessment, and natural resource restoration activities of the National Oceanic and Atmospheric Administration.

Base Program

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 the 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 does the following:

- 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, NOS, and NMFS.

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	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease
11.1 Full-time permanent	3,645	3,758	3,395	3,395	0
11.3 Other than full time permanent	0	0	0	0	0
11.7 Other personnel compensation	27	28	29	29	0
Special personnel services	0	0	0	0	0
11.8 payments	0	0	0	0	0
11.9 Total personnel compensation	3,672	3,786	3,824	3,824	0
12.1 Civilian personnel benefits	1,209	1,246	1,259	1,259	0
12.2 Military personnel benefits	0	0	0	0	0
21 Travel and transportation of persons	571	571	571	571	0
22 Transportation of things	27	27	27	27	0
23.1 Rental payments to GSA	45	45	45	45	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Comm., util., misc. charges	27	27	27	27	0
24 Printing and reproduction	14	14	14	14	0
25.1 Advisory and assistance services	1,729	1,729	1,729	1,729	0
25.2 Other services	17,914	35,086	26,036	26,036	0
Other purchases of goods and	23	23	23	23	0
25.3 services from gov't accounts	23	23	23	23	0
26 Supplies and materials	270	270	270	270	0
31 Equipment	36	36	36	36	0
41 Grants, subsidies and contributions	6,132	206,132	26,132	26,132	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	0	0	0	0
44 Refunds	7	7	7	7	0
99.9 Total Obligations	31,677	249,000	60,000	60,000	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)

	2019 Actual	2020 Enacted	2021 Base Program	2021 Estimate	Increase/ Decrease
Federal Funds	0	0	0	0	0
Offsetting Collections Mandatory	(8,924)	(10,000)	(10,000)	(10,000)	0
Recoveries	(2,810)	(20,000)	(20,000)	(20,000)	0
Change in uncollected payments, Fed	0	0	0	0	
Less unobligated balance, SOY	(137,657)	(110,860)	(100,373)	(100,373)	0
Plus unobligated balance transferred	(16,149)	(20,000)	(20,000)	(20,000)	0
Plus unobligated balance, EOY	136,988	132,841	128,841	128,841	0
Total Budget Authority	3,526	6,000	6,000	6,000	0
Transfers:					
Appropriation previously unavailable	(394)	(207)	(354)	(354)	
Transfer from DOI	(3,339)	(6,000)	(6,000)	(6,000)	0
Appropriation temporarily reduced	207	354	354	354	0
Net Appropriation	0	0	0	0	0
Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	30	30	30	30	0
Other than full time permanent	0	0	0	0	0
Total	30	30	30	30	0
Authorized Positions:					
Full-time permanent	30	30	30	30	0
Other than full time permanent	0	0	0	0	0
Total	30	30	30	30	0

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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
2020 Enacted	0	0	113	448
2021 Adjustments to base:				
less: Obligations from prior year balances	0	0	0	0
plus: Technical ATBs	0	0	7	(328)
2021 Base	0	0	120	120
plus: program changes	0	0	0	0
2021 Estimate	0	0	120	120

		2019 Actual		2020 Enacted		2021 Base Program		2021 Estimate		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Sanctuaries											
Enforcement Asset Forfeiture Fund	Pos/BA	0	15	0	113	0	120	0	120	0	0
	FTE/OBL	0	50	0	448	0	120	0	120	0	0
Total: Sanctuaries Enforcement Asset Forfeiture Fund	Pos/BA	0	15	0	113	0	120	0	120	0	0
	FTE/OBL	0	50	0	448	0	120	0	120	0	0

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Sanctuaries Enforcement Asset Forfeiture Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	2019 Actual		2020 Enacted		2021 Base Program		2021 Estimate		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	50	0	448	0	120	0	120	0	0
Total Obligations	0	50	0	448	0	120	0	120	0	0
Adjustments to Obligations:										
New offsetting collections	0	0	0	(50)	0	0	0	0	0	0
Recoveries	0	0	0	0	0	0	0	0	0	0
Unobligated balance, SOY	0	(270)	0	(234)	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	0	0	0	0	0	0	0	0	0
Unobligated balance, transferred	0	0	0	(50)	0	0	0	0	0	0
Unobligated balance, EOY	0	235	0	0	0	0	0	0	0	0
Unobligated balance, unapportioned	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	0	15	0	113	0	120	0	120	0	0
Financing from Transfers:										
Appropriation previously unavailable	0	(8)	0	0	0	(7)	0	(7)	0	0
Appropriation temporarily reduced	0	0	0	7	0	7	0	7	0	0
Net Appropriation	0	7	0	120	0	120	0	120	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Sanctuaries Enforcement Asset Forfeiture Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE**

Activity: Sanctuaries Enforcement Asset Forfeiture Fund

Goal Statement

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.

Base Program

Penalties received 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 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.

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	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease
11.1 Full-time permanent	0	0	0	0	0
11.3 Other than full time permanent	0	0	0	0	0
11.2 Other personnel compensation	0	0	0	0	0
Special personnel services	0	0	0	0	0
11.8 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	19	82	89	89	0
Purchases of goods and services	0	0	0	0	0
25.3 from Gov't accounts	0	0	0	0	0
26 Supplies and materials	0	0	0	0	0
31 Equipment	0	0	0	0	0
41 Grants, subsidies and contributions	28	28	28	28	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	0	0	0	0
99.9 Total Obligations	50	113	120	120	0

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Sanctuaries Enforcement Asset Forfeiture Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base Program	2021 Estimate	Increase/ Decrease
Less recoveries	0	0	0	0	0
Less unobligated balance, SOY	(270)	(234)	0	0	0
Less unobligated balance, adj SOY	0	0	0	0	0
New offsetting collections	0	(50)	0	0	0
Plus unobligated balance, EOY	235	0	0	0	0
Plus unobligated balance, transferred	0	(50)	0	0	0
Total Budget Authority	15	113	120	120	0
Transfers:					
Appropriation previously unavailable	(8)	0	(7)	(7)	0
Appropriation temporarily reduced	0	7	7	7	0
Mandatory Appropriation	7	120	120	120	0

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DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Gulf Coast Ecosystem Restoration Science, Observation, Monitoring and Technology Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
2020 Enacted	1	1	0	6,672
2021 Adjustments to base:				
less: Obligations from prior year balances	0	0	0	0
less: Technical ATBs	0	0	0	265
2021 Base	1	1	0	6,937
plus: program changes	0	0	0	0
2021 Estimate	1	1	0	6,937

		2019 Actual		2020 Enacted		2021 Base Program		2021 Estimate		Increase/ (Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Gulf Coast	Pos/BA	1	0	1	0	1	0	1	0	0	0
Restoration Fund	FTE/OBL	1	7,876	1	6,672	1	6,937	1	6,937	0	0
Total: Gulf Coast	Pos/BA	1	0	1	0	1	0	1	0	0	0
Restoration Fund	FTE/OBL	1	7,876	1	6,672	1	6,937	1	6,937	0	0

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Gulf Coast Ecosystem Restoration Science, Observation, Monitoring and Technology Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	2019 Actual		2020 Enacted		2021 Base Program		2021 Estimate		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	1	7,876	1	6,672	1	6,937	1	6,937	0	0
Total Obligations	1	7,876	1	6,672	1	6,937	1	6,937	0	0
Adjustments to Obligations:										
New offsetting collections	0	(7,686)	0	(5,645)	0	(6,937)	0	(6,937)	0	0
Change in Uncollected Payments	0	1,801	0	0	0	0	0	0	0	0
Recoveries	0	(24)	0	(100)	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(2,896)	0	(928)	0	0	0	0	0	0
Unobligated balance, EOY	0	928	0	0	0	0	0	0	0	0
Total Budget Authority	1	0	1	0	1	0	1	0	0	0
Financing from Transfers:										
Transfer from Other Accounts	0	0	0	0	0	0	0	0	0	0
Appropriation temporarily reduced	0	0	0	0	0	0	0	0	0	0
Net Appropriation	1	0	1	0	1	0	1	0	0	0

**DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Gulf Coast Ecosystem Restoration Science, Observation, Monitoring and Technology Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE**

Activity: Gulf Coast Ecosystem Restoration Science, Observation, Monitoring and Technology Fund

Goal Statement

The Gulf Coast Ecosystem Restoration Science, Observation, Monitoring and Technology Fund provides funding for the NOAA RESTORE Act Science Program. The purpose of this program is to initiate and sustain an integrative, holistic understanding of the Gulf of Mexico ecosystem and support, to the maximum extent practicable, restoration efforts and the long-term sustainability of the ecosystem, including its fish stocks, fishing industries, habitat, and wildlife through ecosystem research, observation, monitoring, and technology development.

Base Program

To ensure the best use of resources the Program will coordinate with existing Federal and state science and technology programs, including other activities funded under the RESTORE Act. Section 1604 of the RESTORE Act authorized funding for the Program using 2.5 percent of the Gulf Coast Restoration Trust Fund.

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Gulf Coast Ecosystem Restoration Science, Observation, Monitoring and Technology Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base Program	2021 Estimate	Increase/ Decrease
11.1 Full-time permanent	109	113	114	114	0
11.3 Other than full time permanent	0	0	0	0	0
11.2 Other personnel compensation	0	0	0	0	0
Special personnel services					
11.8 payments	0	0	0	0	0
11.9 Total personnel compensation	109	113	114	114	0
12.1 Civilian personnel Benefits	40	42	42	42	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	68	68	68	68	0
22 Transportation of things	2	2	2	2	0
23.1 Rental payments to GSA	2	2	2	2	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	441	441	441	441	0
Other purchases of goods and					
25.3 services from Gov't accounts	0	0	0	0	0
26 Supplies and materials	1,055	555	555	555	0
31 Equipment	0	0	0	0	0
41 Grants, subsidies and contributions	6,159	5,450	5,714	5,714	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	0	0	0	0
99.9 Total Obligations	7,876	6,672	6,937	6,937	0

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Gulf Coast Ecosystem Restoration Science, Observation, Monitoring and Technology Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base Program	2021 Estimate	Increase/ Decrease
Federal Funds	0	0	0	0	0
Less offsetting collections	(7,686)	(5,645)	(6,937)	(6,937)	0
Change in uncollected payments	1,801	0	0	0	0
Recoveries	(24)	(100)	0	0	0
Less unobligated balance, SOY	(2,896)	(928)	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Plus unobligated balance transferred	0	0	0	0	0
Total Budget Authority	0	0	0	0	0
Transfers:					
Transfers from Other Accounts	0	0	0	0	0
Appropriation temporarily reduced	0	0	0	0	0
Mandatory Budget Authority	0	0	0	0	0

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**Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Budget Estimates, Fiscal Year 2021**

Executive Summary

For FY 2021, NOAA requests a total of \$869,750,000 and 2,960 FTE/ 3,110 positions for the National Marine Fisheries Service, including a net decrease of \$196,342,000 and 15 FTE/ 14 positions in program changes.

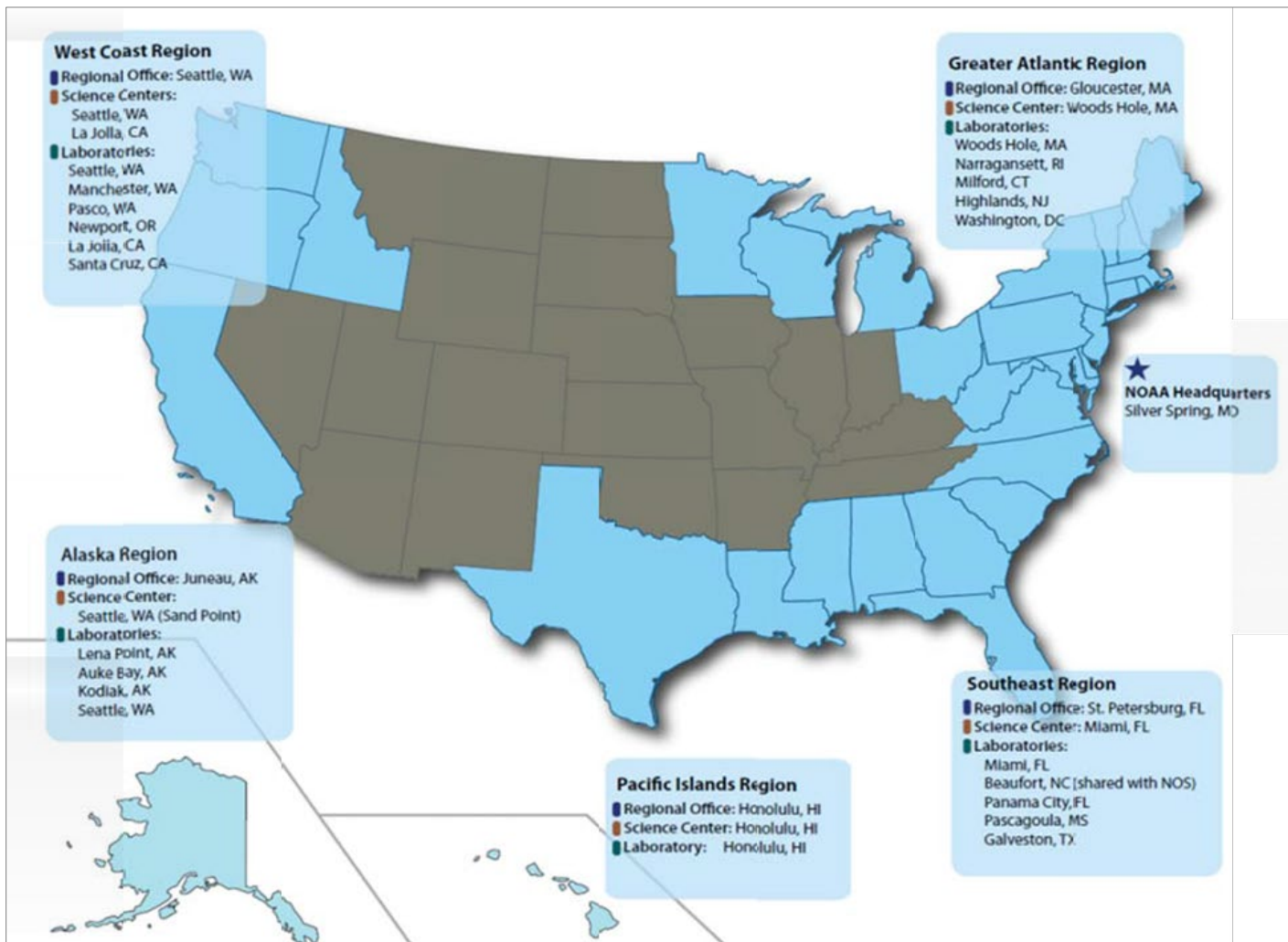
NOAA's National Marine Fisheries Service (NMFS) is responsible for the management and conservation of living marine resources within the U.S. Exclusive Economic Zone (EEZ) – the area extending from three to 200 nautical miles offshore. NMFS provides critical support to commercial and recreational marine fisheries and aquaculture industries, which generate \$212 billion in sales impact, and support over 1.7 million jobs economy-wide.¹ NMFS also provides 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 for the Nation's benefit. 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 strong scientific and research capabilities to support the challenging public policy decision process associated with NMFS' stewardship responsibilities.

NMFS consists of Headquarters offices in Silver Spring, MD and five Regional Offices as well as six Science Centers in significant coastal areas around the country. Major NMFS facilities and laboratories are located at the following sites:

¹ National Marine Fisheries Service. 2018. Fisheries Economics of the United States, 2016. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-187. Available at: <https://www.fisheries.noaa.gov/resource/document/fisheries-economics-united-states-report-2016>

Department of Commerce
 National Oceanic and Atmospheric Administration
 National Marine Fisheries Service
 Budget Estimates, Fiscal Year 2021



**Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Budget Estimates, Fiscal Year 2021**

Significant Adjustments:

Inflationary Adjustments

NOAA’s FY 2021 Base includes an increase of \$27,704,000 and 2 FTE/ 0 positions to account for the full funding requirement for certain inflationary adjustments to current programs for NMFS activities. This includes the 2020 civilian pay raise of 3.1 percent, the estimated 2021 civilian pay raise of 1.0 percent and the estimated 2021 military pay raise of 3.0 percent as well as inflationary increases for labor and non-labor activities, including benefits, and rent charges from the General Services Administration (GSA).

Technical Adjustments

NOAA requests the following transfers for a net change of \$0 and 0 FTE/ 0 positions to the agency:

From Office	Subactivity	To Office	Subactivity	Amount
NMFS	Marine Mammals, Sea Turtles, and Other Species (ORF)	MS	Facilities Maintenance (ORF)	\$253,000/ 0 FTE/ 0 positions
NMFS	Fisheries and Ecosystem Science Programs and Services (ORF)	MS	Facilities Maintenance (ORF)	\$1,536,000/ 0 FTE/ 0 positions
NMFS	Habitat Conservation and Restoration (ORF)	MS	Facilities Maintenance (ORF)	\$255,000/ 0 FTE/ 0 positions

NOAA requests a technical adjustment to transfer \$253,000 and 0 FTE/ 0 positions from the NMFS ORF Marine Mammals, Sea Turtles, and Other Species subactivity, \$1,536,000 and 0 FTE/ 0 positions from the NMFS ORF Fisheries and Ecosystem Science Programs and Services subactivity, and \$255,000 and 0 FTE/ 0 positions from NMFS ORF Habitat Conservation and Restoration subactivity to a newly created Facilities Maintenance subactivity in Mission Support ORF to consolidate facilities maintenance and construction funding within Mission Support for a more centralized approach to the funding and management of these activities. Routine operations and maintenance of facilities typically funded by field offices, such as janitorial services and minor repairs, will continue to be funded through the Line Offices. This consolidation leverages NOAA’s recent efforts for more consistent, corporate approaches to facilities management and planning and reflects NOAA’s commitment to advancing the Department’s strategic objective to achieve cost savings through consolidated functions.

**Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Budget Estimates, Fiscal Year 2021**

From Office	Subactivity	To Office	Subactivity	Amount
NMFS	Fisheries Data Collections, Surveys, and Assessments (ORF)	NMFS	Regional Councils and Fisheries Commissions (ORF)	\$534,000/ 0 FTE/ 0 positions
NMFS	Fisheries Management Programs and Services (ORF)	NMFS	Regional Councils and Fisheries Commissions (ORF)	\$4,317,000/ 0 FTE/ 0 positions

NOAA requests a technical adjustment to transfer \$534,000 and 0 FTE/ 0 positions from the NMFS ORF Fisheries Data Collections, Surveys, and Assessments subactivity, and \$4,317,000 and 0 FTE/ 0 positions from the NMFS ORF Fisheries Management Programs and Services subactivity to the existing NMFS ORF Regional Councils and Fisheries Commissions subactivity to consolidate the Regional Councils base funding into a single budget line. This consolidation will simplify the execution, tracking and communication of NMFS Regional Council funding.

Narrative Information:

NOAA requests a total net decrease of \$196,342,000 and 15 FTE/ 14 positions in program changes for NMFS. Following this section are base justification materials by activity and program change narratives for each subactivity that represent program changes of \$250,000 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-2). Please contact NOAA if details for any of these changes are required.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Protected Resources Science and Management
Subactivity: Marine Mammals, Sea Turtles, and Other Species (ORF) - Transfer to Mission Support Facilities Maintenance (ORF)

<u>Object Class</u>	<u>2020</u> <u>Enacted</u>	<u>2021</u> <u>Transfer</u>	<u>2021</u> <u>Base*</u>
11.1 Full-time permanent compensation	49,193	0	52,185
11.3 Other than full-time permanent	349	0	370
11.5 Other personnel compensation	967	0	1,026
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	50,509	0	53,581
12 Civilian personnel benefits	17,116	0	18,157
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	3,326	0	3,326
22 Transportation of things	115	0	115
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	889	0	889
23.2 Rental Payments to others	528	0	528
23.3 Communications, utilities and misc charges	391	0	391
24 Printing and reproduction	121	0	121
25.1 Advisory and assistance services	3,581	0	3,581
25.2 Other services from non-Federal sources	19,350	(253)	19,097
25.3 Other goods and services from Federal sources	2,043	0	2,043
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	65	0	65
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	4,099	0	4,099
31 Equipment	824	0	824
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	19,206	0	19,206
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	1	0	1
44 Refunds	0	0	0
99 Total obligations	122,164	(253)	126,024

*The 2021 Base column reflects the full 2021 base for the subactivity, including calculated ATBs and any additional transfers.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Fisheries Science and Management

Subactivity: Fisheries and Ecosystem Science Programs and Services (ORF) - Transfer to Mission Support Facilities Maintenance (ORF)

Object Class	2020	2021	2021
	Enacted	Transfer	Base*
11.1 Full-time permanent compensation	61,987	0	65,746
11.3 Other than full-time permanent	667	0	707
11.5 Other personnel compensation	914	0	969
11.8 Special personnel services payments	86	0	91
11.9 Total personnel compensation	63,654	0	67,514
12 Civilian personnel benefits	20,892	0	22,159
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	3,068	0	3,068
22 Transportation of things	547	0	547
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	2,898	0	2,898
23.2 Rental Payments to others	387	0	387
23.3 Communications, utilities and misc charges	5,196	0	5,196
24 Printing and reproduction	91	0	91
25.1 Advisory and assistance services	11,790	0	11,790
25.2 Other services from non-Federal sources	18,427	(1,536)	16,891
25.3 Other goods and services from Federal sources	978	0	978
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	3,935	0	3,935
31 Equipment	2,474	0	2,474
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	12,089	0	12,089
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	1	0	1
44 Refunds	0	0	0
99 Total obligations	146,427	(1,536)	150,018

*The 2021 Base column reflects the full 2021 base for the subactivity, including calculated ATBs and any additional transfers.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Habitat Conservation and Restoration

Subactivity: Habitat Conservation and Restoration (ORF) - Transfer to Mission Support Facilities Maintenance (ORF)

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base*</u>
11.1 Full-time permanent compensation	20,855	0	22,124
11.3 Other than full-time permanent	277	0	294
11.5 Other personnel compensation	258	0	274
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	21,390	0	22,691
12 Civilian personnel benefits	7,165	0	7,601
13 Benefits for former personnel	7	0	7
21 Travel and transportation of persons	818	0	818
22 Transportation of things	167	0	167
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	634	0	634
23.2 Rental Payments to others	267	0	267
23.3 Communications, utilities and misc charges	309	0	309
24 Printing and reproduction	11	0	11
25.1 Advisory and assistance services	1,036	0	1,036
25.2 Other services from non-Federal sources	8,400	(255)	8,145
25.3 Other goods and services from Federal sources	322	0	322
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	499	0	499
31 Equipment	343	0	343
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	15,757	0	15,757
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	57,125	(255)	58,607

*The 2021 Base column reflects the full 2021 base for the subactivity, including calculated ATBs and any additional transfers.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Fisheries Science and Management

Subactivity: Fisheries Data Collections, Surveys and Assessmetns (ORF) - Transfer to Regional Councils and Fisheries Commissions (ORF)

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base*</u>
11.1 Full-time permanent compensation	46,388	0	49,335
11.3 Other than full-time permanent	481	0	512
11.5 Other personnel compensation	1,853	0	1,971
11.8 Special personnel services payments	1,886	0	2,006
11.9 Total personnel compensation	50,608	0	53,823
12 Civilian personnel benefits	16,059	0	17,079
13 Benefits for former personnel	4	0	4
21 Travel and transportation of persons	2,595	0	2,595
22 Transportation of things	486	0	486
23 Rent, communications, and utilitites	0	0	0
23.1 Rental payments to GSA	2,721	0	2,721
23.2 Rental Payments to others	329	0	329
23.3 Communications, utilities and misc charges	7,384	0	7,384
24 Printing and reproduction	50	0	50
25.1 Advisory and assistance services	16,466	0	16,466
25.2 Other services from non-Federal sources	17,821	0	17,821
25.3 Other goods and services from Federal sources	519	0	519
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	31	0	31
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	4,076	0	4,076
31 Equipment	1,196	0	1,196
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	53,356	(534)	52,822
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	8	0	8
44 Refunds	0	0	0
99 Total obligations	173,709	(534)	177,410

*The 2021 Base column reflects the full 2021 base for the subactivity, including calculated ATBs and any additional transfers.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Fisheries Science and Management

Subactivity: Fisheries Management Programs and Services (ORF) - Transfer to Regional Councils and Fisheries Commissions (ORF)

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base*</u>
11.1 Full-time permanent compensation	49,056	0	52,040
11.3 Other than full-time permanent	272	0	289
11.5 Other personnel compensation	741	0	786
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	50,069	0	53,115
12 Civilian personnel benefits	17,089	0	18,128
13 Benefits for former personnel	1	0	1
21 Travel and transportation of persons	2,755	0	2,755
22 Transportation of things	32	0	32
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	1,514	0	1,514
23.2 Rental Payments to others	1,077	0	1,077
23.3 Communications, utilities and misc charges	420	0	420
24 Printing and reproduction	152	0	152
25.1 Advisory and assistance services	5,657	0	5,657
25.2 Other services from non-Federal sources	25,519	0	25,519
25.3 Other goods and services from Federal sources	1,933	0	1,933
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	477	0	477
31 Equipment	583	0	583
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	16,557	(4,317)	12,240
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	1	0	1
44 Refunds	0	0	0
99 Total obligations	123,836	(4,317)	123,604

*The 2021 Base column reflects the full 2021 base for the subactivity, including calculated ATBs and any additional transfers.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Fisheries Science and Management

Subactivity: Regionional Councils and Fisheries Comissions (ORF) - Transfers from Fisheries Data Collection, Surveys and Assessments (ORF)
and Fisheries Management Programs and Services (ORF)

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base*</u>
11.1 Full-time permanent compensation	1,172	0	1,177
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	0	0	0
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	1,172	0	1,177
12 Civilian personnel benefits	336	0	338
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	0	0	0
22 Transportation of things	0	0	0
23 Rent, communications, and utilitites	0	0	0
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	1	0	1
24 Printing and reproduction	0	0	0
25.1 Advisory and assistance services	0	0	0
25.2 Other services from non-Federal sources	5	0	5
25.3 Other goods and services from Federal sources	90	0	90
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	0	0	0
31 Equipment	0	0	0
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	38,474	4,851	44,844
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	40,078	4,851	46,455

*The 2021 Base column reflects the full 2021 base for the subactivity, including calculated ATBs and any additional transfers.

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		2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
NATIONAL MARINE FISHERIES SERVICE (NMFS)											
Protected Resources Science and Management	Pos/BA	724	195,445	851	200,664	851	207,668	851	192,207	0	(15,461)
	FTE/OBL	720	194,320	810	200,664	810	207,668	810	192,207	0	(15,461)
Fisheries Science and Management	Pos/BA	1,561	585,187	1,806	615,845	1,806	630,750	1,792	554,490	(14)	(76,260)
	FTE/OBL	1,552	567,314	1,717	615,845	1,717	630,750	1,703	554,490	(14)	(76,260)
Enforcement	Pos/BA	201	69,111	253	74,023	253	76,292	253	55,930	0	(20,362)
	FTE/OBL	200	61,128	240	74,023	242	76,292	242	55,930	0	(20,362)
Habitat Conservation & Restoration	Pos/BA	170	56,050	172	57,125	172	58,607	172	39,048	0	(19,559)
	FTE/OBL	169	56,243	164	57,125	164	58,607	164	39,048	0	(19,559)
TOTAL NMFS - ORF	Pos/BA	2,656	905,793	3,082	947,657	3,082	973,317	3,068	841,675	(14)	(131,642)
	FTE/OBL	2,641	879,005	2,931	947,657	2,933	973,317	2,919	841,675	(14)	(131,642)
TOTAL NMFS - PAC	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Pacific Coastal Salmon Recovery Fund	Pos/BA	1	64,935	2	65,000	2	65,000	0	0	(2)	(65,000)
	FTE/OBL	1	64,952	2	65,000	2	65,000	0	0	(2)	(65,000)
Fisheries Disaster Assistance Fund	Pos/BA	0	164,835	0	0	0	0	2	300	2	300
	FTE/OBL	0	185,954	0	0	0	0	1	300	1	300
Fishermen's Contingency Fund	Pos/BA	0	15	0	349	0	349	0	349	0	0
	FTE/OBL	0	221	0	349	0	349	0	349	0	0

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		2019		2020		2021		2021		Increase/Decrease	
		Actual		Enacted		Base		Estimate		from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Foreign Fishing Observer Fund	Pos/BA	0	0	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	8,083	0	4,841	0	0	0	0	0	0
	FTE/OBL	0	8,083	0	6,814	0	0	0	0	0	0
Federal Ship Financing	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Promote and Develop Fisheries Products	Pos/BA	3	426	3	8,009	0	0	0	0	0	0
	FTE/OBL	3	1,898	3	8,759	0	0	0	0	0	0
Environmental Improvement and Restoration Fund	Pos/BA	0	6,585	0	6,883	0	4,361	0	4,361	0	0
	FTE/OBL	0	6,585	0	6,883	0	4,361	0	4,361	0	0
Limited Access System Administration Fund	Pos/BA	25	13,913	40	14,468	40	14,593	40	14,593	0	0
	FTE/OBL	25	12,255	40	14,769	40	14,486	40	14,486	0	0
Marine Mammal Unusual Mortality Event Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Western Pacific Sustainable Fisheries Fund	Pos/BA	0	627	0	384	0	587	0	587	0	0
	FTE/OBL	0	502	0	509	0	587	0	587	0	0
Fisheries Enforcement Asset Forfeiture Fund	Pos/BA	0	5,113	0	3,941	0	3,914	0	3,914	0	0
	FTE/OBL	0	4,535	0	6,732	0	3,914	0	3,914	0	0
North Pacific Observer Fund	Pos/BA	0	3,457	0	3,504	0	3,971	0	3,971	0	0
	FTE/OBL	0	3,405	0	5,661	0	3,971	0	3,971	0	0
TOTAL NMFS	Pos/BA	2,685	1,173,782	3,127	1,055,036	3,124	1,066,092	3,110	869,750	(14)	(196,342)
	FTE/OBL	2,670	1,167,395	2,976	1,063,133	2,975	1,065,985	2,960	869,643	(15)	(196,342)

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Activity: Protected Resources Science and Management

Goal Statement

The mission of the Protected Resources Science and Management activity is to assess, understand, and protect the health of protected species, the ecosystems that sustain them, and the communities that value and depend on them. It supports the Department of Commerce's strategic objective 2.2, *Reduce and Streamline Regulations* and strategic objective 2.3, *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

NMFS, in partnership with internal and external stakeholders, uses best available science to develop and implement best practices and conservation actions to reduce threats to protected species and their marine and coastal ecosystems. Protected species include those listed under the Endangered Species Act (ESA) and marine mammals covered by the Marine Mammal Protection Act (MMPA). NMFS Programs funded within this activity operate under the legislative authority of the ESA and MMPA. NMFS implements 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 (i.e., fish that migrate from the sea to freshwater to spawn), marine turtles at sea, marine invertebrates (including corals), and marine plants. In addition, the Marine Mammal Commission provides oversight and makes recommendations to NMFS on priority marine mammal issues, and three regional Scientific Review Groups provide independent review of our marine mammal stock assessments

Statement of Operating Objectives

Schedule and Milestones:

FY 2021 – FY 2025:

- Review listing petitions and issue 90-day findings, conduct ESA status reviews and issue 12-month findings, and promulgate ESA protective regulations
- Prepare recovery plans and implement recovery actions identified in the plans to improve the status of ESA-listed species
- Designate critical habitat

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- Provide technical assistance, consultation, and authorization services for all Federal agencies' proposed actions (ESA Section 7)
- Work with Take Reduction Teams (TRTs) 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
- Research the effects of human activities on the conservation and recovery of protected species
- Analyze protected species survey data to determine population trends
- Solicit proposals and award Species Recovery Grants to states and Tribes for conservation and recovery activities with a focus on Species in the Spotlight
- Participate in international and regional agreements to further the U.S. policy on protected species conservation

Deliverables:

FY 2021 – FY 2025:

- ESA proposed and final listing regulations, Section 4(d) rules, and critical habitat regulations
- Formal and informal consultation with other Federal agencies
- Recovery plans for newly listed species with specific actions to prevent species extinction
- Timely issuance of MMPA and ESA permits, including scientific research permits and incidental harassment authorizations
- Improved or newly developed abundance and fishery mortality estimates for stocks
- MMPA List of Fisheries classifying U.S. commercial fisheries into one of three Categories according to the level of incidental mortality or serious injury of marine mammals
- Marine Mammal Stock Assessment Reports

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Explanation and Justification

Comparison by subactivity		2019		2020		2021	
		Actual		Enacted		Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Marine Mammals, Sea	Pos/BA	407	117,334	487	122,164	487	126,024
Turtles, and Other Species	FTE/OBL	405	116,572	464	122,164	464	126,024
Species Recovery Grants	Pos/BA	1	6,987	3	7,000	3	7,010
	FTE/OBL	1	6,959	3	7,000	3	7,010
Atlantic Salmon	Pos/BA	22	6,487	23	6,500	23	6,635
	FTE/OBL	22	6,283	22	6,500	22	6,635
Pacific Salmon	Pos/BA	294	64,637	338	65,000	338	67,999
	FTE/OBL	292	64,506	321	65,000	321	67,999
Total Protected Resources	Pos/BA	724	195,445	851	200,664	851	207,668
Science and Management	FTE/OBL	720	194,320	810	200,664	810	207,668

Marine Mammals, Sea Turtles, and Other Species

Under the legislative authority of the ESA and MMPA, this budget line supports activities that conserve and recover species threatened or endangered with extinction, as well as most marine mammals. The programs under this budget line aim to sustain marine and anadromous species and the ecosystems on which they depend, and to enable economic development in a manner compatible with species conservation and recovery.

In addition to work supporting all ESA-listed species, NOAA continues to focus on the “Species in the Spotlight: Survive to Thrive” initiative, an innovative approach to marshal public and private support to slow, halt, and reverse the population decline of eight of

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our most endangered species—Hawaiian monk seals, southern resident killer whales, white abalone, Cook Inlet beluga whales, Atlantic salmon, Pacific leatherback turtles, Sacramento River winter-run Chinook, and Central California Coast coho.

(<https://www.fisheries.noaa.gov/topic/endangered-species-conservation#species-in-the-spotlight>)

Major components of this budget line include:

Listing (ESA Section 4): 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, NMFS has 90 days to make an initial determination and 12 months for determining whether the listing or reclassification is warranted. Details of the Listing process can be found at <https://www.fisheries.noaa.gov/national/endangered-species-conservation/listing-species-under-endangered-species-act>.

Recovery (ESA Section 4): The ESA requires NMFS to use all methods and procedures to bring listed species to the point where the protections of the ESA are no longer necessary. NMFS oversees and conducts these methods and procedures to allow the species and its ecosystems to recover, as well as to ensure that listed species remain functioning members of the ecosystems we all depend upon. Details on the recovery actions can be found at <https://www.fisheries.noaa.gov/national/endangered-species-conservation/recovery-species-under-endangered-species-act>. These actions are important to provide communities with healthier ecosystems, cleaner water, greater opportunities for recreation, and the opportunity for current and future generations to share the benefits of diverse and healthy natural resources.

Species Stock Assessment and Monitoring (ESA Section 4, MMPA Sections 115 and 117): This program supports protected species stock assessment and monitoring activities using a variety of observation and survey methods, including use of marine acoustics, unmanned systems, surveys (ship, aerial, and shore-based), and telemetry. To adequately support management decisions, assessments are comprehensive and include estimates of abundance and distribution, as well as analysis of historical trends, serious injury and mortality levels, life history and demographics, and impacts of human activities (e.g., noise, climate, habitat, and ecosystem change). NMFS collects this basic assessment data so it can be as targeted as possible in prescribing mitigation measures that affect commercial and recreational activities. Details on marine mammal stock assessments can be found at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>.

Research (ESA Section 4, MMPA Sections 115 and 117): NMFS conducts research to inform conservation and management actions, focusing on the biology, behavior, and health of marine mammal species; genetic differentiation; ecosystem interactions;

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and effects of human activities on the recovery and conservation of protected species. Effective conservation requires understanding how human and natural factors influence the viability of marine species and their ecosystems.

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 enables authorization for lawful activities—such as construction of roads and bridges, commercial fishing, or defense readiness training—in a manner that is compatible with species conservation and recovery.

Permits and Authorizations (ESA Section 10 and MMPA Sections 101 and 104): Under the ESA and MMPA, NMFS issues permits and authorizations (often with required mitigation measures) to allow activities that may result in the direct and indirect take of a protected species. Permits and take authorizations cover scientific research and the incidental take and harassment of marine mammals by otherwise lawful activities such as seismic surveys, construction activities, or military readiness training exercises when those activities are deemed to have negligible impact on the species. Details on permits and authorizations of protected species can be found at <https://www.fisheries.noaa.gov/insight/understanding-permits-and-authorizations-protected-species>.

Conservation Planning (ESA Section 10): When non-Federal entities—such as states, counties, local governments, and private landowners—wish to conduct an otherwise lawful activity that might incidentally, but not intentionally, “take” a listed species, an incidental take permit must first be obtained from NMFS. NMFS reviews the Conservation Plans submitted by permit applicants that are designed to offset harmful effects that a proposed activity might have on listed species and issues permits accordingly.

Bycatch Reduction (ESA Section 4, MMPA Section 118): Fishing gear can accidentally capture protected species, such as marine mammals, seabirds, and sea turtles. NMFS works with the fishing industry and others through Take Reduction Teams or other means to modify fishing gear or practices to minimize bycatch and its impact.

Co-Management with Alaska Native Organizations (MMPA Section 119): Co-management promotes full and equal participation by Alaska Natives in decisions affecting the subsistence management of marine mammals (to the maximum extent allowed by law) as a tool for conserving marine mammal populations in Alaska. NMFS has entered into agreements with Alaska Native groups to manage harvested marine mammal stocks, and will continue to actively engage in activities to support the cooperative management of these stocks under the agreements.

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Marine Mammal Health and Stranding Response Program (MMPA Title IV): NMFS is the lead Federal agency to coordinate marine mammal stranding networks, responses, and investigations of marine mammal mortality events. The Prescott Grants Program provides competitive 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 of dead marine mammals. The program has led to significant improvements within the stranding network, enabling members to expand response coverage over wider geographic areas, enhance capabilities and data collection, upgrade rehabilitation facilities, evaluate rehabilitation success, increase understanding of the causes of disease and mortality, and provide safer operations for both animals and people. The more than 100 stranding network partners are volunteers and trained professionals from nonprofit organizations; aquaria; universities; and coastal state, local, and Tribal governments. In addition to response activities, the network provides data helping NOAA establish links between marine mammal health and the condition of coastal ecosystems.

The Marine Mammal Health and Stranding Response Program (MMHSRP) has also been highly successful in developing public-private partnerships that provide emergency response to live or dead marine mammals and investigate the health of marine mammal populations in the wild. Over 100 partners comprise the National Marine Mammal Stranding Network and each member plays an important role in helping NMFS meet our Congressional mandates. Details on the MMHSRP can be found at <https://www.fisheries.noaa.gov/national/marine-life-distress/marine-mammal-health-and-stranding-response-program>. Data collected from stranded animals are valuable for informing marine mammal stock assessment reports, identifying key species recovery activities, monitoring ocean health, and identifying natural and manmade causes of stranding, illness, and death in marine mammals around the United States.

Species Recovery Grants (ESA Section 6)

Recovery and conservation actions for listed species under NMFS jurisdiction are implemented through Species Recovery Grants, which are awarded to states and Tribes. Details on Species Recovery Grants can be found at <https://www.fisheries.noaa.gov/grant/species-recovery-grants-states> and <https://www.fisheries.noaa.gov/grant/species-recovery-grants-tribes>. For listed species, funding supports activities such as reducing or removing significant sources of mortality and injury, assessing and monitoring species status and trends, developing conservation plans, conserving habitat, and engaging the public in conservation efforts. Funding may also support monitoring of candidate species and recently delisted species.

Atlantic Salmon (ESA Sections 4, 7, 10)

These programs provide funding for the conservation and recovery of ESA-listed Atlantic salmon in the Northeast. Gulf of Maine Atlantic salmon are co-managed by NMFS, USFWS, the Maine Department of Marine Resources, and the Penobscot Indian Nation.

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Under the ESA, the Essential Fish Habitat provisions under Magnuson-Stevens Act, and a joint Statement of Cooperation with the co-managers, NMFS is responsible for marine stock assessments, designating critical habitat, estuary and marine interagency Section 7 consultations and habitat conservation planning, and minimizing dam impacts.

Pacific Salmon (ESA, All Sections)

Under the legislative authority of the ESA, NMFS conducts interagency Section 7 consultations, habitat conservation planning, and listing and recovery actions to protect and recover threatened and endangered Pacific salmon and steelhead. NMFS also conducts research, monitoring, and analysis to provide managers and regional stakeholders the tools and information necessary to advance salmonid recovery to ensure biological sustainability of Pacific salmonids and the ecosystems on which they depend. Partnerships among Federal, state, local, and tribal entities, together with non-governmental and private organizations, are key to restoring healthy salmon runs and securing the economic and cultural benefits they provide.

PROGRAM CHANGES FOR FY 2021:

NOAA requests a net decrease of \$15,461,000 and 0 FTE/ 0 positions in program changes for the Protected Resources Science and Management Activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table – 2).

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		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel Amount</u>	
Marine Mammals, Sea	Pos./BA	487	126,024	487	122,632	0	(3,392)
Turtles, and Other Species	FTE/OBL	464	126,024	464	122,632	0	(3,392)

ESA and MMPA Permitting Capacity (-\$3,392, 0 FTE/0 Positions) – This request reduces the additional resources provided in FY 2020 appropriations to work with Federal partners to improve coordination and efficiency of consultations within the permitting processes. While it will decrease consultation and permitting capacity that supports requirements of the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA), NMFS will continue to prioritize this work and meet its responsibilities with dedicated base resources of an estimated \$34.3 million. NMFS has made significant gains streamlining ESA and MMPA permitting capacity recently in response to Executive Orders²—predominantly targeted at reducing burden on the public and expediting environmental reviews. As of December 2019, NMFS has implemented efficiencies in the consultation and permitting processes by decreasing the average informal ESA consultation times by more than 65 percent; formal consultations times by 18 percent; and IHA issuance times by 25 percent. We are now focused on maintaining these improvements, even while consultation workload continues to expand, by increasing the use of programmatic consultations and increasing coordination with action agencies.

² [E.O 13783 Promoting Energy Independence and Economic Growth](#)
[E.O 13766 Expediting Environmental Reviews and Approvals for High Priority Infrastructure Projects](#)
[E.O 13795 Implementing an America-First Offshore Energy Strategy](#)
[E.O. 13805 Establishing a Presidential Advisory Council on Infrastructure](#)
[E.O 13807 Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure](#)

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	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations	(3,392)	(3,392)	(3,392)	(3,392)	(3,392)
Uncapitalized	(3,392)	(3,392)	(3,392)	(3,392)	(3,392)
Budget Authority	(3,392)	(3,392)	(3,392)	(3,392)	(3,392)
Outlays	(2,103)	(2,103)	(2,103)	(2,103)	(2,103)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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

Activity: Protected Resources Science and Management
Subactivity: Marine Mammals, Sea Turtles, and Other Species

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	46,939	49,193	52,185	52,185	0
11.3 Other than full-time permanent	333	349	370	370	0
11.5 Other personnel compensation	923	967	1,026	1,026	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	48,195	50,509	53,581	53,581	0
12.1 Civilian personnel benefits	16,333	17,116	18,157	18,157	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	3,174	3,326	3,326	3,326	0
22 Transportation of things	109	115	115	115	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	848	889	889	889	0
23.2 Rental payments to others	504	528	528	528	0
23.3 Communications, utilities, and misc. charges	373	391	391	391	0
24 Printing and reproduction	116	121	121	121	0
25.1 Advisory and assistance services	3,417	3,581	3,581	189	(3,392)
25.2 Other services from non-Federal sources	18,465	19,350	19,097	19,097	0
25.3 Other goods and services from Federal sources	1,950	2,043	2,043	2,043	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	62	65	65	65	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,912	4,099	4,099	4,099	0
31 Equipment	786	824	824	824	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	18,327	19,206	19,206	19,206	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	1	1	1	1	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	\$116,572	122,164	126,024	122,632	(3,392)

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		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Marine Mammals, Sea	Pos./BA	487	126,024	487	122,024	0	(4,000)
Turtles, and Other Species	FTE/OBL	464	126,024	464	122,024	0	(4,000)

Prescott Grant Program (-\$4,000, 0 FTE/0 Positions) – This request will eliminate funding for this grant program. This is the only Federal funding source for the network; however, some members may still operate on private funding. NOAA will continue to support related activities such as the rescue of large whales entangled in fishing gear and the coordination network responses to unusual marine mammal mortality events.³

	2021	2022	2023	2024	2025
Performance Measure:					
Percentage of stranding network organizations that have Prescott Grants to improve rapid response to marine mammal strandings (annual)					
With Decrease	0%	0%	0%	0%	0%
Without Decrease	23%	23%	23%	23%	23%
Outyear Costs:					
Direct Obligations	(4,000)	(4,000)	(4,000)	(4,000)	(4,000)
Uncapitalized	(4,000)	(4,000)	(4,000)	(4,000)	(4,000)
Budget Authority	(4,000)	(4,000)	(4,000)	(4,000)	(4,000)
Outlays	(2,480)	(2,480)	(2,480)	(2,480)	(2,480)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

³ <https://www.fisheries.noaa.gov/grant/john-h-prescott-marine-mammal-rescue-assistance-grant-program>

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
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Activity: Protected Resources Science and Management
Subactivity: Marine Mammals, Sea Turtles, and Other Species

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	46,939	49,193	52,185	52,185	0
11.3	333	349	370	370	0
11.5	923	967	1,026	1,026	0
11.8	0	0	0	0	0
11.9	48,195	50,509	53,581	53,581	0
12.1	16,333	17,116	18,157	18,157	0
13	0	0	0	0	0
21	3,174	3,326	3,326	3,326	0
22	109	115	115	115	0
23	0	0	0	0	0
23.1	848	889	889	889	0
23.2	504	528	528	528	0
23.3	373	391	391	391	0
24	116	121	121	121	0
25.1	3,417	3,581	3,581	3,581	0
25.2	18,465	19,350	19,097	19,097	0
25.3	1,950	2,043	2,043	2,043	0
25.4	0	0	0	0	0
25.5	62	65	65	65	0
25.6	0	0	0	0	0
25.7	0	0	0	0	0
25.8	0	0	0	0	0
26	3,912	4,099	4,099	4,099	0
31	786	824	824	824	0
32	0	0	0	0	0
33	0	0	0	0	0
41	18,327	19,206	19,206	15,206	(4,000)
42	0	0	0	0	0
43	1	1	1	1	0
44	0	0	0	0	0
99.9	\$116,572	122,164	126,024	122,024	(4,000)

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(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Marine Mammals, Sea	Pos./BA	487	126,024	487	122,976	0	(3,048)
Turtles, and Other Species	FTE/OBL	464	126,024	464	122,976	0	(3,048)

Right Whale Recovery (-\$3,048, 0 FTE/0 Positions) – This request reduces the additional funds provided in FY 2020 appropriations for research, development, and conservation efforts of the North Atlantic Right Whale (NARW). The budget includes \$8.6 million in dedicated funds to continue efforts to support right whale recovery. More information is available at the program’s website.⁴

NMFS will continue protection and recovery efforts of the North Atlantic right whale through implementation of various conservation, regulatory, rescue, and enforcement measures, including but not limited to protecting habitat and designating critical habitat, rescuing entangled right whales, reducing the threat of vessel collisions, reducing injury and mortality by fisheries and fishing gear, and minimizing the effects of vessel disturbance and noise. NMFS will monitor the results of assistance provided in 2020 to reduce whale entanglements and will use this information to inform future recovery actions. NMFS will also continue to conduct various research activities on the biology, behavior, and ecology of the North Atlantic right whale including identifying habitat and when it is used by right whales, investigating unusual mortality events, performing stock assessments to gather population information, and tracking individuals over time to monitor important population traits. The results of this research are used to inform management decisions and enhance recovery efforts for this critically endangered species.

⁴<https://www.fisheries.noaa.gov/species/north-atlantic-right-whale>

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(Dollar amounts in thousands)

	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
Outyear Costs:					
Direct Obligations	(3,048)	(3,048)	(3,048)	(3,048)	(3,048)
Uncapitalized	(3,048)	(3,048)	(3,048)	(3,048)	(3,048)
Budget Authority	(3,048)	(3,048)	(3,048)	(3,048)	(3,048)
Outlays	(1,890)	(1,890)	(1,890)	(1,890)	(1,890)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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

Activity: Protected Resources Science and Management
Subactivity: Marine Mammals, Sea Turtles, and Other Species

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	46,939	49,193	52,185	52,185	0
11.3 Other than full-time permanent	333	349	370	370	0
11.5 Other personnel compensation	923	967	1,026	1,026	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	48,195	50,509	53,581	53,581	0
12.1 Civilian personnel benefits	16,333	17,116	18,157	18,157	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	3,174	3,326	3,326	3,326	0
22 Transportation of things	109	115	115	115	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	848	889	889	889	0
23.2 Rental payments to others	504	528	528	528	0
23.3 Communications, utilities, and misc. charges	373	391	391	391	0
24 Printing and reproduction	116	121	121	121	0
25.1 Advisory and assistance services	3,417	3,581	3,581	3,581	0
25.2 Other services from non-Federal sources	18,465	19,350	19,097	16,049	(3,048)
25.3 Other goods and services from Federal sources	1,950	2,043	2,043	2,043	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	62	65	65	65	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,912	4,099	4,099	4,099	0
31 Equipment	786	824	824	824	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	18,327	19,206	19,206	19,206	0
42	0	0	0	0	0
43 Interest and dividends	1	1	1	1	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	\$116,572	122,164	126,024	122,976	(3,048)

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		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Species							
Recovery	Pos./BA	3	7,010	3	6,000	0	(1,010)
Grants	FTE/OBL	3	7,010	3	6,000	0	(1,010)

Species Recovery Grants Program (-\$1,010, 0 FTE/0 Positions) – This request will decrease support for conservation and recovery of marine and anadromous species through the Species Recovery Grant Program. This level of funding will still allow NMFS to continue to adequately support our state and tribal partners in species recovery.

Species Recovery Grants support recovery actions for species listed under the Endangered Species Act (ESA) and are awarded to states and Tribes under the authority of ESA Section 6 and the Fish and Wildlife Coordination Act. Recovery actions are those actions needed to recover species so that the protections of the ESA are no longer necessary. Recovery actions include addressing significant sources of mortality and injury, assessing species status and trends, developing conservation plans to minimize and mitigate bycatch, conserving habitat, and educating and engaging the public. The Species Recovery Grants Program is NMFS’ primary mechanism for directly supporting external partners’ efforts to implement recovery actions for listed species.

As part of administering this program, NMFS will continue to prioritize funding for grants that address non-Pacific salmonid species in the “Species in the Spotlight: Survive to Thrive” initiative.⁵

⁵ <https://www.fisheries.noaa.gov/topic/endangered-species-conservation#species-in-the-spotlight>

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	2021	2022	2023	2024	2025
Performance Measure:					
Number of recovery activities being addressed through Species Recovery Grants					
With Decrease	30	30	30	30	30
Without Decrease	35	35	35	35	35
Outyear Costs:					
Direct Obligations	(1,010)	(1,010)	(1,010)	(1,010)	(1,010)
Uncapitalized	(1,010)	(1,010)	(1,010)	(1,010)	(1,010)
Budget Authority	(1,010)	(1,010)	(1,010)	(1,010)	(1,010)
Outlays	(626)	(626)	(626)	(626)	(626)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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

Activity: Protected Resources Science and Management
Subactivity: Species Recovery Grants

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	287	288	295	295	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	11	11	11	11	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	298	299	306	306	0
12.1 Civilian personnel benefits	113	114	117	117	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	6	6	6	6	0
22 Transportation of things	0	0	0	0	0
23 Rent, communications, and utilities	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 Communications, utilities, and misc. charges	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	0	0	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
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	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	6,542	6,581	6,581	5,571	(1,010)
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
99.9 Total obligations	6,959	7,000	7,010	6,000	(1,010)

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		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
	Pos./BA	338	67,999	338	64,236	0	(3,763)
Pacific Salmon	FTE/OBL	321	67,999	321	64,236	0	(3,763)

Hatchery Genetic Management Plans (HGMPs) (-\$3,763, 0 FTE/0 Positions) – This request reduces the congressionally directed resources provided in FY 2020 appropriations to work with partners to help expedite HGMP reviews. In FY 2019, NMFS completed reviews [i.e. Endangered Species Act (ESA) and National Environmental Policy Act (NEPA)] of an additional 6 HGMPs, bringing the total to 203 out of 330 HGMPs completed. In FY 2020, NMFS estimates completion of an additional 40 HGMPs. NMFS will continue to make progress in FY 2021 completing HGMP reviews.

Hatcheries, or artificial propagation, are one tool to help support wild stocks and provide fish for harvest, so long as hatchery fish are managed in the context of overall conservation goals for threatened or endangered fish. It is important to limit interactions between hatchery and natural-origin fish by using best hatchery practices. NMFS uses HGMPs to determine if an individual hatchery program meets ESA standards and incorporates best practices.

	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations	(3,763)	(3,763)	(3,763)	(3,763)	(3,763)
Uncapitalized	(3,763)	(3,763)	(3,763)	(3,763)	(3,763)
Budget Authority	(3,763)	(3,763)	(3,763)	(3,763)	(3,763)
Outlays	(2,333)	(2,333)	(2,333)	(2,333)	(2,333)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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(Direct Obligations amounts in thousands)

Activity: Protected Resources Science and Management
Subactivity: Pacific Salmon

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	35,741	36,014	38,193	38,193	0
11.3	774	780	827	827	0
11.5	243	245	260	260	0
11.8	0	0	0	0	0
11.9	36,758	37,039	39,280	39,280	0
12.1	12,426	12,521	13,279	13,279	0
13	3	3	3	3	0
21	683	688	688	688	0
22	237	239	239	239	0
23	0	0	0	0	0
23.1	424	428	428	428	0
23.2	6	6	6	6	0
23.3	443	446	446	446	0
24	52	52	52	52	0
25.1	716	722	722	722	0
25.2	7,474	7,532	7,532	3,769	(3,763)
25.3	782	788	788	788	0
25.4	0	0	0	0	0
25.5	0	0	0	0	0
25.6	0	0	0	0	0
25.7	0	0	0	0	0
25.8	0	0	0	0	0
26	526	530	530	530	0
31	300	302	302	302	0
32	0	0	0	0	0
33	0	0	0	0	0
41	3,672	3,700	3,700	3,700	0
42	3	3	3	3	0
43	1	1	1	1	0
44	0	0	0	0	0
99.9	64,506	65,000	67,999	64,236	(3,763)

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Activity: Fisheries Science and Management

Goal Statement

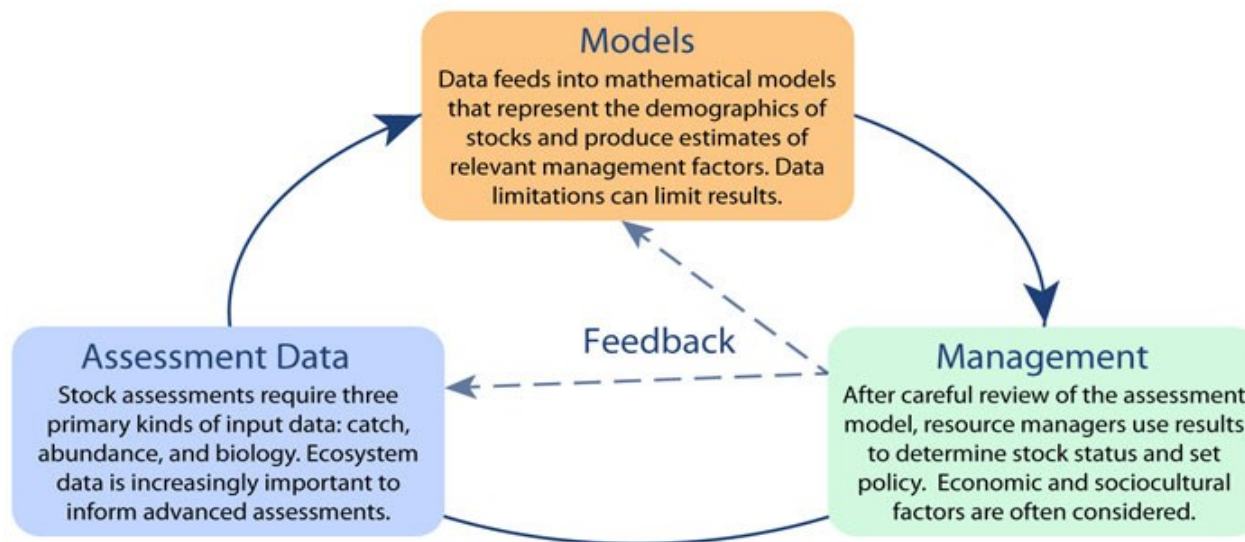
The Fisheries Science and Management activity encompasses scientific and management activities to ensure sustainability of the Nation's marine fishery resources. It supports the Department of Commerce's Strategic Plan: Strategic Objective 2.1 *Increase Aquaculture Production*, Strategic Objective 2.2 *Reduce and Streamline Regulations*, and Strategic Objective to *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

In partnership with the eight Regional Fishery Management Councils and state and Federal partners, NMFS manages marine fisheries, including aquaculture, using the best available science. NMFS actions supported by the Fisheries Science and Management activity result in sustainable fisheries harvest and production, rebuilding of depleted fish stocks, conservation and restoration of essential fish habitats, and other support for fishing businesses and communities. NMFS' science, which is rigorously peer-reviewed, ensures management decisions are based on the highest-quality scientific information. NMFS conducts science on species' responses to environmental changes; impacts of fishing and other human activities on fisheries and their habitat; and social, cultural, and economic behaviors that influence interactions between humans and marine fisheries.

This activity also supports the regulatory process, which involves extensive opportunity for public input into management decisions, and thorough analysis of alternatives to meet statutory requirements and agency priorities. This work occurs in close coordination with Regional Councils, Interstate Marine Fisheries Commissions, and states. It is a process where science informs management. Managers need high quality science to make important decisions to ensure sustainable fisheries, healthy ecosystems, and productive coastal communities. Data feeds into mathematical models that estimate stock biomass, fishing effort, and other reference points, as seen in the graphic below.

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Statement of Operating Objectives

Schedule and Milestones:

Fisheries and Ecosystem Science Programs and Services (FY 2021 – FY 2025):

- *Economics and Social Science:* Expand implementation of an integrated Bioeconomic Length-structured Angler Simulation Tool, the Social Indicator Toolbox, and FishSET—a spatial economics toolbox; assess the economic performance of fisheries; and predict the cost/benefits of stock rebuilding programs
- *Ecosystem Science:* Continue to work with resource managers to provide ecosystem-based science information and trade-off analyses to inform management decisions for evolving constituent-defined management issues in Integrated Ecosystem Assessment (IEA) regions; continue fisheries oceanography research programs to advance the understanding of environmental impacts on living marine resources to improve stock and ecosystem assessments; and continue to incorporate

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long-term observations of climate-related impacts on the Bering Sea ecosystem, and other regions, to help living marine resource managers incorporate climate-related impacts into management decisions

- *Antarctic Research*: Complete 26 stock assessments for targeted stocks of krill, fishes, and crabs managed by the Commission for the Conservation of Antarctic Marine Living Resources
- *Information Analysis and Dissemination*: Improve population dynamics/assessment/ management model development and data analysis tools to support fisheries science programs and improve data dissemination and sharing of integrated data and analyses (climatology, socio-economic, ecosystem, fishery-dependent, and fishery-independent), both internally and externally

Fisheries Data Collections, Surveys, and Assessments (FY 2021 – FY 2025):

- *Fisheries Monitoring, Assessment, and Forecasting*: Conduct and expand fishery-independent surveys; develop advanced sampling technologies to enhance data collection for stock assessments; improve timely delivery of fish stock assessments to fishery managers; and further the implementation of the next-generation stock assessment framework
- *Cooperative Research*: Issue awards for cooperative research from the Northeast Research Set-Aside, and the Southeast CRP competitive grants; and conduct cooperative research surveys nationwide
- *MARMAP*: Perform fishery-independent assessments of reef fish abundance and life history characteristics of economically and ecologically important reef fish species in shelf and upper slope waters from Cape Lookout to Cape Canaveral
- *SEAMAP*: Conduct groundfish and plankton surveys in state and Federal waters, inshore and offshore longline surveys, and reef fish surveys in offshore waters

Observers and Training (FY 2021 – FY 2025):

- Provide safe and high-quality monitoring in 64 fisheries nationwide, with a goal of expanding observer coverage in existing fisheries and implementing new observer programs for fisheries identified with monitoring needs related to bycatch and protected species interactions
- Maintain monitoring for the fisheries with observer coverage to provide catch and bycatch data by supporting approximately 76,000 observed sea days annually
- Coordinate observer program activities at the national level by developing new standards, policies, and procedures to improve regional observer programs

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Fisheries Management Programs and Services (FY 2021 – FY 2025):

- *Illegal, Unreported, and Unregulated (IUU) Fishing:* Address Magnuson-Stevens Fishery Conservation and Management Act (MSA) mandates to implement IUU/bycatch identification, monitoring, and certification procedures, and foreign nation capacity building. Submit biennial status reports to Congress. Review shipments of imported fishery products to monitor for IUU shipments and fraudulently labeled seafood
- *Reducing Bycatch:* Develop technological solutions and investigate changes in fishing practices designed to minimize bycatch of fish and protected species
- *Regional Fishery Management Councils Support:* Develop fishery management measures, using public input and the best available science and tools such as ACLs and AMs
- *Electronic Monitoring and Reporting:* Implement Electronic Monitoring (EM) and Electronic Reporting (ER) options in key fisheries identified by 2020
- *National Catch Share Program:* Work with interested Regional Councils to support catch share programs and the use of technology, when appropriate, to improve the cost-effectiveness of these programs

Aquaculture (FY 2021 – FY 2025):

- Finalize a Programmatic Environmental Impact Statement for the Pacific Islands Region to analyze the potential environmental impacts of a proposed offshore aquaculture management program
- Establish and expand regional pilot projects (e.g., kelp and seaweed farming, offshore aquaculture)
- Advance Science Center research to support environmentally sound aquaculture practices such as genetics and tools for aquaculture siting
- Research sustainable finfish aquaculture feeds
- Develop science-based tools for management that ensure the efficient review of aquaculture permit applications

Salmon Management Activities (FY 2021 – FY 2025):

- 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

Regional Councils and Fisheries Commissions (FY 2021 – FY 2025):

- Continue to revise Fishery Management Plans (FMPs) and amendments to prevent overfishing, rebuild overfished fisheries, and promote sustainability

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- Complete socioeconomic analyses for fishery management actions
- Work with Councils to implement electronic technologies for fishery monitoring
- Complete necessary environmental analyses and support Council action to remove regulations determined to be outdated, unnecessary, or ineffective, to reduce the burden on commercial and recreational fishermen

Deliverables:

Fisheries and Ecosystem Science Programs and Services (FY 2021 – FY 2025):

- *Economics and Social Science*: Assessments of the benefits/cost-effectiveness of fisheries rebuilding programs, habitat and protected species recovery programs, and decision support tools; and, improved quantitative models for conducting benefit-cost analyses and predicting how fishery participants will respond to changes in management measures
- *Ecosystem Science*: Updated ecosystem-status reports and risk and vulnerability assessments delivered to resource managers in the IEA regions; and delivery of environmental indicators and predicted impacts on managed species to appropriate stock assessment scientists and Regional FMCs
- *Antarctic Research*: Complete 26 stock assessments for targeted stocks of krill, fishes, and crabs managed by the Commission for the Conservation of Antarctic Marine Living Resources
- *Information Analysis and Dissemination*: Technical expertise and capacity infrastructure for data collection, processing, sharing, and archiving for Integrated Ocean Observing System, NOAA Environmental Data Management Committee, NMFS Enterprise Data Management, NMFS Fisheries Information Systems, NMFS Marine Recreational Information Program, and Data.gov

Fisheries Data Collections, Surveys, and Assessments (FY 2021 – FY 2025):

- *Fisheries Monitoring, Assessment, and Forecasting*: Fishery-independent surveys to provide ongoing data for stock assessments; stock assessment reports based on a next-generation stock assessment framework for key stocks; and more precise estimates of recreational catch through improved surveys
- *Cooperative Research*: Conduct cooperative research projects, in partnership with stakeholders; and document the individual project final reports of the results, with data archived at the Fisheries Science Centers and added to the NMFS InPort Centralized documentation (metadata) repository
- *MARMAP*: Fishery-independent assessments of reef fish abundance and life history characteristics of economically and ecologically important reef fish species in shelf and upper slope waters from Cape Lookout to Cape Canaveral; resulting data provided for use in stock assessments and in support of other research and management needs

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- *SEAMAP*: Surveys in inshore and offshore waters conducted and fishery, habitat, biological, and environmental data provided to Regional Councils for incorporation into regional species stock assessments and for development of effective fisheries and habitat management strategies

Observers and Training (FY 2021 – FY 2025):

- Information on catch, bycatch, discards, and biological data necessary for in-season monitoring and stock assessments; Also information on fishing effort, fishing gear, and specific fishing techniques that minimize bycatch
- National Observer Program (NOP) reports and biennial updates to the U.S. National Bycatch Report (NBR)

Fisheries Management Programs and Services (FY 2021 – FY 2025):

- Development of fisheries regulations, FMPs, 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) and certain shark catches on the high seas. May also result in recommendations to the Secretary of Commerce, after coordination with other Federal agencies, on possible fishery-product trade prohibitions and port restrictions on nations whose vessels engage in the above
- Collection of source data on fishery product imports tracing back to the harvest area and analysis of shipment documentation to verify accuracy and identify trends in import of IUU fishery products and fraudulently labeled seafood
- Improvements in fishing gear and fishing practices to reduce bycatch
- Implementation of cost-effective electronic technology applications that complement observer coverage, improve data collection and analysis, and lower the economic and time burden on fishermen for compliance with recordkeeping and reporting regulations

Aquaculture (FY 2021 – FY 2025):

- Increased domestic aquaculture production and associated jobs
- More efficient aquaculture permitting systems in state and Federal waters
- Report on interagency efforts to establish a coordinated permitting system for Federal waters
- Reports on research and development to support environmentally sound aquaculture practices
- Application of science-based tools for management that ensure the efficient review of aquaculture permit applications

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Salmon Management Activities (FY 2021 – FY 2025):

- Maintenance of salmon smolt production as required under the Mitchell Act
- Broad range of salmon stock assessment and fishery monitoring programs in the Snake and Columbia Rivers

Regional Councils and Commissions (FY 2021 – FY 2025):

- Draft amendments to FMPs
- Collection and analysis of socioeconomic data on the impacts of fishery management actions
- Regulations removed that were determined to be outdated, unnecessary, or ineffective, to increase economic fisheries value or improve recreational activities and reduce burden on commercial and recreational fishermen

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Explanation and Justification

Line Item		2019 Actual		2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Fisheries and Ecosystem	Pos/BA	507	147,645	629	146,427	629	150,018
Science Programs and Services	FTE/OBL	504	142,272	599	146,427	599	150,018
Fisheries Data Collections, Surveys, and Assessments	Pos/BA	433	167,982	482	173,709	482	177,410
	FTE/OBL	431	166,212	459	173,709	459	177,410
Observers and Training	Pos/BA	124	53,669	156	54,968	156	56,072
	FTE/OBL	123	46,821	149	54,968	149	56,072
Fisheries Management Programs and Services	Pos/BA	431	120,621	463	123,836	463	123,604
	FTE/OBL	428	117,425	441	123,836	441	123,604
Aquaculture	Pos/BA	27	14,833	28	15,250	28	15,523
	FTE/OBL	27	14,221	27	15,250	27	15,523
Salmon Management Activities	Pos/BA	30	36,941	33	58,043	33	58,303
	FTE/OBL	30	36,925	32	58,043	32	58,303
Regional Councils and Fisheries Commissions	Pos/BA	8	40,131	13	40,247	13	46,455
	FTE/OBL	8	40,078	8	40,247	8	46,455
Interjurisdictional Fisheries Grants	Pos/BA	1	3,365	2	3,365	2	3,365
	FTE/OBL	1	3,360	2	3,365	2	3,365
Total Fisheries Science and Management	Pos/BA	1,561	585,187	1,806	615,845	1,806	630,750
	FTE/OBL	1,552	567,314	1,717	615,845	1,717	630,750

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Sustainable fisheries play an important role in the Nation's economy by providing opportunities for commercial, recreational and subsistence fishing, and marine aquaculture to increase our Nation's supply of seafood. In 2016, commercial and recreational fisheries in the U.S. generated 1.7 million jobs throughout the national economy. In addition, commercial and recreational fishing generated \$212.2 billion in sales impacts, \$64.2 billion in income impacts, and \$99.5 billion in value-added impacts.⁶ The U.S. aquaculture industry produced \$1.5 billion worth of seafood in 2016, which equals about 21 percent of total U.S. seafood production by value.⁷ By ending overfishing, rebuilding stocks, applying an ecosystem-based management approach to the stewardship of fishery resources, and supporting development of marine aquaculture, we strengthen the near and long-term value of U.S. fisheries to commercial and recreational fishing businesses, fishing communities, and the national economy.

Fisheries and Ecosystem Science Programs and Services

This budget supports NMFS science to prevent and eliminate overfishing, rebuild overfished stocks, support sustainable aquaculture, conserve and restore habitats, and support fishing communities. The following are some of the major programs and activities funded within the budget line.

Fisheries Science Base Activities: NMFS conducts science used for the analysis and decision-making needed for ecosystem-based fisheries management, Fishery Management Plans (FMPs) and regulatory implementation, and enforcement to ensure compliance with regulations. Funding supports:

- Regional Science and Operations - core survey and science work in the regional Science Centers (Centers) such as fishery catch monitoring, survey and stock assessments, charters for survey vessels, fuel, supplies, etc. This includes research projects at the Centers, including collaborative research with other institutions on topics such as pelagic fisheries and groundfish.
- Recreational Fisheries Information, such as the Marine Recreational Information Program <https://www.fisheries.noaa.gov/topic/recreational-fishing-data>
- Science and management activities in support of the Marine National Monuments <https://www.fisheries.noaa.gov/pacific-islands/habitat-conservation/marine-national-monuments-pacific>
- West Coast Groundfish Management and Research - key stock assessment science that supports management of more than 80 fish stocks along the coasts of Washington, Oregon, and California

⁶ National Marine Fisheries Service. 2018. Fisheries Economics of the United States, 2016. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-187. Available at: <https://www.fisheries.noaa.gov/resource/document/fisheries-economics-united-states-report-2016>.

⁷ National Marine Fisheries Service. 2018. Fisheries of the United States, 2017. U.S. Department of Commerce, NOAA Current Fishery Statistics No. 2017. Available at: <https://www.fisheries.noaa.gov/content/fisheries-united-states-2017>. Note, due to data availability, aquaculture production data lags the rest of the publication by one year.

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- Development and implementation of EM and ER; working with industry to integrate technology into data collections and observations to improve the timeliness, quality, integration, cost effectiveness, and accessibility of fishery-dependent data <https://www.fisheries.noaa.gov/national/fisheries-observers/electronic-monitoring>
- Science to substantially increase sustainable domestic aquaculture; enabling important contributions to the U.S. seafood supply, job creation in coastal communities, and reduced reliance on imported seafood (currently more than 80 percent of U.S. seafood is imported⁸). Marine aquaculture is also used to enhance commercial and recreational fisheries and restore habitats

Economics and Social Science Research (<https://www.fisheries.noaa.gov/topic/socioeconomics>)

NMFS economists and social scientists conduct legislatively mandated (e.g., NEPA, MSA) economic and social analysis for almost 300 rulemakings each year. Underpinning these assessments is a broad range of socio-economic data collection, modeling, and, increasingly, a number of commercial and recreational fisheries decision support tools. This work addresses traditional fishery management issues (e.g. effects of rebuilding programs, catch share programs, aquaculture, and fishery allocation decisions on fishermen and communities) and emerging coastal and marine resource management issues such as ecosystem services trade-offs and valuation, and community resilience.

Ecosystem Science (<https://www.fisheries.noaa.gov/topic/ecosystems#science>)

NMFS implements ecosystem-based approaches to management, which rely upon research that integrates biological, socio-economic, environmental, and oceanographic data into predictive models that improve NOAA's ability to manage resources over the long-term. This includes the Integrated Ecosystem Assessment (IEA) program, which assesses ecosystem status and trends relative to ecosystem management goals, analyze risks and uncertainty, and evaluate trade-offs between management options. (<https://www.integratedecosystemassessment.noaa.gov/>) This also includes the Climate Regimes & Ecosystem Productivity (CREP) program, which provides decision-makers with information on how climate variability and change are impacting U.S. marine ecosystems and the communities and economies that depend on them. CREP provides information, assessments, and projections of climate-related impacts on living marine resources of the Bering Sea and Gulf of Alaska. This area includes some of the Nation's richest commercial fishing grounds (6.0 billion pounds of seafood were landed in Alaska with a value of \$1.8 billion in 2017⁹) as well as protected species and other resources that native communities depend on. CREP also supports an array of sensors designed to

⁸ <https://www.fishwatch.gov/sustainable-seafood/the-global-picture>

⁹ National Marine Fisheries Service. 2018. Fisheries of the United States, 2017. U.S. Department of Commerce, NOAA Current Fishery Statistics No. 2017. Available at: <https://www.fisheries.noaa.gov/content/fisheries-united-states-2017>.

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detect changes in nutrients, productivity, and biological abundances and diversity along a latitudinal gradient extending from the northern Bering Sea to the Chukchi and Beaufort Seas.

Antarctic Research

The U.S. Antarctic Marine Living Resources Convention Act requires that the Department of Commerce conduct 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’s Antarctic Ecosystem Research Program implements the U.S. AMLR program in support of U.S. policy interests related to Antarctic resource management. NMFS scientists operate land-based predator research (e.g., counting seals and penguins and monitoring their reproductive success, body condition, and diet) and ship-based research (e.g., conducting oceanographic, trawl surveys, acoustic surveys, and small boat operations) to describe the fundamental relationships between Antarctic krill, krill’s predators, finfish, and key environmental variables under changing sea ice conditions. This program is NOAA’s only dedicated, long term ecological presence in the Antarctic, with observations dating back to 1986.

(<https://swfsc.noaa.gov/aerd/>)

Information Analysis and Dissemination

Requirements and directives for data collection, management, and dissemination are included in the MSA, Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA), Aquaculture Act of 1980, Data Quality Act, and other policies and directives. The information analysis and dissemination program supports the NMFS infrastructure and staff that process, analyze, and produce data and disseminate it to resource managers and other users.

Fisheries Data Collections, Surveys, and Assessments

Funds in this budget line support data collection, data management, and fisheries stock assessment production. Providing accurate and timely assessments of fish and shellfish stocks that support commercial and recreational fisheries is one of NMFS’ core functions. Stock assessments provide the technical basis for fishery management decisions, such as setting annual catch limits (ACLs) to achieve optimum yield from the fishery while avoiding overfishing and ecosystem harm. Stock assessment models estimate a stock’s status over time and forecast future dynamics to advise fishery managers in their development of sustainable harvest levels. They are most reliable when they incorporate high quality data on fishery removals, stock abundance and biology, and ecosystem and environmental variability. (<https://www.st.nmfs.noaa.gov/stock-assessment/stock-assessment-101>)

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The following are some of the major programs and activities funded within the budget line:

Expand Annual Stock Assessments

Activities include: catch monitoring and surveys; data analysis and stock assessment modeling; advanced sampling technologies; habitat, climate and other ecosystem indicators; and stock assessment model improvements. In addition, NMFS addresses critical gaps in stock assessments as identified in program reviews and the implementation of the new stock assessment improvement plan and prioritization process. This process defines target frequency and assessment levels for each stock and facilitates the implementation of a next generation stock assessment framework. This framework includes assessments linked to climate, ecosystem, and habitat dynamics where appropriate, and provides baseline monitoring for all federally-managed fish stocks.

(<https://www.st.nmfs.noaa.gov/stock-assessment/future-of-stock-assessment>)

Fisheries Statistics

NMFS manages and conducts data collection, data processing, statistical analysis, information management, and statistical reporting activities for commercial and recreational fisheries. Accurate data and reliable statistics on fishing effort and catch are essential for assessing fish stocks, as well as for monitoring performance relative to wild fishery management targets and aquaculture objectives.

Fish Information Networks (FINs)

This program supports several 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.

These programs collect data and manage information on fishing participation, fishing effort, and catch. They also help collect fishery-dependent biological data needed for stock assessments. (<https://www.st.nmfs.noaa.gov/data/fis/structure/partnerships>)

Survey and Monitoring Projects

Projects include support for bluefin tuna tagging research, red snapper monitoring and research, West Coast groundfish surveys, Alaska extended jurisdiction programs, Maine and New Hampshire inshore trawl surveys, 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 FSSI Stocks with Adequate Population Assessments and Forecasts* (performance indicator 3.4).

American Fisheries Act (AFA)

NMFS collects data to support the following management measures for the AFA: 1) regulations that limit access and allocate Bering Sea and Aleutian Islands (BSAI) pollock to the fishing and processing sectors of the BSAI pollock fishery, 2) regulations governing

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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.

Cooperative Research

NMFS conducts cooperative research to enable commercial and recreational fishermen to become involved in collecting fundamental fisheries information that supports 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. (<https://www.st.nmfs.noaa.gov/cooperative-research/index>)

Marine Resources Monitoring, Assessment, and Prediction Program (MARMAP)

MARMAP is a cooperative fisheries project of NMFS and the South Carolina Marine Resources Research Institute (MRRI). For more than 40 years, the MRRI has conducted fishery-independent surveys and research on groundfish, reef fish, and coastal pelagic fishes between Cape Lookout, North Carolina and Cape Canaveral, Florida.

Southeast Area Monitoring and Assessment Program (SEAMAP)

SEAMAP supports the collection of fishery-independent data through state, Federal, and university partnerships by way of cooperative agreements. (<https://www.fisheries.noaa.gov/southeast/funding-and-financial-services/southeast-area-monitoring-and-assessment-program-seamap>)

Observers and Training

This budget line supports information and analyses on the biological, ecological, economic, and social aspects of the Nation's fisheries resources. The scientific data collected by observer programs provide 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. The authority to place observers on commercial fishing and processing vessels is provided by the MSA, MMPA, and ESA. Fisheries observer programs are proven, unbiased, and valuable sources of information on the Nation's fisheries, and are a reliable and cost-effective means to collect fishery-dependent data.

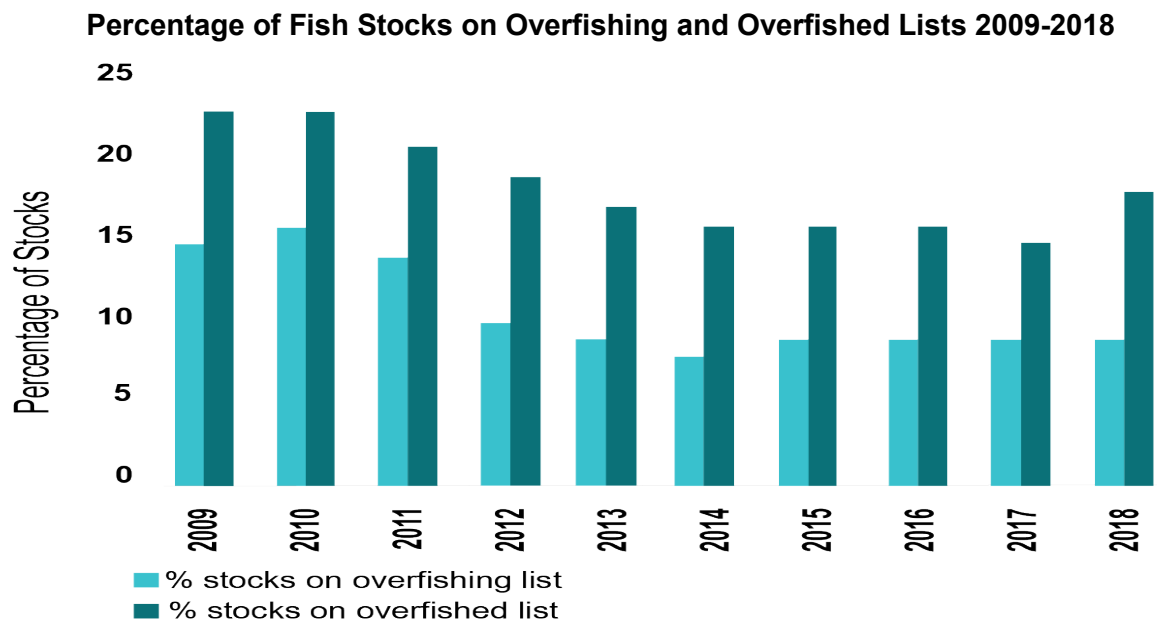
Observers monitor fishing activities across all five NMFS regions, and collect data for a range of conservation and management issues in various fisheries. This includes information on fishing practices, vessel and gear characteristics, fishing locations and times, environmental conditions within the fishing grounds, catch and bycatch, and socio-economic data.

(<https://www.fisheries.noaa.gov/topic/fishery-observers>)

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Fisheries Management Programs and Services

Under the MSA and other fisheries legislation, this budget line supports: management actions to effectively prevent and eliminate overfishing, rebuild overfished stocks, support sustainable aquaculture, develop and implement catch share programs, and implement ecosystem-based management to support sustainable fisheries, fishing businesses, and communities. As a result of this work 45 fish stocks since 2000 have been rebuilt and the number of stocks experiencing overfishing, or determined to be overfished are at near all-time lows.



(Annual Report to Congress: Status of Stocks 2018. <https://www.fisheries.noaa.gov/feature-story/2018-status-us-fisheries-report>)

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The following are some of the major programs and activities funded within the budget line:

Fisheries Management Base

These funds support NMFS staff efforts to deliver the following services, including analysis and decision-making to support fisheries management and regulatory implementation:

- Develop, implement, monitor and adjust (if required) Annual Catch Limits (ACLs) and Accountability Measures (AMs)
- Implement MSA International Requirements of international fishery management organizations
- Combat IUU Fishing [Note: Enforcement actions required to prosecute and deter IUU fisheries actions are covered in the NMFS Enforcement Activity]
- Develop and promulgate National Standard Guidance
- Support Regional Fishery Management Councils
- Incorporate Electronic Monitoring and Reporting technologies into fishery management

National Catch Share Program

NMFS supports the development and implementation of catch share programs where determined appropriate by the regional fishery management councils. "Catch share" is a general term for strategies that allocate a specific portion of the total allowable fishery catch to individuals, cooperatives, communities, or other entities. These programs have numerous benefits including increased flexibility for fishermen to determine when and how they fish. "Catch share" programs are a market-based approach to fisheries management that allocate a specific portion of the total allowable fishery catch to individuals, cooperatives, communities, or other entities. Depending on the nature of the fishery, catch share programs can provide significant advantages including ensuring annual catch limits are not exceeded, reducing costs to produce seafood, market gluts, and bycatch, extending fishing seasons, and improving fishermen's safety. The National Catch Share Program implements improvements requested by the fishing industry and the Regional Councils. Types of improvements may include enhancing data collection efficiency and effectiveness, and accuracy and timeliness of analyses on the biological, ecological, and socio-economic aspects of catch share fisheries. Further, the Magnuson-Stevens Act requires that catch shares be regularly reviewed to ensure programs are meeting their stated goals and the goals of the Act.

Reducing Bycatch

NMFS supports research on gear technologies that reduce bycatch and bycatch mortality. Reducing bycatch can save fishing jobs by preventing fishery closures due to interactions with endangered species or attainment of strict bycatch quotas. This funding supports

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the Bycatch Reduction Engineering Program external competitive grants program, which supports innovative gear designs and fishing techniques to minimize bycatch.

Product Quality and Safety

NMFS helps ensure that the Nation's seafood industry is economically sustainable and complies with food regulations. Funding supports the National Seafood Inspection Laboratory, which provides an analysis laboratory, data management, and regulatory compliance risk analysis. Voluntary services are also part of the program, and include sanitation evaluation, product inspection and certification, auditing of food quality and safety programs, and training.

Aquaculture

NMFS is one of the three NOAA Line Offices that support NOAA's Marine Aquaculture Program, whose mission is to provide science, services, and policies to support the significant expansion and sustainability of U.S. marine aquaculture. Each NOAA Line Office has distinct and complementary roles:

- NMFS leads the program and focuses on developing policies, regulations, and science-based tools for management to support streamlined permitting systems. (<https://www.fisheries.noaa.gov/topic/aquaculture>)
- The Office of Oceanic and Atmospheric Research's (OAR) National Sea Grant College Program supports industry development and extension with integrated research and technology transfers primarily through competitive grants. (<https://seagrant.noaa.gov/Our-Work/Aquaculture>)
- NOS supports development of coastal planning tools to inform siting decisions (for example: <https://coastalscience.noaa.gov/research/marine-spatial-ecology/aquaculture/>)

This budget line supports a key Department of Commerce strategic objective to increase aquaculture production in order to increase the Nation's seafood supply, improve our trade balance with other nations, and create jobs.¹⁰ NMFS' aquaculture activities are led by the Office of Aquaculture (OAQ). NMFS' base funding supports the following priority areas, which are guided by OAQ's 2016 Strategic Plan¹¹:

- Increase regulatory efficiency: Develop coordinated, consistent, and streamlined regulatory processes for the marine aquaculture sector in collaboration with state and Federal partners.
- Develop science-based tools for sustainable management: Develop science-based tools for management to support

¹⁰ United States. Department of Commerce. 2017. Strategic Plan, 2018-2022: Helping the Economy Grow. p. 9.

¹¹ National Marine Fisheries Service. 2015. Marine Aquaculture Strategic Plan FY 2016-2020. U.S. Department of Commerce. available at: <https://www.fisheries.noaa.gov/webdam/download/65605834>

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environmentally sustainable marine aquaculture, and ensure the efficient review of aquaculture permit applications using best available science.

- Improve technical and science-based production tools and techniques (e.g., disease prevention and treatment) in support of the Nation's shellfish farmers.
- Support regional pilot projects: Conduct regional pilot projects (e.g., kelp and seaweed farming, offshore aquaculture) in collaboration with industry and other partners.
- Inform the public: Develop outreach products and conduct activities to improve public understanding of marine aquaculture.

The U.S. is a major consumer of aquaculture products, yet is a minor producer. The Nation imports more than 80 percent of its seafood¹², over half of which is from foreign-produced aquaculture. This reliance on foreign imports resulted in an over \$16 billion seafood trade deficit in 2018, moves potential seafood jobs overseas, and poses a risk to food security. Given wild fish stocks are at or near maximum harvest levels, the single greatest opportunity to increase the seafood supply is through domestic aquaculture. In 2016, U.S. marine aquaculture production decreased from the prior year by 10.0 million pounds (10 percent); however, the value of production increased by \$24.3 million (6 percent)¹³ (see <https://www.fisheries.noaa.gov/national/aquaculture/us-aquaculture> for aquaculture production highlights). Significant acceleration in aquaculture production is needed over the next several years to substantially reduce the seafood trade deficit.

Salmon Management Activities

This budget line supports NMFS' 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 to 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 required to implement the treaty provisions. These programs are carried out in fisheries and rivers located from southeast Alaska to Oregon, including the Columbia River. U.S. and Canadian Parties negotiated amendments to five Pacific Salmon Treaty fishing regimes contained in Annex IV that expired at the end of 2018. Development and implementation of a

¹² <https://www.fishwatch.gov/sustainable-seafood/the-global-picture>

¹³ National Marine Fisheries Service (2018) Fisheries of the United States, 2017. U.S. Department of Commerce, NOAA Current Fishery Statistics No. 2017. Available at: <https://www.fisheries.noaa.gov/content/fisheries-united-states-2017>. (Note: due to data availability, aquaculture production data lags the rest of the publication by one year.)

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new agreement began in 2019, in which conservation concerns are addressed through recommendations for reduced harvest of Chinook salmon in both United States and Canadian fisheries. With the funds provided in FY 2020, NMFS will develop a spend plan and support these new projects.

Base funds also support genetic stock identification research which includes the collection, analysis, and testing of methods that rely on genetics-based data to identify and track the location of Federally protected stocks in the wild. Genetic stock identification programs improve salmon management and avoid harvest of weak salmon stocks by identifying the movement and location of individual stocks.

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 FMPs aimed at preventing and eliminating overfishing and rebuilding overfished stocks for the Nation's fisheries. Funding in this budget line is divided among the eight Councils and is used for their operating costs (e.g., staff, rent, public meetings, Council member salaries, and travel). Funding also supports the activities of the Interstate Marine Fisheries Commissions, and International Fisheries Commissions. Funds provide critical operational support to the commissions and states for development and implementation of sustainable fishery management measures.

Interjurisdictional Fisheries Grants

The Interjurisdictional Fisheries Act of 1986 (IFA) is a formula-based financial assistance program to promote state activities in support of the management of interjurisdictional fisheries resources. Any state, either directly or through an interstate commission, may submit a grant proposal that supports management of fishery resources that: 1) occur in waters under the jurisdiction of one or more states and in the U.S. EEZ; 2) are managed under an interstate FMP; or (3) migrate between the waters under the jurisdiction of two or more states bordering on the Great Lakes. Past examples of projects funded through these grants include research on: blue crab spawning in Florida; American lobster settlement in Maine; and, fishery catch statistics, stock status, and management actions for state of Alaska managed fisheries including sablefish, lingcod, black and blue rockfish, and Pacific cod.

PROGRAM CHANGES FOR FY 2021:

NOAA requests a net decrease of \$76,260,000 and 14 FTE/14 positions in program changes for the Fisheries Science and Management Activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table - 2).

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		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Fisheries and Ecosystem	Pos./BA	629	150,018	629	143,842	0	(6,176)
Science Programs & Services	FTE/OBL	599	150,018	599	143,842	0	(6,176)

Fisheries Science Activities (-\$6,176, 0 FTE/0 Positions) – This request will reduce programmatic support for science activities in NMFS science centers and headquarters program offices. NMFS will review fisheries science activities nationwide, and through streamlining and efficient management actions, NMFS will prioritize funding for fisheries science activities within base resources. NMFS will continue to focus on key science objectives, including: preventing and eliminating overfishing, rebuilding overfished stocks, supporting sustainable aquaculture, and other research to support fishing communities. Specific activities under this funding line include: economics and social sciences research, fisheries oceanography, climate regimes and ecosystem research, and information analysis and dissemination to resource managers. This will likely reduce support for science used for analysis and decision-making that supports ecosystem approaches to fisheries management, fishery management plans and regulatory implementation, and enforcement to ensure compliance with regulations. NMFS will continue to support its science and manage enterprise within existing resources.

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	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations	(6,176)	(6,176)	(6,176)	(6,176)	(6,176)
Uncapitalized	(6,176)	(6,176)	(6,176)	(6,176)	(6,176)
Budget Authority	(6,176)	(6,176)	(6,176)	(6,176)	(6,176)
Outlays	(3,829)	(3,829)	(3,829)	(3,829)	(3,829)
FTE	0	0	0	0	0

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Activity: Fisheries Science and Management
Subactivity: Fisheries and Ecosystem Science Programs and Services

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	60,228	61,987	65,746	65,746	0
11.3 Other than full-time permanent	648	667	707	707	0
11.5 Other personnel compensation	888	914	969	969	0
11.8 Special personnel services payments	84	86	91	91	0
11.9 Total personnel compensation	61,848	63,654	67,514	67,514	0
12.1 Civilian personnel benefits	20,299	20,892	22,159	22,159	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	2,981	3,068	3,068	2,049	(1,019)
22 Transportation of things	532	547	547	547	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	2,816	2,898	2,898	2,898	0
23.2 Rental payments to others	376	387	387	387	0
23.3 Communications, utilities, and misc. charges	5,048	5,196	5,196	5,196	0
24 Printing and reproduction	88	91	91	91	0
25.1 Advisory and assistance services	11,456	11,790	11,790	11,790	0
25.2 Other services from non-Federal sources	17,904	18,427	16,891	12,391	(4,500)
25.3 Other goods and services from Federal sources	950	978	978	978	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,823	3,935	3,935	3,278	(657)
31 Equipment	2,404	2,474	2,474	2,474	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	11,746	12,089	12,089	12,089	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	1	1	1	1	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	142,272	146,427	150,018	143,842	(6,176)

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		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Fisheries and Ecosystem	Pos./BA	629	150,018	629	147,518	0	(2,500)
Science Programs & Services	FTE/OBL	599	150,018	599	147,518	0	(2,500)

Northeast Groundfish Research (-\$2,500, 0 FTE/0 Positions) – This request will eliminate Congressionally directed funding provided in FY 2020 appropriations for New England groundfish research. NOAA recently studied the effects of changing climatic conditions and warming waters on the fishery, including stock health and natural mortality through ten research projects.¹⁴ Projects included: development of stock assessment models; improved spatial management of living marine resources through an increased understanding of spatial and temporal distributions, migration, and phenology; work with NOAA Oceanic and Atmospheric Research and academic scientists to develop short-term (day to year) and medium-term (year to decade) living marine resource forecasting products; research on the effects of multiple climate factors on living marine resources with a goal of improving assessments and scientific advice provided to managers; and ecosystem survey work in the Northeast U.S. shelf ecosystem.

¹⁴ More on ten funded NE groundfish projects: https://www.nefsc.noaa.gov/rcb/projects/groundfish-and-climate/?utm_medium=email&utm_source=govdelivery

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	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations	(2,500)	(2,500)	(2,500)	(2,500)	(2,500)
Uncapitalized	(2,500)	(2,500)	(2,500)	(2,500)	(2,500)
Budget Authority	(2,500)	(2,500)	(2,500)	(2,500)	(2,500)
Outlays	(1,550)	(1,550)	(1,550)	(1,550)	(1,550)
FTE	0	0	0	0	0

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Activity: Fisheries Science and Management
Subactivity: Fisheries and Ecosystem Science Programs and Services

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	60,228	61,987	65,746	65,746	0
11.3 Other than full-time permanent	648	667	707	707	0
11.5 Other personnel compensation	888	914	969	969	0
11.8 Special personnel services payments	84	86	91	91	0
11.9 Total personnel compensation	61,848	63,654	67,514	67,514	0
12.1 Civilian personnel benefits	20,299	20,892	22,159	22,159	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	2,981	3,068	3,068	3,068	0
22 Transportation of things	532	547	547	547	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	2,816	2,898	2,898	2,898	0
23.2 Rental payments to others	376	387	387	387	0
23.3 Communications, utilities, and misc. charges	5,048	5,196	5,196	5,196	0
24 Printing and reproduction	88	91	91	91	0
25.1 Advisory and assistance services	11,456	11,790	11,790	11,790	0
25.2 Other services from non-Federal sources	17,904	18,427	16,891	16,891	0
25.3 Other goods and services from Federal sources	950	978	978	978	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,823	3,935	3,935	3,935	0
31 Equipment	2,404	2,474	2,474	2,474	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	11,746	12,089	12,089	9,589	(2,500)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	1	1	1	1	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	142,272	146,427	150,018	145,380	(2,500)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**

(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Fisheries and Ecosystem Science	Pos./BA	629	150,018	617	147,051	(12)	(2,967)
Programs & Services	FTE/OBL	599	150,018	587	147,051	(12)	(2,967)

Antarctic Research (-\$2,967, -12 FTE/-12 Positions) – This request will eliminate funding for NOAA’s Antarctic Ecosystem Research Program. With the termination of the program, NMFS will reduce staffing through attrition, as well as transitioning of approximately 12 FTEs into other positions for which they are qualified, and will work diligently to mitigate any impact to affected employees. NMFS will also discontinue the research at the Southwest Fisheries Science Center in support of the U.S. commitment to the international treaty to conserve living marine resources in the Antarctic - the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR), and support to the U.S. Antarctic Marine Living Resources (AMLR) Convention Act. The U.S. AMLR Convention Act requires that the Department of Commerce conduct directed scientific research to “achieve the United States goal of effective implementation of the objectives of the Convention.” NMFS does not have any regulatory responsibilities in the Antarctic.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

	2021	2022	2023	2024	2025
Performance Measure:					
Number of Antarctic fish assessments					
With Decrease	0	0	0	0	0
Without Decrease	26	26	26	26	26
Outyear Costs:					
Direct Obligations	(2,967)	(2,967)	(2,967)	(2,967)	(2,967)
Uncapitalized	(2,967)	(2,967)	(2,967)	(2,967)	(2,967)
Budget Authority	(2,967)	(2,967)	(2,967)	(2,967)	(2,967)
Outlays	(1,840)	(1,840)	(1,840)	(1,840)	(1,840)
FTE	(12)	(12)	(12)	(12)	(12)
Positions	(12)	(12)	(12)	(12)	(12)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Fisheries Science and Management
Subactivity: Fisheries and Ecosystem Science Programs and Services

Title	Grade	Number	Annual Salary	Total Salaries
Fisheries Biologist	ZP-III	(2)	71,638	(143,276)
Fisheries Biologist	ZP-IV	(3)	102,104	(306,312)
Research Biologist	ZP-III	(2)	71,638	(143,276)
Research Biologist	ZP-IV	(3)	102,104	(306,312)
Supervisory Fisheries Biologists	ZP-V	(2)	141,924	(283,848)
Total		(12)		(1,183,024)
Less lapse	0.00%	0		0
Total full-time permanent (FTE)		(12)		(1,183,024)
2021 Pay Adjustment (1%)	1.00%			0
Total				(1,183,024)

Personnel Data

Full-time Equivalent Employment	
Full-time permanent	(12)
Other than full-time permanent	0
Total	(12)

Authorized Positions:

Full-time permanent	(12)
Other than full-time permanent	0
Total	(12)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Fisheries Science and Management
Subactivity: Fisheries and Ecosystem Science Programs and Services

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	60,228	61,987	65,746	64,551	(1,183)
11.3 Other than full-time permanent	648	667	707	707	0
11.5 Other personnel compensation	888	914	969	969	0
11.8 Special personnel services payments	84	86	91	91	0
11.9 Total personnel compensation	61,848	63,654	67,514	66,319	(1,183)
12.1 Civilian personnel benefits	20,299	20,892	22,159	21,753	(406)
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	2,981	3,068	3,068	2,942	(126)
22 Transportation of things	532	547	547	461	(86)
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	2,816	2,898	2,898	2,898	0
23.2 Rental payments to others	376	387	387	387	0
23.3 Communications, utilities, and misc. charges	5,048	5,196	5,196	5,196	0
24 Printing and reproduction	88	91	91	91	0
25.1 Advisory and assistance services	11,456	11,790	11,790	11,790	0
25.2 Other services from non-Federal sources	17,904	18,427	16,891	16,188	(715)
25.3 Other goods and services from Federal sources	950	978	978	978	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,823	3,935	3,935	3,749	(186)
31 Equipment	2,404	2,474	2,474	2,209	(265)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	11,746	12,089	12,089	12,089	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	1	1	1	1	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	142,272	146,427	150,018	147,051	(2,967)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Fisheries Data Collection, Surveys & Assessments	Pos./BA	482	177,410	482	166,968	0	(10,442)
	FTE/OBL	459	177,410	459	166,968	0	(10,442)

Fisheries Surveys and Stock Assessments (-\$10,442, 0 FTE/0 Positions) – This request reduces the additional funding provided in FY 2020 appropriations for targeted fisheries surveys and assessments in the Gulf of Mexico and South Atlantic. NOAA will use the additional funds provided in FY 2020 as directed to continue agency independent, alternative approaches to stock assessments in the Gulf of Mexico and South Atlantic. NOAA will continue to conduct surveys and produce stock assessments nationwide as part of its national stock assessment process.

	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations	(10,442)	(10,442)	(10,442)	(10,442)	(10,442)
Uncapitalized	(10,442)	(10,442)	(10,442)	(10,442)	(10,442)
Budget Authority	(10,442)	(10,442)	(10,442)	(10,442)	(10,442)
Outlays	(6,474)	(6,474)	(6,474)	(6,474)	(6,474)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Fisheries Science and Management
Subactivity: Fisheries Data Collections, Surveys, and Assessments

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	44,384	46,388	49,335	49,335	0
11.3 Other than full-time permanent	460	481	512	512	0
11.5 Other personnel compensation	1,773	1,853	1,971	1,971	0
11.8 Special personnel services payments	1,805	1,886	2,006	2,006	0
11.9 Total personnel compensation	48,422	50,608	53,823	53,823	0
12.1 Civilian personnel benefits	15,366	16,059	17,079	17,079	0
13 Benefits for former personnel	4	4	4	4	0
21 Travel and transportation of persons	2,483	2,595	2,595	2,595	0
22 Transportation of things	465	486	486	486	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	2,604	2,721	2,721	2,721	0
23.2 Rental payments to others	315	329	329	329	0
23.3 Communications, utilities, and misc. charges	7,065	7,384	7,384	7,384	0
24 Printing and reproduction	48	50	50	50	0
25.1 Advisory and assistance services	15,756	16,466	16,466	11,159	(5,307)
25.2 Other services from non-Federal sources	17,052	17,821	17,821	17,821	0
25.3 Other goods and services from Federal sources	496	519	519	519	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	30	31	31	31	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,900	4,076	4,076	4,076	0
31 Equipment	1,145	1,196	1,196	1,196	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	51,053	53,356	52,822	47,687	(5,135)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	8	8	8	8	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	166,212	173,709	177,410	166,968	(10,442)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Fisheries Data Collection, Surveys & Assessments	Pos./BA	482	177,410	482	174,494	0	(2,916)
	FTE/OBL	459	177,410	459	174,494	0	(2,916)

Cooperative Research Program (-\$2,916, 0 FTE/0 Positions) – This request reduces funding for the Cooperative Research program, which will lead to approximately ten fewer projects funded in FY 2021. The program will continue to execute cooperative research with industry, fishermen, and other stakeholders.

Since 2001, the Cooperative Research program has provided a means for commercial and recreational fishermen to participate in the collection of fundamental fisheries information to support the development and evaluation of management options. This work involves regional partnerships with a broad range of external stakeholders, including state and tribal managers and scientists (e.g., interstate fishery commissions), fishing industry participants (e.g., commercial and recreational fishermen), and academic institutions. Partnerships occur in all phases of the program, including design, research, analysis, and communication of results.

Cooperative research assists scientists and managers by providing information to supplement the data currently collected through existing Federal research programs. The information provided can cover a wide range of research areas, including, but not limited to: fishery dependent data; life history studies; conservation engineering; species abundance and distribution; habitat studies; and, socio-economic studies. Benefits of cooperative research include increased data quantity and quality, inclusion of stakeholders' knowledge in science and management, improved relevance of research to fisheries management, and reduced science costs through leveraging and cost sharing.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

	2021	2022	2023	2024	2025
Performance Measure:					
Number of Cooperative Research projects funded (annual)					
With Decrease	31	31	31	31	31
Without Decrease	41	41	41	41	41
Outyear Costs:					
Direct Obligations	(2,916)	(2,916)	(2,916)	(2,916)	(2,916)
Uncapitalized	(2,916)	(2,916)	(2,916)	(2,916)	(2,916)
Budget Authority	(2,916)	(2,916)	(2,916)	(2,916)	(2,916)
Outlays	(1,808)	(1,808)	(1,808)	(1,808)	(1,808)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Fisheries Science and Management
Subactivity: Fisheries Data Collections, Surveys, and Assessments

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	44,384	46,388	49,335	49,335	0
11.3 Other than full-time permanent	460	481	512	512	0
11.5 Other personnel compensation	1,773	1,853	1,971	1,971	0
11.8 Special personnel services payments	1,805	1,886	2,006	2,006	0
11.9 Total personnel compensation	48,422	50,608	53,823	53,823	0
12.1 Civilian personnel benefits	15,366	16,059	17,079	17,079	0
13 Benefits for former personnel	4	4	4	4	0
21 Travel and transportation of persons	2,483	2,595	2,595	2,595	0
22 Transportation of things	465	486	486	486	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	2,604	2,721	2,721	2,721	0
23.2 Rental payments to others	315	329	329	329	0
23.3 Communications, utilities, and misc. charges	7,065	7,384	7,384	7,384	0
24 Printing and reproduction	48	50	50	50	0
25.1 Advisory and assistance services	15,756	16,466	16,466	15,008	(1,458)
25.2 Other services from non-Federal sources	17,052	17,821	17,821	17,821	0
25.3 Other goods and services from Federal sources	496	519	519	519	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	30	31	31	31	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,900	4,076	4,076	4,076	0
31 Equipment	1,145	1,196	1,196	1,196	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	51,053	53,356	52,822	51,364	(1,458)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	8	8	8	8	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	166,212	173,709	177,410	174,494	(2,916)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u>	<u>Amount</u>
Observers &	Pos./BA	156	56,072	156	44,831	0	(11,241)
Training	FTE/OBL	149	56,072	149	44,831	0	(11,241)

Northeast At Sea Monitors and North Pacific Fishery Observers (-\$11,241, 0 FTE/0 Positions) – This request will reduce the additional funding provided in FY 2020 appropriations for the Northeast At-Sea Monitoring Program (ASM) and North Pacific Observing Program. An additional \$10.3 million was provided to fully fund the cost of ASM in the New England groundfish fishery, including at-sea and shoreside infrastructure costs. NOAA covered all industry costs for at-sea monitoring and data processing in fishing year 2018 (May 1, 2018, through April 30, 2019), as well as retained funding for potential out-year sea day costs for the industry. NOAA is continuing this same level of funding support for industry costs in fishing year 2019. Funds were also used to support at-sea monitor training and equipment, process samples, and continue development of electronic monitoring technologies that may reduce costs of or improve at-sea monitoring in the future. The request also reduces the additional \$1.0 million increase provided for the North Pacific Observer Program in FY 2020 appropriations. The FY 2021 budget includes \$6.3 million for the program, and NOAA will continue to cover costs to maintain core capabilities of this program.

	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
Outyear Costs:					
Direct Obligations	(11,241)	(11,241)	(11,241)	(11,241)	(11,241)
Uncapitalized	(11,241)	(11,241)	(11,241)	(11,241)	(11,241)
Budget Authority	(11,241)	(11,241)	(11,241)	(11,241)	(11,241)
Outlays	(6,969)	(6,969)	(6,969)	(6,969)	(6,969)
FTE	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLAS
(Dollar amounts in thousands)

Activity: Fisheries Science and Management
Subactivity: Observers and Training

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	11,468	13,465	14,259	14,259	0
11.3	79	93	98	98	0
11.5	161	189	200	200	0
11.8	0	0	0	0	0
11.9	11,708	13,747	14,558	14,558	0
12.1	4,236	4,973	5,266	5,266	0
13	0	0	0	0	0
21	350	411	411	411	0
22	145	170	170	170	0
23	0	0	0	0	0
23.1	1,154	1,355	1,355	1,355	0
23.2	6	7	7	7	0
23.3	415	487	487	487	0
24	26	30	30	30	0
25.1	3,990	4,684	4,684	4,684	0
25.2	23,189	27,223	27,223	15,982	(11,241)
25.3	37	43	43	43	0
25.4	0	0	0	0	0
25.5	0	0	0	0	0
25.6	0	0	0	0	0
25.7	0	0	0	0	0
25.8	0	0	0	0	0
26	602	707	707	707	0
31	475	558	558	558	0
32	0	0	0	0	0
33	0	0	0	0	0
41	488	573	573	573	0
42	0	0	0	0	0
43	0	0	0	0	0
44	0	0	0	0	0
99.9	46,821	54,968	56,072	44,831	(11,241)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Fisheries Management	Pos./BA	463	123,604	463	120,575	0	(3,029)
Programs & Services	FTE/OBL	441	123,604	441	120,575	0	(3,029)

Fisheries Management Programs and Services (-\$3,029, 0 FTE/0 Positions) – This request will reduce funding for lower priority activities but continue the most important analysis and decision-making to support fisheries management and regulatory implementation. Funding within this line supports management activities to ensure sustainability and apply an ecosystem-based management approach to the stewardship of the Nation’s marine fishery resources. This budget line also funds international agreements, education and outreach with the commercial and recreational fishing industry, and the development of fisheries regulations, Fisheries Management Plans, and amendments in order to maintain and restore productive stocks important to commercial, recreational, tribal, and subsistence fisheries. At this funding level, NMFS will continue to carry out these mandated activities, though actions may be reduced and/or delayed. NMFS will continue to engage with stakeholders and constituents to collect information and feedback on the impacts of regulatory changes intended to benefit local fishing communities, and develop and implement new regulations.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations	(3,029)	(3,029)	(3,029)	(3,029)	(3,029)
Uncapitalized	(3,029)	(3,029)	(3,029)	(3,029)	(3,029)
Budget Authority	(3,029)	(3,029)	(3,029)	(3,029)	(3,029)
Outlays	(1,878)	(1,878)	(1,878)	(1,878)	(1,878)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Fisheries Science and Management
Subactivity: Fisheries Management Programs and Services

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	46,519	49,056	52,040	52,040	0
11.3 Other than full-time permanent	258	272	289	289	0
11.5 Other personnel compensation	703	741	786	786	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	47,480	50,069	53,115	53,115	0
12.1 Civilian personnel benefits	16,204	17,089	18,128	18,128	0
13 Benefits for former personnel	1	1	1	1	0
21 Travel and transportation of persons	2,612	2,755	2,755	2,755	0
22 Transportation of things	30	32	32	32	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	1,435	1,514	1,514	1,514	0
23.2 Rental payments to others	1,021	1,077	1,077	1,077	0
23.3 Communications, utilities, and misc. charges	399	420	420	420	0
24 Printing and reproduction	144	152	152	152	0
25.1 Advisory and assistance services	5,364	5,657	5,657	5,657	0
25.2 Other services from non-Federal sources	24,198	25,519	25,519	22,490	(3,029)
25.3 Other goods and services from Federal sources	1,833	1,933	1,933	1,933	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	452	477	477	477	0
31 Equipment	552	583	583	583	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	15,700	16,557	12,240	12,240	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	1	1	1	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	117,425	123,836	123,604	120,575	(3,029)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Fisheries Management	Pos./BA	463	123,604	463	120,904	0	(2,700)
Programs & Services	FTE/OBL	441	123,604	441	120,904	0	(2,700)

Electronic Monitoring & Reporting (EM/ER) Implementation (-\$2,700, 0 FTE/0 Positions) – This request will reduce the Congressionally directed funding provided in FY 2020 appropriations for data collection and catch and effort validation to support timely implementation of electronic logbooks for the federally permitted charter-for-hire sector in the Gulf of Mexico. This budget also requests a program decrease in the NMFS Enforcement activity for State and Federal enforcement activities of electronic logbooks in this sector (see NMFS-96). NMFS will continue to support the development, testing, and installation of EM/ER technologies nationwide, including in the Gulf of Mexico and South Atlantic regions. NMFS will continue to consult with industry, working through the Fishery Management Councils (established under sections 1851 and 1852 of title 16, United States Code) to develop appropriate cost-sharing arrangements that are commensurate with the ex-vessel value of the fishery. NMFS will also continue to work with the charter for-hire recreational fishery fleet in the Gulf of Mexico and any regional fishery fleet interested in implementing EM/ER technologies to better track information that is currently collected through the use of human observers. NMFS will also continue support within existing resources for the implementation of EM/ER in the South Atlantic.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations	(2,700)	(2,700)	(2,700)	(2,700)	(2,700)
Uncapitalized	(2,700)	(2,700)	(2,700)	(2,700)	(2,700)
Budget Authority	(2,700)	(2,700)	(2,700)	(2,700)	(2,700)
Outlays	(1,674)	(1,674)	(1,674)	(1,674)	(1,674)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS**

(Dollar amounts in thousands)

Activity: Fisheries Science and Management
Subactivity: Fisheries Management Programs and Services

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	46,519	49,056	52,040	52,040	0
11.3	258	272	289	289	0
11.5	703	741	786	786	0
11.8	0	0	0	0	0
11.9	47,480	50,069	53,115	53,115	0
12.1	16,204	17,089	18,128	18,128	0
13	1	1	1	1	0
21	2,612	2,755	2,755	2,755	0
22	30	32	32	32	0
23	0	0	0	0	0
23.1	1,435	1,514	1,514	1,514	0
23.2	1,021	1,077	1,077	1,077	0
23.3	399	420	420	420	0
24	144	152	152	152	0
25.1	5,364	5,657	5,657	5,657	0
25.2	24,198	25,519	25,519	22,819	(2,700)
25.3	1,833	1,933	1,933	1,933	0
25.4	0	0	0	0	0
25.5	0	0	0	0	0
0025.6	0	0	0	0	0
25.7	0	0	0	0	0
25.8	0	0	0	0	0
26	452	477	477	477	0
31	552	583	583	583	0
32	0	0	0	0	0
33	0	0	0	0	0
41	15,700	16,557	12,240	12,240	0
42	0	0	0	0	0
43	0	1	1	1	0
44	0	0	0	0	0
99.9	117,425	123,836	123,604	120,904	(2,700)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u>	<u>Amount</u>
Fisheries Management	Pos./BA	463	123,604	463	122,404	0	(1,200)
Programs and Services	FTE/OBL	441	123,604	441	122,404	0	(1,200)

Seafood Import Monitoring Program Implementation (-\$1,200, 0 FTE/0 Positions) – This request will reduce the additional funding provided in FY 2020 appropriations for specific implementation requirements of the Seafood Import Monitoring Program (SIMP). The Seafood Import Monitoring Program establishes reporting and recordkeeping requirements for imports of priority seafood products to prevent illegal, unreported, and unregulated seafood from entering U.S. commerce. NOAA received \$1.2 million in FY 2018 to implement the expansion of SIMP to include shrimp and abalone. NOAA used the additional funds to develop the first-ever traceability program for U.S. aquacultured shrimp and abalone. This domestic program will help NMFS verify that U.S. aquacultured shrimp and abalone were lawfully produced by providing information to trace production to entry into U.S. commerce. Establishing comparable requirements for domestic aquacultured shrimp and abalone allows imports to be subject to SIMP requirements—further leveling the playing field for U.S. fishermen, aquaculture producers, and seafood producers who play by the rules. SIMP compliance for shrimp and abalone imports became effective on December 31, 2018. In FY 2019, NOAA used these funds to invest in information technology improvements and program support capabilities. In FY 2021, NOAA will continue the program through dedicated SIMP base funds of approximately \$2.4 million.

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Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations	(1,200)	(1,200)	(1,200)	(1,200)	(1,200)
Uncapitalized	(1,200)	(1,200)	(1,200)	(1,200)	(1,200)
Budget Authority	(1,200)	(1,200)	(1,200)	(1,200)	(1,200)
Outlays	(744)	(744)	(744)	(744)	(744)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS**

(Dollar amounts in thousands)

Activity: Fisheries Science and Management Programs
Subactivity: Fisheries Management Programs and Services

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
11.1	46,519	49,056	52,040	52,040	0
11.3	258	272	289	289	0
11.5	703	741	786	786	0
11.8	0	0	0	0	0
11.9	47,480	50,069	53,115	53,115	0
12.1	16,204	17,089	18,128	18,128	0
13	1	1	1	1	0
21	2,612	2,755	2,755	2,755	0
22	30	32	32	32	0
23	0	0	0	0	0
23.1	1,435	1,514	1,514	1,514	0
23.2	1,021	1,077	1,077	1,077	0
23.3	399	420	420	420	0
24	144	152	152	152	0
25.1	5,364	5,657	5,657	5,657	0
25.2	24,198	25,519	25,519	24,319	(1,200)
25.3	1,833	1,933	1,933	1,933	0
25.4	0	0	0	0	0
25.5	0	0	0	0	0
25.6	0	0	0	0	0
25.7	0	0	0	0	0
25.8	0	0	0	0	0
26	452	477	477	477	0
31	552	583	583	583	0
32	0	0	0	0	0
33	0	0	0	0	0
41	15,700	16,557	12,240	12,240	0
42	0	0	0	0	0
43	0	1	1	1	0
44	0	0	0	0	0
99.9	117,425	123,836	123,604	122,404	(1,200)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Fisheries Management	Pos./BA	463	123,604	463	119,629	0	(3,975)
Programs & Services	FTE/OBL	441	123,604	441	119,629	0	(3,975)

National Catch Share Program (-\$3,975, 0 FTE/0 Positions) – This request will reduce support for implementation of new catch share programs; data collection improvements for recently implemented programs; and, national-level coordination to improve efficiency in the development and implementation of catch share programs. NOAA will reduce its investment in specific tools, which support more consistent data collection and increase program efficiencies and performance. NOAA will continue to provide support for the 16 programs currently under catch share management.

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

	2021	2022	2023	2024	2025
Performance Measure:					
Number of key objectives met by catch share programs					
With Decrease	19	19	19	19	19
Without Decrease	19	20	20	20	20
Outyear Costs:					
Direct Obligations	(3,975)	(3,975)	(3,975)	(3,975)	(3,975)
Uncapitalized	(3,975)	(3,975)	(3,975)	(3,975)	(3,975)
Budget Authority	(3,975)	(3,975)	(3,975)	(3,975)	(3,975)
Outlays	(2,465)	(2,465)	(2,465)	(2,465)	(2,465)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Fisheries Science and Management
Subactivity: Fisheries Management Programs and Services

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	46,519	49,056	52,040	52,040	0
11.3 Other than full-time permanent	258	272	289	289	0
11.5 Other personnel compensation	703	741	786	786	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	47,480	50,069	53,115	53,115	0
12.1 Civilian personnel benefits	16,204	17,089	18,128	18,128	0
13 Benefits for former personnel	1	1	1	1	0
21 Travel and transportation of persons	2,612	2,755	2,755	2,755	0
22 Transportation of things	30	32	32	32	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	1,435	1,514	1,514	1,514	0
23.2 Rental payments to others	1,021	1,077	1,077	1,077	0
23.3 Communications, utilities, and misc. charges	399	420	420	420	0
24 Printing and reproduction	144	152	152	152	0
25.1 Advisory and assistance services	5,364	5,657	5,657	5,657	0
25.2 Other services from non-Federal sources	24,198	25,519	25,519	23,144	(2,375)
25.3 Other goods and services from Federal sources	1,833	1,933	1,933	1,933	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	452	477	477	477	0
31 Equipment	552	583	583	583	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	15,700	16,557	12,240	10,640	(1,600)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	1	1	1	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	117,425	123,836	123,604	119,629	(3,975)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Aquaculture	Pos./BA	28	15,523	28	13,121	0	(2,402)
	FTE/OBL	27	15,523	27	13,121	0	(2,402)

Aquaculture (-\$2,402, 0 FTE/0 Positions) – This request reduces funding for NMFS to coordinate and streamline interagency marine aquaculture permitting requirements. NOAA will reduce resources available to resolve regulatory bottlenecks (e.g., environmental compliance, cooperation and coordination with state permitting authorities) relative to Federal approval of marine aquaculture permits. However, NOAA will continue to focus on aquaculture science and streamlined permitting with remaining funds.

NOAA will maintain priority research in support of management and industry development in marine aquaculture and continue to support regional marine aquaculture pilot projects in collaboration with industry and other partners. The funding will support science capacity, especially at the Northeast and Northwest Fishery Science Centers, to advance research addressing key industry bottlenecks (e.g., hatchery methods, disease, genetics and genomics, culture system engineering, feed development) and science to support permitting and management decisions (e.g., evaluating habitat and water quality impacts, risk of escapes).

There is substantial untapped potential to increase marine aquaculture production in the U.S. The U.S. has the second largest Exclusive Economic Zone (EEZ) in the world, yet ranks 16th in global aquaculture production.¹⁵ NOAA will continue to support the growth of U.S.-sourced seafood by allowing NMFS to develop, test, and transfer the results of aquaculture research to the seafood industry in a manner that benefits the Nation’s economy and creates new jobs. Domestic aquaculture provides an alternative livelihood for coastal communities, including fishermen, and year-round commerce in coastal regions that have limited economic opportunities. Supporting the development of sustainable marine aquaculture in the U.S. can also help meet the growing demand for seafood.

¹⁵National Marine Fisheries Service. 2018. Fisheries of the United States, 2017. U.S. Department of Commerce, NOAA Current Fishery Statistics No. 2017, p. viii. Available at: <https://www.fisheries.noaa.gov/feature-story/fisheries-united-states-2017>.

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(Dollar amounts in thousands)

NOAA's aquaculture program supports Executive Order 13840: Ocean Policy to Advance the Economic, Security, and Environmental Interests of the United States.

	2021	2022	2023	2024	2025
Performance Measure:					
Percent reduction in total permitting time					
With decrease	5	10	10	15	15
Without decrease	5	15	25	30	30
Number of research advances annually					
With decrease	20	20	20	20	20
Without decrease	29	29	29	29	29
Outyear Costs:					
Direct Obligations	(2,402)	(2,402)	(2,402)	(2,402)	(2,402)
Uncapitalized	(2,402)	(2,402)	(2,402)	(2,402)	(2,402)
Budget Authority	(2,402)	(2,402)	(2,402)	(2,402)	(2,402)
Outlays	(1,489)	(1,489)	(1,489)	(1,489)	(1,489)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Fisheries Science and Management
Subactivity: Aquaculture

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	3,043	3,263	3,472	3,472	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	11	12	13	13	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	3,054	3,275	3,485	3,485	0
12.1 Civilian personnel benefits	923	990	1,053	1,053	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	305	327	327	327	0
22 Transportation of things	1	1	1	1	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	119	128	128	128	0
23.2 Rental payments to others	13	14	14	14	0
23.3 Communications, utilities, and misc. charges	3	3	3	3	0
24 Printing and reproduction	0	0	0	0	0
25.1 Advisory and assistance services	675	724	724	724	0
25.2 Other services from non-Federal sources	2,719	2,916	2,916	514	(2,402)
25.3 Other goods and services from Federal sources	93	99	99	99	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	574	615	615	615	0
31 Equipment	71	76	76	76	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	5,671	6,082	6,082	6,082	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
99.9 Total obligations	14,221	15,250	15,523	13,121	(2,402)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Salmon							
Management	Pos./BA	33	58,303	33	36,708	0	(21,595)
Activities	FTE/OBL	32	58,303	32	36,708	0	(21,595)

Columbia River Hatcheries and Pacific Salmon Treaty (-\$21,595, 0 FTE/0 Positions) – This request will reduce the additional funds provided in FY 2020 appropriations for Mitchell Act hatcheries, and Pacific Salmon Treaty implementation. NMFS will continue the Mitchell Act Hatchery program at \$19.9 million and Pacific Salmon Treaty at \$16.2 million in FY 2021.

The request will reduce \$2.2 million for the Mitchell Act hatchery program, including \$1.1 million for genetic stock identification, and \$1.1 million for hatcheries operations. NMFS will continue to support the operations and maintenance of Columbia River hatcheries at its historical amount of \$19.9 million.

In addition, the request reduces \$19.4 million for Pacific Salmon Treaty implementation. FY 2020 appropriations provided a \$20 million increase for Pacific Salmon Treaty implementation to support new Pacific Salmon Treaty requirements. The FY 2021 request will continue Pacific Salmon Treaty implementation at \$16.2 million for ongoing activities including funds to provide personnel support to the Pacific Salmon Commission's technical committees, and a broad range of salmon stock assessment and fishery monitoring programs which produce information required to implement Pacific Salmon Treaty provisions.

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations	(21,595)	(21,595)	(21,595)	(21,595)	(21,595)
Uncapitalized	(21,595)	(21,595)	(21,595)	(21,595)	(21,595)
Budget Authority	(21,595)	(21,595)	(21,595)	(21,595)	(21,595)
Outlays	(13,389)	(13,389)	(13,389)	(13,389)	(13,389)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PRORAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Fisheries Science and Management
Subactivity: Salmon Management Activities

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	1,448	1,451	1,645	1,645	0
11.3 Other than full-time permanent	12	12	14	14	0
.5 Other personnel compensation	19	20	23	23	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	1,479	1,483	1,681	1,681	0
12.1 Civilian personnel benefits	461	462	524	524	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	5	5	5	5	0
22 Transportation of things	8	8	8	8	0
23 Rent, communications, and utilities	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 Communications, utilities, and misc. charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.1 Advisory and assistance services	2	2	2	2	0
25.2 Other services from non-Federal sources	282	283	283	283	0
25.3 Other goods and services from Federal sources	6,710	7,764	7,764	6,664	(1,100)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	346	347	347	347	0
31 Equipment	233	234	234	234	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	27,399	47,455	47,455	26,960	(20,495)
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
99.9 Total obligations	36,925	58,043	58,303	36,708	(21,595)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2020**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Regional Councils and Fisheries	Pos./BA	13	46,455	13	44,577	0	(1,878)
Commissions	FTE/OBL	8	46,455	8	44,577	0	(1,878)

Regional Councils and Fisheries Commissions (-\$1,878, 0 FTE/0 Positions) – This request will reduce funding for the three Interstate Marine Fisheries Management Commissions. The FY 2021 budget request does not include additional resources previously enacted, and proposes a total of \$10.7 million for Interstate Marine Fisheries Management Commissions, International Fish Commissions, and the Atlantic Cooperative Management. The three Interstate Commissions work with NMFS on cross-state issues related to shared fishery resources.

	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
Outyear Costs:					
Direct Obligations	(1,878)	(1,878)	(1,878)	(1,878)	(1,878)
Uncapitalized	(1,878)	(1,878)	(1,878)	(1,878)	(1,878)
Budget Authority	(1,878)	(1,878)	(1,878)	(1,878)	(1,878)
Outlays	(1,164)	(1,164)	(1,164)	(1,164)	(1,164)
FTE	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PRORAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Fisheries Science and Management
Subactivity: Regional Councils and Fisheries Commissions

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	1,172	1,177	1,177	1,177	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	1,172	1,177	1,177	1,177	0
12.1 Civilian personnel benefits	336	338	338	338	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 Rent, communications, and utilities	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 Communications, utilities, and misc. charges	1	1	1	1	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	5	5	5	5	0
25.3 Other goods and services from Federal sources	90	90	90	90	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	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	38,474	38,636	44,844	42,966	(1,878)
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
99.9 Total obligations	40,078	40,247	46,455	44,577	(1,878)

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PROGRAM DECREASE FOR 2020**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Interjurisdictional	Pos./BA	2	3,365	0	0	(2)	(3,365)
Fisheries Grants	FTE/OBL	2	3,365	0	0	(2)	(3,365)

Interjurisdictional Fisheries Grants (-\$3,365, -2 FTE/-2 Positions) – This request will eliminate the interjurisdictional fisheries grants program. These grants are authorized by the Interjurisdictional Fisheries Act and support states’ and territories’ implementation of fisheries management programs. NOAA will continue to work with states and territories to provide technical and other assistance for fisheries management.

	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
Outyear Costs:					
Direct Obligations	(3,365)	(3,365)	(3,365)	(3,365)	(3,365)
Uncapitalized	(3,365)	(3,365)	(3,365)	(3,365)	(3,365)
Budget Authority	(3,365)	(3,365)	(3,365)	(3,365)	(3,365)
Outlays	(2,086)	(2,086)	(2,086)	(2,086)	(2,086)
FTE	(2)	(2)	(2)	(1)	(2)

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PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Fisheries Science and Management
Subactivity: Interjurisdictional Fisheries Grants

Title	Grade	Number	Annual Salary	Total Salaries
Fisheries Biologist	ZP-III	(2)	46,224	(92,448)
Total		(2)		(92,448)
Less lapse	0.00%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)		(2)		(92,448)
2021 Pay Adjustment (1%)	1.00%			<u>0</u>
Total				(92,448)

Personnel Data

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)

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

Activity: Fisheries Science and Management
Subactivity: Interjurisdictional Fisheries Grants

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	92	92	92	0	(92)
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	92	92	92	0	(92)
12.1 Civilian personnel benefits	28	28	28	0	(28)
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 Rent, communications, and utilities	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 Communications, utilities, and misc. charges	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	32	37	37	0	(37)
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
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	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	3,208	3,208	3,208	0	(3,208)
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
99.9 Total obligations	3,360	3,365	3,365	0	(3,365)

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Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE

(Dollar amounts in thousands)

Activity: Enforcement

Goal Statement

NOAA's strengthens domestic commerce by enforcing NOAA's natural resource protection laws and promoting compliance with Federal regulations to conserve and protect our Nation's living marine resources and their natural habitat. The activities within the Enforcement activity support the Department of Commerce's Strategic Plan: Strategic Objective 2.3 *Strengthen U.S. Commerce and the U.S. Industrial Base*.

Base Program

NOAA's Office of Law Enforcement (OLE) protects and monitors the world's largest EEZ including 13 National Marine Sanctuaries and five Marine National Monuments (Figure 1), and is the only conservation enforcement program (Federal or state) exclusively dedicated to Federal fisheries and marine resource enforcement. An overview can be found at <https://www.fisheries.noaa.gov/about/office-law-enforcement> and <https://www.fisheries.noaa.gov/topic/enforcement>. OLE provides direct support for enforcement activities in the NMFS headquarters' Offices of Sustainable Fisheries and Protected Resources, NMFS Regional Offices, and the NOS Office of National Marine Sanctuaries.



Figure 1. NOAA OLE Jurisdiction

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(Dollar amounts in thousands)

NOAA's Enforcement Program supports critical collaborations and leverages 28 Joint Enforcement Agreements (JEAs) with 27 coastal states and territories, and partnerships with other Federal agencies such as the U.S. Coast Guard. OLE refers enforcement cases that document violations to NOAA's Office of General Counsel or the U.S. Department of Justice for review and potential prosecution under their jurisdiction.

NOAA cannot meet the mandate to end overfishing without OLE's efforts. These efforts ensure that the millions of people who enjoy and rely on these marine resources understand and comply with the regulations necessary to ensure their sustainability and allow fair competition now and for future generations. OLE supports two objectives:

1. Enforce laws and regulations that govern:
 - a. commercial fisheries,
 - b. international and interstate commerce in marine resources, and
 - c. human interactions with marine mammals and threatened and endangered species.
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
4. Outreach and education strategies designed to increase and enhance voluntary compliance with environmental laws and regulations.

Statement of Operating Objectives

Schedule and Milestones:

FY 2021 – FY 2025:

- Continue to advance enforcement and compliance assistance efforts in support of NOAA's OLE Operational Priorities
- Continue with the hiring, training and deployment of enforcement personnel at strategic Ports of Entry
- Ensure consistent international IUU enforcement training and technical assistance

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(Dollar amounts in thousands)

Deliverables:

FY 2021 – FY 2025:

- Monitoring of and compliance assistance to approximately 4,450 vessels under the Vessel Monitoring System (VMS) requirements of 23 Fishery Management Plans (FMPs), two international convention areas, and the Papahānaumokuākea National Monument
- Review of progress toward current and determination of next set of strategic five-year national and regional Operational Enforcement Priorities

Explanation and Justification

		2019 Actual		2020 Enacted		2021 Base	
<u>Comparison by subactivity</u>		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Enforcement	Pos/BA	201	69,111	253	74,023	253	76,292
	FTE/OBL	200	61,128	240	74,023	242	76,292
Total Enforcement	Pos/BA	201	69,111	253	74,023	253	76,292
	FTE/OBL	200	61,128	240	74,023	242	76,292

The following programs and activities are funded by the Enforcement budget line:

Enforcement and Surveillance:

NOAA special agents and enforcement officers work to deter, detect, investigate, and document any violations of Federal marine natural resource laws and regulations. NOAA’s approach to fisheries enforcement emphasizes compliance assistance. OLE assists regulated parties in understanding and complying with fishery regulations through contact during monitoring and inspections, and increases public awareness and understanding of enforcement goals and objectives through participation in community meetings, trade shows, and on-the-dock informational visits. This approach has proven effective in maintaining dialog on often complex regulations, and allows NOAA’s investigative efforts and subsequent prosecution to focus on cases that go beyond misunderstandings and/or clerical errors.

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This program responds to inquiries and requests for assistance from a variety of industry and public stakeholders, covering a broad range of issues related to fisheries, marine mammals, and endangered and other protected marine species. In recent years, additional investments in the Enforcement Program have been made to strengthen NOAA's efforts to detect and deter Illegal, Unreported and Unregulated (IUU) fishing and enforce restrictions on imports of illegally-harvested and improperly-documented seafood.

Cooperative Agreements with States:

The Cooperative Enforcement Program leverages the resources of coastal state and U.S. territorial marine conservation law enforcement agencies to provide direct support for the Federal enforcement mission. These partners execute Joint Enforcement Agreements (JEA) with NOAA to support Federal enforcement efforts near shore and at sea, as well as provide land-based monitoring and inspection activities. This approach addresses challenges associated with the geographic jurisdiction, the breadth of laws and regulations within NOAA's stewardship responsibilities, the amount of regulated commercial activity (fishing and both domestic and international trade), and the amount of recreational use of the marine environment. This cooperative program allows OLE 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. More information on the program can be found at <https://www.fisheries.noaa.gov/topic/enforcement#cooperative-enforcement>.

Vessel Monitoring System (VMS):

VMS is a satellite-based technology program for remote monitoring of fishing vessels at sea. This communications system remotely reports vessel positions and provides an infrastructure for the communication of electronic monitoring data. The program supports a growing number of regulations that require many fishing vessels to report in the VMS, and it allows OLE to monitor compliance and track fishing vessels over vast expanses. The VMS data serve as valuable evidence and are vital to NMFS' scientific community and fisheries managers. 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. More information on how VMS works and how NMFS uses it can be found at <https://www.fisheries.noaa.gov/topic/enforcement#vessel-monitoring>.

Implementation of the High Seas Driftnet Fisheries Enforcement Act:

The High Seas Driftnet Fisheries Enforcement Act sets U.S. policy to enforce the United Nations' worldwide moratorium on large-scale driftnet fishing beyond the EEZ of any nation. Renegade large-scale high seas driftnet fishing indiscriminately kills massive amounts of fish and other marine life such as whales and turtles with enormous nets suspended for miles in open water. The practice

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is universally condemned because 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 to 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. With these funds, OLE conducts investigation and enforcement required to prosecute and deter these illegal actions. Additionally, NOAA participates in scientific research as part of a multi-national cooperative marine ecosystem research program on driftnet-affected species. The results of this research reduce uncertainty in population assessments for these species and inform related fishery management and enforcement decisions.

PROGRAM CHANGES FOR FY 2021:

NOAA requests a decrease of \$20,362,000 and 0 FTE/ 0 positions in program changes for the Enforcement activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table - 2).

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PROGRAM DECREASE FOR 2021**

(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Enforcement	Pos./BA	242	76,292	242	74,430	0	(1,862)
	FTE/OBL	253	76,292	253	74,430	0	(1,862)

Enforcement (-\$1,862.0 FTE/0 Positions) – This request will reduce the additional funding provided in FY 2020 appropriations for increased enforcement capacity (-\$1,262) and for State enforcement activities necessary to ensure successful implementation of electronic logbooks for the federally permitted charter-for-hire sector in the Gulf of Mexico (-\$600). This budget also requests a program decrease in Fisheries Management Programs and Services to reduce funding for data collection and catch and effort validation to support implementation of electronic logbooks for the federally permitted charter-for-hire sector in the Gulf of Mexico (see NMFS-71). NOAA’s Office of Law Enforcement (OLE) will continue its dedication to Federal fisheries and marine resource enforcement through traditional enforcement such as investigations and patrols, technological tools such as the Vessel Monitoring System, and outreach and education strategies designed to increase and enhance voluntary compliance with environmental laws and regulations. In addition, NOAA has focused in recent years to ensure fair competition and a level playing field by strengthening efforts to detect and deter Illegal, Unreported and Unregulated (IUU) fishing and enforce restrictions on imports of illegally harvested and improperly documented seafood.

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 (Dollar amounts in thousands)

Outyear Costs:					
Direct Obligations	(1,862)	(1,862)	(1,862)	(1,862)	(1,862)
Uncapitalized	(1,862)	(1,862)	(1,862)	(1,862)	(1,862)
 Budget Authority	(1,862)	(1,862)	(1,862)	(1,862)	(1,862)
Outlays	(1,154)	(1,154)	(1,154)	(1,154)	(1,154)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Enforcement
Subactivity: Enforcement

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	20,086	24,324	25,615	25,615	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	2,567	3,108	3,273	3,273	0
11.8 Special personnel services payments	2,383	2,886	3,039	3,039	0
11.9 Total personnel compensation	25,036	30,318	31,928	31,928	0
12.1 Civilian personnel benefits	10,255	12,418	13,077	13,077	0
13 Benefits for former personnel	3	4	4	4	0
21 Travel and transportation of persons	796	963	963	963	0
22 Transportation of things	683	828	828	828	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	2,289	2,772	2,772	2,772	0
23.2 Rental payments to others	511	619	619	619	0
23.3 Communications, utilities, and misc. charges	1,311	1,588	1,588	1,588	0
24 Printing and reproduction	54	65	65	65	0
25.1 Advisory and assistance services	646	782	782	782	0
25.2 Other services from non-Federal sources	17,771	21,520	21,520	19,658	(1,862)
25.3 Other goods and services from Federal sources	759	919	919	919	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	621	751	751	751	0
31 Equipment	312	378	378	378	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	80	97	97	97	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	1	1	1	1	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	61,128	74,023	76,292	74,430	(1,862)

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

		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u>	<u>Amount</u>
Enforcement	Pos./BA	242	76,292	242	57,792	0	(18,500)
	FTE/OBL	253	76,292	253	57,792	0	(18,500)

Cooperative Enforcement Program (-\$18,500, 0 FTE/0 Positions): This request will eliminate funding to support the Cooperative Enforcement Program (CEP). JEAs provide funds to state and U.S. territorial law enforcement agencies to perform enforcement services in support of Federal regulations. These partners execute JEAs with NOAA to support Federal enforcement efforts near shore and at sea, as well as provide land-based monitoring and inspection activities.

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(Dollar amounts in thousands)

	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
Performance Measure					
Base hours of labor from JEAs*					
With Decrease	0	0	0	0	0
Without Decrease	126,760	126,760	126,760	126,760	126,760
Outyear Costs:					
Direct Obligations	(18,500)	(18,500)	(18,500)	(18,500)	(18,500)
Uncapitalized	(18,500)	(18,500)	(18,500)	(18,500)	(18,500)
Budget Authority	(18,500)	(18,500)	(18,500)	(18,500)	(18,500)
Outlays	(11,470)	(11,470)	(11,470)	(11,470)	(11,470)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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(Direct Obligations amounts in thousands)

Activity: Enforcement
Subactivity: Enforcement

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	20,086	24,324	25,615	25,615	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	2,567	3,108	3,273	3,273	0
11.8 Special personnel services payments	2,383	2,886	3,039	3,039	0
11.9 Total personnel compensation	25,036	30,318	31,928	31,928	0
12.1 Civilian personnel benefits	10,255	12,418	13,077	13,077	0
13 Benefits for former personnel	3	4	4	4	0
21 Travel and transportation of persons	796	963	963	963	0
22 Transportation of things	683	828	828	828	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	2,289	2,772	2,772	2,772	0
23.2 Rental payments to others	511	619	619	619	0
23.3 Communications, utilities, and misc. charges	1,311	1,588	1,588	1,588	0
24 Printing and reproduction	54	65	65	65	0
25.1 Advisory and assistance services	646	782	782	782	0
25.2 Other services from non-Federal sources	17,771	21,520	21,520	3,020	(18,500)
25.3 Other goods and services from Federal sources	759	919	919	919	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	621	751	751	751	0
31 Equipment	312	378	378	378	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	80	97	97	97	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	1	1	1	1	0
44 Refunds	0	0	0	0	0
99.9 Total obligations	61,128	74,023	76,292	57,792	(18,500)

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(Dollar amounts in thousands)

Activity: Habitat Conservation and Restoration

Goal Statement

The Office of Habitat Conservation protects and restores habitat to sustain fisheries, recover protected species, and maintain resilient coastal ecosystems and communities. The activities within this activity support the Department of Commerce's Strategic Plan: Strategic Objective 2.3 *Strengthen U.S. Commerce and the U.S. Industrial Base*.

Base Program

Activities within the Habitat Conservation and Restoration activity focus on three program areas including Sustainable Habitat Management, Fisheries Habitat Restoration, and Chesapeake Bay Protection and Restoration. The Magnuson-Stevens Fishery Conservation and Management Act (MSA), Federal Power Act, Energy Policy Act of 2005; Endangered Species Act; Oil Pollution Act; and Comprehensive Environmental Response, Compensation and Liability Act guide many of our efforts. NOAA works strategically across programs and with partner organizations toward shared goals to address the growing challenge of coastal and marine habitat loss and degradation. (see <https://www.fisheries.noaa.gov/insight/habitat-heroes-some-our-partners-habitat-conservation> for additional information on our partners.)

Through NOAA's Habitat Blueprint (<https://www.habitatblueprint.noaa.gov/>), NOAA and partners collaborate to increase the effectiveness of our habitat conservation efforts for the benefit of fisheries, coastal and marine life, and the coastal communities and economies they support.

Additional information on NMFS habitat conservation can be found at <https://www.fisheries.noaa.gov/topic/habitat-conservation>.

Statement of Operating Objectives

Schedule and Milestones:

FY 2021 – FY 2025:

- Develop management options for protecting deep-sea corals in partnership with the Regional Fishery Management Councils and National Marine Sanctuaries
- Participate in the re-licensing process for an estimated 125 hydroelectric projects

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- Identify and protect essential fish habitat through consultations and partnerships
- Develop restoration plans, conduct habitat assessments, and implement priority restoration projects critical for NOAA trust resources
- Contribute to major ecosystem restoration efforts, including Chesapeake Bay, Puget Sound, Gulf of Mexico, Great Lakes, and San Francisco Bay/Delta

Deliverables:

FY 2021 – FY 2025:

- Accurate deep-sea coral habitat distribution maps that allow managers to better protect these biologically rich ecosystems
- 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
- Development of maps and habitat assessments annually to support oyster restoration in the Chesapeake Bay
- Acres of habitat restored for ocean, coastal, and Great Lakes resources
- Stream miles made accessible for ocean, coastal, and Great Lakes resources

Explanation and Justification

Comparison by subactivity		2019 Actual		2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Habitat Conservation and Restoration	Pos/BA	170	56,050	172	57,125	172	58,607
	FTE/OBL	169	56,243	164	57,125	164	58,607
Total Habitat Conservation and Restoration	Pos/BA	170	56,050	172	57,125	172	58,607
	FTE/OBL	169	56,243	164	57,125	164	58,607

Healthy habitat provides significant and essential ecosystem, community, and economic benefits. Habitat is the foundation for resilient fisheries and fishing-based communities and industries, as well as key to supporting and recovering endangered and

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threatened species. In 2016, the U.S. commercial and recreational saltwater fishing industries generated more than \$212 billion in sales and supported 1.7 million jobs.¹⁶

Coastal communities rely on healthy habitat for a wide variety of additional socio-economic needs including, recreation, tourism, and as natural infrastructure that protects life and property by reducing effects of storm damage, erosion, and coastal flooding. (<https://www.fisheries.noaa.gov/national/habitat-conservation/value-habitat>) The Nation's ocean and coastal resources annually provide non-market value (e.g. storm surge protection, wildlife viewing, beach visits, snorkeling) of over \$100 billion.¹⁷

However, we are facing continued widespread loss and deterioration of vital habitats for managed fisheries, as well as threatened and endangered species. For example, we are losing coastal wetlands – prime nurseries for many species – at the rate of about 80,000 acres per year. (<https://www.fisheries.noaa.gov/coastal-wetlands-too-valuable-lose>) This rate of loss is 20,000 more acres per year than was lost during the 6-year period of 1998– 2004.¹⁸ NOAA is working to decrease the loss of priority coastal habitat through its habitat conservation programs.

Sustainable Habitat Management

When a Federal agency authorizes, funds, or undertakes an action that may adversely affect EFH, they must consult with NMFS on that action, as required by Section 305(b) of the Magnuson-Stevens Act. NOAA works with Federal partners to guide coastal development in a manner that protects vital fish habitat without hindering economic development opportunities, including critical transportation and infrastructure improvements.

Each year, NOAA protects more than one hundred thousand acres of Essential Fish Habitat (EFH) by conducting thousands of consultations with Federal agencies to avoid, minimize, or compensate for any adverse impacts to coastal habitat that may result from proposed actions such as dredging and filling wetlands, and renewable energy proposals. (<https://www.fisheries.noaa.gov/national/habitat-conservation/essential-fish-habitat>) Fish require healthy surroundings to survive and

¹⁶ National Marine Fisheries Service. 2018. Fisheries Economics of the United States, 2016. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS-F/SPO-187. Available at: <https://www.fisheries.noaa.gov/content/fisheries-economics-united-states-2016>

¹⁷ The National Ocean Economics Program and the Center for the Blue Economy. 2014. State of the U.S. Ocean and Coastal Economies. 84p. Available at: <http://www.oceaneconomics.org/Download/>

¹⁸ T.E. Dahl and S.M. Stedman. 2013. Status and trends of wetlands in the coastal watersheds of the Conterminous United States 2004 to 2009. U.S. Department of the Interior, Fish and Wildlife Service and National Oceanic and Atmospheric Administration, National Marine Fisheries Service. (46 p.). Available at: <https://coast.noaa.gov/digitalcoast/training/wetland-trends.html>

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reproduce. EFH includes all types of aquatic habitat - wetlands, coral reefs, seagrasses, and rivers - where fish spawn, breed, feed, or grow to maturity. EFH is described and designated by each of the Regional Fishery Management Councils in their development of Fishery Management Plans for Federally-managed fish species. Our unique role and responsibility under the Federal Power Act to ensure fish passage at hydropower dams licensed by the Federal Energy Regulatory Commission (FERC) has resulted in opening passage of more than 1,620 miles of streams and rivers for species such as river herring that serve as important food sources for commercial and recreational fish stocks. (<https://www.fisheries.noaa.gov/national/habitat-conservation/improving-fish-migration-hydropower-dams>) Since 2011, under its Deep Sea Coral Research and Technology program, NOAA has mapped more than 880,000 square kilometers of seafloor to identify locations and new species of deep-sea corals in coordination with other Federal agencies and research institutions. (<https://www.fisheries.noaa.gov/national/habitat-conservation/deep-sea-coral-habitat>)

Fisheries Habitat Restoration

The NOAA Office of Habitat Conservation Restoration Center (RC) provides expert technical assistance to its many partners for the implementation of priority coastal habitat restoration nationwide. (<https://www.fisheries.noaa.gov/topic/habitat-conservation#how-we-restore>) In addition, the NOAA RC leads restoration planning and implementation for oil spills and hazardous substance releases across the Nation through our Damage Assessment Remediation and Restoration program (DARRP) (<https://darrp.noaa.gov/>). Every year, NOAA responds to as many as 150 oil spills and hazardous substance releases (most notably the Deepwater Horizon oil spill. (<https://www.gulfspillrestoration.noaa.gov/>). The Community-based Restoration Program (CRP) provides technical and financial assistance for the implementation of community-driven habitat restoration. Habitat restoration projects are selected through a competitive solicitation process that leverages substantial investments from partners. (<https://www.fisheries.noaa.gov/grant/coastal-and-marine-habitat-restoration-grants>)

Chesapeake Bay Protection and Restoration (<https://chesapeakebay.noaa.gov/>)

The NOAA Chesapeake Bay Office (NCBO) conducts work in fisheries, observations, education, and oyster restoration in support of the 2014 Chesapeake Bay Agreement. NCBO collects and integrates information about the Bay from buoys, satellites, shipboard mapping technologies, and other sources to improve fisheries and protected resource management, weather forecasts, on-the-water safety, and public health. NCBO is working closely with state, Federal, academic, and not-for-profit partners to provide technical assistance for restoring native oysters in ten tributaries of the Chesapeake Bay.

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PROGRAM CHANGES FOR FY 2021:

NOAA requests a decrease of \$19,559 and 0 FTE/ 0 positions in program changes for the Habitat Conservation and Restoration activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table - 2).

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		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Habitat Conservation and Restoration	Pos./BA	172	58,607	172	53,771	0	(4,836)
	FTE/OBL	164	58,607	164	53,771	0	(4,836)

Sustainable Habitat Management (-\$4,836, 0 FTE/0 Positions) – This request will reduce the additional funding provided in FY 2020 appropriations for Sustainable Habitat Management. NOAA will ensure the highest priority activities and consultations will continue. NOAA will reduce Essential Fish Habitat (EFH) consultations by \$3.0 million and other activities, such as ensuring fish passage at hydropower dams licensed by FERC or identifying and conserving deep water corals, by \$1.8 million. NMFS will continue to perform EFH consultations with available resources. At the FY 2021 request level, NMFS will continue to complete consultations at its historical rate.

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(Dollar amounts in thousands)

	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations	(4,836)	(4,836)	(4,836)	(4,836)	(4,836)
Uncapitalized	(4,836)	(4,836)	(4,836)	(4,836)	(4,836)
Budget Authority	(4,836)	(4,836)	(4,836)	(4,836)	(4,836)
Outlays	(2,998)	(2,998)	(2,998)	(2,998)	(2,998)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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

Activity: Habitat Conservation and Restoration
Subactivity: Habitat Conservation and Restoration

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	20,536	20,855	21,718	21,718	0
11.3	272	277	288	288	0
11.5	254	258	269	269	0
11.8	0	0	0	0	0
11.9	21,062	21,390	22,275	22,275	0
12.1	7,055	7,165	7,462	7,462	0
13	7	7	7	7	0
21	806	818	818	818	0
22	164	167	167	167	0
23	0	0	0	0	0
23.1	624	634	634	634	0
23.2	263	267	267	267	0
23.3	304	309	309	309	0
24	10	11	11	11	0
25.1	1,020	1,036	1,036	1,036	0
25.2	8,270	8,400	8,145	3,681	(4,836)
25.3	317	322	322	322	0
25.4	0	0	0	0	0
25.5	0	0	0	0	0
25.6	0	0	0	0	0
25.7	0	0	0	0	0
25.8	0	0	0	0	0
26	491	499	499	499	0
31	337	343	343	343	0
32	0	0	0	0	0
33	0	0	0	0	0
41	15,513	15,757	15,757	15,757	0
42	0	0	0	0	0
43	0	0	0	0	0
44	0	0	0	0	0
99.9	56,243	57,125	58,052	53,588	(4,836)

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Habitat Conservation and Restoration	Pos./BA	172	58,607	172	43,884	0	(14,723)
	FTE/OBL	164	58,607	164	43,884	0	(14,723)

Fisheries Habitat Grants (-\$14,723, 0 FTE/0 Positions) – This request will eliminate grants for on-the-ground habitat restoration projects. NOAA will end its financial support for partnerships and grants provided through the Community-based Restoration Program. NOAA will continue to provide technical expertise and leadership to states, tribes, and local communities, as well as other programs and Federal agencies implementing fishery and coastal habitat restoration projects (e.g., NOAA’s Coral Reef Conservation and Protected Species Programs, EPA, Army Corp of Engineers), within the guiding principles of NOAA’s Habitat Blueprint, as resources allow. Technical expertise such as engineering and design, implementation support, and monitoring provided to external and internal partners allow NOAA to maximize the benefits for resources and habitats, including wetlands, rivers, coral reefs, and oysters, for which DOC/NOAA has trustee responsibility. In addition, the FY 2021 budget supports core operations for the Damage Assessment, Remediation, and Restoration Program (DARRP). DARRP helps to compensate the public for lost trust resources through the Natural Resource Damage Assessment (NRDA) process, and the NOAA Restoration Center directs the planning, implementation, and monitoring of case-specific projects to restore NOAA trust resources.

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(Dollar amounts in thousands)

	2021	2022	2023	2024	2025
Performance Measures:					
Number of habitat acres restored (annual)					
(Measure 3.4f)					
With Decrease	3,500	1,200	500	0	0
Without Decrease	3,500	2,200	2,000	2,000	2,000
Stream miles made accessible (annual)					
With Decrease	90	0	0	0	0
Without Decrease	90	50	50	50	50
Outyear Costs:					
Direct Obligations	(14,723)	(14,723)	(14,723)	(14,723)	(14,723)
Uncapitalized	(14,723)	(14,723)	(14,723)	(14,723)	(14,723)
Budget Authority	(14,723)	(14,723)	(14,723)	(14,723)	(14,723)
Outlays	(9,128)	(9,128)	(9,128)	(9,128)	(9,128)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Habitat Conservation and Restoration
Subactivity: Habitat Conservation and Restoration

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	20,536	20,855	22,124	22,124	0
11.3	272	277	294	294	0
11.5	254	258	274	274	0
11.8	0	0	0	0	0
11.9	21,062	21,390	22,691	22,691	0
12.1	7,055	7,165	7,601	7,601	0
13	7	7	7	7	0
21	806	818	818	818	0
22	164	167	167	167	0
23	0	0	0	0	0
23.1	624	634	634	634	0
23.2	263	267	267	267	0
23.3	304	309	309	309	0
24	10	11	11	11	0
25.1	1,020	1,036	1,036	1,036	0
25.2	8,270	8,400	8,145	8,145	0
25.3	317	322	322	322	0
25.4	0	0	0	0	0
25.5	0	0	0	0	0
25.6	0	0	0	0	0
25.7	0	0	0	0	0
25.8	0	0	0	0	0
26	491	499	499	499	0
31	337	343	343	343	0
32	0	0	0	0	0
33	0	0	0	0	0
41	15,513	15,757	15,757	1,034	(14,723)
42	0	0	0	0	0
43	0	0	0	0	0
44	0	0	0	0	0
99.9	56,243	57,125	58,607	43,884	(14,723)

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Pacific Coastal Salmon Recovery Fund
SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
2020 Enacted	2	2	65,000	65,000
Less: Obligations from Prior Year Balances	0	0	0	0
Plus: Other Adjustments-to- Base	0	0	0	0
2021 Base	2	2	65,000	65,000
Plus: 2021 Program Changes	(2)	(2)	(65,000)	(65,000)
2021 Estimate	0	0	0	0

		2019 Actual Personnel Amount	2020 Enacted Personnel Amount	2021 Base Personnel Amount	2021 Estimate Personnel Amount	Increase/ Decrease from 2021 Base Personnel Amount
Pacific Coastal Salmon Recovery Fund	Pos/BA	1 64,935	2 65,000	2 65,000	0 0	(2) (65,000)
	FTE/OBL	1 64,952	2 65,000	2 65,000	0 0	(2) (65,000)
Total: Pacific Coastal Salmon Recovery Fund	Pos/BA	1 64,935	2 65,000	2 65,000	0 0	(2) (65,000)
	FTE/OBL	1 64,952	2 65,000	2 65,000	0 0	(2) (65,000)

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Pacific Coastal Salmon Recovery Fund
SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/ Decrease from 2021 Base	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	1	64,952	2	65,000	2	65,000	0	0	(2)	(65,000)
Total Obligations	1	64,952	2	65,000	2	65,000	0	0	(2)	(65,000)
Adjustments for:										
Recoveries	0	(19)	0	0	0	0	0	0	0	0
Unobligated balance, unapportioned	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(793)	0	0	0	0	0	0	0	0
Unobligated balance, expired	0	112	0	0	0	0	0	0	0	0
Unobligated balance, transferred	0	683	0	0	0	0	0	0	0	0
Unobligated balance, adj. EOY	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	1	64,935	2	65,000	2	65,000	0	0	(2)	(65,000)
Financing from Transfers and Other:										
Transfer to ORF	0	65	0	0	0	0	0	0	0	0
Appropriation	1	65,000	2	65,000	2	65,000	0	0	(2)	(65,000)

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Pacific Coastal Salmon Recovery Fund
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(Dollar amounts in thousands)

Activity: Pacific Coastal Salmon Recovery Fund

Goal Statement

The Pacific Coastal Salmon Recovery Fund (PCSRF) was established by Congress in FY 2000 to protect, restore, and conserve Pacific salmon and steelhead and their habitats through competitive funding to states and Tribes. This program supports the Department of Commerce's strategic objective 2.3, *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

Congressionally authorized activities include:

- Conserving salmon and steelhead populations that are listed as threatened or endangered, or identified by a state as at-risk to be so listed,
- Maintaining populations necessary for exercise of tribal treaty fishing rights or native subsistence fishing, and
- Conserving Pacific coastal salmon and steelhead habitat.

Key accomplishments for PCSRF-funded activities from FY 2000 to FY 2019 include:

- More than 1,105,000 acres of habitat restored, and
- Passage restored to over 10,900 stream miles of salmon habitat.

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 nearly 3,414 barriers to fish passage along streams, restoring access to high-quality habitat. PCSRF projects provide a number of socio-economic benefits, including enhanced water quality, recreation opportunities, flood control, and coastline protection, as well as support green jobs and local economies.

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Pacific Coastal Salmon Recovery Fund
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Statement of Operating Objectives

PCSRF awards to grantees remain active for up to five years. Consequently, even with the proposed elimination of funding, an estimated 1,200 active projects funded with FY 2014 through FY 2019 appropriations will not be completed until FY 2021 and future years.

Active projects span all project categories, but a select list of habitat projects include:

- Alaska: Hewitt and Whiskey Lake Pike Suppression (end date November 2020)
- Alaska: Stream Bank Restoration: Mat-Su Cost Share – Phase 4 (end date November 2020)
- Washington: Cottonwood Flats - Entiat Floodplain Restoration (end date December 2020)
- Washington: Hansen Creek Reach 5 Restoration (end date March 2022)
- Idaho: Two-Mile Meadow Stream and Meadow Restoration (end date October 2020)
- Idaho: Big Cedar Creek Fish Passage (end date December 2020)
- Oregon: Opal Springs Dam Volitional Fish Passage Phases 2 & 3 (end date December 2020)
- Oregon: Willamette Confluence Lower Middle Fork Revegetation (end date: June 2022)
- California: Supply Creek Restoration Project Phase II (end date March 2021)
- California: French Creek Main Channel & Off Channel Habitat Improvement & Monitoring (end date March 2021)

Explanation and Justification

The PCSRF program provides competitive funding to states and Tribes of the Pacific Coast region to implement projects that restore and protect salmonid populations and their habitats. Eligible applicants include the States of Washington, Oregon, California, Idaho, Nevada, and Alaska and federally recognized Tribes of the Columbia River and Pacific Coast (including Alaska). 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. No match is required from the federally recognized Tribes.

PCSRF habitat projects provide a number of benefits to the human community, including enhanced water quality, recreation opportunities, flood control, and coastline protection. Studies suggest that a \$1.0 million investment in watershed restoration, of

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which PCSRF and state matching funds play a significant role, creates on average 16¹⁹ to 17²⁰ new “green” jobs and averages \$2.3 million²¹ in economic activity. Additionally, approximately 80 percent of habitat restoration investments are spent locally in the county in which the project is located, and over 90 percent is spent within the state²², supporting local jobs and local economies, often in rural and economically distressed communities. More information is available at the program’s website:

https://www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/recovery_planning_and_implementation/pacific_coastal_salmon_recovery_fund.html.

¹⁹ Nielsen-Pincus, M., and C. Moseley. 2010. Economic and employment impacts of forest and watershed restoration in Oregon. University of Oregon, Institute for a Sustainable Environment, Ecosystem Workforce Program, Working Paper Number 24, Spring 2010.

²⁰ Edwards, P.E.T., A.E. Sutton-Grier and C.E. Coyle. 2013 Investing in nature: Restoring coastal habitat blue infrastructure and green job creation. *Marine Policy* 38:65-71.

²¹ Nielsen-Pincus, M., and C. Moseley. 2010. Economic and employment impacts of forest and watershed restoration in Oregon. University of Oregon, Institute for a Sustainable Environment, Ecosystem Workforce Program, Working Paper Number 24, Spring 2010.

²² Hibbard, M. and S. Lurie. 2006. Some community socio-economic benefits of watershed councils: A case study from Oregon. *Journal of Environmental Planning and Management* 49:891-908.

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Pacific Coastal Salmon Recovery Fund
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease From 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Pacific Coastal Salmon	Pos./BA	2	65,000	0	0	(2)	(65,000)
Recovery Fund	FTE/OBL	2	65,000	0	0	(2)	(65,000)

Pacific Coastal Salmon Recovery Fund (PCSRF) (-\$65,000, -2 FTE/-2 Positions) – This reduction will eliminate funding for this grant program in FY 2021. The agency will continue its Federal commitment to advancing Pacific salmon and steelhead recovery and Tribal treaty fishing rights through other NOAA programs as resources allow.

The congressionally authorized activities for PCSRF include:

- 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.

The PCSRF program provides competitive funding to states and Tribes of the Pacific Coast region. Eligible applicants include the states of Washington, Oregon, California, Idaho, Nevada, and Alaska and Federally recognized Tribes of the Columbia River and Pacific Coast (including Alaska). 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. No match is required from the Federally recognized Tribes. More information on past program accomplishments can be found in the PCSRF base narrative above and the program’s website.²³

²³http://www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/recovery_planning_and_implementation/pacific_coastal_salmon_recovery_fund.html

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Pacific Coastal Salmon Recovery Fund
PROGRAM DECREASE FOR 2020**
(Dollar amounts in thousands)

	2021	2022	2023	2024	2025
Performance Measure					
Number of habitat acres restored (annual) (Indicator 3.4)					
With Decrease	14,200	12,500	8,500	4,200	1,800
Without Decrease	14,400	14,400	14,400	14,400	14,400
Number of stream miles made accessible for ocean, coastal, and Great Lakes resources (annual)					
With Decrease	460	400	270	130	60
Without Decrease	460	460	460	460	460
Outyear Costs:					
Direct Obligations	(65,000)	(65,000)	(65,000)	(65,000)	(65,000)
Uncapitalized	(65,000)	(65,000)	(65,000)	(65,000)	(65,000)
Budget Authority	(65,000)	(65,000)	(65,000)	(65,000)	(65,000)
Outlays	(40,300)	(40,300)	(40,300)	(40,300)	(40,300)
FTE	(2)	(2)	(2)	(2)	(2)
Positions	(2)	(2)	(2)	(2)	(2)

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Pacific Coastal Salmon Recovery Fund
PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Pacific Coastal Salmon Recovery Fund
Subactivity: Pacific Coastal Salmon Recovery Fund

Title	Grade	Number	Annual Salary	Total Salaries
Supervisory Grants Specialist	ZP-V	(1)	151,094	(151,094)
Grants Specialist	ZP-IV	(1)	102,360	(102,360)
Total		(2)		(253,454)
Less lapse		0		0
Total full-time permanent (FTE)		(2)		(253,454)
2021 Pay Adjustment (1%)				0
Total				(253,454)

Personnel Data

Full-time Equivalent Employment

Full-time permanent	(2)
Other than full-time permanent	0
Total	(2)

Authorized Positions:

Full-time permanent	(2)
Other than full-time permanent	0
Total	(2)

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Pacific Coastal Salmon Recovery Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
11 Personnel compensation					
11.1 Full-time permanent	78	253	253	0	(253)
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	78	253	253	0	(253)
12.1 Civilian personnel benefits	29	86	86	0	(86)
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
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	117	296	296	0	(296)
26 Supplies and materials	3	0	0	0	0
31 Equipment	0	1	1	0	(1)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	64,725	64,364	64,364	0	(64,364)
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	64,952	65,000	65,000	0	(65,000)

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SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
Less prior year recoveries	(19)	0	0	0	0
Plus unobligated balance, transferred	683	0	0	0	0
Unobligated balance, expired	112	0	0	0	0
Less unobligated balance, SOY	(793)	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Total Budget Authority	64,935	65,000	65,000	0	(65,000)

Personnel Data

Full-Time equivalent Employment:

Full-time permanent	1	2	2	0	(2)
Other than full time permanent	0	0	0	0	0
Total	1	2	2	0	(2)

Authorized Positions:

Full-time permanent	1	2	2	0	(2)
Other than full time permanent	0	0	0	0	0
Total	1	2	2	0	(2)

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Fisheries Disaster Assistance Fund
SUMMARY OF REQUIREMENTS**
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
2020 Enacted	0	0	0	198,748
Plus: Obligations from prior year balances	0	0	0	(198,748)
Plus: Other Adjustments-to-Base	0	0	0	0
2021 Base	0	0	0	0
Plus: 2021 Program Changes	2	1	300	300
2021 Estimate	2	1	300	300

		2019 Actual Personnel Amount		2020 Enacted Personnel Amount		2021 Base Personnel Amount		2021 Estimate Personnel Amount		Increase/Decrease from 2021 Base Personnel Amount	
Fisheries Disaster Assistance Fund	Pos/BA	0	164,835	0	0	0	0	2	300	2	300
	FTE/OBL	0	185,954	0	198,748	0	0	1	300	1	300
Total: Fisheries Disaster Assistance Fund	Pos/BA	0	164,835	0	0	0	0	2	300	2	300
	FTE/OBL	0	185,954	0	198,748	0	0	1	300	1	300

**Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Disaster Assistance Fund
SUMMARY OF REQUIREMENTS**
(Dollar amounts in thousands)

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/ Decrease from 2021 Base	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	185,954	0	198,748	0	0	1	300	1	300
Total Obligations	0	185,954	0	198,748	0	0	1	300	1	300
Adjustments for:										
Recoveries	0	(9)	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(219,858)	0	(198,748)	0	0	0	0	0	0
Unobligated balance, EOY	0	198,748	0	0	0	0	0	0	0	0
Total Budget Authority	0	164,835	0	0	0	0	1	300	1	300
Financing from Transfers and Other:										
Transfer to ORF	0	165	0	0	0	0	0	0	0	0
Net Appropriation	0	165,000	0	0	0	0	1	300	1	300

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Disaster Assistance Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Fisheries Disaster Assistance Fund

For FY 2021, NMFS requests a total of \$300 for this fund.

Goal Statement

To provide disaster assistance for addressing the economic and social effects of a commercial fishery failure, for activities to restore the fishery or prevent a similar failure in the future, and for assisting fishing communities. This program supports the Department of Commerce's strategic objective 2.3, *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

Fishery disaster assistance is administered by NOAA's National Marine Fisheries Service within the Department of Commerce. Two statutes, the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Interjurisdictional Fisheries Act, provide the authority for fishery disaster assistance. Under both statutes, a request for a fishery disaster determination is generally made by the Governor of a State, or an elected leader of a fishing community, although the Secretary of Commerce may also initiate a review at his or her own discretion. The Secretary determines whether the circumstances are consistent with relevant statutes and warrant a fishery disaster determination. If the Secretary determines that a fishery disaster has occurred, Congress may appropriate funds for disaster assistance, which are administered by the Secretary.

Statement of Operating Objectives

- MSA 312(a)(2) allows for disaster funds to be used for assessing the economic and social effects of the commercial fishery failure and for activities that restore the fishery or prevent a similar failure in the future and to assist a fishing community affected by such failure. Additionally, any such activity may not expand the size or scope of the commercial fishery failure in that fishery or into other fisheries or other geographic regions.
- MSA 315(b) allows for funding or other economic assistance for meeting immediate shore-side infrastructure needs, financial assistance and job training for fishermen, fishing capacity reduction and other activities authorized under MSA 312(a) and IFA 308(d).

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Disaster Assistance Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

- IFA 308(b) authorizes the Secretary to use funds to restore the fishery affected by the failure or to prevent a similar failure in the future.
- IFA 308(d) enables the Secretary to help persons engaged in the commercial fishery through projects that alleviate the harm suffered from the fishery resource disaster.

Explanation and Justification

NOAA intends to revise its procedures to provide greater clarity and improved consistency with respect to the process of requesting a fishery disaster declaration. These changes will accelerate the timeline for making disaster determinations, and establish guidelines for administering awards. The issues to be considered include, but are not limited to, deadlines, incentives for recipients to carry insurance, required documentation of loss, cost sharing by states, other available financial assistance, eligible uses, and prioritization of the long term sustainability of the affected fishery of the affected fishery. The changes under consideration will accelerate the Department's responsiveness to fishery disaster requests, help get appropriated funds distributed to affected communities in a more timely manner, and contribute to the long term environmental and economic sustainability of the fishery.

**Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Disaster Assistance
PROGRAM INCREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Increase from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Fisheries							
Disaster	Pos./BA	0	0	2	300	2	300
Assistance Fund	FTE/OBL	0	0	1	300	1	300

Fisheries Disaster Assistance (+\$300, +1 FTE/+2 Positions) – This request will bolster NOAA staffing necessary to execute the Fisheries Disaster Assistance program. NOAA will use these funds to process fisheries disaster grants in a timely manner, and provide additional program oversight and review. This request will improve NOAA’s response to fishery disaster declarations and ensure funds are used in the most effective manner.

If the Secretary of Commerce determines that a fishery disaster has occurred, Congress may appropriate funds for disaster assistance. While a fishery disaster determination is based solely on the impacts to commercial fisheries, appropriated funds can be used more broadly to assist communities affected by the commercial fishery failure. Under Section 312 of the MSA, “...the Secretary is authorized to make sums available to be used by the affected state or fishing community, or by the Secretary in cooperation with the affected state or fishing community for assessing the economic and social effects of the commercial fishery failure, or any activities that the Secretary determines are appropriate to restore the fishery or prevent a similar failure in the future and to assist a fishing community affected by such failure.” Rebuilding infrastructure – such as rebuilding piers and boat launches, restoring habitat, state-run vessel and permit buybacks – and job retraining are some examples of activities that restore the fishery or prevent a similar failure in the future and that assist an affected fishing community.

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Disaster Assistance
PROGRAM INCREASE FOR 2021
 (Dollar amounts in thousands)

	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations	300	300	300	300	300
Uncapitalized	300	300	300	300	300
Budget Authority	300	300	300	300	300
Outlays	186	186	186	186	186
FTE	0	0	0	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Disaster Assistance Fund
PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Fisheries Disaster Assistance
Subactivity: Fisheries Disaster Assistance

Title	Grade	Number	Annual Salary	Total Salaries
Grants Management Specialist	ZPIII	<u>2</u>	72,030	<u>144,060</u>
Total		2		144,060
Less lapse	-25.00%	<u>(1)</u>		<u>(36,015)</u>
Total full-time permanent (FTE)		1		108,045
2021 Pay Adjustment (1%)	1.00%			<u>1,080</u>
				109,125
Personnel Data Summary				
Full-time Equivalent Employment (FTE)				
Full-time permanent		1		
Part-time permanent		0		
Full-time temporary		0		
Part-time temporary		<u>0</u>		
Total FTE		1		
Authorized Positions:				
Full-time permanent		2		
Part-time permanent		0		
Full-time temporary		0		
Part-time temporary		<u>0</u>		
Total Positions		2		

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Disaster Assistance Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
11 Personnel compensation					
11.1 Full-time permanent	0	0	0	109	109
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	109	109
12.1 Civilian personnel benefits	0	0	0	34	34
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	25	25
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 from non Federal sources	0	0	0	112	112
26 Supplies and materials	0	0	0	10	10
31 Equipment	0	0	0	5	5
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	185,954	198,748	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	185,954	198,748	0	300	300

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Disaster Assistance Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
Less prior year recoveries	(9)	0	0	0	0
Plus unobligated balance, transferred	0	0	0	0	0
Unobligated balance, expired	0	0	0	0	0
Less unobligated balance, SOY	(219,858)	(198,748)	0	0	0
Plus unobligated balance, EOY	198,748	0	0	0	0
Total Budget Authority	164,835	0	0	300	300

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**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
2020 Enacted	0	0	349	349
Plus: Obligations from prior year balances	0	0	0	0
Plus: Other Adjustments-to-Base	0	0	0	0
2021 Base	0	0	349	349
Plus: 2021 Program Changes	0	0	0	0
2021 Estimate	0	0	349	349

		2019 Actual Personnel Amount		2020 Enacted Personnel Amount		2021 Base Personnel Amount		2021 Estimate Personnel Amount		Increase/Decrease from 2021 Base Personnel Amount	
Fishermen's Contingency Fund	Pos/BA	0	15	0	349	0	349	0	349	0	0
	FTE/OBL	0	221	0	349	0	349	0	349	0	0
Total: Fishermen's Contingency Fund	Pos/BA	0	15	0	349	0	349	0	349	0	0
	FTE/OBL	0	221	0	349	0	349	0	349	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Fishermen’s Contingency Fund
SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/ Decrease from 2021 Base	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	221	0	349	0	349	0	349	0	0
Total Obligations	0	221	0	349	0	349	0	349	0	0
Adjustments for:										
Unobligated balance, adj. SOY	0	(1,547)	0	(1,341)	0	(1,341)	0	(1,341)	0	0
Unobligated balance, EOY	0	1,341	0	1,341	0	1,341	0	1,341	0	0
Total Budget Authority	0	15	0	349	0	349	0	349	0	0
Financing from Transfers and Other:										
Temporarily Reduced	0	0	0	0	0	0	0	0	0	0
Unapportioned	0	0	0	0	0	0	0	0	0	0
Discretionary Appropriation	0	0	0	0	0	0	0	0	0	0
Net Appropriation	0	15	0	349	0	349	0	349	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Fishermen's Contingency Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Fishermen's Contingency Fund

For FY 2021, NMFS requests a total of \$349 for this fund.

Goal Statement

This fund compensates U.S. commercial fishermen for damage or loss of fishing gear, vessels, and resulting economic loss caused by obstructions related to oil or gas exploration, development, and production in any area of the Outer Continental Shelf. It supports the Department of Commerce's strategic objective 2.3, *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

The Fishermen's Contingency Fund is authorized under Section 402 of Title IV of the Outer Continental Shelf Lands Act Amendments of 1978. This fund minimizes financial instability of the fishing industry caused by competing uses of the OCS, and provides for timely resolution of claims by vessel owners.

Statement of Operating Objectives

Fishermen who can prove that they suffered losses in income due to inability or reduced capacity to fish as a result of the damage sustained may be eligible for compensation for economic loss and property loss or damage. Compensation for economic loss is based on 50 percent of gross income lost, rather than loss of profits.

Explanation and Justification

The funds used to provide this compensation are derived solely 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 OCS. 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 \$349,000, to be derived from receipts collected pursuant to that Act, to remain available until expended.

Department of Commerce
National Oceanic and Atmospheric Administration
Fishermen's Contingency Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 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 from non Federal sources	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	221	349	349	349	0
43 Interest and dividends	0	0	0	0	0
44 Refunds	0	0	0	0	0
99 Total Obligations	221	349	349	349	0

Department of Commerce
National Oceanic and Atmospheric Administration
Fishermen's Contingency Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
Less prior year recoveries	0		0	0	0
Less unobligated balance, SOY	(1,547)		(1,341)	(1,341)	0
Less unapportioned	0		0	0	0
Plus unobligated balance, EOY	1,341		1,341	1,341	0
Unobligated balance, rescission	0		0	0	0
Total Budget Authority	15		349	349	0

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**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
2020 Enacted	0	0	0	0
Less: Obligations from prior year balances	0	0	0	0
Plus: 2021 Adjustments to Base	0	0	0	0
2021 Base	0	0	0	0
Plus: 2021 Program Changes	0	0	0	0
2021 Estimate	0	0	0	0

		2019 Actual Personnel Amount	2020 Enacted Personnel Amount	2021 Base Personnel Amount	2021 Estimate Personnel Amount	Increase/ Decrease from 2021 Base Personnel Amount
Foreign Fishing Observer Fund	Pos/BA	0	0	0	0	0
	FTE/OBL	0	0	0	0	0
Total: Foreign Fishing Observer Fund	Pos/BA	0	0	0	0	0
	FTE/OBL	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Foreign Fishing Observer Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/Decrease from 2021 Base	
	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 for:										
Unobligated balance, adj. SOY	0	(522)	0	(522)	0	(522)	0	(522)	0	0
Unobligated balance, EOY	0	522	0	522	0	522	0	522	0	0
Total Budget Authority	0	0	0	0	0	0	0	0	0	0
Financing from Transfers and Other:										
Unobligated balance, rescission	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
Foreign Fishing Observer Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Foreign Fishing Observer Fund

For FY 2021, NMFS requests a total of \$0 for this fund.

Goal Statement

The goals of this fund are to provide 100 percent observer coverage aboard foreign vessels fishing within the U.S. EEZ; increase compliance with fishery regulations and requirements; support balanced conservation and management measures to achieve and maintain the optimum use of living marine resources; collect data to determine foreign compliance with fishery regulations and the status of fish stocks within the U.S. EEZ; and administer the base and supplemental observer programs in a cost-effective manner. It supports the Department of Commerce's strategic objective 2.3, *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

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 Fishery Conservation and Management Act). The fund is used by NOAA to pay salaries, administrative costs, data editing and entry, and other costs incurred in placing observers aboard foreign fishing vessels.

Statement of Operating Objectives

- Monitor foreign fishing for compliance with U.S. fishing regulations
- Collect biological data

Explanation and Justification

The observer program is conducted primarily through contracts with the private sector. This includes longline vessels fishing in the Atlantic billfish and shark fishery and other foreign vessels fishing in the EEZ. NOAA 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.

Department of Commerce
National Oceanic and Atmospheric Administration
Foreign Fishing Observer Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 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 from non-Federal sources	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 OUTYEAR CHANGES REQUESTED
 (Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(522)	(522)	(522)	(522)	0
Plus unobligated balance, EOY	522	522	522	522	0
Unobligated balance, rescission	0	0	0	0	0
Total Budget Authority	0	0	0	0	0

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**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
2020 Enacted	0	0	4,841	6,814
Less: 2021 Adjustments to Base	0	0	0	0
Less: Negative Subsidy Receipts Adjustment	0	0	(4,841)	(6,814)
2021 Base	0	0	0	0
Plus: 2021 Program Changes	0	0	0	0
2021 Estimate	0	0	0	0

		2019 Actual Personnel Amount	2020 Enacted Personnel Amount	2021 Base Personnel Amount	2021 Estimate Personnel Amount	Increase/ Decrease from 2021 Base Personnel Amount
Fisheries Finance Program Account	Pos/BA	0	8,083	0	4,841	0
	FTE/OBL	0	8,083	0	6,814	0
Total: Fisheries Finance Program Account	Pos/BA	0	8,083	0	4,841	0
	FTE/OBL	0	8,083	0	6,814	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Finance Program Account
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)**

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/ Decrease from 2021 Base	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Cost Loan Subsidy	0	0	0	1,973	0	0	0	0	0	0
Credit Reestimates	0	8,083	0	4,841	0	0	0	0	0	0
Total Obligations	0	8,083	0	6,814	0	0	0	0	0	0
Adjustments for:										
Unobligated balance, adj. SOY	0	(2,779)	0	(2,779)	0	(806)	0	(806)	0	0
Unobligated balance, EOY	0	2,779	0	806	0	806	0	806	0	0
Total Budget Authority	0	8,083	0	4,841	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	8,083	0	4,841	0	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Finance Program Account
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Fisheries Finance Program Account

For FY 2021, NMFS requests a total of \$0 for the Fisheries Finance Program Account.

Goal Statement

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. This program supports the Department of Commerce's strategic objective 2.3, Strengthen Domestic Commerce and the U.S. Industrial Base.

Base Program

NOAA's Fisheries Finance Program offers financing to U.S. companies seeking to improve their commercial fisheries and vessels. Vessel financing or refinancing that could contribute to overcapitalization by increasing harvesting capacity is prohibited by regulation.

Statement of Operating Objectives

The purpose of these loans is to provide stability to at least one aspect of an otherwise volatile industry.

Explanation and Justification

Types of activities for financing include the reconstruction, reconditioning, and, in some cases, the purchasing of fishing vessels, shoreside processing, aquaculture, mariculture facilities, purchase or refinance the purchase of harvesting rights in Federally managed limited access systems, and the purchase of individual fishing quota (IFQ) in two Northwest fisheries. The FFP also provides fishery-wide financing to ease the transition to sustainable fisheries through its fishing capacity reduction programs and provides IFQ financing 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 Fishery Conservation and Management Act; and, from time to

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Finance Program Account
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

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 fish harvesting.

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 2021, obligations of direct loans may not exceed \$24,000,000 *for Individual Fishing Quota loans and not to exceed \$100,000,000 for traditional direct loans as authorized by the Merchant Marine Act of 1936.*

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Finance Program Account
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 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 from non-Federal sources	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	8,083	6,814	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	8,083	6,814	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Finance Program Account
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(2,779)	(2,779)	(806)	(806)	0
Plus unobligated balance, EOY	2,779	806	806	806	0
Unobligated balance, rescission	0	0	0	0	0
Total Budget Authority	8,083	4,841	0	0	0

**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
2020 Enacted	3	3	8,009	8,759
Less: Obligations from prior year balances	0	0	0	0
Plus: 2021 Adjustments to Base	(3)	(3)	(8,009)	(8,759)
2021 Base	0	0	0	0
Plus: 2021 Program Changes	0	0	0	0
2021 Estimate	0	0	0	0

		2019 Actual Personnel Amount	2020 Enacted Personnel Amount	2021 Base Personnel Amount	2021 Estimate Personnel Amount	Increase/ Decrease from 2021 Base Personnel Amount
Promote and Develop Fisheries Products	Pos/BA	4	426	3	8,009	0
	FTE/OBL	4	1,898	0	8,759	0
Total: Promote and Develop Fisheries Products	Pos/BA	4	426	0	8,009	0
	FTE/OBL	4	1,898	0	8,759	0

Department of Commerce
National Oceanic and Atmospheric Administration
Promote and Develop Fisheries Products
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/Decrease from 2021 Base	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	4	1,898	3	8,759	0	0	0	0	0	0
Total Obligations	4	1,898	3	8,759	0	0	0	0	0	0
Adjustments for:										
Unobligated balance, adj. SOY	0	(2,089)	0	(750)	0	0	0	0	0	0
Recoveries	0	(133)	0	0	0	0	0	0	0	0
Unobligated balance, adj. EOY	0	750	0	0	0	0	0	0	0	0
Total Budget Authority	4	426	3	8,009	0	0	0	0	0	0
Financing from Transfers and Other:										
Transfer from USDA	(4)	(157,980)	(3)	(183,834)	0	0	0	0	0	0
Appropriations previously unavailable	0	(10,221)	0	(9,795)	0	(10,846)	0	(10,846)	0	0
Permanently Reduced	0	0	0	0	0	0	0	0	0	0
Temporarily Reduced	0	9,795	0	10,846	0	10,846	0	10,846	0	0
Transfer to ORF	0	157,980	0	174,774	0	183,834	0	183,834	0	0
Net Appropriation	0	0	0	0	0	183,834	0	183,834	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Promote and Develop Fisheries Products
JUSTIFICATION OF PROGRAM AND PERFORMANCE

(Dollar amounts in thousands)

Activity: Promote and Develop Fisheries Products

For FY 2021, NOAA estimates that a total of \$183,834 will be appropriated to the Promote and Develop account. After accounting for sequestration, \$183,834 will be available in the account. NOAA requests to transfer \$183,834 from the Promote and Develop account to the Operations, Research, and Facilities (ORF) account, leaving \$0 for the Saltonstall-Kennedy (S-K) grant program in FY 2021.

Goal Statement

To address the needs of fishing communities in optimizing economic benefits by building and maintaining sustainable fisheries and practices, dealing with the impacts of conservation and management measures, and increasing other opportunities to keep working waterfronts viable. This program supports the Department of Commerce's strategic objective 2.3, *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

NOAA will transfer \$183,834 from the Promote and Develop account to offset appropriations in the NMFS ORF account. The transfer to ORF will support data collection, data management, and fisheries stock assessment production within the Fisheries Data Collections, Surveys, and Assessments budget line, which includes the Expand Annual Stock Assessments, Fish Information Networks, Survey and Monitoring Projects, Cooperative Research activities.

Statement of Operating Objectives

Applications should fall into one of three priorities:

- Promotion, Development, and Marketing
- Marine Aquaculture
- Support of Science that Maximizes Fishing Opportunities, Revenue, and Jobs in U.S. Fisheries While Ensuring the Long-Term Sustainability of Marine Resources

Department of Commerce
National Oceanic and Atmospheric Administration
Promote and Develop Fisheries Products
JUSTIFICATION OF PROGRAM AND PERFORMANCE

(Dollar amounts in thousands)

Explanation and Justification

The Promote and Develop account funds are derived from a transfer of thirty percent of duties on imported fisheries products from USDA. Any funds remaining in this account after the ORF transfer are available to carry out the purposes of the S-K program. The American Fisheries Promotion Act (AFPA) of 1980 amended the S-K Act to authorize a grants program for fisheries research and development projects. In FY 2019, five projects were funded nationwide. The projects address topics such as promotion, development, and marketing; marine aquaculture; and support science that maximizes fishing opportunities, revenue and jobs in U.S. fisheries while ensuring long-term sustainability of marine resources. More information on past accomplishments is available at the program's website http://www.nmfs.noaa.gov/mb/financial_services/skhome.htm.

The complex process of transferring customs duties receipts from USDA to DOC to partially fund fishery activities is neither transparent to the public nor consistent with general Federal budgeting practices. In the place of customs receipts and to increase transparency, the Budget proposes to directly appropriate funding to DOC. These funds will be provided to DOC without further appropriation and are available for the same purposes as previous receipt-funded activities. Within DOC, an initial \$184 million will be provided to the Promote and Develop program in FY 2021, equal to the level of funding that would otherwise have been provided by USDA, and adjusted annually in future years. The Administration will formalize these changes through a legislative proposal to be transmitted at a later date. This request is part of a broader reform proposed for USDA's Section 32 program.

Department of Commerce
National Oceanic and Atmospheric Administration
Promote and Develop Fisheries Products
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
11 Personnel compensation					
11.1 Full-time permanent	345	345	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	4	4	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	349	349	0	0	0
12.1 Civilian personnel benefits	102	102	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	7	23	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	9	19	0	0	0
23.3 Commun., util., misc. charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.1 Advisory and assistance services	132	386	0	0	0
25.2 Other services from non-Federal sources	33	284	0	0	0
25.3 Other goods and services from Federal sources	0	0	0	0	0
26 Supplies and materials	1	10	0	0	0
31 Equipment	2	4	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	1,262	7,591	0	0	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	1	0	0	0	0
44 Refunds	0	0	0	0	0
99 Total Obligations	1,898	8,759	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Promote and Develop Fisheries Products
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
Less unobligated balance, SOY	(2,089)	(750)	0	0	0
Plus unobligated balance, EOY	750	0	0	0	0
Recoveries	(133)	0	0	0	0
Total Budget Authority	426	8,009	0	0	0

Personnel Data

Full-Time equivalent Employment:

Full-time permanent	4	3	0	0	0
Other than full time permanent	0	0	0	0	0
Total	4	3	0	0	0

Authorized Positions:

Full-time permanent	4	3	0	0	0
Other than full time permanent	0	0	0	0	0
Total	4	3	0	0	0

**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
2020 Enacted	0	0	0	0
2021 Base	0	0	0	0
Plus: 2021 Program Changes	0	0	0	0
2021 Estimate	0	0	0	0

		2019 Actual Personnel Amount		2020 Enacted Personnel Amount		2021 Base Personnel Amount		2021 Estimate Personnel Amount		Increase/ Decrease from 2021 Base Personnel Amount	
Federal Ship Financing Fund	Pos/BA	0	0	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	0	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)

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/ Decrease from 2021 Base	
	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 for:										
Transfer to Treasury (mandatory)	0	1,264	0	0	0	0	0	0	0	0
Offsetting collections (mandatory)	0	(1,264)	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
Total Budget Authority	0	0	0	0	0	0	0	0	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Federal Ship Financing Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE**
(Dollar amounts in thousands)

Activity: Federal Ship Financing Fund

For FY 2021, NMFS estimates a total of \$0 for the Federal Ship Financing Fund Account.

Goal Statement

To provide for a liquidating account necessary for the collection of premiums and fees under the Fishing Vessel Obligations Guarantee program for loan commitments made prior to FY 1992. This program supports the Department of Commerce's strategic objective 2.3, *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

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. Administrative expenses are charged to the ORF account.

Statement of Operating Objectives

- Collect repayments and interest
- Repay borrowings plus interest
- Pay default claims and interest

Explanation and Justification

These collections are for operations of this program, loans, and for use in case of default.

Department of Commerce
National Oceanic and Atmospheric Administration
Federal Ship Financing Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 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 from non-Federal sources	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
Federal Ship Financing Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
Plus transfers to Treasury	1,264	0	0	0	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Less offsetting Collections	(1,264)	0	0	0	0
Total Budget Authority	0	0	0	0	0

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**Department of Commerce
National Oceanic and Atmospheric Administration
Environmental Improvement and Restoration Fund
SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
2020 Enacted	0	0	6,883	6,883
Less: obligations from prior year balances	0	0	0	0
Plus: 2021 Adjustments to Base	0	0	(2,522)	(2,522)
2021 Base	0	0	4,361	4,361
plus: 2021 Program Changes	0	0	0	0
2021 Estimate	0	0	4,361	4,361

		2019 Actual Personnel Amount	2020 Enacted Personnel Amount	2021 Base Personnel Amount	2021 Estimate Personnel Amount	Increase/ Decrease from 2020 Base Personnel Amount
Environmental Improvement and Restoration Fund	Pos/BA	0	6,585	0	6,883	0
	FTE/OBL	0	6,585	0	6,883	0
Total: Environmental Improvement and Restoration Fund	Pos/BA	0	6,585	0	6,883	0
	FTE/OBL	0	6,585	0	6,883	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Environmental Improvement and Restoration Fund
SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/ Decrease from 2021 Base	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	6,585	0	6,883	0	4,361	0	4,361	0	0
Total Obligations	0	6,585	0	6,883	0	4,361	0	4,361	0	0
Adjustments for:										
Unobligated balance, adj. SOY	0	0	0	0	0	0	0	0	0	0
Unobligated balance, unapportioned	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adjusted	0	0	0	0	0	0	0	0	0	0
Unobligated balance, EOY	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	0	6,585	0	6,883	0	4,361	0	4,361	0	0
Financing from Transfers and Other:										
Appropriation previously unavailable	0	0	0	0	0	0	0	0	0	0
Permanently Reduced	0	435	0	432	0	273	0	273	0	0
Net Mandatory Appropriation	0	7,020	0	7,315	0	4,634	0	4,634	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Environmental Improvement and Restoration Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Environmental Improvement and Restoration Fund

For FY 2021, NMFS estimates obligating \$4,361 in the Environmental Improvement and Restoration Fund.

Goal Statement

The Environmental Improvement and 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. This program supports the Department of Commerce's strategic objective 2.3, *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

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.

Statement of Operating Objectives

- Improve understanding of North Pacific marine ecosystem dynamics and use of the resources
- Improve ability to forecast and respond to effects of changes through integration of various research activities including long-term monitoring
- Improve ability to manage and protect fish and wildlife populations of the North Pacific

Explanation and Justification

Each year NOAA's EIRF account is financed with a transfer from the Department of the Interior. NOAA grants these funds to the North Pacific Research Board (NPRB), which conducts an open, competitive process for gathering research proposals. Through this process, the NPRB recommends research projects relating to fisheries or marine ecosystems in the North Pacific Ocean, Bering Sea, and Arctic Ocean, with emphasis on cooperative research designed to address pressing fishery management or marine ecosystem information needs.

Department of Commerce
National Oceanic and Atmospheric Administration
Environmental Improvement and Restoration Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 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 from non-Federal sources	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	6,585	6,883	4,361	4,361	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	6,585	6,883	4,361	4,361	0

Department of Commerce
National Oceanic and Atmospheric Administration
Environmental Improvement and Restoration Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, adjusted	0	0	0	0	0
Less unobligated balance, transferred	0	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Unobligated balance, rescission	0	0	0	0	0
Total Budget Authority	6,585	6,883	4,361	4,361	0

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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
2020 Enacted	40	40	14,468	14,769
Adjustments to Base	0	0	0	0
Less: Obligations from Prior Year Balances	0	0	125	(283)
2021 Base	40	40	14,593	14,486
Plus: 2021 Program Changes	0	0	0	0
2021 Estimate	40	40	14,593	14,486

		2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/ Decrease from 2021 Base	
		Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount	
Limited Access System Administration Fund	Pos/BA	25	13,913	40	14,468	40	14,593	40	14,593	0	0
	FTE/OBL	25	12,255	40	14,769	40	14,486	40	14,486	0	0
Total: Limited Access System Administration Fund	Pos/BA	25	13,913	40	14,468	40	14,593	40	14,593	0	0
	FTE/OBL	25	12,255	40	14,769	40	14,486	40	14,486	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Limited Access System Administration Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/ Decrease from 2021 Base	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	25	12,255	40	14,769	40	14,486	40	14,486	0	0
Total Obligations	25	12,255	40	14,769	40	14,486	40	14,486	0	0
Adjustments for:										
Recoveries	0	(208)	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(17,777)	0	(19,643)	0	(19,342)	0	(19,342)	0	0
Unobligated balance, unapportioned	0	0	0	0	0	0	0	0	0	0
Unobligated balance, EOY	0	19,643	0	19,342	0	19,449	0	19,449	0	0
Total Budget Authority	25	13,913	40	14,468	40	14,593	40	14,593	0	0
Financing from Transfers and Other:										
Appropriations previously unavailable	0	(830)	0	(865)	0	(853)	0	(853)	0	0
Temporarily Reduced	0	865	0	853	0	862	0	862	0	0
Net Appropriation	25	13,948	40	14,456	40	14,602	40	14,602	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Limited Access System Administration Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Limited Access System Administration Fund

For FY 2021, NMFS estimates obligating \$14,486 in the Limited Access System Administration account.

Goal Statement

To provide for the collection of fees to recover the incremental costs of management, data collection, and enforcement of Limited Access Privilege (LAP) programs. This program supports the Department of Commerce's strategic objective 2.3, *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

Under the authority of Magnuson-Stevens Fishery Conservation and Management Act (MSA) Section 304(d)(2)(A) funds collected are deposited into the "Limited Access System Administrative Fund" (LASAF). Fees cannot 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.

Statement of Operating Objectives

- Provide repository for fees collected from Limited Access Programs
- Fund incremental costs of management, data collection and analysis, and enforcement of limited access privilege programs

Explanation and Justification

The LASAF is available, without appropriation or fiscal year limitation, only for the purposes of administering the central registry system; and administering and implementing the MSA in the fishery in which the fees were collected. Sums in the fund that are not currently needed for these purposes are kept on deposit or invested in obligations of, or guaranteed by, the United States. 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 LASAF.

Department of Commerce
National Oceanic and Atmospheric Administration
Limited Access System Administration Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
11 Personnel compensation					
11.1 Full-time permanent	2,414	3,958	3,958	3,958	0
11.3 Other than full-time permanent	1	1	1	1	0
11.5 Other personnel compensation	341	341	341	341	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	2,756	4,300	4,300	4,300	0
12.1 Civilian personnel benefits	1,134	1,597	1,597	1,597	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	50	75	75	75	0
22 Transportation of things	6	8	8	8	0
23.1 Rental payments to GSA	329	329	329	329	0
23.2 Rental payments to others	11	11	11	11	0
23.3 Commun., util., misc. charges	31	31	31	31	0
24 Printing and reproduction	5	5	5	5	0
25.1 Advisory and assistance services	86	86	86	86	0
25.2 Other services from non-Federal sources	5,309	5,792	5,509	5,509	0
25.3 Other goods and services from Federal sources	14	14	14	14	0
26 Supplies and materials	75	75	75	75	0
31 Equipment	10	10	10	10	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	2,436	2,436	2,436	2,436	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	3	0	0	0	0
44 Refunds	0	0	0	0	0
99 Total Obligations	12,255	14,769	14,486	14,486	0

Department of Commerce
National Oceanic and Atmospheric Administration
Limited Access System Administration Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
Recoveries	(208)	0	0	0	0
Less unobligated balance, SOY	(17,777)	(19,643)	(19,342)	(19,342)	0
Unobligated balance, unapportioned	0	0	0	0	0
Plus unobligated balance, EOY	19,643	19,342	19,449	19,449	0
Unobligated balance, rescission	0	0	0	0	0
Total Budget Authority	13,913	14,468	14,593	14,593	0

Personnel Data

Full-Time equivalent Employment:

Full-time permanent	25	40	40	40	40
Other than full time permanent	0	0	0	0	0
Total	25	40	40	40	40

Authorized Positions:

Full-time permanent	25	40	40	40	40
Other than full time permanent	0	0	0	0	0
Total	25	40	40	40	40

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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
2020 Enacted	0	0	0	0
Adjustments to Base	0	0	0	0
2021 Base	0	0	0	0
Plus: 2021 Program Change:	0	0	0	0
2021 Estimate	0	0	0	0

		2019 Actual Personnel Amount	2020 Enacted Personnel Amount	2021 Base Personnel Amount	2021 Estimate Personnel Amount	Increase/ Decrease from 2021 Base Personnel Amount
Marine Mammal Unusual Mortality Event Fund	Pos/BA	0	0	0	0	0
	FTE/OBL	0	0	0	0	0
Total: Marine Mammal Unusual Mortality Event Fund	Pos/BA	0	0	0	0	0
	FTE/OBL	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)

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/ Decrease from 2021 Base	
	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 for:										
Recoveries	0	0	0	0	0	0	0	0	0	0
Collections	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(27)	0	(27)	0	(27)	0	(27)	0	0
Unobligated balance, unapportioned	0	0	0	0	0	0	0	0	0	0
Unobligated balance, EOY	0	27	0	27	0	27	0	27	0	0
Total Budget Authority	0	0	0	0	0	0	0	0	0	0
Financing from Transfers and Other:										
Appropriation previously unavailable	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
Marine Mammal Unusual Mortality Event Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Marine Mammal Unusual Mortality Event Fund

For FY 2021, NMFS estimates obligating up to \$27 from the Marine Mammal Unusual Mortality Event Fund.

Provide funds to support investigations and responses to unusual marine mammal mortality events. This program supports the Department of Commerce's strategic objective 2.3, *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

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.

Statement of Operating Objectives

MMPA Section 405 (16 U.S.C. 1421d) establishes the Marine Mammal Unusual Mortality Event Fund and describes its purposes and how donations can be made to the Fund. The Fund is an emergency response fund used to help cover expenses incurred by the volunteer Marine Mammal Stranding Network during a UME. Specifically, 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 in the following ways:

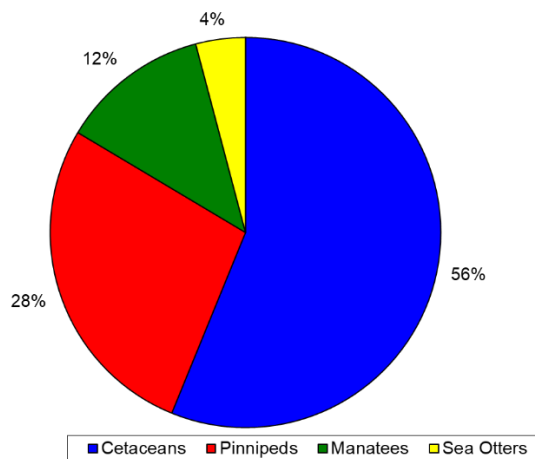
Department of Commerce
National Oceanic and Atmospheric Administration
Marine Mammal Unusual Mortality Event Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

- “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.”

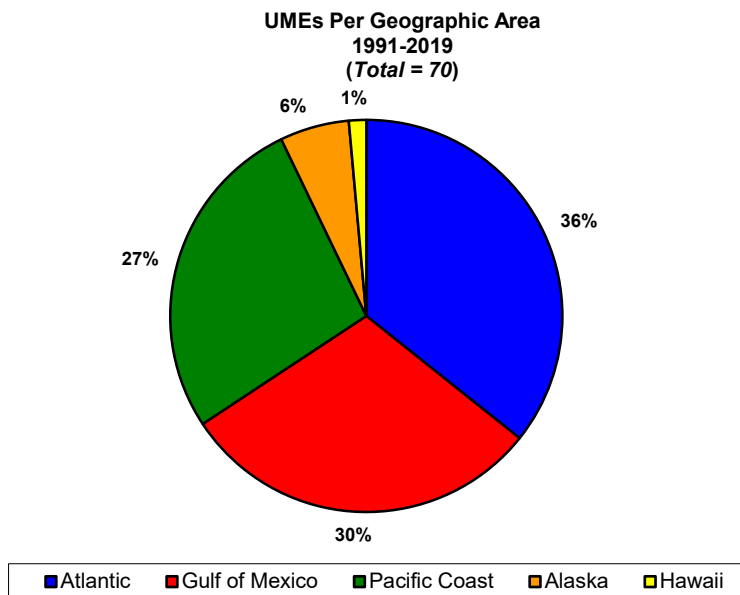
NOAA will continue to utilize the UME Contingency Fund to support the Marine Mammal Stranding Network’s eligible work as needed.

Department of Commerce
National Oceanic and Atmospheric Administration
Marine Mammal Unusual Mortality Event Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Species Impacted by UMEs
1991-2019
(Total = 70)



Department of Commerce
National Oceanic and Atmospheric Administration
Marine Mammal Unusual Mortality Event Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
 (Dollar amounts in thousands)



Explanation and Justification

Since UMEs are unpredictable emergency events caused by any number of circumstances (natural or human-caused), it is impossible to anticipate how many UMEs may occur in a given year or how much funding will be needed. During the past 28 years (1991– 2019), NOAA declared 67 UMEs, an average of ~2.4 UMEs per year. The highest number of UMEs declared in a year was five (in both 2006 and 2007). The costs associated with UMEs are highly variable and depend on the species involved, location, equipment, and laboratory needs. For example, a UME involving large whales offshore can cost well over several \$100,000s in

Department of Commerce
National Oceanic and Atmospheric Administration
Marine Mammal Unusual Mortality Event Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

expenses because of the considerable logistical challenges and needs (e.g., ship time or aerial support, number of personnel, safety equipment, etc.)

To date, Congress has appropriated funding for UMEs on one occasion in 2005. Some of those funds were transferred to the National Fish and Wildlife Foundation (NFWF) since they have the ability to quickly distribute funds within 30 days of invoicing to our partners during a UME. At this time there are sufficient funds held at NFWF to meet most of our expected expenses in FY 2020 and we anticipate obligating up to \$27 from the Marine Mammal Unusual Mortality Event Fund in FY 2021. Additionally, the UME Contingency fund is listed on Pay.gov allowing the public to donate to the fund year round.

Department of Commerce
National Oceanic and Atmospheric Administration
Marine Mammal Unusual Mortality Event Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 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 from non-Federal sources	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
Marine Mammal Unusual Mortality Event Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(27)	(27)	(27)	(27)	0
Plus unobligated balance, EOY	27	27	27	27	0
Less collections	0	0	0	0	0
Unobligated balance, unapportioned	0	0	0	0	0
Total Budget Authority	0	0	0	0	0

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**Department of Commerce
National Oceanic and Atmospheric Administration
Western Pacific Sustainable Fisheries Fund
SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
2020 Enacted	0	0	384	509
Adjustments to Base	0	0	203	78
2021 Base	0	0	587	587
Plus: 2021 Program Changes	0	0	0	0
2021 Estimate	0	0	587	587

		2019 Actual Personnel Amount	2020 Enacted Personnel Amount	2021 Base Personnel Amount	2021 Estimate Personnel Amount	Increase/ Decrease from 2021 Base Personnel Amount					
Western Pacific Sustainable Fisheries Fund	Pos/BA	0	627	0	384	0	587	0	587	0	0
	FTE/OBL	0	502	0	509	0	587	0	587	0	0
Total: Western Pacific Sustainable Fisheries Fund	Pos/BA	0	627	0	384	0	587	0	587	0	0
	FTE/OBL	0	502	0	509	0	587	0	587	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Western Pacific Sustainable Fisheries Fund
SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/ Decrease from 2021 Base	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	502	0	509	0	587	0	587	0	0
Total Obligations	0	502	0	509	0	587	0	587	0	0
Adjustments for:										
Recoveries	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	0	0	(125)	0	0	0	0	0	0
Unobligated balance, unapportioned	0	0	0	0	0	0	0	0	0	0
Unobligated balance, EOY	0	125	0	0	0	0	0	0	0	0
Total Budget Authority	0	627	0	384	0	587	0	587	0	0
Financing from Transfers and Other:										
Appropriation previously unavailable	0	(33)	0	(31)	0	(22)	0	(22)	0	0
Temporarily Reduced	0	31	0	22	0	35	0	35	0	0
Net Appropriation	0	625	0	375	0	600	0	600	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Western Pacific Sustainable Fisheries Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Western Pacific Sustainable Fisheries Fund

For FY 2021, NMFS estimates obligating \$587 in the Western Pacific Sustainable Fisheries Fund.

Goal Statement

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. This program supports the Department of Commerce's strategic objective 2.3, *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

Section 204(e) of the 2006 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) authorizes the establishment of the Western Pacific Sustainable Fisheries Fund. Before entering 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.

Statement of Operating Objectives

The conservation and management objectives for the Western Pacific Sustainable Fisheries Fund are listed in the four marine conservation plans:

- Hawaii and Pacific Insular Areas
- Guam
- American Samoa
- Commonwealth of the Northern Mariana Islands.

Department of Commerce
National Oceanic and Atmospheric Administration
Western Pacific Sustainable Fisheries Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Explanation and Justification

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). Funds are available to:

- The Western Pacific Council for the purpose of carrying out implementation of a marine conservation plan (see below for more info on marine conservation plans).
- The Secretary of State for mutually agreed upon travel expenses for no more than two Federal representatives incurred as a direct result of negotiations and entering into a Pacific Insular Area fishery agreement. These fishery agreements authorize foreign fishing within the exclusive economic zone adjacent to a Pacific Insular Area other than American Samoa, Guam, or the Northern Mariana Islands, at the request of the Western Pacific Council).
- The Western Pacific Council to meet conservation and management objectives in the State of Hawaii if monies remain in the Western Pacific Sustainable Fisheries Fund after the funding requirements of Section 204(e) subparagraphs (A) and (B) of the 2006 amendments to the MSA have been satisfied.

In the case of violations by foreign vessels occurring in these areas, amounts received by the Secretary attributable to fines and penalties are deposited into the fund to be used for fisheries enforcement and for implementation of a marine conservation plan. 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 are deposited in the fund.

Department of Commerce
National Oceanic and Atmospheric Administration
Western Pacific Sustainable Fisheries Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 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 from non-Federal sources	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	502	509	587	587	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	502	509	587	587	0

Department of Commerce
National Oceanic and Atmospheric Administration
Western Pacific Sustainable Fisheries Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
Recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	(125)	0	0	0
Plus unobligated balance, EOY	125	0	0	0	0
Unobligated balance, unapportioned	0	0	0	0	0
Total Budget Authority	627	384	587	587	0

**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
2020 Enacted	0	0	3,941	6,732
Adjustments to Base			0	0
Less: Obligations from Prior Year Balances	0	0	(27)	800
2021 Base	0	0	3,941	7,532
Plus: 2021 Program				
Changes	0	0	0	0
2021 Estimate	0	0	3,941	7,532

		2019 Actual Personnel Amount	2020 Enacted Personnel Amount	2021 Base Personnel Amount	2021 Estimate Personnel Amount	Increase/ Decrease from 2021 Base Personnel Amount
Fisheries Asset Forfeiture Fund	Pos/BA	0 5,113	0 3,941	0 3,914	0 3,914	0 0
	FTE/OBL	0 4,535	0 6,732	0 7,532	0 7,532	0 0
Total: Fisheries Asset Forfeiture Fund	Pos/BA	0 5,113	0 3,941	0 3,941	0 3,914	0 0
	FTE/OBL	0 4,535	0 6,732	0 7,532	0 7,532	0 0

**Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Asset Forfeiture Fund
SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/ Decrease from 2021 Base	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	4,535	0	6,732	0	7,532	0	7,532	0	0
Total Obligations	0	4,535	0	6,732	0	7,532	0	7,532	0	0
Adjustments for:										
Recoveries	0	(1)	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(16,276)	0	(16,855)	0	(9,064)	0	(9,064)	0	0
Unobligated balance, rescinded	0	0	0	5,000	0	0	0	0	0	0
Unobligated balance, EOY	0	16,855	0	9,064	0	5,446	0	5,446	0	0
Total Budget Authority	0	5,113	0	3,941	0	3,914	0	3,914	0	0
Financing from Transfers and Other:										
Mandatory Appropriation Temporarily Reduced	0	258	0	231	0	231	0	231	0	0
Appropriations previously unavailable	0	(264)	0	(258)	0	(231)	0	(231)	0	0
Net Appropriation	0	5,107	0	3,914	0	3,914	0	3,914	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Asset Forfeiture Fund
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Fisheries Asset Forfeiture Fund

For FY 2021, NMFS estimates it will collect \$3,914 in fines, penalties, and forfeitures proceeds.

Goal Statement

To pay certain enforcement-related expenses from fines, penalties, and forfeiture proceeds received for violations of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), Marine Mammal Protection Act (MMPA), National Marine Sanctuaries Act, or any other marine resource law enforced by the Secretary. This program supports the Department of Commerce's strategic objective 2.3, *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

Pursuant to Section 311(e)(1) of the MSA, NOAA has established a Civil Monetary Penalty/Asset Forfeiture Fund (AFF) where these proceeds are deposited.

Statement of Operating Objectives

The objective of the AFF is to provide a repository for fines, penalties and forfeiture proceeds, which are only used to fund the authorized costs listed below.

Explanation and Justification

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.

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Asset Forfeiture Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 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	1,791	2,079	2,079	2,079	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	13	13	13	13	0
23.3 Commun., util., misc. charges	3	3	3	3	0
24 Printing and reproduction	8	8	8	8	0
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	382	2,061	2,861	2,861	0
25.3 Other goods and services from Federal sources	1,983	1,983	1,983	1,983	0
26 Supplies and materials	59	158	158	158	0
31 Equipment	59	177	177	177	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	250	250	250	250	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	4,535	6,732	7,532	7,532	0

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Asset Forfeiture Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
Less unobligated balance, SOY	(16,276)	(16,855)	(9,064)	(9,064)	0
Recoveries	(1)	0	0	0	0
Plus unobligated balance, EOY	16,855	9,064	5,446	5,446	0
Less unobligated balance, rescinded	0	5,000	0	0	0
Total Budget Authority	5,113	3,941	3,914	3,914	0

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**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
2020 Enacted	0	0	3,504	5,661
Adjustments to Base	0	0	0	0
Less: Obligations from Prior Year Balances	0	0	467	(1,690)
2021 Base	0	0	3,971	3,971
Plus: 2021 Program				
Changes	0	0	0	0
2021 Estimate	0	0	3,971	3,971

		2019 Actual Personnel Amount		2020 Enacted Personnel Amount		2021 Base Personnel Amount		2021 Estimate Personnel Amount		Increase/ Decrease from 2021 Base Personnel Amount	
North Pacific Observer Fund	Pos/BA	0	3,457	0	3,504	0	3,971	0	3,971	0	0
	FTE/OBL	0	3,405	0	5,661	0	3,971	0	3,971	0	0
Total: North Pacific Observer Fund	Pos/BA	0	3,457	0	3,504	0	3,971	0	3,971	0	0
	FTE/OBL	0	3,405	0	5,661	0	3,971	0	3,971	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
North Pacific Observer Fund
SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

	2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/ Decrease from 2021 Base	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	3,405	0	5,661	0	3,971	0	3,971	0	0
Total Obligations	0	3,405	0	5,661	0	3,971	0	3,971	0	0
Adjustments for:										
Recoveries	0	0	0	0	0	0	0	0	0	0
Unobligated balance, SOY	0	(2,105)	0	(2,157)	0	0	0	0	0	0
Unobligated balance, EOY	0	2,157	0	0	0	0	0	0	0	0
Total Budget Authority	0	3,457	0	3,504	0	3,971	0	3,971	0	0
Financing from Transfers and Other:										
Appropriation previously unavailable	0	(262)	0	(211)	0	(207)	0	(207)	0	0
Temporarily Reduced	0	211	0	207	0	236	0	236	0	0
Net Appropriation	0	3,406	0	3,500	0	4,000	0	4,000	0	0

Department of Commerce
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JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: North Pacific Observer Fund

For FY 2021, NMFS estimates obligating \$3,971 for the North Pacific Observer Fund.

Goal Statement

To fund observer coverage on the vessels and processors in the partial coverage category within the North Pacific Groundfish Observer Program (NPGOP). This program supports the Department of Commerce's strategic objective 2.3, *Strengthen Domestic Commerce and the U.S. Industrial Base*.

Base Program

On January 1, 2013, the restructured 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.

Statement of Operating Objectives

- Collect catch data onboard fishing vessels and at onshore processing plants that is used for in-season management and scientific purposes such as stock assessments and ecosystem studies
- Ensure that the data collected by observers are of the highest quality possible by implementing rigorous quality control and quality assurance processes

Explanation and Justification

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) full coverage category and (2) partial coverage. 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

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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 North Pacific 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 \$4.0 million to be collected in fees from the FY 2020 season, to be used in FY 2021 for observer coverage.

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North Pacific Observer Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 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 goods and services from Federal sources	3,404	5,661	3,971	3,971	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	1	0	0	0	0
44 Refunds	0	0	0	0	0
99 Total Obligations	3,405	5,661	3,971	3,971	0

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North Pacific Observer Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/ Decrease from 2021 Base
Recoveries	0	0	0	0	0
Less unobligated balance, SOY	(2,105)	(2,157)	0	0	0
Plus unobligated balance, EOY	2,157	0	0	0	0
Unobligated balance, rescission	0	0	0	0	0
Total Budget Authority	3,457	3,504	3,971	3,971	0

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Oceanic and Atmospheric Research
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Executive Summary

For FY 2021, NOAA requests a total of \$352,745,000 and 663 FTE/ 666 positions for the Office of Oceanic and Atmospheric Research including a net decrease of \$245,992,000 and 96 FTE/ 98 positions in program changes.

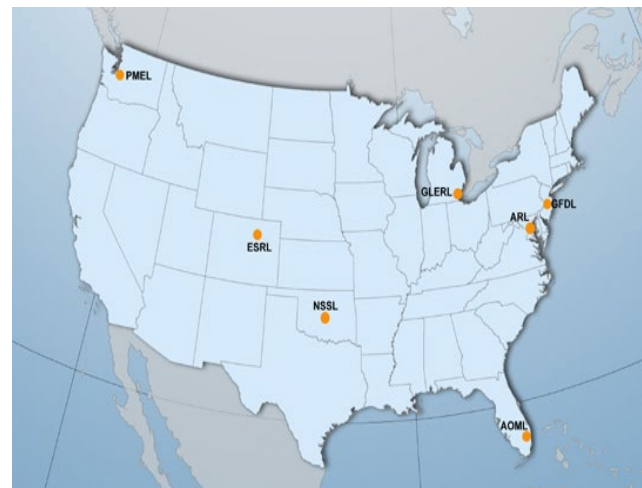
Oceanic and Atmospheric Research (OAR) is NOAA's central research Line Office charged with improving the understanding of changes in the Earth's environment. OAR integrates and conducts research across NOAA to advance NOAA's mission by providing better forecasts and improving understanding of the Earth and its processes. OAR conducts research on ocean acidification, aquaculture, severe weather, climate, and deep sea environments and develops technology that is transitioned into operations at one of the other NOAA Line Offices or that improve the scope and efficiency of our observing systems. OAR also provides information to individuals, businesses, and communities to reduce vulnerability to extreme weather and climate, prepare for drought and water resource challenges, protect and preserve coasts and coastal infrastructure from inundation, and identify and manage risks to marine ecosystems and the services they provide.

OAR's Organizational Components:

OAR operates through a national network of laboratories, other university-based research institutes, and specialized programs. These centers of expertise collaborate across NOAA's weather, climate, and ocean research to apply an integrated approach to global and local scientific challenges. OAR consists of the following organizational components:

OAR Laboratories:

OAR has ten laboratories across the United States providing the research foundation for NOAA products and services that support decision making by policymakers and the public. These laboratories collaborate with numerous external partners, including NOAA-funded Cooperative Institutes at academic and scientific institutions.



Map displays the location of OAR's ten laboratories. There are four laboratories at the ESRL location in Boulder, CO.

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OAR's labs include:

Air Resources Laboratory (ARL), College Park, Maryland

ARL conducts research on atmospheric dispersion, atmospheric chemistry, climate composition, and the complex behavior of the atmosphere near the Earth's surface, providing weather forecasters' direct access to dispersion estimates of airborne hazardous materials to predict the transport of acid rain, volcanic ash, wildfires, air chemistry, mercury contamination, and radioactive material.

Atlantic Oceanographic and Meteorological Laboratory (AOML), Miami, Florida

AOML conducts research that protects coastal populations and ecosystems with more accurate forecasting of hurricanes, better understanding of the role of oceans in climate, and protection from environmental degradation.

Earth System Research Laboratories (ESRL), Boulder, Colorado

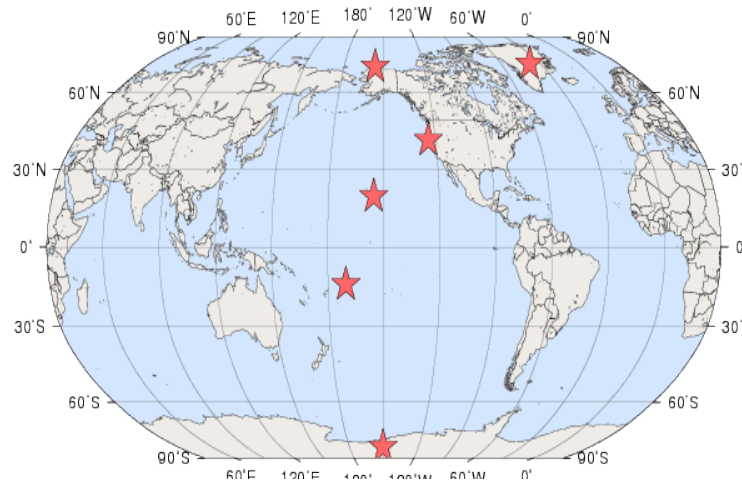
Four laboratories within ESRL pursue a broad and comprehensive understanding of the Earth system, including the atmosphere, ocean, and the climate system.

Chemical Sciences Laboratory (CSL)

CSL focuses on quantifying manmade and natural emissions, understanding processes that alter the atmosphere's composition and the distribution of pollutants, and offering information and practical applications to local decision makers and the public.

Global Monitoring Laboratory (GML)

GML sustains long-term observation of atmospheric compounds from over 100 sites around the world and identifies emerging trends in compound location and concentration. It also validates the NASA and NOAA satellite data of greenhouse gases, ozone, radiation, aerosols, and many other atmospheric compounds.



Among other observation networks, GML operates 6 Atmospheric Baseline Observatories (ABOs), strategically located across the globe, that collect high quality, long-term atmospheric data used by more than 500 external partners and stakeholders.

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Global Systems Laboratory (GSL)

GSL improves weather and water by developing and integrating next-generation Earth system models at storm-to-global scales and advances new modeling.

Physical Sciences Laboratory (PSL)

PSL conducts physical science research that advances NOAA's abilities to observe, understand, and predict the physical behavior of the Earth system, improving forecasts and seasonal outlooks.

Geophysical Fluid Dynamics Laboratory (GFDL), Princeton, New Jersey

GFDL modeling research provides the foundation for our Nation's weather prediction, seasonal forecasting and ocean modeling.

Great Lakes Environmental Research Laboratory (GLERL), Ann Arbor, Michigan

GLERL develops information and tools for coastal decision makers managing 95 percent of our country's surface freshwater. GLERL advances forecasts of environmental change in the Great Lakes through environmental observation, ecosystem process studies, and integrated modeling.

National Severe Storms Laboratory (NSSL), Norman, Oklahoma

NSSL focuses on understating the causes of severe weather, such as tornadoes, flash floods, hail, damaging winds, and winter weather, in order to improve the lead time and accuracy of severe weather forecasts and warnings.

Pacific Marine Environmental Laboratory (PMEL), Seattle, Washington

PMEL explores the complex physical and geochemical processes operating in the world's oceans, including the processes driving ocean circulation and the global climate system.

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OAR Cooperative Institutes:

OAR Cooperative Institutes (CIs) are long-term collaborations between NOAA and academic and scientific institutions dedicated to advancing oceanic and atmospheric research. CIs are co-located with one or more NOAA facilities to promote scientific exchange and technology transfer. Each CI is competitively selected to address a specific research theme within NOAA's mission, such as weather forecast improvement or ecosystem forecasting. These partnerships help maximize scientific breadth, quality, productivity, and return on investment. NOAA currently supports 17 CIs consisting of 42 universities and research institutions across 23 states and the District of Columbia.

NOAA's Cooperative Institutes and their host institution are:

- CI for Alaska Research, (CIFAR), University of Alaska Fairbanks
- CI for Great Lakes Research , (CIGLR), University of Michigan
- CI for Marine and Atmospheric Studies, (CIMAS), University of Miami
- CI for Marine Ecosystems and Climate, (CIMEC), University of California, San Diego
- CI for Marine Resources Studies, (CIMRS), Oregon State University
- CI for Mesoscale Meteorological Studies, (CIMMS), University of Oklahoma
- CI for Meteorological Satellite Studies, (CIMSS), University of Wisconsin
- CI for Modeling the Earth System, (CIMES), Princeton University
- CI for Ocean Exploration, Research and Technology, (CIOERT), Florida Atlantic University
- CI for Research in Environmental Sciences, (CIRES), University of Colorado
- CI for Research in the Atmosphere, (CIRA), Colorado State University
- CI for Satellite Earth System Studies, (CISESS), University of Maryland, College Park
- CI for the North Atlantic Region, (CINAR), Woods Hole Oceanographic Institution
- Joint Institute for Marine and Atmospheric Research, (JIMAR), University of Hawaii
- Joint Institute for the Study of the Atmosphere and Ocean, (JISAO), University of Washington
- Northern Gulf Institute, (NGI), Mississippi State University
- Ocean Exploration Cooperative Institute, (OECI), University of Rhode Island

OAR Programs:

OAR Programs manage competitive and noncompetitive awards for intramural and extramural research that focus on specific topics and emerging areas of research. They also foster collaboration across NOAA, with other agencies, and academic institutions. OAR's

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programs include:

Climate Program Office (CPO)

CPO supports activities that advance our understanding of Earth's climate system and helps communities apply this knowledge to mitigate risks and improve community resilience and preparedness throughout the Nation.

Global Ocean Monitoring and Observing Program (GOMO)

GOMO provides long-term, high quality, global ocean observations and information products to researchers, forecasters, and other stakeholders to inform and prepare society for environmental challenges.

National Sea Grant College Program (NSGCP)

The National Sea Grant College Program is a Federal-state partnership that focuses on maintaining resilient communities and economies, sustainable fisheries and aquaculture, healthy coastal ecosystems, and environmental literacy and workforce development.

NOAA Ocean Acidification Program (OAP)

The OAP aims to improve understanding of how ocean chemistry is changing, how variable that change is by region, and how ocean acidification affects marine life, people, and the economy.

Ocean Exploration and Research (OER)

OER, the only Federal program dedicated to ocean exploration, leads efforts to explore and characterize deep-water areas of the U.S. and other poorly known ocean areas so the Nation can successfully manage its oceanic resources.

Weather Program Office (WPO)

WPO improves predictions and warnings for the public and weather sensitive U.S. industries by facilitating cutting-edge research and transitioning this research to National Weather Service (NWS) operations.

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Performance:

Performance evaluation is an integral part of OAR’s business process. OAR uses the performance management process to align resources, systems, and workforce to achieve research-based objectives and priorities for the Nation. The effectiveness of these investments is assessed using numerous internal and external performance measures including the Government Performance and Results Act (GPRA) and other performance measures.

Adjustments:

Inflationary Adjustments

NOAA’s FY 2021 Base includes \$6,039,000 and 0 FTE/ 0 positions to account for the full funding requirement for inflationary adjustments to current programs for OAR activities. This includes the 2020 civilian pay raise of 3.1 percent, estimated 2021 civilian pay raise of 1.0 percent, and the estimated 2021 military pay raise of 3.0 percent as well as inflationary increases for labor and non-labor activities, including benefits, service contracts, utilities, field office lease payments, and rent charges from the General Services Administration (GSA).

Technical Adjustments (Transfers)

NOAA also requests the following transfers for a net change of \$0 and 0 FTE/ 0 Positions to the operating unit:

From Office	Subactivity	To Office	Subactivity	Amount
OAR	Climate Competitive Research	OAR	U.S. Weather Research Program (USWRP)	\$5,676,000 / 0 FTE/ 0 positions
OAR	Climate Competitive Research	OAR	Climate Research Laboratories & Cooperative Institutes	\$14,392,000 / 29 FTE/ 29 positions
OAR	Regional Climate Data & Information	OAR	Climate Research Laboratories & Cooperative Institutes	*\$0 / 14 FTE/ 14 positions

*As a result of the Climate Program decreases in the RCDI Subactivity, existing laboratory FTE previously funded by RCDI will be funded from their laboratory’s Climate Labs & CI Subactivity funding.

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NOAA is requesting to transfer \$20,068,000 and 43 FTE to consolidate Climate Research and allow for better alignment of funding within specific programs and activities being carried out within the Climate Research Climate Laboratories & Cooperative Institutes and the U.S. Weather Research Program (USWRP). Specifically, \$5,676,000 will be moved from the Climate Competitive Research Subactivity to the USWRP Subactivity to support research and development associated with Seasonal to Subseasonal (S2S) atmospheric research. This funding complements S2S funding already located in the USWRP Subactivity. Additionally, \$14,392,000 and 29 FTE will be moved from the Climate Competitive Research Subactivity to the Climate Research Climate Laboratories & Cooperative Institutes Subactivity to support Earth Systems Research within the OAR laboratories and long-term observations and climate records. This funding will be sent to the NOAA labs in support of their observation activities. A total of 14 FTE will be moved without funding from the Regional Climate Data & Information (RCDI) Subactivity to the Climate Laboratories & Cooperative Institute Subactivity. This is a result of the RCDI funding opportunities no longer being available for OAR laboratory to receive and to fund their existing research. FTE will not be reduced as part of the Climate Program decreases. The Climate Competitive Research Subactivity is proposed for elimination in FY 2020. Further transfer change detail can be found in Exhibit 3T (OAR - 8).

NARRATIVE INFORMATION:

NOAA requests a total net decrease of \$243,678,000 and 96 FTE/ 98 position in program changes for OAR. Following this section are base justification materials by activity and program change narratives for each subactivity that represent program changes of \$250,000 or greater and/or are new starts or terminations.

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Climate Research
Subactivity: Climate Competitive Research Transfer to USWRP

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base</u>
11.1 Full-time permanent compensation	5,900	0	2,351
11.3 Other than full-time permanent	168	0	66
11.5 Other personnel compensation	43	0	0
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	6,111	0	2,417
12 Civilian personnel benefits	1,833	0	725
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	400	0	164
22 Transportation of things	146	0	0
23 Rent, communications, and utilities		0	0
23.1 Rental payments to GSA	700	0	700
23.2 Rental Payments to others	200	0	0
23.3 Communications, utilities and misc charges	800	0	627
24 Printing and reproduction	12	0	0
25.1 Advisory and assistance services	2,451	(2,451)	0
25.2 Other services from non-Federal sources	6,000	0	3,919
25.3 Other goods and services from Federal sources	300	0	249
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	800	0	272
31 Equipment	600	0	296
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	42,646	(3,225)	33,675
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	63,000	(5,676)	43,044

* The 2021 Base column reflects the full 2021 Base for the Subactivity, including calculated ATBs and any additional transfers.

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)**

Activity: U.S. Weather Research Program (USWRP)
Subactivity: USWRP Transfer from Climate Competitive Research

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	575	0	581
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	4	0	4
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	579	0	585
12 Civilian personnel benefits	174	0	175
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	44	0	44
22 Transportation of things	0	0	0
23 Rent, communications, and utilities		0	
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	5	0	5
25.1 Advisory and assistance services	118	2,451	2,569
25.2 Other services from non-Federal sources	4,716	0	4,716
25.3 Other goods and services from Federal sources	217	0	217
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	1,543	0	1,543
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	51	0	51
31 Equipment	109	0	109
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	15,444	3,225	18,718
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	23,000	5,676	28,732

* The 2021 Base column reflects the full 2021 Base for the Subactivity, including calculated ATBs and any additional transfers.

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)**

Activity: Climate Research

Subactivity: Climate Competitive Research Transfer to Climate Laboratories & Cooperative Institutes

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	5,806	(3,549)	2,257
11.3 Other than full-time permanent	168	(102)	66
11.5 Other personnel compensation	43	(43)	0
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	6,017	(3,694)	2,323
12 Civilian personnel benefits	1,805	(1,108)	697
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	400	(236)	164
22 Transportation of things	146	(146)	0
23 Rent, communications, and utilities		0	0
23.1 Rental payments to GSA	700	0	700
23.2 Rental Payments to others	200	(200)	0
23.3 Communications, utilities and misc charges	800	(173)	627
24 Printing and reproduction	12	(12)	0
25.1 Advisory and assistance services	2,451	0	0
25.2 Other services from non-Federal sources	6,000	(2,194)	3,918
25.3 Other goods and services from Federal sources	300	(51)	249
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	800	(528)	272
31 Equipment	600	(304)	296
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	42,769	(5,746)	33,798
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	63,000	(14,392)	43,044

* The 2021 Base column reflects the full 2021 Base for the Subactivity, including calculated ATBs and any additional transfers.

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Salaries and Expenses
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Climate Laboratories & Competitive Institutes
Subactivity: Climate Laboratories & Competitive Institutes Transfer from Climate Competitive Research

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base</u>
11.1 Full-time permanent compensation	16,358	3,549	20,071
11.3 Other than full-time permanent	38	102	140
11.5 Other personnel compensation	504	43	547
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	16,900	3,694	20,758
12 Civilian personnel benefits	5,070	1,108	6,227
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	765	236	1,001
22 Transportation of things	736	146	882
23 Rent, communications, and utilities		0	
23.1 Rental payments to GSA	1,580	0	1,580
23.2 Rental Payments to others	5	200	205
23.3 Communications, utilities and misc charges	508	173	681
24 Printing and reproduction	1,302	12	1,314
25.1 Advisory and assistance services	349	0	349
25.2 Other services from non-Federal sources	9,917	2,194	14,049
25.3 Other goods and services from Federal sources	876	51	927
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	78	0	78
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	3,392	528	3,920
31 Equipment	1,087	304	1,391
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	23,935	5,746	29,681
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	66,500	14,392	83,043

* The 2021 Base column reflects the full 2021 Base for the Subactivity, including calculated ATBs and any additional transfers.

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Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar amounts in thousands)**

		2019		2020		2021		2021		Increase/Decrease	
		Actual		Enacted		Base		Estimate		from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
OFFICE OCEANIC AND ATMOSPHERIC RESEARCH (OAR)											
Climate Research	Pos/BA	308	158,232	283	169,500	308	167,099	263	83,903	(45)	(83,196)
	FTE/OBL	297	157,470	273	169,500	297	167,099	253	83,903	(44)	(83,196)
Weather & Air Chemistry Research	Pos/BA	262	139,359	225	133,634	260	141,900	225	114,792	(35)	(27,108)
	FTE/OBL	237	152,166	201	133,634	235	141,900	201	114,792	(34)	(27,108)
Ocean, Coastal, and Great Lakes Research	Pos/BA	221	217,507	204	228,500	222	230,833	204	112,754	(18)	(118,079)
	FTE/OBL	211	218,151	194	228,500	212	230,833	194	112,754	(18)	(118,079)
Innovative Research & Technology	Pos/BA	15	12,150	15	16,750	15	16,905	15	15,296	0	(1,609)
	FTE/OBL	14	12,044	14	16,750	14	16,905	14	15,296	0	(1,609)
TOTAL OAR - ORF	Pos/BA	806	527,248	727	548,384	805	556,737	707	326,745	(98)	(229,992)
	FTE/OBL	759	539,831	682	548,384	758	556,737	662	326,745	(96)	(229,992)
Systems Acquisition	Pos/BA	0	40,949	0	42,000	0	42,000	0	26,000	0	(16,000)
	FTE/OBL	0	64,173	0	42,000	0	42,000	0	26,000	0	(16,000)
TOTAL OAR - PAC	Pos/BA	0	40,949	0	42,000	0	42,000	0	26,000	0	(16,000)
	FTE/OBL	0	64,173	0	42,000	0	42,000	0	26,000	0	(16,000)
TOTAL OAR	Pos/BA	806	568,197	727	590,384	805	598,737	707	352,745	(98)	(245,992)
	FTE/OBL	759	604,004	682	590,384	758	598,737	662	352,745	(96)	(245,992)

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Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Climate Research

Goal Statement

The mission of the Climate Research in OAR is to monitor and understand Earth's climate system to predict potential changes in global climate, as well as understand and communicate to the public and decision-makers near-term, regional climate variations that are of societal and economic importance. The long-term observing, monitoring, research, and modeling capabilities performed in OAR's Climate Research provides the science that Americans need to understand how, where, and when Earth's conditions are changing.

Base Program

OAR's climate research laboratories, programs, and partners are key contributors to advancing understanding of Earth's climate system through interdisciplinary, integrated scientific research, and leveraging the resulting knowledge, data, and systems to enhance society's ability to plan and respond to climate variability and climate change. NOAA's Climate Program Office (CPO) network of partners, specialists, and principal investigators are working to integrate and transition research findings from CPO-sponsored research and development projects into applications designed to help communities and businesses build resilience to climate-related impacts and extreme events.

NOAA's competitive research programs funds climate science, assessments, decision support research, modeling improvements, and transition of research and capacity-building activities in four complementary and important areas:

- Observations and monitoring
- Process understanding and analysis
- Modeling, predictions, and projections
- Societal interactions and communications

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The following three Subactivities are included in the Climate Research Portfolio:

- *Laboratories & Cooperative Institutes*: OAR's Laboratories and Cooperative Institutes primarily support Earth System science research, modeling, and technology development and maintain long-term atmospheric observation networks and infrastructure, including a network of tall towers and the Atmospheric Baseline Observatories (ABOs) which collect data on the atmosphere's composition.
- *Regional Climate Data & Information*: OAR supports activities that improve resilience and preparedness throughout the Nation with research that advances our understanding of climate-related risks and vulnerabilities across sectors and regions and with the development of tools to enable more informed decision making.
- *Climate Competitive Research*: OAR funds high-priority climate science through a competitive selection process to advance understanding of the Earth's climate system and climate impacts on society.

NOAA's climate research activities are authorized under the *National Climate Program Act* (15 U.S.C. §§ 2901-2908), the *Global Change Research Act* (15 U.S.C. §§ 2921-2961), the *Weather Research and Forecasting Innovation Act* (15 U.S.C. § 8501), and the *National Integrated Drought Information System (NIDIS) Reauthorization Act* (P.L. 115-423; 15 U.S.C. § 8511-8521).

Statement of Operating Objectives

Schedule and Milestone Highlights

FY 2021–2025

Laboratories and Cooperative Institutes

- Publish updates on Annual Greenhouse and Ozone Depleting Gas Indices
- Apply new Earth system modeling for tipping point prediction in global estuarine, coastal, and benthic ecosystems
- Deploy and maintain an array of 1,200 surface drifters
- Maintain and augment 38 moorings that measure carbon dioxide (CO₂) and ocean acidification
- Complete 1-2 cruises that will collect important ocean chemistry data while servicing moorings and collecting information on coastal and deep ocean currents
- Long term global records of greenhouse gases, stratospheric ozone, and aerosols

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Regional Climate Data & Information

- Improve drought indicators and indices in support of the Regional Drought Early Warning Information System
- Conduct climate training for tribal communities in the Southern U.S.
- Lead and support the quadrennial National Climate Assessment and the Scientific Assessment of Ozone Depletion, under the Montreal Protocol on Substances that Deplete the Ozone Layer
- Test experimental drought indicators based on decision making needs in the NIDIS Pilot regions

Climate Competitive Research

- Expand Earth system data collection for cryospheric, boundary layer properties, hydrometeorological, and oceanic process studies
- Increase, from two to five, the cumulative number of science-based adaptation tools and technologies that are used by NOAA partners and stakeholders to improve ecosystem-based management of fisheries

Deliverables

Laboratories and Cooperative Institutes

- Long term global records of atmospheric compounds, up to 55 trace gases, stratospheric ozone, aerosols, and surface radiation
- Updated status of South Pole Ozone hole

Regional Climate Data & Information

- Forty total interoperable drought systems accessible through the U.S. Drought Portal
- Increased skill and capacity among stakeholders in businesses and communities to build resilience to climate-related impacts
- Climate.gov received more than 9 million visits in FY 2018 (averaging over 751,000 visits per month), which was a 18.36 percent increase in visit rate over FY 2017
- Climate training workshops and reports directed to the needs of resource managers

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Climate Competitive Research

In FY 2019, OAR's Climate Program Office (CPO) supported projects, ranging from advancing the understanding and prediction of drought to building resilience in coastal communities, conducted by universities, other research institutions, and other Federal agencies

Explanation and Justification

Line Item		2019 Actual		2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Laboratories & Cooperative Institutes (Climate Research)	Pos/BA	236	60,793	279	66,500	279	83,868
	FTE/OBL	227	59,494	270	66,500	270	83,868
Regional Climate Data & Information	Pos/BA	28	37,806	4	40,000	4	40,144
	FTE/OBL	27	37,663	3	40,000	3	40,144
Climate Competitive Research	Pos/BA	44	59,633	0	63,000	0	43,087
	FTE/OBL	43	60,313	0	63,000	0	43,087
Total Climate Research	Pos/BA	308	158,232	283	169,500	283	167,099
	FTE/OBL	297	157,470	273	169,500	273	167,099

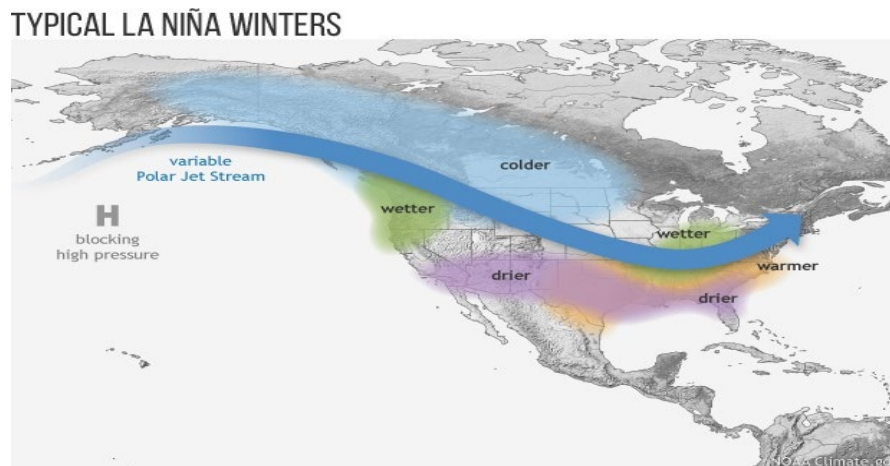
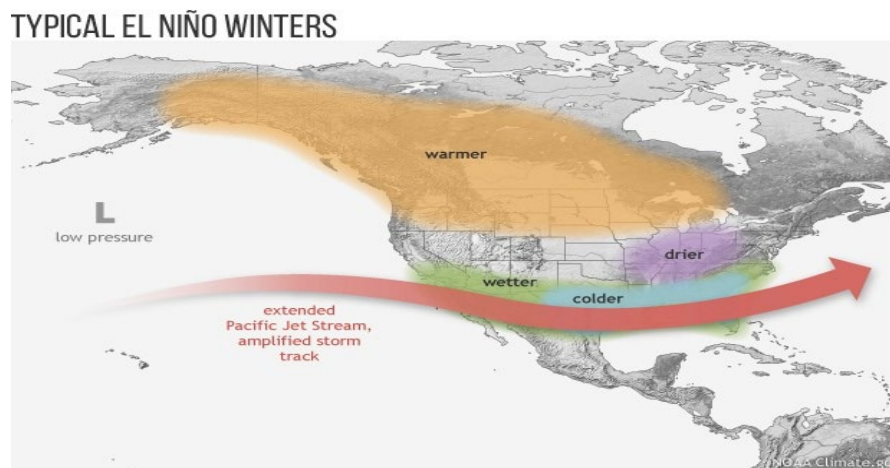
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During 2019, the United States experienced a very active year of weather and climate disasters. In total, the United States was impacted by 14 separate billion-dollar disaster events: three major inland flooding events, eight severe storm events, two tropical cyclone events, and one wildfire event. OAR science has been at the forefront of improving our understanding of the causes of extremes, characterizing the drivers of predictability of extremes, and improving the prediction of extremes across timescales. OAR scientists have worked to understand the drivers of tropical cyclone variability and change over time; how severe weather is modulated by climate phenomena such as the El Niño Southern Oscillation and Madden Julian Oscillation; how winter storms are responding to changes in the winter jet stream and water vapor in the atmosphere; how drought varies in response to remote and local climate influences; and how wildfires relate to meteorology, changes in the land surface, and drought. OAR's scientists and funding programs have worked to advance not only the understanding of these events but also our ability to predict them farther in advance to mitigate impacts on lives and property, and monitor them to better describe their evolution and magnitude. Extensive work over the past few years has deepened our understanding of the mechanisms that control Subseasonal to Seasonal (S2S) phenomena, which has, for example, advanced our understanding of Atmospheric Rivers and their predictability on S2S timescales, and transitioned an operational capability to provide S2S forecasts to the Climate Prediction Center.

The distribution of damage from U.S. billion-dollar disaster events from 1980–2019 is dominated by tropical cyclone losses. Tropical cyclones have caused the most damage (\$945.9 billion) and also have the highest average event cost (\$21.5 billion per event). Hurricanes are responsible for slightly more than half (53.9%) of the total losses for all U.S. billion-dollar disasters but represent less than one-fifth (17.1%) of all the billion-dollar events we have assessed since 1980. Drought (\$249.7 billion), severe storms (\$247.8 billion) and inland flooding (\$146.5 billion,) have also caused considerable damage. Severe storms have caused the highest number of billion-dollar disaster events (113), while the average event cost is the lowest (\$2.2 billion). Tropical cyclones and flooding represent the second and third most frequent event types (44 and 32), respectively. Tropical cyclones are responsible for the highest number of deaths (6,502), followed by drought/heatwave events (2,993), and severe storms (1,642).

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Climate Research continues to sustain its investments and partnerships in global ocean observation and monitoring systems and participated in scientific field campaigns, like "Years of the Maritime Continent" — a 2-year joint research project to improve understanding and prediction of variability over the Indo-Pacific Ocean region, and how that influences weather patterns around the world. Climate Research has advanced use of autonomous robotic ocean profiling instruments such as Deep Argo and saildrones. Ocean observations led to assessments of ocean acidification impacts to coral reefs and fisheries and to sea level change risks that improved coastal community preparedness. Climate Research-sponsored field campaigns also conducted research on impacts to air quality from urban emissions and wildfires, which can adversely impact human health and the nation's economy due to reduced productivity. In its continuing efforts to help bolster the nation's economy and meet stakeholders' need for science-based decision support, Climate Research enhanced its Regional Drought Early Warning Systems and expanded its online "Climate Explorer" tool, whereby decision makers can access maps and graphs of downscaled climate projections of decision-relevant variables for their county, like the annual numbers of days above or below critical temperature, precipitation, and high-tide flooding thresholds. Similar tools were developed to improve heat risk information and address other health impacts.



NOAA Climate Research

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OAR's Climate Research is collaborative and crosscutting and therefore is often funded through multiple Subactivities. Some cross-cutting themes include:

Global Observations

To better document and understand global processes, OAR provides an array of observational capabilities. For example, OAR's four ABOs have been collecting 250 measurements of atmospheric trends for over 50 years such that measurements conducted in the 1960s are exactly comparable to those made today and 100 years from now. These observations and supplemental measurements help identify trends and anomalies in the atmosphere, like radioactive dust releases and transport of mercury in the air from China to the U.S., and their impacts. With this information, decision-makers are better able to address global atmospheric challenges. For example, OAR's long-term and on-going measurements of ozone, UV, and ozone-depleting compounds help policymakers identify successes and needs to repair the ozone layer. OAR also supports the Global Ocean Observing System including the drifting buoy network, Argo profiling floats, tropical moored arrays in the Atlantic, and ocean carbon networks, and continually researches new climate observing strategies.

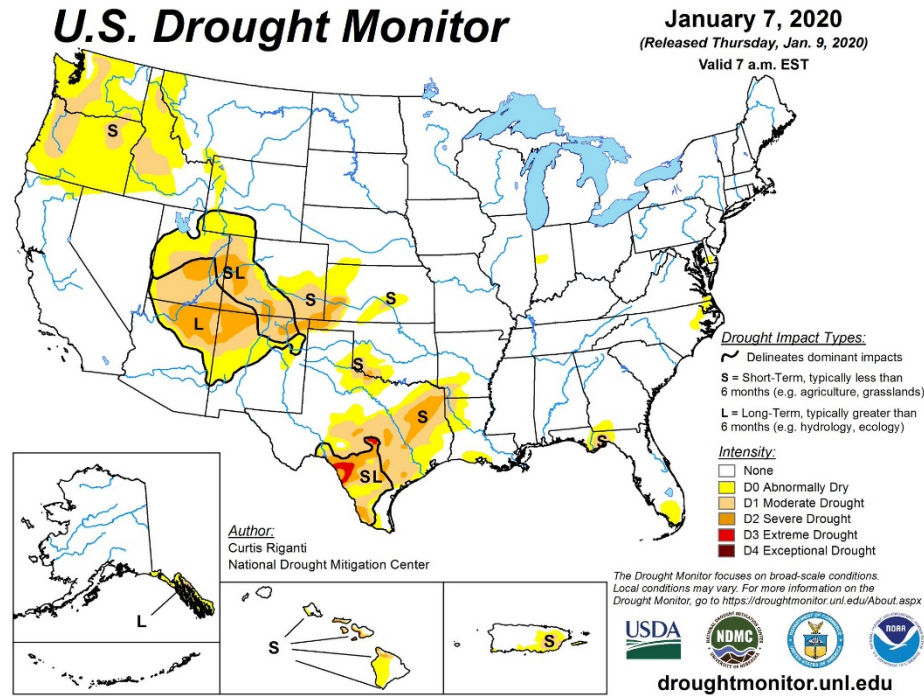
Predicting Future Change

OAR's Climate Research predicts future change to inform decision making. The Earth System comprises many physical, chemical and biological processes that need to be dynamically integrated to better predict their behavior over scales from local to global and periods of minutes to millennia. OAR research produces state-of-the-art models of the Earth System to better predict climate extremes and variability impacting the U.S., such as changes in the risk for heavy rainfall and snow events during an El Niño, frequency of high-impact weather events, and ocean dynamics like the Meridional Overturning Circulation.

Assessing Impacts

OAR Climate Research provides in-depth analysis of climate change impacts on the United States. OAR assesses the multitude of ways climate change is already affecting and will increasingly affect the lives of Americans. For example, the National Climate Assessment details the changes various geographic regions and economic sectors are experiencing and can expect to experience in the future. Past assessments have included studies of how climate impacts tornadoes, sea level, and drought. This research is pointing to more effective ways to meet environmental management and policy goals while avoiding costly overregulation.

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The U.S. Drought Monitor (pictured above) is a weekly map based on measurements of climatic, hydrologic, and soil conditions as well as reported impacts and observations collected from more than 350 contributors around the U.S.

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Supporting Decisions

OAR Climate Research also delivers resources and tools to foster resilience and preparedness throughout the U.S. and abroad, across sectors and regions. In particular, the NOAA-led National Integrated Drought Information System (NIDIS), established by the National Integrated Drought Information System Act of 2006 and amended in the National Integrated Drought Information System Reauthorization Act of 2018, provides accessible drought information for the Nation through improved drought monitoring and forecasting capabilities. In addition, the NOAA Climate.gov Portal provides easy public access to NOAA and its partners' climate data and information services. Climate.gov also hosts and supports the U.S. Climate Resilience Toolkit (toolkit.climate.gov).

PROGRAM CHANGES FOR FY 2021

NOAA requests a total decrease of \$83,196 and 44 FTE/ 45 positions in program changes for the Climate Research activity. Following this section are program change narratives for this activity that represent program changes of \$250,000 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-3)

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(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Climate Laboratories & Cooperative Institutes	Pos./BA	279	83,868	279	81,928	0	(1,940)
	FTE/Obl.	270	83,868	270	81,928	0	(1,940)

Arctic Research Elimination (-\$1,940, 0 FTE/ 0 Positions) – NOAA proposes a decrease of \$1,940,000 in funding to terminate Arctic research within the Climate Laboratories & Cooperative Institutes Subactivity. Arctic research will also be eliminated in the Regional Climate Data & Information Subactivity, described below (OAR - 32). NOAA’s budget proposes to terminate improvements to sea ice modeling and predictions. Many other Arctic research products, including future scenarios for changes to Arctic Ocean sea-ice extent, ecosystem and fisheries vulnerabilities, and ocean acidification will also be eliminated. This proposed decrease will reduce support for research related to mid-latitude weather and other Arctic projects conducted with other NOAA Line Offices.

Schedule and Milestones

FY 2021

- Conclude Arctic research activities within OAR
- Reduce program to support highest priority activities within available climate research funding

FY 2022–2026

- Maintain support for highest priority activities within available climate research funding

Deliverables

Terminate Arctic research activities

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Performance Measures	2021	2022	2023	2024	2025
Annual number of advances in climate and weather research and information products transitioned to a new stage (development, demonstration, or application) to improve earth system understanding and provide information to private and public sectors with decrease	6	6	6	6	6
Annual number of advances in climate and weather research and information products transitioned to a new stage (development, demonstration, or application) to improve earth system understanding and provide information to private and public sectors without decrease	7	7	7	7	7
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(1,940)	(1,940)	(1,940)	(1,940)	(1,940)
Uncapitalized	(1,940)	(1,940)	(1,940)	(1,940)	(1,940)
Budget Authority	(1,940)	(1,940)	(1,940)	(1,940)	(1,940)
Outlays	(1,203)	(1,203)	(1,203)	(1,203)	(1,203)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Climate Research
Subactivity: Climate Laboratories & Cooperative Institutes

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	15,866	16,358	20,071	20,071	0
11.3 Other than full-time permanent	38	38	140	140	0
11.5 Other personnel compensation	504	504	547	547	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	16,408	16,900	20,758	20,758	0
12 Civilian personnel benefits	5,154	5,070	6,227	6,227	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	703	765	1,001	981	(20)
22 Transportation of things	412	736	882	872	(10)
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	1,232	1,580	1,580	1,580	0
23.2 Rental Payments to others	5	5	205	205	0
23.3 Communications, utilities and misc charges	508	508	681	681	0
24 Printing and reproduction	96	1,302	1,314	1,314	0
25.1 Advisory and assistance services	349	349	349	349	0
25.2 Other services from non-Federal sources	8,084	9,917	14,049	14,049	0
25.3 Other goods and services from Federal sources	621	876	927	927	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	78	78	53	(25)
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,392	3,392	3,920	3,820	(100)
31 Equipment	1,087	1,087	1,391	1,364	(27)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	21,443	23,935	29,681	27,923	(1,758)
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	59,494	66,500	83,043	81,103	(1,940)

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(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Climate Laboratories and Cooperative Institutes	Pos./BA	279	83,868	259	78,811	(20)	(5,057)
	FTE/Obl.	270	83,868	250	78,811	(20)	(5,057)

Atlantic Oceanographic & Meteorological Laboratory Climate Research Termination (-\$5,057, -20 FTE/ -20 Positions) –

NOAA proposes a decrease of \$5,057,000 to terminate funding for climate-related research and observations at the Atlantic Oceanographic & Meteorological Laboratory (AOML). The magnitude of this reduction is not sufficient to affect the performance targets. OAR will evaluate the best approach to streamlining key activities to achieve the desired efficiencies.

This funding decrease will not close AOML entirely; for example, AOML’s other work funded through weather and oceans PPAs includes critical research of hurricanes, ocean observation, and oceans and coastal systems will continue. However, NOAA will cease the collection of high-quality, long-term observations that serve as a foundation for atmospheric research. AOML will end its participation, contributions and leadership of the:

- XBT Network (eXpendable BathyThermograph) that collects temperature information across all ocean basins for hurricane and other weather-related event predictions;
- PIRATA (Prediction and Research Moored Array in the Tropical Atlantic) Northeast Extension project that is an international effort to improve our knowledge and understanding of ocean-atmosphere variability in the tropical Atlantic;
- Hurricane Underwater Glider research, development, and deployment efforts that are intended to enhance our understanding of air-sea interaction processes during hurricane force wind events;
- ARGO deployment and data collection that is crucial for weather forecast and provides information for climate and the biological ocean;
- Global Drifter Program including the Drifter Operations Center and the Drifter Data Assembly Center; and
- Other climate observation and monitoring projects with other federal agencies and external partners.

Schedule and Milestones

FY 2021

- Terminate climate-related research and observations at AOML

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(Dollar amounts in thousands)

Deliverables

- Terminate climate-related research and observations at AOML

Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(5,057)	(5,057)	(5,057)	(5,057)	(5,057)
Uncapitalized	(5,057)	(5,057)	(5,057)	(5,057)	(5,057)
Budget Authority	(5,057)	(5,057)	(5,057)	(5,057)	(5,057)
Outlays	(3,135)	(3,135)	(3,135)	(3,135)	(3,135)
FTE	(20)	(20)	(20)	(20)	(20)
Positions	(20)	(20)	(20)	(20)	(20)

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PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Climate Research
Subactivity: Climate Laboratories and Cooperative Institutes

Title	Location	Grade	Number	Annual Salary	Total Salaries
Supervisory Oceanographer	Miami, FL	ZP-5	(1)	129	(\$129)
Oceanographer	Miami, FL	ZP-5	(2)	129	(\$258)
Oceanographer	Miami, FL	ZP-4	(6)	93	(\$558)
Computer Engineer	Miami, FL	ZP-4	(1)	93	(\$93)
IT Specialist	Miami, FL	ZP-4	(3)	93	(\$279)
Meteorologist	Miami, FL	ZP-4	(1)	93	(\$93)
Oceanographer	Miami, FL	ZP-3	(2)	65	(\$130)
Physical Scientist	Miami, FL	ZP-3	(2)	65	(\$130)
Logistics Management Specialist	Miami, FL	ZA-3	(1)	61	(\$61)
Administrative Support Specialist	Miami, FL	ZA-2	(1)	44	(\$44)
Total			(20)		(\$1,775)
Less lapse	0.00%		0		0
Total full-time permanent (FTE)			(20)		(1,775)
2021 Pay Adjustment (1%)	1.00%				(18)
					(1,793)
Personnel Data Summary					
Full-time Equivalent Employment (FTE)					
Full-time permanent			(20)		
Total FTE			(20)		
Authorized Positions:					
Full-time permanent			(20)		
Total Positions			(20)		

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Climate Research
Subactivity: Climate Laboratories & Cooperative Institutes

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	15,866	16,358	20,071	18,278	(1,793)
11.3 Other than full-time permanent	38	38	140	109	(31)
11.5 Other personnel compensation	504	504	547	547	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	16,408	16,900	20,758	18,934	(1,824)
12 Civilian personnel benefits	5,154	5,070	6,227	5,698	(529)
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	703	765	1,001	816	(185)
22 Transportation of things	412	736	882	764	(118)
23 Rent, communications, and utilities				0	0
23.1 Rental payments to GSA	1,232	1,580	1,580	1,580	0
23.2 Rental Payments to others	5	5	205	205	0
23.3 Communications, utilities and misc charges	508	508	681	673	(8)
24 Printing and reproduction	96	1,302	1,314	1,292	(22)
25.1 Advisory and assistance services	349	349	349	349	0
25.2 Other services from non-Federal sources	8,084	9,917	14,049	13,974	(75)
25.3 Other goods and services from Federal sources	621	876	927	926	(1)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	78	78	78	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,392	3,392	3,920	3,813	(107)
31 Equipment	1,087	1,087	1,391	1,341	(50)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	21,443	23,935	29,681	27,543	(2,138)
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	59,494	66,500	83,043	77,986	(5,057)

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Climate Laboratories & Cooperative Institutes	Pos./BA	279	83,868	279	77,298	0	(6,570)
	FTE/Obl.	270	83,868	270	77,298	0	(6,570)

Laboratories and Cooperative Institutes Decrease (-\$6,570, 0 FTE/ 0 Positions) – NOAA proposes a decrease of \$6,570,000 in funding for priority activities in the Climate Laboratories and Cooperative Institutes. The magnitude of this reduction is not sufficient to affect the performance targets. OAR will evaluate the best approach to streamlining key activities to achieve the desired efficiencies.

With this reduction, NOAA will decrease support for the Experimental, Seasonal to Decadal (S2D) Predictions activities that are intended to minimize gaps in forecasting capabilities. Specifically, support for the following activities will be decreased: research efforts to extend the NMME (North American Multi-Model Ensemble) to year-2; extending and evaluating decadal-scale CMIP-6 (Coupled Model Intercomparison Project Phase 6) simulations; and assessing climate model prediction skill for coastal water levels and marine heat waves on S2D scales.

Schedule and Milestones

FY 2021

- Decrease funding for Laboratories and Cooperative Institute activities

Deliverables

- Decrease funding for climate socioeconomics studies
- Decrease funding for seasonal to decadal climate research

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(Dollar amounts in thousands)

Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(6,570)	(6,570)	(6,570)	(6,570)	(6,570)
Uncapitalized	(4,022)	(4,022)	(4,022)	(4,022)	(4,022)
Budget Authority	(6,570)	(6,570)	(6,570)	(6,570)	(6,570)
Outlays	(4,073)	(4,073)	(4,073)	(4,073)	(4,073)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Climate Research
Subactivity: Climate Laboratories & Cooperative Institutes

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	15,866	16,358	20,071	20,071	0
11.3 Other than full-time permanent	38	38	140	140	0
11.5 Other personnel compensation	504	504	547	547	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	16,408	16,900	20,758	20,758	0
12 Civilian personnel benefits	5,154	5,070	6,227	6,227	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	703	765	1,001	1,001	0
22 Transportation of things	412	736	882	882	0
23 Rent, communications, and utilities				0	
23.1 Rental payments to GSA	1,232	1,580	1,580	1,580	0
23.2 Rental Payments to others	5	5	205	205	0
23.3 Communications, utilities and misc charges	508	508	681	681	0
24 Printing and reproduction	96	1,302	1,314	1,314	0
25.1 Advisory and assistance services	349	349	349	349	0
25.2 Other services from non-Federal sources	8,084	9,917	14,874	12,326	(2,549)
25.3 Other goods and services from Federal sources	621	876	927	927	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	78	78	78	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,392	3,392	3,920	3,920	0
31 Equipment	1,087	1,087	1,391	1,391	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	21,443	23,935	29,681	25,660	(4,022)
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	59,494	66,500	83,868	77,298	(6,570)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Regional Climate Data & Information	Pos./BA	14	40,144	14	36,399	0	(3,745)
	FTE/Obl.	13	40,144	13	36,399	0	(3,745)

Arctic Research Elimination (-\$3,745, 0 FTE/ 0 Positions) – NOAA proposes a decrease of \$3,745,000 in funding to eliminate Arctic research within the Regional Climate Data & Information Subactivity. Arctic Research will also be eliminated in the Climate Laboratories & Cooperative Institutes Subactivity, described above (OAR - 22). NOAA’s budget proposes to terminate improvements to sea ice modeling and predictions. Other Arctic research products, including future scenarios for changes to Arctic Ocean sea-ice extent, ecosystem and fisheries vulnerabilities, and ocean acidification will also be eliminated. This proposed decrease will reduce support for research related to mid-latitude weather and other Arctic projects conducted with other NOAA Line Offices.

Schedule and Milestones

FY 2021

- Conclude Arctic research activities within OAR
- Reduce program to support highest priority activities within available climate research funding

FY 2022–2025

- Maintain support for highest priority activities within available climate research funding

Deliverables

Terminate Arctic research activities

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

Performance Measures	2021	2022	2023	2024	2025
Annual number of advances in climate and weather research and information products transitioned to a new stage (development, demonstration, or application) to improve earth system understanding and provide information to private and public sectors with decrease	6	6	6	6	6
Annual number of advances in climate and weather research and information products transitioned to a new stage (development, demonstration, or application) to improve earth system understanding and provide information to private and public sectors without decrease	7	7	7	7	7
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(3,745)	(3,745)	(3,745)	(3,745)	(3,745)
Uncapitalized	(3,745)	(3,745)	(3,745)	(3,745)	(3,745)
Budget Authority	(3,745)	(3,745)	(3,745)	(3,745)	(3,745)
Outlays	(2,322)	(2,322)	(2,322)	(2,322)	(2,322)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Climate Research
Subactivity: Regional Climate Data & Information

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	1,839	2,392	2,416	2,416	0
11.3 Other than full-time permanent	124	41	41	41	0
11.5 Other personnel compensation	23	9	9	9	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	1,986	2,442	2,466	2,466	0
12 Civilian personnel benefits	628	733	740	740	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	161	182	182	105	(77)
22 Transportation of things	17	43	43	32	(11)
23 Rent, communications, and utilities	283	283	283	283	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 Communications, utilities and misc charges	0	0	0	0	0
24 Printing and reproduction	68	68	68	65	(3)
25.1 Advisory and assistance services	2,608	2,608	2,608	1,965	(643)
25.2 Other services from non-Federal sources	3,332	3,332	3,445	3,445	0
25.3 Other goods and services from Federal sources	1,523	1,523	1,523	1,523	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	7	7	7	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	312	312	312	168	(144)
31 Equipment	223	223	223	223	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	26,522	28,245	28,245	25,378	(2,867)
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	37,663	40,000	40,144	36,399	(3,745)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Regional Climate Data & Information	Pos./BA	14	40,144	4	17,347	(10)	(22,797)
	FTE/Obl.	13	40,144	3	17,347	(10)	(22,797)

Eliminate Climate Competitive Research Funding (-\$22,797, -10 FTE/ -10 Positions) – NOAA proposes a decrease of \$22,797,000 in funding to eliminate climate competitive research activities in the Regional Climate Data and Information Subactivity, terminating the Regional Integrated Sciences and Assessments Program (RISA) program, and eliminating NOAA’s portion of the funding for the National Climate Assessment. With this termination, NOAA will explore a range of options to address staffing, including transfers, Voluntary Early Retirement Authority (VERA) and Voluntary Separation Incentive Payments (VSIP), and other options will be requested and/or explored.

This request will terminate the Regional Integrated Sciences and Assessments Program (RISA) program, by eliminating the ten RISA teams and partnerships and reducing regionally tailored decision-support tools that support disaster management and city planning. Stakeholders from regions across the country will continue to receive weather and climate data and information from programs within NOAA, across the federal government, and private sector climate services.

This request will terminate NOAA’s portion of the funding dedicated to the National Climate Assessment. The Global Change Research Act of 1990 requires a National Climate Assessment not less frequently than every four years. NOAA led the Federal effort to develop the 2014 and the 2018 National Climate Assessments. The required National Climate Assessments will continue to be produced with available funding in NOAA and other federal agencies. NOAA will continue to lead this effort and provide necessary climate research and information using resources from other projects and programs.

Schedule and Milestones

FY 2021

- End climate competitive research activities in the Regional Climate Data and Information Subactivity
- Terminate the solicitation of proposals to expand applied research and engagement with local, state and regional decision makers
- Terminate dedicated Climate Assessment funding

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

FY 2022–2025

- Maintain support for National Integrated Drought Information System (NIDIS)
- Lead the 2022 National Climate Assessment

Deliverables

- Terminate competitive research funding under the Regional Climate Data and Information Subactivity
- Terminate Regional Integrated Sciences and Assessments Program (RISA)
- Terminate dedicated funding for the National Climate Assessment

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

Performance Measures	2021	2022	2023	2024	2025
Number of assessment reports or integrated plans developed or implemented across NOAA programs to enhance NOAA climate services with decrease	0	0	0	0	0
Number of assessment reports or integrated plans developed or implemented across NOAA programs to enhance NOAA climate services without decrease	4	4	4	4	4
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(22,797)	(22,797)	(22,797)	(22,797)	(22,797)
Uncapitalized	(20,665)	(20,665)	(20,665)	(20,665)	(20,665)
Budget Authority	(22,797)	(22,797)	(22,797)	(22,797)	(22,797)
Outlays	(14,134)	(14,134)	(14,134)	(14,134)	(14,134)
FTE	(10)	(10)	(10)	(10)	(10)
Positions	(10)	(10)	(10)	(10)	(10)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Climate Research
Activity: Regional Climate Data & Information

Title	Grade	Number	Annual Salary	Total Salaries
Management and Program Analyst	ZA-4	(6)	161	(965)
Program Analyst	ZA-3	(3)	115	(346)
Program Specialist	ZA-2	(1)	90	(90)
Total		(10)		(1,401)
Less lapse	0.00%	0		0
Total full-time permanent (FTE)		(10)		(1,401)
2021 Pay Adjustment (1%)	1.00%			(14)
				(1,415)

Personnel Data Summary

Full-time Equivalent Employment (FTE)	
Full-time permanent	(10)
Total FTE	(10)
Authorized Positions:	
Full-time permanent	(10)
Total Positions	(10)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Climate Research
Subactivity: Regional Climate Data & Information

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	1,839	2,392	2,416	1,001	(1,415)
11.3 Other than full-time permanent	124	41	41	0	(41)
11.5 Other personnel compensation	23	9	9	0	(9)
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	1,986	2,442	2,466	1,001	(1,465)
12 Civilian personnel benefits	628	733	740	300	(439)
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	161	182	182	171	(11)
22 Transportation of things	17	43	43	1	(42)
23 Rent, communications, and utilities	283	283	283	0	(283)
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental Payments to others	0	0	0	0	0
23.3 Communications, utilities and misc charges	0	0	0	0	0
24 Printing and reproduction	68	68	68	7	(61)
25.1 Advisory and assistance services	2,608	2,608	2,608	0	(2,608)
25.2 Other services from non-Federal sources	3,332	3,332	3,445	3,000	(445)
25.3 Other goods and services from Federal sources	1,523	1,523	1,523	0	(1,523)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	7	7	0	(7)
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	312	312	312	20	(292)
31 Equipment	223	223	223	66	(157)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	26,522	28,245	28,245	12,781	(15,464)
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	37,663	40,000	40,144	17,347	(22,797)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Climate Competitive Research	Pos./BA	15	43,087	0	0	(15)	(43,087)
	FTE/Obl.	14	43,087	0	0	(14)	(43,087)

Eliminate Climate Competitive Research Subactivity (-\$43,087, -14 FTE/ -15 Positions) – NOAA proposes a decrease of \$43,087,000 in funding to eliminate the Climate Competitive Research Subactivity, while retaining the National Integrated Drought Information System (NIDIS) program. This will result in the termination of other CPO programs including the International Research and Applications Project (IRAP), the Coastal and Ocean Climate Applications (COCA), the Sectoral Applications Research Program (SARP), the Atmospheric Chemistry, Carbon Cycle, & Climate (AC4), the Climate Variability and Predictability (CVP) Program, and the Modeling, Analysis, Predictions, and Projections (MAPP) Program. NOAA will reduce competitive research grants to cooperative institutes, universities, NOAA research laboratories, and other partners. With this termination, NOAA will explore a range of options to address staffing, including transfers, Voluntary Early Retirement Authority (VERA) and Voluntary Separation Incentive Payments (VSIP), and other options will be requested and/or explored.

Schedule and Milestones
FY 2021

- End CPO’s research, communication, education and engagement activities
- End OAR’s Service Level Agreement with the National Weather Service (NWS) for climate funding
- Maintain support for the National Integrated Drought Information System (NIDIS) through the Regional Climate Data and Information PPA (OAR - 30)

Deliverables

- Terminate funding under the Climate Competitive Research Subactivity

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

Performance Measures	2021	2022	2023	2024	2025
Annual number of new research awards to improve climate, understanding, prediction, and information with decrease	0	0	0	0	0
Annual number of new research awards to improve climate, understanding, prediction, and information without decrease	50	50	50	50	50
Annual number of advances in climate and weather research and information products transitioned to a new stage to improve earth system understanding and provide information to private and public sectors with decrease	0	0	0	0	0
Annual number of advances in climate and weather research and information products transitioned to a new stage to improve earth system understanding and provide information to private and public sectors without decrease	7	7	7	7	7
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(43,087)	(43,087)	(43,087)	(43,087)	(43,087)
Uncapitalized	(38,581)	(38,581)	(38,581)	(38,581)	(38,581)
Budget Authority	(43,087)	(43,087)	(43,087)	(43,087)	(43,087)
Outlays	(26,714)	(26,714)	(26,714)	(26,714)	(26,714)
FTE	(14)	(14)	(14)	(14)	(14)
Positions	(15)	(15)	(15)	(15)	(15)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Climate Research
Subactivity: Climate Competitive Research

Title	Grade	Number	Annual Salary	Total Salaries
Director, Climate Program Office	SES	(1)	173	(173)
Physical Scientist	ZP-5	(4)	173	(693)
Supervisory Management & Program Analyst	ZA-5	(1)	173	(173)
Physical Scientist	ZP-4	(5)	165	(825)
Program Analyst	ZA-4	(1)	134	(134)
Physical Scientist	ZP-3	(1)	119	(119)
Program Analyst	ZA-3	(1)	119	(119)
Total		(14)		(2,235)
Less lapse	0.00%			
Total full-time permanent (FTE)		(14)		(2,235)
2021 Pay Adjustment (1%)	1.00%			(22)
Total				(2,257)

Personnel Data

Full-time Equivalent Employment		
Full-time permanent		(14)
Other than full-time permanent		0
Total		(14)

Authorized Positions:

Full-time permanent	(15)
Other than full-time permanent	0
Total	(15)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Climate Research
Subactivity: Climate Competitive Research

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2020 Base
11.1 Full-time permanent compensation	5,631	5,806	2,257	0	(2,257)
11.3 Other than full-time permanent	168	168	66	0	(66)
11.5 Other personnel compensation	43	43	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	5,842	6,017	2,323	0	(2,323)
12 Civilian personnel benefits	1,753	1,805	697	0	(697)
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	390	400	164	0	(164)
22 Transportation of things	0	146	0	0	0
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	634	700	700	0	(700)
23.2 Rental Payments to others	149	200	0	0	0
23.3 Communications, utilities and misc charges	740	800	627	0	(627)
24 Printing and reproduction	12	12	0	0	0
25.1 Advisory and assistance services	1,700	2,451	0	0	0
25.2 Other services from non-Federal sources	5,986	6,000	3,961	0	(3,961)
25.3 Other goods and services from Federal sources	273	300	249	0	(249)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	3	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	737	800	272	0	(272)
31 Equipment	537	600	296	0	(296)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	41,557	42,769	33,798	0	(33,798)
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	60,313	63,000	43,087	0	(43,087)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Weather and Air Chemistry Research

Goal Statement

Weather & Air Chemistry Research continually improves capabilities to provide more accurate and timely warnings and forecasts of various high-impact weather, water, and air quality events by prioritizing improvements in weather data observation, modeling, computing, forecasting, and warnings for the protection of life and property, for the enhancement of the national economy and in support of the Department of Commerce 2018-2022 Strategic Plan, Strategic Objective 3.3 Reduce Extreme Weather Impacts.

Base Program

OAR's weather research laboratories, programs, and partners are key contributors to advancing the National Weather Service (NWS) prediction capabilities. NOAA also focuses resources on better understanding and providing information on seasonal (3 months to 2 years) and sub-seasonal (2 weeks to 3 months) outlooks for farmers, fishermen, emergency responders, other industry workers, and the American people regarding what to expect in two weeks, next month, or next season. In addition, scientists working within OAR's Weather & Air Chemistry Research study atmospheric chemistry to accurately characterize atmospheric composition and predict meteorological processes to more effectively understand their role in severe weather.

The following two Subactivities are included in Weather & Air Chemistry Research

- Laboratories & Cooperative Institutes: OAR's Laboratories & Cooperative Institutes primarily support weather forecasting improvement and air chemistry research, modeling, and technology development.
- Weather & Air Quality Research Programs: Primarily encourages cooperation with external experts in weather and air chemistry research by improving predictions and warnings for the public and weather sensitive U.S. industries with cutting-edge research, analysis techniques, and observing platforms.

NOAA's weather research activities are authorized under the *Weather Service Modernization Act* (Title VII, 15 U.S.C. § 313 note, §§ 701-709), the *National Oceanic and Atmospheric Administration Authorization Act* (Title I, § 108, 15 U.S.C. § 313 note), the *Weather Research and Forecasting Innovation Act* (15 U.S.C. § 8501), and the *National Integrated Drought Information System (NIDIS) Reauthorization Act* (P.L. 115-423; 15 U.S.C. § 8511-8521).

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JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Statement of Operating Objectives

Schedule and Milestone Highlights

FY 2021–2025

Laboratories & Cooperative Institutes

- High-quality hurricane observations from airborne experiments for use in hurricane regional model data assimilation and evaluation

Weather & Air Quality Research Programs

- Advance radar capabilities to better estimate precipitation in the cool season using dual polarization techniques in operational radar's Multi Radar Multi Sensor (MRMS)
- Complete annual competitive grant process to select USWRP-funded and demonstration projects
- Evaluate Advanced Technology Demonstrator (ATD) as a proof-of-concept for phased array radar
- Review industry proposals for phased array radar pre-production contract award, provided that NOAA accepts phased array radar as its solution for its future radar system
- Test/evaluation of dual-polarization panel characteristics and performance on phased array radar systems including the ATD
- Improved tornado warning decision performance evaluated and quantified in collaboration with NWS forecasters within the HWT

Deliverables

Laboratories & Cooperative Institutes

- Tsunami observation, mitigation, and forecast tools
- Probabilistic products incorporated into flash flood forecasting system
- A total of 100,000 stations feeding observations data to the Meteorological Assimilation Data Ingest System (MADIS)
- Improved skill and reliability of flood and water supply forecasts

Weather & Air Quality Research Programs

- Prototype phased array radar products available for transfer into NOAA operations

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)**

Explanation and Justification

Line Item		FY 2019 Actual		FY 2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Laboratories & Cooperative Institutes (Weather & Air Chemistry Research)	Pos/BA	194	85,344	252	82,000	214	84,469
	FTE/OBL	193	98,864	227	82,000	190	84,469
U.S. Weather Research Program	Pos/BA	7	21,465	6	23,000	7	28,753
	FTE/OBL	7	17,124	6	23,000	7	28,753
Tornado Severe Storm Research/Phased Array Radar	Pos/BA	3	12,570	3	13,634	3	13,667
	FTE/OBL	3	12,709	3	13,634	3	13,667
Joint Technology Transfer Initiative	Pos/BA	2	19,980	1	15,000	1	15,011
	FTE/OBL	2	23,469	1	15,000	1	15,011
Total Weather & Air Chemistry Research	Pos/BA	206	139,359	262	133,634	225	141,900
	FTE/OBL	205	152,166	237	133,634	201	141,900

Overall, OAR’s Weather Research supports:

- Research and development that provides the Nation with 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 chemistry; and
- Research that provides the scientific basis for informed management decisions about weather, water, and air chemistry.

NOAA research has supported the recent 2018 upgrades to the two primary short-range weather models, the hourly-updating High-Resolution Rapid Refresh model (HRRR) and its “parent” model, the Rapid Refresh model (RAP). Decision makers in the weather, aviation, and energy forecasting communities rely on frequently updating sets of environmental data to produce accurate and detailed weather-related guidance. In support of these needs, the upgrades allow NOAA, as well as other national forecast centers and local forecast offices across the country, to nearly double the forecast period from 18 to 36 hours for hazardous weather and

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JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

flooding potential. Aviation forecasts also boosted their forecast range to 39 hours from the previous 21 hours. The forecast area has also been expanded to include Alaska, where the primary mode of transportation is aircraft and predictions of small-scale details on clouds, visibility, and icing are vital for pilot safety. These updates provide the foundation for many of the forecast products issued by NOAA and represent the annual efforts of NOAA researchers to develop and transition research into operations. In FY19, NOAA advanced its research-to-operation with the implementation of "FV3" into NOAA's Global Forecast System. This marked the first system infrastructure upgrade to NOAA's flagship weather model in more than 35 years, representing an important step in re-engineering NOAA's models to continue providing the best possible science-based predictions for the nation.

The 2019 Atlantic hurricane season was once again relentless with 18 named storms, the fourth consecutive year with above-normal activity. The season included six hurricanes of which three were "major" (Dorian, Humberto, and Lorenzo). NOAA's extensive observations collected during the 2019 Hurricane season provided landmark datasets for the evaluation of ocean models and hurricane forecast improvements, further progressing NOAA's ability to protect American life and property throughout each hurricane season. NOAA scientists and operational crew matched the busy season with a banner year for aircraft observations as NOAA's Hurricane Hunter aircraft flew more than 430 hours, providing critical real-time data and allowing researchers to test unmanned aircraft systems, observe critical stages of hurricane intensification, and evaluate the experimental Hurricane Weather Research and Forecasting (HWRF-B) model with its operational counterpart (HWRF) and official NHC forecasts.

OAR's Weather Research Portfolio is collaborative and crosscutting and therefore is often funded through multiple Subactivities. Some cross-cutting themes include:

Tornado Severe Storm Research / Phased Array Radar

OAR is working to couple weather forecast model information with dual-polarized radar observations to better determine the type and intensity of precipitation, and add the ability to classify hail size and detect tornado debris. Other radar research includes developing phased array radar, which can reduce the time to scan a weather system from 4-5 minutes to less than one minute, providing earlier weather predictions.

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JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)



Each spring, during prime time for severe thunderstorms and tornadoes, the NOAA Hazardous Weather Testbed hosts experiments that bring together researchers, forecasters and academics to test new technologies. Forecasters and researchers get to walk in each other's shoes.

Forecaster and Researcher Collaboration

Researchers and forecasters work side-by-side throughout the year in the NOAA Hazardous Weather Testbed (HWT) to develop, test, and evaluate new forecast and warning strategies. Participants explore innovative radar and satellite technologies, decision support systems, and new weather and water prediction models. Each year, the HWT draws as many as 60 researchers and forecasters together for six to eight weeks to review emerging ideas and answer the question, "What do forecasters need?" HWT scientists also test new concepts and tools with forecasters in simulated settings and with real-time forecasts. This collaborative approach promotes effective transfer of research into forecasting and warning operations.

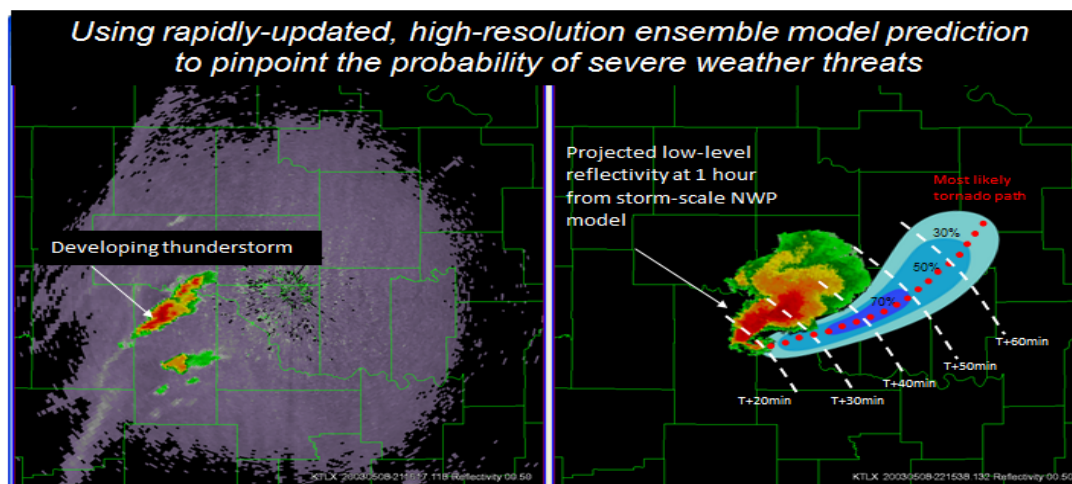
Earlier Warnings

Currently, NWS does not issue warnings for local severe weather until they see an early signal on radar, or the weather hazard is spotted. This approach provides the public with an average tornado warning lead time of 9 minutes. However, hospitals, nursing homes, large venue operators, aviation officials, and others require 30 minutes of lead time or more to move citizens to safety. Through its Warn-On-Forecast project, OAR is working to combine high-resolution surface satellite and radar data into a set of analyses allowing computer models to predict specific weather hazards 30-60 minutes before they form. This would enable decision-makers to take more effective action to mitigate damage and reduce injuries and loss of life.

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U.S. Weather Research Program

Through a competitive grant program, the U.S. Weather Research Program (USWRP) provides continuous improvements to understand, predict, and communicate information associated with hazardous weather, air quality and seasonal to sub-seasonal events. Results of this research are transferred to NWS after demonstration in several NOAA testbeds. Projects are selected using a peer-review process with NWS participation.



Earth Prediction Innovation Center

The National Integrated Drought Information System Reauthorization Act of 2018 expands Section 102(b) of the Weather Research and Forecasting Innovation Act of 2017 to include the Earth Prediction Innovation Center (EPIC) for advancing weather modeling skill and international leadership in the area of numerical weather prediction, and directs NOAA's U.S. Weather Research Program (USWRP) to carry out the activities of EPIC. The Act directs NOAA to create a true community global weather research modeling system that is accessible by the public and utilizes innovative strategies to host and manage the modeling system. EPIC leverages existing NOAA resources to accelerate advances to the Unified Forecast System (UFS), a community-based, coupled comprehensive Earth system model-based analysis and prediction system designed to meet NOAA's operational forecast mission to protect life and property and improve economic growth.

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JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)**

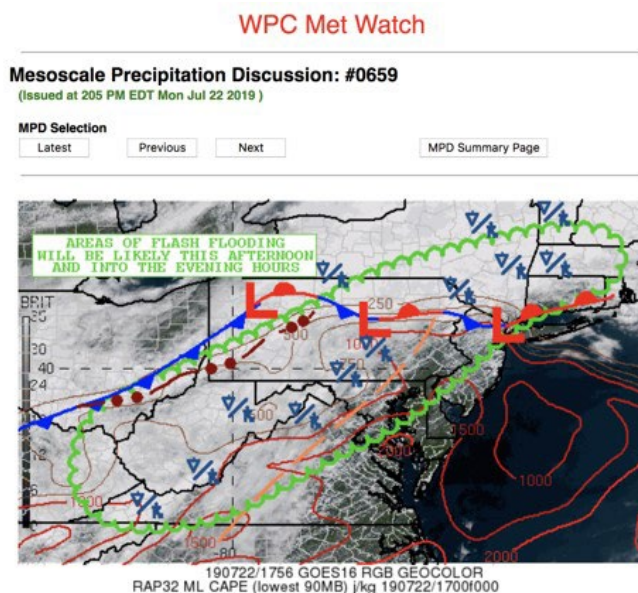
Improved Flood & Drought Predictions

Accurate rain and snowfall predictions help water and emergency managers to better balance water supply needs. Partnering with NWS and other Federal, state, and local water resource agencies, OAR researches the extreme precipitation and weather conditions that can lead to droughts or flooding by evaluating new observations and modeling tools to improve these forecasts. Floods and flash floods kill more people each year than any other severe weather hazard. And a few extra minutes of notice can make a big difference in reducing deaths and economic loss. This is why NOAA is testing an experimental flash flood and intense rainfall forecasting tool. The [Warn-on-Forecast System](#), or WoFS, provides high-resolution information and can update quickly. The current operational model focuses on individual thunderstorms and hazards associated with those storms a few hours before they form and as they develop. Ultimately, the new tool will help forecasters issue flash flood warnings earlier.

The prediction system proved its usefulness in July 2019 when parts of the Northeast and mid-Atlantic were inundated with intense rainfall. The storms resulted in flooded roads during rush hour, stranded motorists, cancelled and delayed flights, power outages and property damage. Forecasters used WoFS as they observed the perfect conditions for flash flooding over the I-95 corridor and the experimental system showed up to five inches of rain in some areas. The guidance provided through WoFS gave forecasters more confidence to use the phrase “flash flooding likely” when they issued area forecasts for parts of Pennsylvania and New Jersey, down to Baltimore, Washington D.C and Virginia.

Air Chemistry

Whether it's fine particulate matter, or other airborne substances, air pollution can have significant impact on the environment and human health. OAR Weather Research & Air Chemistry provides a strong scientific understanding of these air chemistry problems to help all stakeholders make effective management decisions. With long-term monitoring of chemicals like mercury, nitrogen and other compounds, OAR provides data to identify sources and evaluate the effectiveness of emission controls. Data from these observations, along with model evaluations and other studies, help improve predictions of where airborne substances come from and where they will go. NWS uses OAR-developed air chemistry models to issue air quality warnings so that people can limit their



A Warn-on-Forecast product showing conditions for flash flooding over the I-95 corridor.

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JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

exposure to air pollution. OAR's atmospheric dispersion models also predict impacts during emergencies, like the 2019 Texas chemical plant explosion and fire.

PROGRAM CHANGES FOR FY 2021

NOAA requests a total net decrease of \$27,108 and 34 FTE/ 35 positions in program changes for the Weather & Air Chemistry Research activity. Following this section are program change narratives for this activity that represent program changes of \$250,000 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-3).

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Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Weather & Air Chemistry Research Laboratories and Cooperative Institutes	Pos./BA	249	84,469	214	79,490	-35	(4,979)
	FTE/Obl.	224	84,469	190	79,490	-34	(4,979)

The Air Resources Laboratory Closure (-\$4,979, -34 FTE/ -35 Positions) – NOAA proposes a decrease of \$4,979,000 to close the Air Resources Laboratory and eliminate ARL’s research on air chemistry, mercury deposition, and atmospheric dispersion of harmful materials in order to fund other priority programs. The magnitude of this reduction is not sufficient to affect the performance targets. OAR will evaluate the best approach to streamlining key activities to achieve the desired efficiencies. ARL’s headquarters in College Park, MD, will be closed, as will satellite campuses in Oak Ridge, TN, Idaho Falls, ID, Las Vegas, NV, and Mercury, NV. With this termination, NOAA will explore a range of options to address staffing, including transfers, Voluntary Early Retirement Authority (VERA) and Voluntary Separation Incentive Payments (VSIP), and other options will be requested and/or explored.

NOAA also will end ARL’s applied research and observational data collection that is being used to study and project effects of air chemistry on human health and the environment. NOAA will no longer support the Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) model, which is used for emergency response applications and by researchers to study topics ranging from mercury deposition to anthrax bioterrorism. While HYSPLIT may still be used as a research and emergency response tool, ARL will no longer maintain HYSPLIT’s online platform, provide support for users, or improve the model. The budget also ends ARL’s support for agencies to predict where airborne hazardous materials – like acid rain, wildfire smoke, mercury contamination, or radioactive materials – will go. ARL has historically been funded out of both the Weather and Air Chemistry Research Laboratories and Cooperative Institutes Subactivity and the Climate Research Laboratories and Cooperative Institutes Subactivity. The U.S. Climate Reference Network (CRN) and other observational networks managed by ARL under OAR’s Climate Research will be consolidated into other NOAA laboratories.

Schedule and Milestones

FY 2021

- Close the Air Resources Laboratory
- Consolidate ARL Climate Research into other NOAA laboratories

FY 2022–2025

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(Dollar amounts in thousands)

- Maintain support for highest priority activities within available weather research funding

Deliverables

- Terminate funding and close the Air Resources Laboratory

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Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(4,979)	(4,979)	(4,979)	(4,979)	(4,979)
Uncapitalized	(4,979)	(4,979)	(4,979)	(4,979)	(4,979)
 Budget Authority	(4,979)	(4,979)	(4,979)	(4,979)	(4,979)
Outlays	(3,087)	(3,087)	(3,087)	(3,087)	(3,087)
FTE	(34)	(34)	(34)	(34)	(34)
Positions	(35)	(35)	(35)	(35)	(35)

**Department of Commerce
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Operations, Research, and Facilities
PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Weather & Air Chemistry Research
Subactivity: Weather and Air Chemistry Laboratories & Cooperative Institutes

Title	Grade	Number	Salary	Salaries
Supervisory Physical Scientist	ZP-5	(4)	\$ 142	(568)
Physical Scientist/Meteorologist/IT Specialist/Electronics Engineer	ZP-4	(14)	\$ 103	(1,442)
Management & Program Analyst	ZA-4	(2)	\$ 103	(206)
Meteorological Technician	ZT-4	(2)	\$ 72	(144)
Physical Scientist/Meteorologist	ZP-3	(6)	\$ 72	(432)
Administrative Officer/Program Analyst/Budget Analyst	ZA-3	(5)	\$ 72	(360)
Program Specialist	ZA-2	(1)	\$ 49	(49)
Total		(34)		(3,201)
Less lapse	0.00%			
Total full-time permanent (FTE)		(34)		(3,201)
2021 Pay Adjustment (1%)	1.00%			(32)
Total				(3,233)
Personnel Data				
Full-time Equivalent Employment				
Full-time permanent		(34)		
Other than full-time permanent		0		
Total		(34)		
Authorized Positions:				
Full-time permanent		(35)		
Other than full-time permanent		0		
Total		(35)		

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Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Weather & Air Chemistry Research
Subactivity: Weather & Air Chemistry Research Laboratories & CIs

Object Class	2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	19,395	20,664	20,870	17,637	(3,233)
11.3 Other than full-time permanent	152	196	196	196	0
11.5 Other personnel compensation	312	299	299	299	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	20,950	21,159	21,365	18,132	(3,233)
12 Civilian personnel benefits	5,829	6,348	6,410	5,440	(970)
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	1,058	786	786	770	(16)
22 Transportation of things	83	87	87	86	(1)
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	3,520	3,385	3,385	3,385	0
23.2 Rental Payments to others	2,689	2,689	2,689	2,689	0
23.3 Communications, utilities and misc charges	936	936	936	933	(3)
24 Printing and reproduction	156	156	156	154	(2)
25.1 Advisory and assistance services	483	451	451	446	(5)
25.2 Other services from non-Federal sources	13,160	8,192	9,708	9,519	(189)
25.3 Other goods and services from Federal sources	847	810	810	653	(157)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	946	946	946	946	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,211	1,810	1,810	1,653	(157)
31 Equipment	2,141	3,826	3,826	3,744	(82)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	42,854	30,420	30,420	30,256	(164)
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	98,864	82,000	83,785	78,806	(4,979)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Weather & Air Chemistry							
Research Laboratories and	Pos./BA	249	84,469	249	79,503	0	(4,966)
Cooperative Institutes	FTE/Obl.	224	84,469	224	79,503	0	(4,966)

The Vortex-Southeast Termination (-\$4,966, 0 FTE/ 0 Positions) – NOAA proposes a decrease of \$4,966,000 to terminate Vortex-Southeast (VORTEX-SE), a project that seeks to improve tornado forecasts in the southeastern U.S. NOAA has used congressionally directed funding for field campaigns, science workshops, and data collection under VORTEX-SE to understand how to anticipate, detect, issue warnings against, and respond to forecast information regarding tornadoes in the Southeastern United States.

Schedule and Milestones

FY 2021

- Terminate VORTEX-SE

FY 2022–2025

- Maintain support for highest priority activities within available weather research funding

Deliverables

- Terminate funding for VORTEX-SE

**Department of Commerce
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Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

Performance Measures	2021	2022	2023	2024	2025
VORTEX-SE studies completed annually with termination	0	0	0	0	0
VORTEX-SE studies completed annually without termination	10	10	10	10	10
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(4,966)	(4,966)	(4,966)	(4,966)	(4,966)
Uncapitalized	(4,966)	(4,966)	(4,966)	(4,966)	(4,966)
Budget Authority	(4,966)	(4,966)	(4,966)	(4,966)	(4,966)
Outlays	(3,079)	(3,079)	(3,079)	(3,079)	(3,079)
FTE	(0)	(0)	(0)	(0)	(0)
Positions	(0)	(0)	(0)	(0)	(0)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Weather & Air Chemistry Research
Subactivity: Weather & Air Chemistry Research Laboratories & CIs

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	19,395	20,664	20,870	21,085	0
11.3 Other than full-time permanent	152	196	196	196	0
11.5 Other personnel compensation	312	299	299	299	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	20,950	21,159	21,365	21,580	0
12 Civilian personnel benefits	5,829	6,348	6,410	6,555	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	1,058	786	786	572	(214)
22 Transportation of things	83	87	87	54	(33)
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	3,520	3,385	3,385	3,385	0
23.2 Rental Payments to others	2,689	2,689	2,689	2,689	0
23.3 Communications, utilities and misc charges	936	936	936	936	0
24 Printing and reproduction	156	156	156	156	0
25.1 Advisory and assistance services	483	451	451	451	0
25.2 Other services from non-Federal sources	13,160	8,192	9,708	9,708	0
25.3 Other goods and services from Federal sources	847	810	810	810	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	946	946	946	449	(497)
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,211	1,810	1,810	1,810	0
31 Equipment	2,141	3,826	3,826	2,833	(993)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	42,854	30,420	30,420	27,191	(3,229)
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	98,864	82,000	83,785	79,179	(4,966)

**Department of Commerce
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Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Weather & Air Chemistry							
Research Laboratories and	Pos./BA	249	84,469	249	77,609	0	(6,860)
Cooperative Institutes	FTE/Obl.	224	84,469	224	77,609	0	(6,860)

Laboratories and Cooperative Institutes Decrease (-\$6,860, 0 FTE/ 0 Positions) – NOAA proposes a decrease of \$ 6,860,000 to support priority activities identified as benefiting from short-term funding in FY 2020, such as advancing coastal coupling for total water prediction between the National Water Model and the coastal model FVCOM (Finite-Volume Community Ocean Model); R&D funding for aerosols and atmospheric composition in boundary-layer observations, data assimilation, and prediction of atmospheric composition and its interaction with Next Generation Global Prediction System (NGGPS); and the Weather Portfolio’s Forecasting a Continuum of Environmental Threats (FACETs) framework efforts. The magnitude of this reduction is not sufficient to affect the performance targets. OAR will evaluate the best approach to streamlining key activities to achieve the desired efficiencies.

Schedule and Milestones

FY 2021

- Decrease funding for Laboratories and Cooperative Institute activities

Deliverables

- Decrease funding for weather research

Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(6,860)	(6,860)	(6,860)	(6,860)	(6,860)
Uncapitalized	(4,253)	(4,253)	(4,253)	(4,253)	(4,253)
Budget Authority	(6,860)	(6,860)	(6,860)	(6,860)	(6,860)
Outlays	(3,829)	(3,829)	(3,829)	(3,829)	(3,829)
FTE	(0)	(0)	(0)	(0)	(0)
Positions	(0)	(0)	(0)	(0)	(0)

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Weather & Air Chemistry Research
Subactivity: Weather & Air Chemistry Research Laboratories & CIs

Object Class		2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	Full-time permanent compensation	19,395	20,664	20,870	21,300	0
11.3	Other than full-time permanent	152	196	196	196	0
11.5	Other personnel compensation	312	299	299	299	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	20,950	21,159	21,365	21,795	0
12	Civilian personnel benefits	5,829	6,348	6,410	6,539	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	1,058	786	786	786	0
22	Transportation of things	83	87	87	87	0
23	Rent, communications, and utilities					
23.1	Rental payments to GSA	3,520	3,385	3,385	3,385	0
23.2	Rental Payments to others	2,689	2,689	2,689	2,689	0
23.3	Communications, utilities and misc charges	936	936	936	936	0
24	Printing and reproduction	156	156	156	156	0
25.1	Advisory and assistance services	483	451	451	451	0
25.2	Other services from non-Federal sources	13,160	8,192	10,392	7,855	(2,537)
25.3	Other goods and services from Federal sources	847	810	810	810	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	946	946	946	946	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	3,211	1,810	1,810	1,810	0
31	Equipment	2,141	3,826	3,826	3,826	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	42,854	30,420	30,420	26,097	(4,323)
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	98,864	82,000	84,469	78,168	(6,860)

**Department of Commerce
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Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Increase from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
U.S. Weather Research	Pos./BA	7	28,753	7	35,753	0	7,000
Program (USWRP)	FTE/Obl.	7	28,753	7	35,753	0	7,000

Earth Prediction Innovation Center (EPIC) Increase (\$7,000, 0 FTE/ 0 Positions) – NOAA proposes an increase of \$ 7,000,000 in funding to support for the Earth Prediction Innovation Center (EPIC), allowing EPIC to expand the community support it provides for Unified Forecast System (UFS) applications, accelerating research to operations to research (R2O2R), and leveraging innovation from the Weather Enterprise using a cloud-based development environment.

With FY 2020 appropriations, NOAA is contracting support for EPIC to make the UFS computer code accessible, portable, and supported on various cloud computing platforms. It is also supporting the Joint Center for Satellite Data Assimilation (JCSDA) in improving data assimilation techniques. With the requested funding for FY 2021, NOAA will expand the suite of Unified Forecast System (UFS) applications supported in a cloud development environment and user support for those applications, enabling more effective and efficient collaboration and integration of community-based innovations into the UFS. NOAA will engage private and academic institutions (i.e. National Center for Atmospheric Research [NCAR]), and other Federal agencies such as the National Aeronautics Space Administration (NASA), Department of Energy (DOE), and Department of Defense, ultimately leveraging their expertise and innovative cultures to reclaim and maintain international leadership in the area of numerical weather prediction (NWP).

Ultimately, in order to expand NOAA’s NWP suite to include community-based development of a full earth system model coupling across phenomena and time scales, EPIC will need to support a cloud development environment that’s outside of the NOAA code repository, observations, and tools, and provide training and support to a much larger community working on NOAA’s operational modeling systems. To achieve this goal, EPIC will integrate the latest user requirements, scientific research, and model developments from the community to accelerate improvements in operational model guidance that underpin forecasts and warnings. EPIC will support open source community-based model development for the UFS and the Joint Effort for Data assimilation Integration (JEDI).

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Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)

Schedule and Milestones

FY 2021-2025

- Continue to design, test, build and release a community model framework for the UFS that's scientifically credible, well documented, supported, optimized, computationally flexible, user-friendly, managed and available to the scientific community for use in fundamental research and operational applications (FY 2021)
- Share operational requirements with the research and development community to accelerate and communicate the challenges in R2O2R (FY 2021)
- Provide annual update to UFS Strategic Implementation Plan (FY 2021)
- Create the ability to run a parallel production environment for the UFS to mirror the operational configuration of the NOAA/NWS Environmental Modeling Center in a cloud development environment to take advantage of surge development (FY 2021)
- Ensure the UFS community modeling framework is computationally flexible and can run on many HPC platforms, including the cloud development environment (FY 2021)
- Design, develop and implement national and international scale training, tutorials, and scientific workshops to engage academia and the private sector in developing a fully coupled earth system modeling framework for the UFS (FY 2021)
- Provide startup grants for the community to adopt and align their research with the UFS (FY 2021)
- Alignment programmatic investments across NOAA to support coupled earth system modeling using the UFS (FY 2021)
- Bi-annual upgrade, release, and support of the UFS Medium Range Weather Application (FY 2021)
- Annual upgrade, release, and support for the UFS Convection Allowing Regional Forecast System (FY 2022)
- Annual upgrade, release, and support of the UFS Hurricane Analysis Forecast System (FY 2023)
- Annual upgrade, release, and support of the UFS Sub-seasonal to Seasonal Forecast System (SSFS) for weeks 3-4 and beyond (FY 2023)

Deliverables

- Transition NOAA's operational modeling system across phenomena and scales to open source development environments using Github
- Develop roadmap for regaining and maintaining international supremacy in weather modelling
- Annual update to UFS Strategic Implementation Plan
- Develop the cloud development environment for enabling the research community to contribute to the UFS Medium Range Weather Application
- Develop the cloud development environment for enabling the research community to contribute to the UFS Convective

**Department of Commerce
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Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

- Allowing Model Application
 - Develop the cloud development environment for enabling the research community to contribute to the UFS Hurricane Analysis and Forecasting System Application
 - Develop the cloud development environment for enabling the research community to contribute to the UFS Sub-seasonal to Seasonal Forecast System Application

Performance Measures	2021	2022	2023	2024	2025
Number of national UFS tutorials and scientific workshops with increase	4	4	4	4	4
Number of national UFS tutorials and scientific workshops without increase	0	0	0	0	0
Increased useful forecast lead time (Days when GEFS 500 hpa CC drop to 0.6) with increase	8.4	8.4	8.5	8.5	8.6
Increased useful forecast lead time (Days when GEFS 500 hpa CC drop to 0.6) without increase	8.3	8.3	8.3	8.4	8.4
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	7,000	7,000	7,000	7,000	7,000
Uncapitalized	4,200	4,200	4,200	4,200	4,200
Budget Authority	7,000	7,000	7,000	7,000	7,000
Outlays	4,340	4,340	4,340	4,340	4,340
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Weather and Air Chemistry Research
Subactivity: U.S. Weather Research Program

Object Class	2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base	
11.1	Full-time permanent compensation	558	575	581	581	0
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	10	4	4	4	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	568	579	585	585	0
12	Civilian personnel benefits	190	174	175	176	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	53	44	44	44	0
22	Transportation of things	0	0	0	0	0
23	Rent, communications, and utilities					
23.1	Rental payments to GSA	0	0	0	0	0
23.2	Rental Payments to others	0	0	0	0	0
23.3	Communications, utilities and misc charges	0	0	0	0	0
24	Printing and reproduction	5	5	5	5	0
25.1	Advisory and assistance services	285	118	2,569	2,569	0
25.2	Other services from non-Federal sources	1,975	4,716	4,716	4,716	0
25.3	Other goods and services from Federal sources	2	217	217	217	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	147	1,543	1,543	4,343	2,800
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	51	51	51	51	0
31	Equipment	76	109	109	109	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	13,772	15,444	18,718	22,918	4,200
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	17,124	23,000	28,732	35,733	7,000

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Increase from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
U.S. Weather Research Program	Pos./BA	7	28,753	7	31,953	0	3,200
	FTE/Obl.	7	28,753	7	31,953	0	3,200

Establish Tornado Warning Improvement and Extension Program (TWIEP) (\$3,200, 0 FTE/ 0 Positions) – NOAA requests an increase of \$3,200,000 in funding to establish a Tornado Warning Improvement and Extension Program (TWIEP) to improve the accuracy and timeliness of tornado forecasts, predictions, and warnings. With this increase, the TWIEP will carry out research and leverage existing resources to advance NOAA’s tornado observing systems, thunderstorm-scale computer models, and risk communication approaches.

The TWIEP will

- Improve assimilation of data from observing systems, including conventional and advanced radar technology
- Provide high resolution, convection-allowing (thunderstorm-scale) computer prediction models, including the High Resolution Rapid Refresh (HRRR) and Warn-on-Forecast systems; and
- Modernize NOAA’s approach to risk communication, informed by social sciences, and delivered to decision makers, the public, and weather enterprise stakeholders before, during, and after tornado events.

The requested increase will allow NOAA to integrate, enhance, execute and implement the scientific and technological advances identified in the TWIEP plan associated with OAR’s broader severe weather research programs, including Warn-on-Forecast (WoF), Forecasting a Continuum of Environmental Threats (FACETs), and VORTEX-SE, and the interagency National Windstorm Impact Reduction Program (NWIRP).

Section 103 of the *Weather Research and Forecasting Innovation Act of 2017* directs NOAA to establish a Tornado Warning Improvement and Extension Program.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)

Schedule and Milestones

FY 2021-2025

- Conduct Observing System Simulation Experiments to inform optimal design of existing and future observational networks.
- Implement a Warn-on-Forecast (WoF) prototype system into the NWS's modeling framework
- Establish performance metrics to accurately assess the effectiveness of current and future forecast and warning paradigms in support of societal needs
- Conduct science studies and operational demonstrations of phased array radar Advanced Technology Demonstrator (ATD)

Deliverables

- Plans for research transitioning into NWS operations
- Improvements to Warn-on-Forecast computer models
- Peer-reviewed scientific journal articles describing improved knowledge about tornadic storms
- Improvements to NOAA's ATD

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Demonstrate improvement in tornado warning lead time (mins) with increase	13	14	15	16	17
Demonstrate improvement in tornado warning lead time (mins) without increase	13	13	13	13	13
Outyear Costs:					
Direct Obligations	3,200	3,200	3,200	3,200	3,200
Uncapitalized	3,200	3,200	3,200	3,200	3,200
Budget Authority	3,200	3,200	3,200	3,200	3,200
Outlays	1,984	1,984	1,984	1,984	1,984
FTE	0	0	0	0	0
Positions	0	0	0	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)**

Activity: Weather and Air Chemistry Research
Subactivity: U.S. Weather Research Program

Object Class	2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1 Full-time permanent compensation	558	575	581	581	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	10	4	4	4	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	568	579	585	585	0
12 Civilian personnel benefits	190	174	175	175	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	53	44	44	64	20
22 Transportation of things	0	0	0	20	20
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental Payments to others	0	0	0	0	0
23.3 Communications, utilities and misc charges	0	0	0	0	0
24 Printing and reproduction	5	5	5	5	0
25.1 Advisory and assistance services	285	118	2,569	2,569	0
25.2 Other services from non-Federal sources	1,975	4,716	4,716	4,716	0
25.3 Other goods and services from Federal sources	2	217	217	217	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	147	1,543	1,543	2,043	500
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	51	51	51	51	0
31 Equipment	76	109	109	109	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	13,772	15,444	18,718	21,378	2,660
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	17,124	23,000	28,732	31,932	3,200

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>		<u>Personnel</u>		<u>Personnel</u>	
		Amount		Amount		Amount	
U.S. Weather Research	Pos./BA	6	28,753	6	27,753	0	(1,000)
Program (USWRP)	FTE/Obl.	6	28,753	6	27,753	0	(1,000)

Infrasonic Weather Monitoring Research Termination (-\$1,000, 0 FTE/ 0 Positions) – NOAA proposes a decrease of \$1,000,000 in funding to conclude infrasonic monitoring research. NOAA has completed an evaluation of this technology using congressionally directed funding in FY 2016 through FY 2020.

Schedule and Milestones

FY 2021

- Terminate Infrasonic Weather Monitoring Research

FY 2022-2025

- Maintain support for highest priority activities within available weather research funding

Deliverables

- Terminate funding for infrasonic monitoring research

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

Performance Measures	2021	2022	2023	2024	2025
Number of forecast and mission improvements, based on The Weather Research and Forecasting Innovation Act of 2017, to weather applications at operational US weather services and in the US weather commercial sector with decrease	13	13	13	13	13
Number of forecast and mission improvements, based on The Weather Research and Forecasting Innovation Act of 2017, to weather applications at operational US weather services and in the US weather commercial sector without decrease	15	15	15	15	15
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Uncapitalized	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Budget Authority	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Outlays	(620)	(620)	(620)	(620)	(620)
FTE	(0)	(0)	(0)	(0)	(0)
Positions	(0)	(0)	(0)	(0)	(0)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Weather and Air Chemistry Research
Subactivity: U.S. Weather Research Program

Object Class	2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base	
11.1	Full-time permanent compensation	558	575	581	581	0
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	10	4	4	4	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	568	579	585	585	0
12	Civilian personnel benefits	190	174	175	176	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	53	44	44	44	0
22	Transportation of things	0	0	0	0	0
23	Rent, communications, and utilities					
23.1	Rental payments to GSA	0	0	0	0	0
23.2	Rental Payments to others	0	0	0	0	0
23.3	Communications, utilities and misc charges	0	0	0	0	0
24	Printing and reproduction	5	5	5	5	0
25.1	Advisory and assistance services	285	118	2,569	2,569	0
25.2	Other services from non-Federal sources	1,975	4,716	4,716	4,716	0
25.3	Other goods and services from Federal sources	2	217	217	217	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	147	1,543	1,543	1,543	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	51	51	51	51	0
31	Equipment	76	109	109	109	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	13,772	15,444	18,718	17,718	(1,000)
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	17,124	23,000	28,732	27,733	(1,000)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel Amount		Personnel Amount		Personnel Amount	
U.S. Weather Research	Pos./BA	7	28,753	7	22,267	0	(6,486)
Program (USWRP)	FTE/Obl.	7	28,753	7	22,267	0	(6,486)

U.S. Weather Research Program (USWRP) Decrease (-\$6,486, 0 FTE/ 0 Positions) – NOAA proposes a decrease of \$6,486,000 in the funding that was used to support priority USWRP activities identified as benefiting from short-term funding in FY 2020, such as economic studies that were initiated in FY18 and activities at the Northern Gulf Institute to establish a capability to develop and evaluate the National Water Model in collaboration with the NWC and OAR labs/programs. The magnitude of this reduction is not sufficient to affect the performance targets. OAR will evaluate the best approach to streamlining key activities to achieve the desired efficiencies.

Schedule and Milestones

FY 2021

- Decrease funding for U.S. Weather Research Program activities

FY 2022-2025

- Decrease funding for weather research

Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(6,486)	(6,486)	(6,486)	(6,486)	(6,486)
Uncapitalized	(4,526)	(4,526)	(4,526)	(4,526)	(4,526)
Budget Authority	(6,486)	(6,486)	(6,486)	(6,486)	(6,486)
Outlays	(4,021)	(4,021)	(4,021)	(4,021)	(4,021)
FTE	(0)	(0)	(0)	(0)	(0)
Positions	(0)	(0)	(0)	(0)	(0)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Weather and Air Chemistry Research
Subactivity: U.S. Weather Research Program

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	558	575	581	581	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	10	4	4	4	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	568	579	585	585	0
12 Civilian personnel benefits	190	174	175	176	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	53	44	44	44	0
22 Transportation of things	0	0	0	0	0
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental Payments to others	0	0	0	0	0
23.3 Communications, utilities and misc charges	0	0	0	0	0
24 Printing and reproduction	5	5	5	5	0
25.1 Advisory and assistance services	285	118	2,569	2,569	0
25.2 Other services from non-Federal sources	1,975	4,716	4,737	2,777	(1,961)
25.3 Other goods and services from Federal sources	2	217	217	217	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	147	1,543	1,543	1,543	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	51	51	51	51	0
31 Equipment	76	109	109	109	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	13,772	15,444	18,718	14,193	(4,526)
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	17,124	23,000	28,753	22,268	(6,486)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u> <u>Amount</u>	
Tornado/Severe Storm	Pos./BA	3	13,667	3	12,647	0	(1,020)
Research (PAR)	FTE/Obl.	3	13,667	3	12,647	0	(1,020)

Tornado Severe Storms Research/PAR Decrease (-\$1,020, 0 FTE/ 0 Positions) – NOAA proposes a decrease of \$1,020,000 in the funding used to advance priority activities in Tornado/Severe Storm Research line. In FY 2020, these funds were provided to enhance NOAA’s work in exploring ways to transition from current NWS radar systems to phased array radar systems. In FY 2021, NOAA will prioritize the remaining funding to continue evaluation of the Phased Array Radar technology as a possible cost-effective replacement for aging weather radars.

Schedule and Milestones

FY 2021

- Decrease funding for Tornado/Severe Storm Research

FY 2022-2025

- Decrease funding for weather research

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Number of forecast and mission improvements, based on The Weather Research and Forecasting Innovation Act of 2017, to weather applications at operational US weather services and in the US weather commercial sector with decrease	13	13	13	13	13
Number of forecast and mission improvements, based on The Weather Research and Forecasting Innovation Act of 2017, to weather applications at operational US weather services and in the US weather commercial sector without decrease	15	15	15	15	15
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(1,020)	(1,020)	(1,020)	(1,020)	(1,020)
Uncapitalized	(708)	(708)	(708)	(708)	(708)
Budget Authority	(1,020)	(1,020)	(1,020)	(1,020)	(1,020)
Outlays	(632)	(632)	(632)	(632)	(632)
FTE	(0)	(0)	(0)	(0)	(0)
Positions	(0)	(0)	(0)	(0)	(0)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Weather and Air Chemistry Research
Subactivity: Tornado Severe Storm Research/PAR

Object Class	2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base	
11.1	Full-time permanent compensation	347	358	362	362	0
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	6	6	6	6	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	353	364	367	367	0
12	Civilian personnel benefits	106	109	110	110	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	11	11	11	11	0
22	Transportation of things	3	3	3	3	0
23	Rent, communications, and utilities					
23.1	Rental payments to GSA	0	0	0	0	0
23.2	Rental Payments to others	831	831	831	831	0
23.3	Communications, utilities and misc charges	1	1	1	1	0
24	Printing and reproduction	4	4	4	4	0
25.1	Advisory and assistance services	45	45	45	45	0
25.2	Other services from non-Federal sources	727	727	727	727	0
25.3	Other goods and services from Federal sources	518	518	518	518	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	2,583	2,884	2,913	2,600	(312)
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	196	196	196	196	0
31	Equipment	609	609	609	609	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	6,722	7,333	7,332	6,624	(708)
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	12,709	13,634	13,667	12,647	(1,020)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Joint Technology Transfer Initiative	Pos./BA	1	15,011	1	3,014	0	(11,997)
	FTE/Obl.	1	15,011	1	3,014	0	(11,997)

Joint Technology Transfer Initiative (JTTI) Decrease (-\$11,997, 0 FTE/ 0 Position) - NOAA proposes a decrease of \$11,997,000 in the funding used to accelerate the transition of the most promising research activities within NOAA and the weather enterprise into NWS operations through testing, demonstrating, and partnerships with important external partners. In an effort to prioritize R2O research, NOAA will seek to fund the transition of promising research through offsetting reductions or discontinuation of less promising research.

Schedule and Milestones

FY 2021

- In coordination with NWS, develop JTTI program priorities and publish funding opportunities for internal and external projects
- Select final Transition projects
- Work with NWS to evaluate previously funded transition projects that advanced in Readiness Level for possible operational implementation

FY 2022–2025

- Annually, in coordination with NWS, develop JTTI program priorities and publish funding opportunities for internal and external projects
- Annually work with NWS to evaluate previously funded transition projects that advanced in Readiness Level for possible operational implementation

Deliverables

- Improved weather forecasting tools transitioned to NWS operations

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Annual number of OAR R&D products transitioned to a higher Technology Readiness Level with decrease	54	54	54	54	54
Annual number of OAR R&D products transitioned to a new stage(s) without decrease	125	125	125	125	125
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(11,997)	(11,997)	(11,997)	(11,997)	(11,997)
Uncapitalized	(11,997)	(11,997)	(11,997)	(11,997)	(11,997)
Budget Authority	(11,997)	(11,997)	(11,997)	(11,997)	(11,997)
Outlays	(7,438)	(7,438)	(7,438)	(7,438)	(7,438)
FTE	(0)	(0)	(0)	(0)	(0)
Positions	(0)	(0)	(0)	(0)	(0)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Weather and Air Chemistry Research
Subactivity: Joint Technology Transfer Initiative

Object Class	2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base	
11.1	Full-time permanent compensation	113	76	77	77	0
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	1	0	0	0	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	115	76	77	77	0
12	Civilian personnel benefits	37	23	23	23	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	46	0	0	0	0
22	Transportation of things	0	0	0	0	0
23	Rent, communications, and utilities					
23.1	Rental payments to GSA	0	0	0	0	0
23.2	Rental Payments to others	0	0	0	0	0
23.3	Communications, utilities and misc charges	0	0	0	0	0
24	Printing and reproduction	7	0	0	0	0
25.1	Advisory and assistance services	4,577	0	0	0	0
25.2	Other services from non-Federal sources	2,101	0	0	0	0
25.3	Other goods and services from Federal sources	452	0	0	0	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	115	0	0	0	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	285	0	0	0	0
31	Equipment	1	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	15,732	14,901	14,911	2,914	(11,997)
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	23,469	15,000	15,011	3,014	(11,997)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Ocean, Coastal, and Great Lakes Research

Goal Statement

The Ocean, Coastal, and Great Lakes Research in OAR provides science to coastal communities from a wide network of university partners, develops technology to advance the Nation's oceans and Great Lakes observations, and coordinates multi-partner ocean exploration missions to characterize our natural resources and improve our understanding of the changes occurring in the oceans and Great Lakes.

Base Program

OAR's ocean, coastal, and Great Lakes laboratories, programs, and partners have been key contributors to advancing NOAA's National Marine Fisheries Service (NMFS), National Ocean Service (NOS), and National Weather Service (NWS) by providing research to better understand our oceans and Great Lakes natural resources and the influence of the oceans and Great Lakes on the Earth's weather and climate through technological advancements in modeling, computing, observing, and information dissemination.

The following five Subactivities are included in the Ocean, Coastal, and Great Lakes Research portfolio:

- Laboratories & Cooperative Institutes: Primarily supports foundational ocean observation networks and research, modeling, and technology development at OAR's laboratories and cooperative institutes.
- National Sea Grant College Program: Established by Congress through the National Sea Grant College Program Act, the National Sea Grant Collage Program is a Federal-state partnership that turns research into actions that support science-based sustainable practices. This partnership ensures that coastal communities remain engines of economic growth. The Sea Grant programs form a dynamic national network of more than 300 participating institutions represented by more than 2,300 scientists, engineers and outreach experts based at universities across the country.
- Ocean Exploration and Research: Established by Congress through the Ocean Exploration Act, Ocean Exploration and Research is the only Federal organization dedicated to ocean exploration.
- Integrated Ocean Acidification authorized under the Federal Ocean Acidification Research and Monitoring Act to better understanding ocean acidification (OA) and the consequences of OA on marine resources to enable communities to mitigate, prepare, and adapt to changes.

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- National Oceanographic Partnership Program (NOPP): This OAR funding line was established in FY 2019 to advance ocean science research through the program established under 10 U.S.C. 7901 and to continue support for Ocean Joint Technology Transfer Initiative projects funded in fiscal year 2018.
- Sustained Ocean Observations and Monitoring: A global system for observations, modelling, and analysis of marine and ocean variables to support operational ocean services worldwide.

Statement of Operating Objectives

Schedule and Milestone Highlights

FY 2021–2025

Laboratories & Cooperative Institutes

- Continue collection and analysis of acoustic data from Ocean Noise Reference Stations, in coordination with NMFS and NOS
- Demonstrate/test new ocean observing/communication technologies

National Sea Grant College Program

- Hold local and regional state program requests for proposals
- Continue to ensure accountability to NOAA aligned program plans through external Performance Review Panels

Ocean Exploration and Research

- Develop an annual extramural competition for conducting the next phase of research into the potential resources and natural habitats in areas identified through the ECS Mapping Initiative
- Develop an annual extramural competition for the exploration of unknown and poorly known ocean areas where there is a high potential for discovery

Integrated Ocean Acidification

- Conduct OA coastal observing and process research cruises and deploy OA sensors on NOAA research and volunteer observing ships
- Develop a coastal early-warning system that can identify episodic low pH events and alert managers of potentially impacted resources
- Partner with IOOS Marine Sensor Program to develop marine sensors that can assist coastal industries with both scientific and monitoring capacity

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- Optimize observing systems in each of the eight large marine ecosystem regions
- Increase number of living marine resources characterized for vulnerability to ocean acidification

Sustained Ocean Observations and Monitoring

- Maintain NOAA's contribution of 1500 active Argo ocean profiling floats and implement Deep (6000 meters) Argo array
- Maintain Global Ocean Observing System (GOOS)

National Oceanographic Partnership Program (NOPP)

- Projects focused on improving NOAA's operational efficiency and resource management responsibilities, including activities designed to support the blue economy

Deliverables

Laboratories & Cooperative Institutes

- Technical Report to describe current and chemical distributions in coastal waters in relation to known point sources, to assessing relative strengths of land-based sources of pollution over southeast Florida reef tracks
- Pre-operational forecast products to alert the over two million coastal Lake Erie residents of algal toxins in drinking water
- An annual, synthetic, ecosystem-based assessment of the eastern Bering Sea for the North Pacific Fisheries Management Council

National Sea Grant College Program

- Continue to leverage state and other partners
- Assist coastal communities to adopt sustainable development principles
- Create and transfer decision-support tools/technologies to coastal managers
- Support Sea Grant activities to restore degraded ecosystems
- Provide coastal resource managers with information/training in local hazard resiliency, and hazard mitigation tools, techniques, and best practices

Ocean Exploration and Research

- Complete Bureau of Ocean Energy Management (BOEM)-NOAA Partnership expedition to explore and characterize habitats and ecosystems the Arctic and other key areas within the U.S. Exclusive Economic Zone (EEZ)

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- 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

Integrated Ocean Acidification

- Regional biogeochemical and ecological models

Sustained Ocean Observations and Monitoring

- 1,000 drifting buoys deployed annually
- 250 Argo Array Buoys deployed annually

National Oceanographic Partnership Program (NOPP)

- Transition research into operational applications

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Explanation and Justification

Line Item		2019 Actual		2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Laboratories & Cooperative Institutes (Ocean, Coastal and Great Lakes Research)	Pos/BA	100	35,778	124	35,500	124	36,800
	FTE/OBL	99	34,802	118	35,500	118	36,800
National Sea Grant College Program	Pos/BA	10	79,834	18	87,000	0	87,198
	FTE/OBL	10	79,281	18	87,000	0	87,198
Ocean Exploration and Research	Pos/BA	23	41,503	23	42,000	23	42,242
	FTE/OBL	23	40,702	22	42,000	22	42,242
Integrated Ocean Acidification	Pos/BA	13	11,969	17	14,000	17	14,174
	FTE/OBL	13	11,826	16	14,000	16	14,174
Sustained Ocean Observations and Monitoring	Pos/BA	34	42,928	39	45,000	39	45,408
	FTE/OBL	34	46,038	37	45,000	37	45,408
National Oceanographic Partnership Program	Pos/BA	0	5,495	0	5,000	1	5,011
	FTE/OBL	0	5,488	0	5,000	1	5,011
Total Ocean, Coastal, and Great Lakes Research	Pos/BA	180	217,507	221	228,500	204	230,833
	FTE/OBL	179	218,137	211	228,500	194	230,833

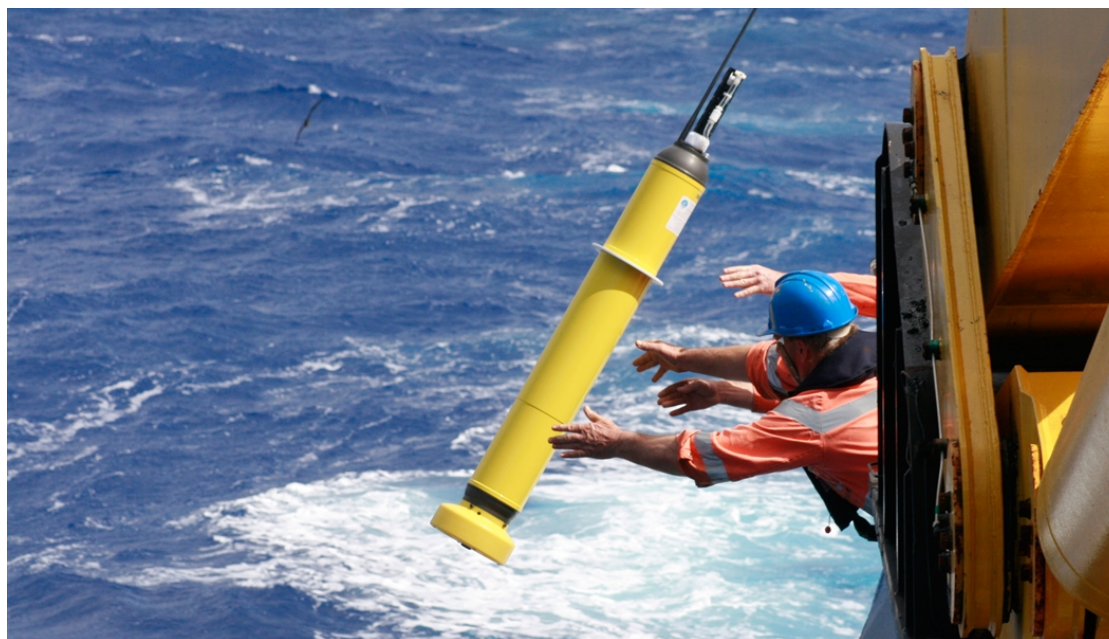
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Overall, OAR's Ocean, Coastal, and Great Lakes Research supports:

- Improving 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;
- Improving 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;
- Translating 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; and
- Developing and using cutting edge technology for understanding and exploring the ocean, coasts and Great Lakes.

In early FY 2019, the Argo Program, a hallmark of NOAA's global ocean observing systems, reached a major milestone with its two millionth profile of ocean temperature and salinity conditions. The Argo Program has collectively revolutionized the ability to monitor our global oceans, providing nearly four times the information as all other ocean observing tools combined. Argo data are freely available to anyone and used every day in operational weather and ocean forecasting, with broader applications that include aquaculture, pollution monitoring, ocean education, and national defense. As it celebrates its two millionth profile, the Argo Program is expanding and innovating with new types of instruments. Deep Argo floats will dive three times deeper, down to 3.7 miles, into the largely unobserved deep ocean. Biogeochemical Argo floats measure oxygen, carbon, and pH, critical for addressing pressing environmental issues such as ocean acidification and low oxygen levels that have been associated with harmful algal blooms.

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OAR's Argo Program reached a major milestone in early FY 2019 with its two millionth profile of ocean temperature and salinity conditions. The Argo float responsible for the profile is one of nearly 4,000 autonomous floats that cover the global ocean (nearly half operated by NOAA), representing the growth of the two-decade program and international commitment from 26 countries across the world.

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Much of the research performed within OAR's Ocean, Coastal, & Great Lakes Research is collaborative and crosscutting and therefore is often funded through multiple Sub-activities. Some cross-cutting themes include:

Ecosystems Research

OAR Laboratories and Cooperative Institutes conduct research on ecological processes, and provide data to develop models critical to understanding ecosystem structure and function in important and economically significant environments in the oceans and the Great Lakes, including coral reefs, deep sea hydrothermal vents, and fish and shellfish habitat. Through observations, laboratory, and field experiments researchers also develop models to forecast impacts of multiple stressors, such as invasive species and nutrient runoff, on water quality, food webs, and fishery productivity. This work supports the development of new models, forecasting tools, and applications to evaluate and mitigate impacts to present and future ecosystem stressors.

Integrated Marine and Ocean Processes

OAR carries out interdisciplinary scientific investigations of the physics of ocean currents and water properties, and on the role of the ocean in extreme weather events, and ecosystems. The tools used to carry out these studies range from sensors on deep ocean moorings to satellite-based instruments to measurements made on research and commercial shipping vessels and autonomous vehicles, and include data analysis and numerical modeling. NOAA scientists and partners conduct innovative research and develop numerical models to predict the physical, chemical, biological, and ecological response in the oceans and Great Lakes due to weather, climate, and human-induced changes. The forecast models and quantitative tools developed by researchers allow scientists, coastal resource managers, policy makers, and the public to make informed decisions for optimal management of oceans and Great Lakes resources. The ocean, coasts, and Great Lakes are closely tied to the Earth's atmosphere, and a sound understanding of ocean-earth interactions is essential for better management of marine resources and improved ocean and weather services.



Photo shows a Harmful Algal Bloom (HAB) developing in Lake Erie. The NOAA Great Lakes HAB and Hypoxia program is a collaborative effort between GLERL and Cooperative Institute scientists. The team uses an integrated approach to understand the ecosystem dynamics and environmental drivers of HABs and hypoxia in the Great Lakes to improve prediction and mitigation strategies.

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Resilient Communities and Economies

OAR's Ocean, Coastal and Great Lakes Research works through the National Sea Grant College Program to develop vibrant and resilient coastal economies that use comprehensive planning to make informed strategic decisions; improve coastal water resources that sustain human health and ecosystem services; and adapt to the impacts of coastal hazards.

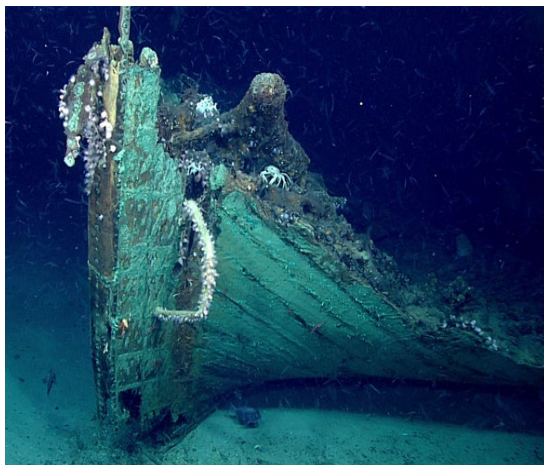
Sustainable Fisheries and Aquaculture

The National Sea Grant Marine Aquaculture Grant Program is the only U.S. government grant program dedicated to supporting marine aquaculture development. OAR's marine aquaculture work ensures safe, secure and sustainable supplies of domestic seafood and decreases reliance on seafood imports through aquaculture research, extension, and grants. As a part of the cross-NOAA Program, OAR works with aquaculture partners in the National Marine Fisheries Service (NMFS) and the National Ocean Service (NOS) in coordination with state fisheries managers, seafood processors, fishing associations and consumer groups. These grants tackle some of the top challenges to marine aquaculture like reducing fishmeal and fish oil in aquaculture feeds, increasing seafood safety and quality, diversifying species and products. OAR's aquaculture competition is authorized under the National Aquaculture Act of 1980.

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Ocean Exploration

OAR leads efforts to explore and characterize deep-water areas of the U.S. Exclusive Economic Zone, Extended Continental Shelf, and other poorly known ocean areas and phenomena. Since its commissioning in 2008, the *Okeanos Explorer*, NOAA's ship assigned to exploration, has mapped over a million square kilometers of the seafloor at high resolution. Data collected from ocean exploration expeditions have been critical for science-based decisions on issues like deepwater fisheries management, potential oil and gas development or deep-sea mining, marine protected area establishment and management, determination of the U.S. Extended Continental Shelf, and nautical charting.

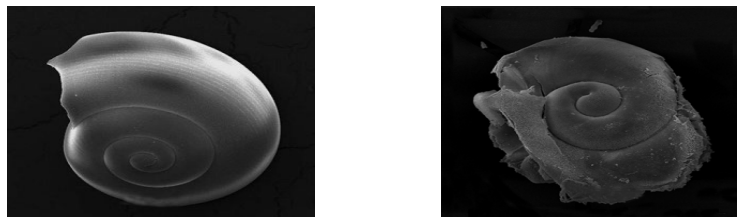


In May 2019 on a NOAA Ship *Okeanos Explorer* expedition along the edge of the Florida Escarpment in the Gulf of Mexico, a shipwreck was discovered during a remotely operated vehicle (ROV) dive. The discovery took place during the final hours of the expedition's last engineering dive, as ROV pilots trained a junior engineer on the use of the manipulator arm. Searching for rocks to sample, the pilots were following a series of waypoints when their sonar detected an obstacle that appeared to be a shipwreck. The find was confirmed as they approached, and the onboard team was able to convene a group of marine archaeologists and maritime experts for an impromptu telepresence discussion. The ship's command and mission team agreed to extend the dive for three hours longer than planned, enabling a more thorough characterization of the wreck, including collection of imagery for a complete photomosaic.

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Ocean Chemistry and Ocean Acidification

Research across OAR labs, programs, and Cooperative Institutes aims to improve our understanding of how (and how fast) ocean chemistry is changing, how variable that change is by region, and what impacts these changes are having on marine life, people, and the local, regional, and national economies. OA refers to changes in the chemistry of the ocean due to rising atmospheric carbon dioxide; currently, ocean chemistry is changing faster than any period in the past 55 million years. OAR's Ocean Acidification Program (OAP) maintains long-term OA monitoring, conducts research to enhance the conservation of marine ecosystems sensitive to OA, and promotes OA educational opportunities. By better understanding and predicting OA, OAP also informs national and international carbon mitigation discussions and enables local communities to better prepare, mitigate, and adapt to changes caused by OA.



Impacts to a pteropod's shell in seawater that is too acidic (images above). The left panel shows a shell collected from a live pteropod from a region in the Southern Ocean where acidity is low. The shell on the right is from a pteropod collected in a region where the water is more acidic. Photo credits: (left) Bednaršek et al. 2012; (right) Nina Bednaršek.

Sustained Ocean Observations and Monitoring (SOOM)

SOOM supports NOAA's contribution to the sustained Global Ocean Observing System (GOOS) by maintaining over 3,950 platforms that report environmental weather/climate information to global prediction centers and researchers. GOOS is a permanent global system for observations, modelling, and analysis of marine and ocean variables to support operational ocean services worldwide. The U.S. Integrated Ocean Observing System (IOOS) is the U.S. regional contribution to GOOS and SOOM activities contribute unique and essential global measurements and capabilities to the IOOS enterprise. SOOM's contribution helps describe the present state of the oceans, monitors long-term changes, supports operational services worldwide and is the basis for forecasting climate variability and change. SOOM also supports research to develop new data products from these observations to address a broad range of stakeholder needs.

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National Oceanographic Partnership Program (NOPP)

The National Oceanographic Partnership Program (NOPP) was established by Public Law 104-201 of September 23, 1996, to “coordinate and strengthen national oceanographic efforts by identifying and carrying out partnerships among Federal agencies, academia, industry, and other members of the oceanographic scientific community in the areas of data, resources, education, and communication.” With an increasing amount of research and development spending occurring within the private sector relative to the federal government, NOPP is a unique catalyst for participation by non-governmental organizations and industry in federal ocean research and education projects. NOAA has been investing ad hoc resources (on an annual basis) toward this effort.

Previous NOPP successes include creation of a comprehensive national ocean observing network, air/ocean modeling improvements and transitions, and innovative marine technology solutions. Future efforts under discussion include:

- Reducing plastic waste in the oceans
- Comprehensive mapping and characterization of the US Exclusive Economic Zone
- Development of next-generation autonomous and remote (air and satellite) marine data collection systems
- New discoveries of ocean resources and marine habitat dynamics that are gleaned from existing marine information databases.
- Seamless national oceanographic and marine information systems that provide transparent access and advanced data management and analysis tools

PROGRAM CHANGES FOR FY 2021

NOAA requests a total decrease of \$118,079 and 18 FTE/ 18 positions in program changes for the Ocean, Coastal, & Great Lakes Research activity. Following this section are program change narratives for this activity that represent program changes of \$250,000 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-3).

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Ocean, Coastal, and Great Lakes Laboratories and Cooperative Institutes	Pos./BA	124	36,800	124	34,920	0	(1,880)
	FTE/Obl.	118	36,800	118	34,920	0	(1,880)

Genomics Termination (-\$1,880, 0 FTE/ 0 Positions) – NOAA proposes a decrease of \$1,880,000 in funding to eliminate the environmental genomics program at the Atlantic Oceanographic and Meteorological Laboratory (AOML).

The Genomics program studies Deoxyribonucleic acid (DNA), Ribonucleic acid (RNA), and proteins to better understand what organisms are present, what they are doing, and how they are affected by changing ocean conditions. Environmental genomics research scheduled at the Experimental Reefs Lab will be halted. NOAA will discontinue funding for 5 post-doctoral researchers, and the work will be stopped at the end of 2020.

Schedule and Milestones

FY 2021

- Terminate the environmental genomics program

FY 2022-2025

- Maintain support for highest priority activities within available ocean, coastal and Great Lake research funding

Deliverables

- Terminate funding for genomics research
- Eliminate funding for 5 post-doctoral researchers
- End work at the Future Reefs lab

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Performance Measures	2021	2022	2023	2024	2025
Cumulative number of project/partners/customers/contract adopting 'omic methods or technologies developed or validated by NOAA to increase efficiency, reduce costs, or to improve ecosystem-based understanding & management with termination	0	0	0	0	0
Cumulative number of project/partners/customers/contract adopting 'omic methods or technologies developed or validated by NOAA to increase efficiency, reduce costs, or to improve ecosystem-based understanding & management without termination	42	43	43	44	44
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(1,880)	(1,880)	(1,880)	(1,880)	(1,880)
Uncapitalized	(1,541)	(1,541)	(1,541)	(1,541)	(1,541)
Budget Authority	(1,880)	(1,880)	(1,880)	(1,880)	(1,880)
Outlays	(1,166)	(1,166)	(1,166)	(1,166)	(1,166)
FTE	(0)	(0)	(0)	(0)	(0)
Positions	(0)	(0)	(0)	(0)	(0)

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)**

Activity: Ocean, Coastal, & Great Lakes Research
Subactivity: Ocean, Coastal, and Great Lakes Laboratories & Cooperative Institutes

	2019 Actual	2020 Enacted	2020 Base	2020 Estimate	Decrease from 2020 Base	
11.1	Full-time permanent compensation	8,211	9,053	9,380	9,380	0
11.3	Other than full-time permanent	199	199	199	199	0
11.5	Other personnel compensation	304	271	271	271	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	8,714	9,523	9,850	9,850	0
12	Civilian personnel benefits	2,757	2,716	2,856	2,856	0
13	Benefits for former personnel	9	8	8	8	0
21	Travel and transportation of persons	419	465	465	407	(58)
22	Transportation of things	153	229	229	191	(38)
23	Rent, communications, and utilities					
23.1	Rental payments to GSA	0	0	0	0	0
23.2	Rental Payments to others	2,879	2,879	2,879	2,879	0
23.3	Communications, utilities and misc charges	99	150	150	150	0
24	Printing and reproduction	31	44	44	44	0
25.1	Advisory and assistance services	931	931	931	931	0
25.2	Other services from non-Federal sources	2,260	3,111	3,111	2,772	(339)
25.3	Other goods and services from Federal sources	633	277	277	277	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	0	0	0	0	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	1,216	1,768	1,768	1,380	(388)
31	Equipment	223	351	351	351	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	14,477	13,046	13,519	12,462	(1,057)
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	2	2	2	2	0
44	Refunds	0	0	0	0	0
99	Total obligations	34,802	35,500	36,440	34,560	(1,880)

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Ocean, Coastal, and Great Lakes Laboratories and Cooperative Institutes	Pos./BA	124	36,800	124	31,465	0	(5,335)
	FTE/Obl.	118	36,800	118	31,465	0	(5,335)

Laboratories and Cooperative Institutes Decrease (-\$5,335, 0 FTE/ 0 Positions) – NOAA proposes a decrease of \$5,335,000 in funding for activities in the Ocean, Coastal, and Great Lakes Laboratories and Cooperative Institutes. With this reduction, NOAA will decrease support for both molecular biological analysis (collectively known as 'Omics research) and economic valuation work, fisheries and aquaculture, and seafood safety. The magnitude of this reduction is not sufficient to affect the performance targets. OAR will evaluate the best approach to streamlining key activities to achieve the desired efficiencies.

Schedule and Milestones

FY 2021

- Decrease funding for Laboratories and Cooperative Institute activities

FY 2022-2025

- Maintain support for highest priority activities within available ocean, coastal and Great Lake research funding

Deliverables

- Decrease funding for ocean, coastal and Great Lake research

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Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(5335)	(5335)	(5335)	(5335)	(5335)
Uncapitalized	(4,636)	(4,636)	(4,636)	(4,636)	(4,636)
Budget Authority	(5335)	(5335)	(5335)	(5335)	(5335)
Outlays	(3,308)	(3,308)	(3,308)	(3,308)	(3,308)
FTE	(0)	(0)	(0)	(0)	(0)
Positions	(0)	(0)	(0)	(0)	(0)

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

Activity: Ocean, Coastal, & Great Lakes Research
Subactivity: Ocean, Coastal, and Great Lakes Laboratories & Cooperative Institutes

	2020 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	8,211	9,053	9,380	9,380	0
11.3	199	199	199	199	0
11.5	304	271	271	271	0
11.8	0	0	0	0	0
11.9	8,714	9,523	9,850	9,850	0
12	2,757	2,716	2,856	2,856	0
13	9	8	8	8	0
21	419	465	465	407	(58)
22	153	229	229	191	(38)
23					
23.1	0	0	0	0	0
23.2	2,879	2,879	2,879	2,879	0
23.3	99	150	150	150	0
24	31	44	44	44	0
25.1	931	931	931	931	0
25.2	2,260	3,111	3,471	2,772	(699)
25.3	633	277	277	277	0
25.4	0	0	0	0	0
25.5	0	0	0	0	0
25.6	0	0	0	0	0
25.7	0	0	0	0	0
25.8	0	0	0	0	0
26	1,216	1,768	1,768	1,380	(388)
31	223	351	351	351	0
32	0	0	0	0	0
33	0	0	0	0	0
41	14,477	13,046	13,519	9,367	(4,152)
42	0	0	0	0	0
43	2	2	2	2	0
44	0	0	0	0	0
99	34,802	35,500	36,800	31,465	(5,335)

**Department of Commerce
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(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u>	<u>Amount</u>
National Sea Grant	Pos./BA	18	87,198	0	0	-18	(87,198)
College Program	FTE/Obl.	18	87,198	0	0	-18	(87,198)

National Sea Grant College Program Terminations (-\$87,198, -18 FTE/ -18 Positions) – NOAA proposes a decrease of \$87,198,000 in funding to terminate the National Sea Grant College Program Base and the Marine Aquaculture Program. The termination of the National Sea Grant College Program will eliminate NOAA’s funding for the network of 34 Sea Grant programs located in coastal States and territories. With this termination, NOAA will explore a range of options to address staffing; including transfers, Voluntary Early Retirement Authority (VERA) and Voluntary Separation Incentive Payments (VSIP) and other options will be requested and/or explored.

NOAA will also terminate the Sea Grant’s Marine Aquaculture Program. As a result of this termination, support will be withdrawn for the larger cross-NOAA Aquaculture Program.

Schedule and Milestones:

FY 2021

- Terminate the National Sea Grant College Program Base
- Terminate the Sea Grant Marine Aquaculture Program

Deliverables:

- Terminate funding for the National Sea Grant College Program Base and the Marine Aquaculture Program

**Department of Commerce
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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

Performance Measures	2021	2022	2023	2024	2025
Economic and societal impacts derived from Sea Grant activities(Jobs created or retained/Businesses created or retained/Economic benefit (\$M dollars) with termination	0/0/\$0	0/0/\$0	0/0/\$0	0/0/\$0	0/0/\$0
Economic and societal impacts derived from Sea Grant activities(Jobs created or retained/Businesses created or retained/Economic benefit (\$M dollars) without termination	10,000 / 2,000 / \$400M	10,000 / 2,000 / \$400M	10,000 / 2,000 / \$400M	10,000 / 2,000 / \$400M	10,000 / 2,000 / \$400M
Number of fishermen, seafood processing and aquaculture industry personnel who modify their practices using knowledge gained in fisheries sustainability and seafood safety as a result of Sea Grant activities with termination	0	0	0	0	0
Number of fishermen, seafood processing and aquaculture industry personnel who modify their practices using knowledge gained in fisheries sustainability and seafood safety as a result of Sea Grant activities without termination	15,000	15,000	15,000	15,000	15,000

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(87,198)	(87,198)	(87,198)	(87,198)	(87,198)
Uncapitalized	(84,520)	(84,520)	(84,520)	(84,520)	(84,520)
 Budget Authority	 (87,198)	 (87,198)	 (87,198)	 (87,198)	 (87,198)
Outlays	(54,063)	(54,063)	(54,063)	(54,063)	(54,063)
FTE	(18)	(18)	(18)	(18)	(18)
Positions	(18)	(18)	(18)	(18)	(18)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Ocean, Coastal, and Great Lakes Research Program
Subactivity: National Sea Grant College Program

Title	Grade	Number	Salary	Salaries
Director, National Sea Grant College Program	SES	(1)	\$181	(\$181)
Supervisory Management & Program Analyst	ZA-5	(1)	\$ 186	(\$186)
Management Analysis Officer	ZA-4	(5)	\$ 96	(\$479)
Management & Program Analyst	ZA-3	(10)	\$ 68	(\$680)
Secretary - Office Administrator	ZS-4	(1)	\$ 54	(\$54)
Total		<u>(18)</u>		<u>(\$1,581)</u>
Less lapse	0.00%			
Total full-time permanent (FTE)		<u>(18)</u>		<u>(1,581)</u>
2021 Pay Adjustment (0%)	1.00%			<u>(16)</u>
Total				<u>(1,597)</u>
Personnel Data				
Full-time Equivalent Employment				
Full-time permanent		(18)		
Other than full-time permanent		<u>0</u>		
Total		(18)		
Authorized Positions:				
Full-time permanent		(18)		
Other than full-time permanent		<u>0</u>		
Total		(18)		

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: National Sea Grant College Program
Subactivity: National Sea Grant College Program

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	1,379	1,581	1,597	0	(1,597)
11.3 Other than full-time permanent	58	58	0	0	0
11.5 Other personnel compensation	27	24	0	0	0
11.8 Special personnel services payments	0	27	0	0	0
11.9 Total personnel compensation	1,464	1,690	1,597	0	(1,597)
12 Civilian personnel benefits	486	474	445	0	(445)
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	245	245	245	0	(245)
22 Transportation of things	2	2	2	0	(2)
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	266	266	266	0	(266)
23.2 Rental Payments to others	0	0	0	0	0
23.3 Communications, utilities and misc charges	10	9	9	0	(9)
24 Printing and reproduction	1	593	593	0	(593)
25.1 Advisory and assistance services	27	27	27	0	(27)
25.2 Other services from non-Federal sources	2,803	2,467	2,596	0	(2,596)
25.3 Other goods and services from Federal sources	68	68	68	0	(68)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	56	56	56	0	(56)
31 Equipment	14	14	14	0	(14)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	73,839	81,089	81,280	0	(81,280)
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	79,281	87,000	87,198	0	(87,198)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Ocean Exploration and Research	Pos./BA	23	42,242	23	32,096	0	(10,146)
	FTE/Obl.	22	42,242	22	32,096	0	(10,146)

Ocean Exploration Decrease (-\$10,146, 0 FTE/ 0 Positions) – NOAA proposes a decrease of \$10,146,000 in funding for extramural grants and the interagency Biodiversity Observation Network. NOAA will realign its ocean exploration activities to ensure it supports and meets the goals of the Presidential Memorandum on Ocean Mapping of the United States Exclusive Economic Zone (EEZ) and the Shoreline and Nearshore of Alaska. NOAA’s work will be guided by the National Strategy for mapping, exploring, and characterizing the U.S. EEZ currently being developed by the Ocean Policy Committee for release in Spring 2020.

With remaining funds, NOAA will focus on and accelerate its EEZ mapping efforts, maintain and leverage key partnerships, and advance new ocean exploration technologies in support of the strategy. NOAA will continue its mapping of the U.S. EEZ utilizing Federal, academic, philanthropic, and private research vessels, as well as advanced autonomous technologies to cost-effectively complete this work. NOAA will also facilitate the testing and evaluation of new and emerging ocean exploration and characterization methods and technologies that are anticipated to increase the pace, scope, and efficiency of ocean exploration and characterization, collaborating through the National Oceanographic Partnership Program where appropriate.

In support of the goals of the Presidential Memorandum, NOAA will continue efforts to: explore the ocean to make discoveries of scientific, economic, and cultural value, with a priority given to the U.S. EEZ; quickly and efficiently provide public access to the data, information, and samples collected; work to expand a national ocean exploration program using national forums and through the establishment of new and novel partnerships; and encourage the next generation of ocean explorers, scientists and engineers as well as educate the public about the value of the ocean through tailored education and outreach activities.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Schedule and Milestones:

FY 2021–2025

- Maintain support for highest priority activities within program, specifically the PM on Ocean Mapping of the United States Exclusive Economic Zone and the Shoreline and Nearshore of Alaska
- Reduce external grants

Deliverables:

- Conduct wide-scale physical mapping of the U.S. EEZ
- Continue fine-scale mapping to characterize geology, chemistry, and biology of the U.S. EEZ
- Reduce funding for external exploration grants

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

Performance Measures	2021	2022	2023	2024	2025
Cumulative percent of deepwater ocean (>200m) U.S. EEZ mapped with decrease	53%	55%	57%	59%	61%
Cumulative percent of deepwater ocean (>200m) U.S. EEZ mapped without decrease	56%	58%	60%	62%	64%
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(10,146)	(10,146)	(10,146)	(10,146)	(10,146)
Uncapitalized	(10,079)	(10,079)	(10,079)	(10,079)	(10,079)
Budget Authority	(10,146)	(10,146)	(10,146)	(10,146)	(10,146)
Outlays	(6,291)	(6,291)	(6,291)	(6,291)	(6,291)
FTE	(0)	(0)	(0)	(0)	(0)
Positions	(0)	(0)	(0)	(0)	(0)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Ocean, Coastal, & Great Lakes Research
Subactivity: Ocean Exploration and Research

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	1,949	1,986	2,010	2,010	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	85	85	85	85	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	2,034	2,071	2,095	2,095	0
12 Civilian personnel benefits	591	596	636	636	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	198	312	312	312	0
22 Transportation of things	8	50	50	50	0
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	211	274	274	274	0
23.2 Rental Payments to others	0	0	0	0	0
23.3 Communications, utilities and misc charges	162	1,179	1,179	1,179	0
24 Printing and reproduction	1	3	3	3	0
25.1 Advisory and assistance services	1,931	104	104	104	0
25.2 Other services from non-Federal sources	3,408	1,437	1,504	1,437	(67)
25.3 Other goods and services from Federal sources	42	182	182	182	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	182	182	182	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	200	200	200	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	77	300	300	300	0
31 Equipment	4	1,285	1,285	1,285	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	32,035	33,825	33,936	23,857	(10,079)
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	40,702	42,000	42,242	32,096	(10,146)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2020
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u> <u>Amount</u>	
Integrated Ocean Acidification	Pos./BA	17	14,174	17	8,227	0	(5,947)
	FTE/Obl.	16	14,174	16	8,227	0	(5,947)

Integrated Ocean Acidification Decrease (-\$5,947, 0 FTE/ 0 Positions) – NOAA proposes a decrease \$5,947,000 in funding for the Integrated Ocean Acidification Program that conducts research to improve our understanding of ocean and coastal acidification (OA) and its impacts on marine resources, coastal communities, and economies. The proposed decrease will reduce efforts supporting the *Federal Ocean Acidification Research and Monitoring (FOARAM) Act of 2009* (33 U.S.C. §§ 3701-3708).

NOAA will continue high priority efforts to maintain 10 of 21 existing surface-only fixed OA observing assets, preserve a subset of existing experimental studies evaluating NOAA managed species vulnerability, continue adaptive capacities in selected priority regions, and maintain regional vulnerability analysis at a narrowed regional scope.

Schedule and Milestones

FY 2021

- Decrease integrated ocean acidification research

FY 2022-2025

- Maintain support for highest priority activities within available integrated ocean acidification research funding

Deliverables

- Decrease funding for integrated ocean acidification research grants

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Annual Number of Ocean Acidification Observations collected by the National Ocean Acidification Observing Network with decrease	5475	5748	5748	5748	6022
Annual Number of Ocean Acidification Observations collected by the National Ocean Acidification Observing Network without decrease	7665	7665	7665	8030	8030
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(5,947)	(5,947)	(5,947)	(5,947)	(5,947)
Uncapitalized	(5,899)	(5,899)	(5,899)	(5,899)	(5,899)
Budget Authority	(5,947)	(5,947)	(5,947)	(5,947)	(5,947)
Outlays	(3,687)	(3,687)	(3,687)	(3,687)	(3,687)
FTE	(0)	(0)	(0)	(0)	(0)
Positions	(0)	(0)	(0)	(0)	(0)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Integrated Ocean Acification
Subactivity: Integrated Ocean Acification

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	1,042	1,062	1,106	1,106	0
11.3 Other than full-time permanent	51	51	51	51	0
11.5 Other personnel compensation	21	21	21	21	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	1,114	1,134	1,178	1,178	0
12 Civilian personnel benefits	334	340	353	353	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	140	140	140	140	0
22 Transportation of things	63	0	0	0	0
23 Rent, communications, and utilities					
23.1 Rental payments to GSA	43	43	43	43	0
23.2 Rental Payments to others	1	1	1	1	0
23.3 Communications, utilities and misc charges	126	126	126	126	0
24 Printing and reproduction	3	3	3	3	0
25.1 Advisory and assistance services	37	37	37	37	0
25.2 Other services from non-Federal sources	1,529	1,529	1,577	1,529	(48)
25.3 Other goods and services from Federal sources	13	13	13	13	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	631	631	631	631	0
31 Equipment	137	137	137	137	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	7,655	9,866	9,934	4,035	(5,899)
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	11,826	14,000	14,174	8,227	(5,947)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Sustained Ocean	Pos./BA	39	45,408	39	37,301	0	(8,107)
Observations and Monitoring	FTE/Obl.	37	45,408	37	37,301	0	(8,107)

Sustained Ocean Observation and Monitoring Decrease (-\$8,107, 0 FTE/ 0 Positions) – NOAA proposes a decrease of \$8,107,000 in funding for Sustained Ocean Observations and Monitoring (SOOM). NOAA will reduce external grant funding that is used to leverage partnerships to develop a sustained, comprehensive, and responsive global ocean observing system. This reduction will reduce the number of platforms NOAA and its partners can help maintain.

Schedule and Milestones

FY 2021–2025

- Decrease Sustained Ocean Observations and Monitoring
- Maintain support for highest priority activities within available Sustained Ocean Observations and Monitoring research funding

Deliverables

- Decrease funding for Sustained Ocean Observations and Monitoring research grants

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Reduced error in Global Measurement of Sea Surface Temperature. (Degrees Celsius (°C)) to improve understanding of the environment with decrease	0.1	0.1	0.1	0.1	0.1
Reduced error in Global Measurement of Sea Surface Temperature. (Degrees Celsius (°C)) to improve understanding of the environment without decrease	0.5	0.5	0.5	0.5	0.5
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(8,107)	(8,107)	(8,107)	(8,107)	(8,107)
Uncapitalized	(7,994)	(7,994)	(7,994)	(7,994)	(7,994)
Budget Authority	(8,107)	(8,107)	(8,107)	(8,107)	(8,107)
Outlays	(5,026)	(5,026)	(5,026)	(5,026)	(5,026)
FTE	(0)	(0)	(0)	(0)	(0)
Positions	(0)	(0)	(0)	(0)	(0)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Ocean, Coastal, & Great Lakes Research
Subactivity: Sustained Ocean Observations and Monitoring

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base	
11.1	Full-time permanent compensation	2,159	2,200	2,303	2,303	0
11.3	Other than full-time permanent	103	103	103	103	0
11.5	Other personnel compensation	114	114	114	114	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	2,376	2,417	2,520	2,520	0
12	Civilian personnel benefits	713	725	769	769	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	374	374	374	374	0
22	Transportation of things	146	146	146	146	0
23	Rent, communications, and utilities					
23.1	Rental payments to GSA	209	209	209	209	0
23.2	Rental Payments to others	1	1	1	1	0
23.3	Communications, utilities and misc charges	138	138	138	138	0
24	Printing and reproduction	21	21	21	21	0
25.1	Advisory and assistance services	1	1	1	1	0
25.2	Other services from non-Federal sources	2,185	2,185	2,298	2,185	(113)
25.3	Other goods and services from Federal sources	457	457	457	457	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	0	0	0	0	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	2,409	2,409	2,409	2,409	0
31	Equipment	799	799	799	799	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	36,209	35,118	35,266	27,272	(7,994)
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	46,038	45,000	45,408	37,301	(8,107)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Increase from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
National Oceanographic Partnership Program (NOPP)	Pos./BA	1	5,011	1	5,545	0	534
	FTE/Obl.	1	5,011	1	5,545	0	534

National Oceanographic Partnership Program (NOPP) Increase (\$534, 0 FTE/ 0 Position) - NOAA proposes an increase of \$534,000 in funding to support the interagency National Oceanographic Partnership Program’s (NOPP), increasing the stable dedicated funding source that is used to leverage other NOAA programs for this extramural, competitively-awarded partnership-based research program.

This increase will enhance NOAA’s funding currently executed through NOPP. Capability will be further increased by using the availability of NOPP funds as an incentive to leverage other NOAA programs. Previous NOPP successes include creation of a comprehensive national ocean observing network, air/ocean modeling improvements and transitions, and innovative marine technology solutions. Future efforts under discussion include:

- Reducing plastic waste in the oceans
- Comprehensive mapping and characterization of the US Exclusive Economic Zone
- Development of next-generation autonomous and remote (air and satellite) marine data collection systems
- New discoveries of ocean resources and marine habitat dynamics that are gleaned from existing marine information databases.
- Seamless national oceanographic and marine information systems that provide transparent access and advanced data management and analysis tools

Schedule and Milestones

FY 2021

- Identification of NOPP topics and partners
- Continuation of awards within NOPP Broad Agency Announcement (BAA) process
- Continuation of awards for projects independent of BAA process

FY 2022–2025

- Continuation of project awards

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

- Development and funding of new awards as warranted

Deliverables

- Continued support of NOPP research projects that engage and leverage industry and other federal agency investment at moderately high levels of impact
- Increase in availability of marine data, data-derived information, and ability to use that information to realize high priority economic benefits

Performance Measures	2021	2022	2023	2024	2025
Cumulative number of projects supported using leveraged NOAA program funding and other federal agency resources with increase	8	16	24	32	40
Cumulative number of projects supported using leveraged NOAA program funding and other federal agency resources without increase	0	0	0	0	0
Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	534	534	534	534	534
Uncapitalized	534	534	534	534	534
Budget Authority	534	534	534	534	534
Outlays	331	331	331	331	331
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Ocean, Coastal, & Great Lakes Research
Subactivity: National Oceanographic Partnership Program

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1	Full-time permanent compensation	0	0	0	74
11.3	Other than full-time permanent	0	0	0	0
11.5	Other personnel compensation	0	0	0	0
11.8	Special personnel services payments	0	0	0	0
11.9	Total personnel compensation	0	0	0	74
12	Civilian personnel benefits	0	0	0	22
13	Benefits for former personnel	0	0	0	0
21	Travel and transportation of persons	0	0	0	0
22	Transportation of things	0	0	0	0
23	Rent, communications, and utilities				
23.1	Rental payments to GSA	0	0	0	0
23.2	Rental Payments to others	0	0	0	0
23.3	Communications, utilities and misc charges	0	0	0	0
24	Printing and reproduction	0	0	0	0
25.1	Advisory and assistance services	0	0	0	0
25.2	Other services from non-Federal sources	0	0	0	0
25.3	Other goods and services from Federal sources	0	0	0	0
25.4	Operation and maintenance of facilities	0	0	0	0
25.5	Research and development contracts	0	0	0	0
25.6	Medical care	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0
26	Supplies and materials	0	0	0	0
31	Equipment	0	0	0	0
32	Lands and structures	0	0	0	0
33	Investments and loans	0	0	0	0
41	Grants, subsidies and contributions	0	5,000	5,011	5,449
42	Insurance claims and indemnities	0	0	0	0
43	Interest and dividends	0	0	0	0
44	Refunds	0	0	0	0
99	Total obligations	0	5,000	5,011	5,545

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Innovative Research & Technology

Goal Statement

The Innovative Research and Technology accelerates the adoption and transition of advanced computing and technology throughout NOAA. Innovative Research and Technology supports High Performance Computing (HPC) initiatives through major improvements in weather and climate forecasting, ecosystem and ocean modeling, environmental information dissemination and in support of the Department of Commerce 2018-2022 Strategic Plan, Strategic Objective 3.3 Reduce: Extreme Weather Impacts.

Base Program

The Innovative Research and Technology efforts provide NOAA with necessary computational and network resources required to support continued advances in environmental modeling capabilities. The purpose of the HPCC program is to improve the accuracy and timeliness of NOAA's short-term weather warnings, seasonal forecasts, hurricane forecast improvements, as well as regional and global climate and weather predictions that are heavily dependent on major advances. Timely and responsive dissemination of NOAA's services and information requires full use of modern network and communication technologies.

The following Subactivity is included in Innovative Research & Technology:

- High Performance Computing and Communications (HPCC): Supports the computing requirements for NOAA's modeling and research missions.

Statement of Operating Objectives

Schedule and Milestones

FY 2021–2025

- Complete migration of at least one operational model and one research model to next-generation architecture software structure
- Test impact of assimilation of new and proposed satellite observations using observing system simulation experiment (OSSE) and observing system experiments (OSE) approaches using the operational Hurricane Weather Research and Forecast (HWRF) hybrid data assimilation system to improve hurricane intensity guidance

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)**

- Quantitative evaluation of (a) (statistically) downscaled climate projections for the U.S. and (b) their suitability for use in climate impacts and decision-making applications published in the peer-reviewed literature
- Participate in the Networking and information Technology Research and Development Program (NITRD) interagency activities

Deliverables

- HPC System availability – 97 percent of computational hours made available to scientists
- 11 HPC and advanced networking R&D projects

Explanation and Justification

Line Item		2019		2020		2021	
		Actual		Enacted		Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
High Performance Computing & Communications	Pos/BA	15	12,150	15	16,750	15	16,905
	FTE/OBL	14	12,044	14	16,750	14	16,905

High Performance Computing & Communications

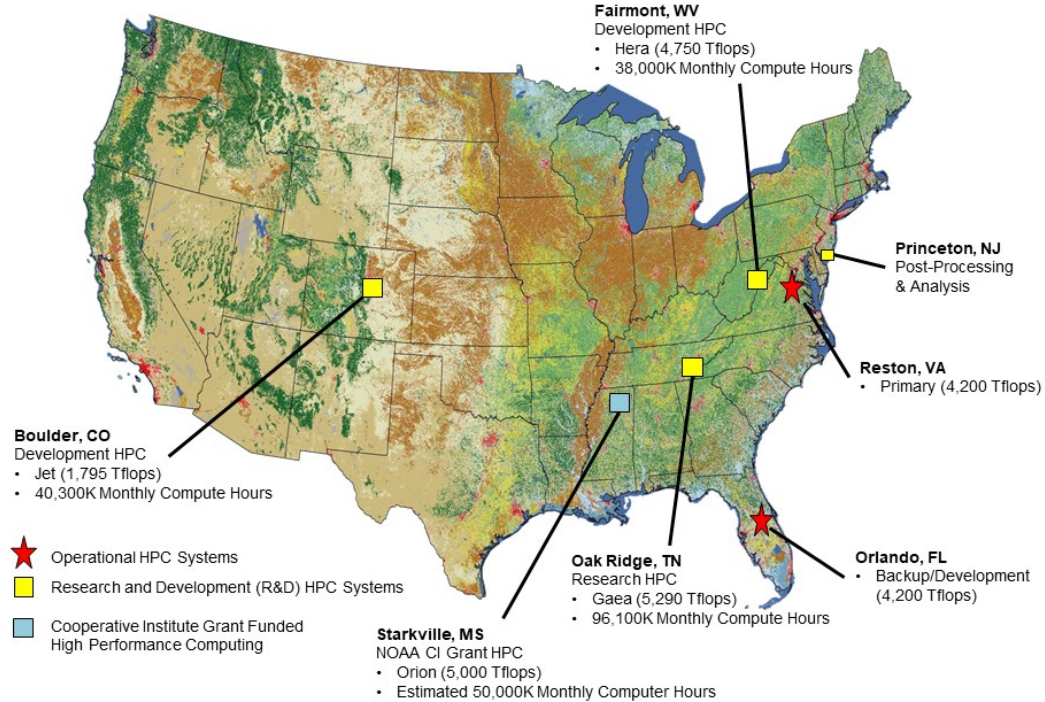
HPC Initiatives, established through the High-Performance Computing Act of 1991, improve the accuracy and timeliness of NOAA's short-term weather warnings, forecasts, hurricane forecast improvements, as well as regional and global climate and ecosystem predictions. HPC Initiatives provide necessary computational and network resources required to advance in environmental modeling capabilities across NOAA. In fact, every NOAA line office uses R&D HPC systems. Benefits of HPC Initiatives 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,

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- 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.

**NOAA’s High Performance Computing
Locations and Systems**



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(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
High Performance Computing & Communications (HPCC)	Pos./BA	15	16,905	15	15,296	0	(1,609)
	FTE/OBL	14	16,905	14	15,296	0	(1,609)

R&D HPC Cloud Computing Services Decrease (-\$1,609, 0 FTE/ 0 Position) – NOAA proposes a decrease of \$1,609,000 in funding toward its expansion of cloud and community computing capability. NOAA will be able to meet reduced cloud computing strategies and fully support traditional high performance computing (HPC) needs.

NOAA’s HPC suite has expanded to provide a larger spectrum of HPC capabilities and platforms to support emerging projects and users who require flexible and scalable computing resources for projects like the Unified Forecast System (UFS is a community-based, coupled, comprehensive Earth modeling system designed to support NOAA’s operational weather prediction applications). These additional capabilities are being pursued through cloud technologies that provide a good fit within the framework of the Earth Prediction Innovation Center (EPIC) to engage the greater community. Community based research requires different accessibility, user support services, software toolsets, and architecture adaptability which are the main technical tenets supported in NOAA’s HPC cloud strategy. NOAA will be able to support these scientific community requirements at a reduced level.

NOAA’s HPC supports mission activities, including ecosystem modeling, earth system modeling and projections, HPC technology evaluation, and those activities authorized in the *National Integrated Drought Information System Reauthorization Act of 2018* and the *Weather Research and Forecasting Innovation Act of 2017*.

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(Dollar amounts in thousands)

Schedule and Milestones

FY 2021

- Decrease cloud computing support for existing HPC programs, while maintaining highest priority and traditional systems.

FY2022

- Consolidate and leverage HPC Cloud resource purchasing across NOAA
- Create Unified HPC Cloud Strategy for NOAA

FY2023 – FY 2025

- Establish NOAA Cloud Container and Software portability capability to allow projects to run on a variety of architectures
- Evaluate suite of NOAA HPC resources to enhance research into operations and operations into research (R2O2R) transitions and continued development

Deliverables

- Annual user workshop to document NOAA HPC Cloud requirements
- Standardize Policy for NOAA HPC Cloud usage and container development
- Centralized HPC Cloud service purchasing
- HPC Cloud compute and service contracting vehicles

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Performance Measures	2021	2022	2023	2024	2025
Traditional R&D projects imported or new projects run using the cloud that will improve NOAA products or outputs with increase	5	10	15	20	20
Traditional R&D projects imported or new projects run using the cloud that will improve NOAA products or outputs without increase	0	0	0	0	0
Outyear Costs:					
Direct Obligations	(1,609)	(1,609)	(1,609)	(1,609)	(1,609)
Uncapitalized	(1,609)	(1,609)	(1,609)	(1,609)	(1,609)
Budget Authority	(1,609)	(1,609)	(1,609)	(1,609)	(1,609)
Outlays	(998)	(998)	(998)	(998)	(998)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)**

Activity: Innovative Research and Technology
Subactivity: High Performance Computing & Communications (HPCC)

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	1,372	1,411	1,466	1,466	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	24	24	24	24	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	1,396	1,435	1,490	1,490	0
12 Civilian personnel benefits	416	432	455	455	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	71	71	71	71	0
22 Transportation of things	0	0	0	0	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	1,050	1,050	1,050	1,050	0
23.2 Rental Payments to others	0	0	0	0	0
23.3 Communications, utilities and misc charges	1,130	1,130	1,130	1,130	0
24 Printing and reproduction	0	0	0	0	0
25.1 Advisory and assistance services	1,161	1,161	1,161	1,161	0
25.2 Other services from non-Federal sources	3,839	3,839	3,882	6,761	2,879
25.3 Other goods and services from Federal sources	260	260	260	260	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	73	73	73	73	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	684	684	684	684	0
31 Equipment	353	353	353	353	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	1,611	6,262	6,296	1,808	(4,488)
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	12,044	16,750	16,905	15,296	(1,609)

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(Dollar amounts in thousands)

Activity: Systems Acquisition

Goal Statement

Research Supercomputing:

Research Supercomputing provides sustained capability to the NOAA Research and Development (R&D) High Performance Computing System (HPC) to advance Earth system science and accelerate the development of regional and sub-regional information products and services as described in the NOAA High Performance Computing Strategic Plan 2015-2020¹ and in support of the Department of Commerce 2018-2022 Strategic Plan, Strategic Objective 3.3 Reduce Extreme Weather Impacts.

Base Program

NOAA's R&D HPC provides computational resources to support advances in environmental modeling crucial for understanding critical Earth system modeling issues. NOAA's environmental modeling enterprise underpins most of NOAA's products and services to the Nation. NOAA's R&D HPC assets are part of the critical infrastructure required for NOAA to accomplish its mission. NOAA's R&D HPC support the NOAA user base in the geospatial and ecosystems research communities across the Agency. However, demand for HPC compute resources outweighs the supply currently. Based on an analysis carried out in 2016, demand for HPC compute resources outweighs the current supply of NOAA's capabilities by 32X. NOAA is exploring ways of mitigating this shortfall through other means such as cloud computing. NOAA currently has several pilots examining if cloud could be a possible solution to fill the supply and demand gap.

Statement of Operating Objectives

Schedule and Milestones and Deliverables:

FY 2021 – 2025

- High-resolution Earth System Model integrations publicly available for use in regional decision-making through federated data services
- Exploratory application of Earth System Models and subsequent demonstration of Earth System modeling applications using exascale high-performance computing platforms, which would be capable of at least one exaflop, or a thousand petaflops
- High-resolution integrations for prediction of seasonal tornado risks at multi-month lead times

¹ http://www.cio.noaa.gov/it_plans/HPCstrategy_Final_Draft_080913.pdf

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(Dollar amounts in thousands)

- 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
- 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

Explanation and Justification

Line Item		2019		2020		2021	
		Actual		Enacted		Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Research	Pos/BA	3	40,949	0	42,000	0	42,000
Supercomputing/CCRI	FTE/OBL	3	64,173	0	42,000	0	42,000

NOAA’s R&D HPC provides computational resources to support advances in environmental modeling crucial for understanding critical Earth system modeling issues. This investment includes the supercomputing systems, associated storage devices, advanced data communications, hardware and software engineering services, security, and necessary data center space. NOAA currently operates three R&D HPCs:

- Gaea – Located at Oak Ridge National Laboratory in Oak Ridge, Tennessee, Gaea is primarily used for long-term climate and weather predictions and projections. Hera – Located in Fairmont, West Virginia, HERA more than doubles the previous Theia system with a total capacity of 2.7 petaflops. It supports development of weather modeling across OAR and NWS to improve the prediction of high-impact weather events and evaluate potential future directions for models and data assimilation.
- Jet – Located in Boulder, Colorado, Jet is primarily used for hurricane research.

NOAA’s R&D HPC also provides software engineering support and associated tools to re-architect NOAA’s applications to run

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(Dollar amounts in thousands)

efficiently on next generation fine-grain HPC architectures. Through a focused effort, engineers investigate and test new algorithms, train existing NOAA developers with new coding techniques, and assist these developers in accelerating the re-architecting of NOAA's applications. These software engineering efforts allow NOAA to take advantage of next-generation research computing technologies, but also help NOAA to more efficiently use its existing high performance computing assets.

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

	2021 Base		2021 Estimate		Decrease
	Personnel	Amount	Personnel	Amount	from 2021 Base Personnel Amount
Research					
Supercomputing/CCRI	Pos./BA	0 42,000	0 27,000		0 (15,000)
(PAC)	FTE/Obl.	0 42,000	0 27,000		0 (15,000)

Mississippi State Partnership Termination (-\$15,000, 0 FTE/ 0 Positions) – NOAA proposes a decrease of \$15,000.000 in funding to terminate the Mississippi State University Partnership established by congressionally directed requirements to develop a dedicated high performance computing facility in collaboration with partners with existing high performance computing expertise and scientific synergies.

Consistent with the Consolidated Appropriations Act, 2020, funding was used to help address NOAA's high performance computing needs and its current limitations on providing high fidelity results in near real-time.

Schedule and Milestones:

FY 2021

- Terminate the Mississippi State Partnership

FY 2022–2025

- Maintain support for highest priority activities within available Research Supercomputing/CCRI funding

Deliverables:

- Terminate funding for the Mississippi State Partnership

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

Outyear Funding Estimates*

Research Supercomputing/CCRI	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	(15,000)	(15,000)	(11,000)	(7,000)	(7,000)	N/A	N/A
Total Mississippi State Partnership Termination	441,144	0	0	0	0	0	N/A	N/A
Total Research Supercomputing/CCRI	N/A	27,000	27,000	30,000	34,000	34,000	N/A	Recurring

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Systems Acquisition
Subactivity: Research Supercomputing

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	Full-time permanent compensation	277	0	0	0
11.3	Other than full-time permanent	0	0	0	0
11.5	Other personnel compensation	6	0	0	0
11.8	Special personnel services payments	0	0	0	0
11.9	Total personnel compensation	283	0	0	0
12	Civilian personnel benefits	79	0	0	0
13	Benefits for former personnel	0	0	0	0
21	Travel and transportation of persons	6	0	0	0
22	Transportation of things	0	0	0	0
23	Rent, communications, and utilities	0			
23.1	Rental payments to GSA	24	0	0	0
23.2	Rental Payments to others	0	0	0	0
23.3	Communications, utilities and misc charges	309	202	202	202
24	Printing and reproduction	10	0	0	0
25.1	Advisory and assistance services	148	0	0	0
25.2	Other services from non-Federal sources	7,695	6,024	6,024	6,024
25.3	Other goods and services from Federal sources	21,503	20,000	20,000	10,765
25.4	Operation and maintenance of facilities	0	0	0	0
25.5	Research and development contracts	0	0	0	0
25.6	Medical care	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0
26	Supplies and materials	2,383	2,000	2,000	2,000
31	Equipment	19,518	774	774	774
32	Lands and structures	0	0	0	0
33	Investments and loans	0	0	0	0
41	Grants, subsidies and contributions	12,216	13,000	13,000	7,235
42	Insurance claims and indemnities	0	0	0	0
43	Interest and dividends	0	0	0	0
44	Refunds	0	0	0	0
99	Total obligations	64,174	42,000	42,000	27,000

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(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel Amount</u>	
Research							
Supercomputing/CCRI	Pos./BA	0	42,000	0	41,000	0	(1,000)
(PAC)	FTE/Obl.	0	42,000	0	41,000	0	(1,000)

Research Supercomputing Decrease (-\$1,000, 0 FTE/0 Positions) – NOAA proposes a decrease of \$1,000,000 in funding for the NOAA Research and Development (R&D) High Performance Computing System (HPCS). The R&D HPCS program provides architecture platforms for NOAA’s scientific needs through a mix of public, federal, and private partnerships. R&D HPCS enables significant research and modeling improvements for weather, climate, and ocean predictions, projections, and forecasts. Comprehensive numerical modeling of the global system, which requires HPC, is the cornerstone of NOAA’s research. NOAA is looking into leveraging new and emerging technologies such as cloud-based solutions. The magnitude of this reduction is not sufficient to affect the performance targets. OAR will evaluate the best approach to streamlining key activities to achieve the desired efficiencies.

Schedule and Milestones:

FY 2021

- Decrease NOAA’s R&D HPC computational resources which support advances in environmental modeling crucial for understanding critical Earth system modeling issues.

FY 2022–2025

- Maintain support for highest priority activities within available Research Supercomputing/CCRI funding

Deliverables:

- Decrease supercomputing capacity

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(Dollar amounts in thousands)**

Research Supercomputing/CCRI	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2020 Base	N/A	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	N/A	N/A
Total Research Supercomputing Reduction	426,144	0	0	0	0	0	N/A	N/A
Total Research Supercomputing/CCRI	N/A	26,000	27,000	30,000	34,000	34,000	N/A	Recurring

Outyear Costs:	2021	2022	2023	2024	2025
Direct Obligations	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Uncapitalized	0	0	0	0	0
Budget Authority	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Outlays	(350)	(350)	(350)	(350)	(350)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Systems Acquisition
Subactivity: Research Supercomputing

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	Full-time permanent compensation	277	0	0	0
11.3	Other than full-time permanent	0	0	0	0
11.5	Other personnel compensation	6	0	0	0
11.8	Special personnel services payments	0	0	0	0
11.9	Total personnel compensation	283	0	0	0
12	Civilian personnel benefits	79	0	0	0
13	Benefits for former personnel	0	0	0	0
21	Travel and transportation of persons	6	0	0	0
22	Transportation of things	0	0	0	0
23	Rent, communications, and utilities	0			0
23.1	Rental payments to GSA	24	0	0	0
23.2	Rental Payments to others	0	0	0	0
23.3	Communications, utilities and misc charges	309	202	202	202
24	Printing and reproduction	10	0	0	0
25.1	Advisory and assistance services	148	0	0	0
25.2	Other services from non-Federal sources	7,695	6,024	6,024	6,024
25.3	Other goods and services from Federal sources	21,503	20,000	20,000	19,000
25.4	Operation and maintenance of facilities	0	0	0	0
25.5	Research and development contracts	0	0	0	0
25.6	Medical care	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0
26	Supplies and materials	2,383	2,000	2,000	2,000
31	Equipment	19,518	774	774	774
32	Lands and structures	0	0	0	0
33	Investments and loans	0	0	0	0
41	Grants, subsidies and contributions	12,216	13,000	13,000	13,000
42	Insurance claims and indemnities	0	0	0	0
43	Interest and dividends	0	0	0	0
44	Refunds	0	0	0	0
99	Total obligations	64,174	42,000	42,000	41,000

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National Weather Service
Budget Estimates, Fiscal Year 2021**

Executive Summary

For FY 2021, NOAA requests a total of \$1,120,268,000 and 4,048 FTE/ 3,940 positions for the National Weather Service (NWS) including a net decrease of \$74,929,000 and 227 FTE/ 365 positions in program changes.

The FY 2021 budget submission continues to make the United States a Weather-Ready Nation (WRN) in which NWS operations help the public best prepare for, and respond to, extreme weather events. NWS launched its WRN initiative to build community resilience in the face of increasing vulnerability to extreme weather and water events. The initiative improves support for 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 cause frequent multi-billion dollar weather disasters. The devastating impacts of extreme events can be reduced through improved readiness. The WRN initiative helps reduce the Nation's weather-related vulnerabilities and will be enacted through improvements to demand-driven support services and specialized training of the NWS workforce.

NWS will utilize existing science, technology, and engineering to provide the best observations, forecasts, and warnings to achieve the vision of a WRN. NWS aims to build the best earth system models; maintain and leverage its suite of observations; improve tools, access and interoperability; and transition research to operations. To do so, NWS will leverage new and expanding partnerships with the Weather, Water, and Climate enterprise, academia, other Federal agencies, as well as international partners.

As embodied in the NWS 2019 – 2022 Strategic Plan, "Building a Weather-Ready Nation," the NWS is evolving to meet changing and increasing needs for weather, water, and climate forecasts and warnings. As part of the "Evolve" strategy and direction from the *Weather Research and Forecasting Innovation Act of 2017*, NWS will work to better serve partners through Impact-based Decision Support Services (IDSS), develop a flexible and nimble workforce, improve the effectiveness of forecasting in support of IDSS, match workforce to workload to enable rapid response during high impact events, and support continuous improvements through innovation.

Through FY 2019, NWS has made several improvements within current resources:

1. NWS established a standard definition for a Collaborative Forecast Process (CFP). The CFP ensures NWS provides weather, water, and climate data forecasts and warnings for the protection of life and property and the enhancement of the national economy in the most efficient and effective way possible. NWS Central Region is using the National Blend of Models (NBM) and it is available to all NWS WFOs. Regional Operations Centers were established with Initial Operating Capability at each

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National Weather Service
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of the six NWS Regional Headquarters. These elements all establish the building blocks for CFP to be evaluated and tested in FY 2020/2021 that will ultimately provide flexibility for scheduling and assigning forecaster shift-work.

2. The Meteorologist GS 5-12 Career Progression initiative was successfully implemented in July 2019 with current and new entry-level meteorologists converted into a new career ladder system, working toward fostering a “whole office concept” where all NWS meteorologists participate fully in forecast operations.
3. Auto-launchers were deployed throughout the Alaska Region to automate the upper air radiosonde launching process freeing up staff and positions to populate the newly created Alaska Environmental Science & Services Integration Center.
4. Working to collocate the New Orleans WFO and the Albany, NY, WFO with key partners.

In FY 2020, NWS will deliver a quantitative precipitation forecasts (QPF) CFP Test and Evaluation Plan and begin a field demonstration. The FY 2020 demonstration test goal is to determine the viability of adopting a single nationwide QPF product for days 1 through 7 using the NBM and CFP aided by the Regional Operations Centers. The CFP QPF demonstration will also be expanded to incorporate additional forecast parameters and following the initial demonstration in FY 2021, NWS will develop a plan to define and assess the impact of CFP on the flexibility of forecaster shift scheduling.

Working toward the goals identified in the NWS 2019 – 2022 Strategic Plan, “Building a Weather- Ready Nation”, NWS aims to protect an increasing vulnerable American population by providing accurate, consistent, and actionable NWS products and services. To meet these needs and achieve a WRN, the NWS is committed to organizational change through: providing quality, consistent IDSS at all levels; developing a flexible and nimble workforce; improving effectiveness of forecasting in support of IDSS through the Collaborative Forecast Process; enabling rapid response during high-impact events with enhanced workforce flexibility; and dedication to research and innovation that integrates into operations.

Performance:

The effectiveness of NWS investments is assessed using numerous internal and external performance measures including the Government Performance and Results Act (GPRA) goals. These efforts have been institutionalized in NWS operations to maintain quality control and use objective methods to assess NWS performance. For current GPRA targets please see FY 2021/2019 Annual Performance Plan and Report.

Adjustments:

Inflationary Adjustments

NOAA’s FY 2021 Base includes an increase of \$36,551,000 and 0 FTE/ 0 positions to account for the full funding requirement for certain inflationary adjustments to current programs for NWS activities. This includes the 2020 civilian pay raise of 3.1 percent, estimated 2021 civilian pay raise of 1.0 percent and a military pay raise of 3.0 percent, where applicable, as well as inflationary

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increases for labor and non-labor activities including benefits and rent charges from the General Services Administration (GSA).

Technical Adjustments (Transfers)

NOAA also requests the following transfers for a net change of (\$10,000,000) and 0 FTE/ 0 positions to the agency:

From Office	Subactivity	To Office	Subactivity	Amount
NWS	NWS Construction (PAC)	Mission Support	NOAA Construction (PAC)	\$10,000,000/ 0 FTE/ 0 positions

NOAA requests a technical adjustment to transfer \$10,000,000 and 0 FTE/ 0 positions from the NWS PAC Construction Subactivity to the NOAA Construction Subactivity in Mission Support (MS) PAC to consolidate facilities maintenance and construction funding within MS for a more centralized approach to the funding and management of these activities. Routine operations and maintenance of facilities typically funded by field offices, such as janitorial services and minor repairs, will continue to be funded through the Line Offices. This consolidation leverages NOAA's recent efforts for more consistent, corporate approaches to facilities management and planning and reflects NOAA's commitment to advancing the Department's strategic objective to achieve cost savings through consolidated functions.

Narrative Information:

NOAA requests a total net decrease of \$74,929,000 and 227 FTE/ 365 positions in program changes for NWS. Following this section are base justification materials by activity and program change narratives for each subactivity that represent program changes greater than \$250,000 and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-4). Please contact NOAA if details for any of these changes are required.

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: NWS Construction (PAC)

Subactivity: NWS Construction (PAC) Transfer to MS NOAA Construction (PAC)

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	0	0	0
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	0	0	0
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	0	0	0
12 Civilian personnel benefits	0	0	0
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	180	(180)	0
22 Transportation of things	0	0	0
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	0	0	0
25.1 Advisory and assistance services	4,000	(4,000)	0
25.2 Other services from non-Federal sources	2,240	(2,240)	0
25.3 Other goods and services from Federal sources	3,500	(3,500)	0
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	80	(80)	0
31 Equipment	0	0	0
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	10,000	(10,000)	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
(Dollar amounts in thousands)

		2019 Actual		2020 Enacted		2021 Base		2021 Estimate		Increase/Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Weather Service (NWS)											
Observations	Pos/BA	683	222,137	698	229,862	698	237,644	698	230,289	0	(7,355)
	FTE/OBL	679	219,795	688	229,862	688	237,644	688	230,289	0	(7,355)
Central Processing	Pos/BA	226	97,366	228	97,980	228	102,538	144	88,372	(84)	(14,166)
	FTE/OBL	225	98,477	227	97,980	227	102,538	143	88,372	(84)	(14,166)
Analyze, Forecast and Support	Pos/BA	2,843	500,931	2,861	513,556	2,861	531,535	2,580	500,780	(281)	(30,755)
	FTE/OBL	2,827	505,451	2,846	513,556	2,846	531,535	2,703	500,780	(143)	(30,755)
Dissemination	Pos/BA	78	49,995	81	76,843	81	79,112	81	78,362	0	(750)
	FTE/OBL	77	52,792	79	76,843	79	79,112	79	78,362	0	(750)
Science and Technology Integration	Pos/BA	419	155,034	414	147,460	414	151,423	414	139,073	0	(12,350)
	FTE/OBL	417	161,542	412	147,460	412	151,423	412	139,073	0	(12,350)
Total NWS – ORF	Pos/BA	4,249	1,025,463	4,282	1,065,701	4,282	1,102,252	3,917	1,036,876	(365)	(65,376)
	FTE/OBL	4,225	1,038,057	4,252	1,065,701	4,252	1,102,252	4,025	1,036,876	(227)	(65,376)
Systems Acquisition	Pos/BA	28	146,887	23	92,945	23	92,945	23	83,392	0	(9,553)
	FTE/OBL	28	139,807	23	92,945	23	92,945	23	83,392	0	(9,553)
Construction	Pos/BA	0	18,717	0	10,000	0	0	0	0	0	0
	FTE/OBL	0	10,438	0	10,000	0	0	0	0	0	0
Total NWS – PAC	Pos/BA	28	165,604	23	102,945	23	92,945	23	83,392	0	(9,553)
	FTE/OBL	28	150,245	23	102,945	23	92,945	23	83,392	0	(9,553)
Total NWS	Pos/BA	4,277	1,191,067	4,305	1,168,646	4,305	1,195,197	3,940	1,120,268	(365)	(74,929)
	FTE/OBL	4,253	1,188,302	4,275	1,168,646	4,275	1,195,197	4,048	1,120,268	(227)	(74,929)

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National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Observations

Subactivity: Observations

Goal Statement

NWS is fundamentally dependent on environmental observations, from the surface of the sun to the bottom of the sea, to meet its forecast and warnings mission. NWS integrates in-situ and remotely-sensed data from satellites and radars, NOAA systems, commercial sources, Federal, and even international partners in support of the Department of Commerce 2018-2022 Strategic Plan, Strategic Objective 3.3 Reduce Extreme Weather Impacts.

Base Program

Funding from this Activity is used to operate and maintain all NWS observing systems, evaluate observational requirements, engineer technical solutions, and perform systems development and testing. Together, these systems enable forecasters to identify emerging threats, characterize their severity, and provide detailed warnings and forecasts.

Observing systems must measure a broad array of parameters to support forecasting in the varied mission service areas of the NWS including aviation weather, severe weather, space weather, tropical weather, and more. All of these systems have strengths and weaknesses in monitoring the environment, so individual systems in the overall suite must complement each other. By gathering information from multiple sources, NWS ensures the most complete data picture possible.

Specific activities in Observations include:

- Manage operations and maintenance of NWS observational systems;
- Provide holistic, ongoing assessments/analyses of the observing systems portfolio;
- Identify and validate NWS' observation requirements;
- Seek solutions to fulfill NWS' observation requirements;
- Develop a strategy to maximize effectiveness while minimizing cost; and,
- Coordinate NWS' observing system activities with NOAA and its partners.

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Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE

(Dollar amounts in thousands)

Statement of Operating Objectives

Schedule and Milestones

FY 2021–2025

- Maintain the tri-agency Next Generation Weather Radar (NEXRAD) radar network
- Maintain the radiosonde network
- Maintain the tri-agency Automated Surface Observing System (ASOS)
- Operate and maintain weather/ocean buoy, Coastal Marine Automated Networks (C-MAN), Deep-ocean Assessment and Reporting of Tsunamis (DART), and Tropical Atmosphere Ocean (TAO) buoy arrays
- Sustain data processing of the National Solar Observatory's (NSO) Global Oscillation Network Group (GONG) and observatory support
- Maintain paperless reporting of Cooperative Observer Program (COOP) data
- Develop, test, and deploy NEXRAD Radar Product Generator (RPG) and Radar Data Acquisition (RDA) Software Builds
- Develop, test, and deploy Terminal Doppler Weather Radar (TDWR) Supplemental Product Generator (SPG) Builds
- Develop, test, and deploy NOAA Profiler Network Software Builds

Deliverables

- Support operations of 122 NEXRAD systems at 96 percent availability
- Support operations of 45 TDWR SPG systems
- Support operations of 102 radiosonde stations in the United States and its territories, Caribbean, and Pacific Island nations
- Support operations of 309 NWS ASOS units and maintenance of 570 Federal Aviation Administration (FAA) and 97 Department of Defense (DoD) ASOS units under a reimbursable funding arrangement
- Support operations of 103 Coastal Weather Buoys (CWB) systems at 80 percent data availability (assumes adequate ship time provided by the U.S. Coast Guard) to provide hourly marine weather wind speed and direction, air and sea temperature, atmospheric pressure, and detailed wave information
- Support operations of 44 C-MAN stations at 80 percent data availability
- Support operations of 39 DART buoys with data availability of 80 percent
- Support operations of the TAO buoy array at 80 percent data availability (assumes adequate ship time provided by NOAA Office of Marine and Aviation Operations)
- Continuity of GONG data to the Space Weather Prediction Center (SWPC)
- Support operations of three Wind Profiler systems in Alaska at 96 percent availability

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(Dollar amounts in thousands)

- Leverage data flow from aircraft observations commercial data purchases
- Maintain National Mesonet Program Office and leverage data flow from commercial data purchases
- Leverage data flow from lightning commercial data purchases
- Leverage data flow from ship meteorological and oceanographic observations data purchases
- Support strategic and tactical ice analysis services by leveraging data from foreign satellite data purchases and providing support for the International Arctic Buoy Program

Explanation and Justification

Line Item		2019 Actual		2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Observations	Pos/BA	683	222,137	698	229,862	698	237,644
	FTE/OBL	679	219,795	688	229,862	688	237,644

In FY 2021 the Observations portfolio will support the observing systems, such as the NEXRAD, ASOS, and Radiosondes that collect data necessary to provide weather forecasts, warnings, and outlooks. They will also operate and maintain multiple networks of weather/ocean buoys, and develop, test and deploy software builds for the NEXRAD RPG and RDA, the TDWR SPG, and the NOAA Profiler Network.

In FY 2020, NWS is maintaining an average, cross platform buoy data availability rate of 80 percent, a NEXRAD system availability rate of 96 percent and an ASOS system availability rate of 98 percent. In FY 2021, NWS will continue to maintain its critical observing systems while improving their sustainability through configuration management and sustaining engineering.

Under Observations, NWS maintains the following programs to accomplish this activity:

Upper Air (UA) Observations Program provides a vertical profile of meteorological data across the Earth’s atmosphere. To provide humidity, pressure, and other data that shape weather forecasts, NWS operates a radiosonde network, acquires observations from private and commercial aircraft, acquires lightning data from commercial vendors, and operates a wind profiler network in Alaska. In addition, the program provides for critical, terrestrial-based space weather observations.

- Each year, NWS launches over 78,000 radiosondes from locations throughout the United States and its territories, including the Caribbean and Pacific Island nations. Radiosondes provide atmospheric profiles of pressure, temperature, relative

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(Dollar amounts in thousands)

humidity and winds aloft. These data are critical inputs for NWS weather prediction models and forecaster operations supporting severe storm, aviation and marine forecasts, and climate and other research uses. Radiosondes also serve to provide a reference for satellite sounding data.

- NWS leverages private-public partnerships to obtain additional data for more comprehensive upper air observations. Meteorological Data, Collection and Reporting System (MDCRS)-equipped aircraft currently provide temperature and wind information.
- The Alaskan NOAA Profiler Network (NPN) consists of three Doppler radar sites providing continuous vertical wind profile data. The most critical use of the Alaska profiler network is to support the production of aviation warnings of volcanic ash, which can cause catastrophic engine failure for aircraft in flight.
- NWS supports the NSO GONG. GONG consists of six ground-based observatories strategically placed around the globe, so that at least one site has the opportunity to observe the sun at all times.

Radar Observations Program provides meteorological data about clouds and precipitation that can predict storm impacts and severity. To produce timely and accurate storm data, NWS operates 122 NEXRADs and acquires supplementary radar data from other sources.

- NEXRAD is a tri-agency weather radar system with NWS, the U.S. DoD and FAA. NEXRAD is the primary tool used by NOAA's meteorologists for issuing warnings for flash floods, tornadoes, and severe thunderstorms.
- NWS leverages other radar data sources such as the FAA's Terminal Doppler Weather Radar (TDWR) to supplement the NEXRAD network to ensure adequate national radar coverage.

Surface Observations Program provides meteorological data at the Earth's surface. To provide on-the-ground observations, NWS operates the ASOS, the Cooperative Observer Program (COOP) and the National Mesonet Program (NMP).

- ASOS is the Nation's primary surface weather observing network supporting aviation operations and the needs of the meteorological, hydrological, and climatological research communities. ASOS is a tri-agency automated surface observation system with NWS, FAA, and DoD and consists of 976 operational systems.
- COOP is a network of volunteer observers providing a significant and cost effective source of meteorological and climatological data representative of where our citizens live, work, and play. The COOP data are the primary data utilized in the NWS snowfall forecast guidance.
- The National Mesonet Program is a network of automated weather stations located in areas most susceptible to tornadoes and installed closely together to gather "mesoscale meteorological" observations such as temperature, humidity, lightning, and atmospheric pressure. Due to their proximity to each other, Mesonet data can identify small-scale features at the surface

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JUSTIFICATION OF PROGRAM AND PERFORMANCE

(Dollar amounts in thousands)

that can indicate rapidly deteriorating weather conditions not shown by other observations.

Marine Observations Program provides real-time meteorological, oceanographic and climatological data in the open ocean and coastal zones surrounding the United States. NWS operates the Weather and Ocean Platform network, the TAO buoy array, the DART buoy program, and the Voluntary Observing Ship (VOS) program.

- The Weather and Ocean Platform is a network of 147 meteorological and ocean observing platforms that provide real-time marine meteorological, oceanographic, and geophysical observations. The network includes 103 moored CWB and 44 land-based C-MAN stations deployed in coastal and offshore waters from the western Atlantic, Gulf of Mexico, and Caribbean Sea to the western Pacific around Hawaii, to the Bering Sea, and in the Great Lakes. This network provides forecasters and the public with frequent, high-quality marine observations for forecast and warning preparation (including for hurricanes) and to verify forecasts after they are produced. Other users rely on the observations and forecasts for commercial and recreational activities.
- The TAO buoy array is designed for the study of seasonal and year-to-year climatic variations related to El Niño and the Southern Oscillation (ENSO) that can have tremendous impact on the Nation's weather. These data are used to produce NWS' seasonal outlooks. Like shorter-term forecasting, the study of this variability enables more rapid prediction of climate anomalies that may result in hazardous weather conditions within the United States. The array consists of 55 moored ocean buoys and four Acoustic Doppler Current Profilers (ADCP) in the equatorial Pacific.
- The DART buoy network, located along the 'ring of fire' throughout the Pacific Ocean, and in the Atlantic Ocean, Caribbean Sea and Gulf of Mexico, collects observational data that is used by NWS' Tsunami Warning Center to prepare and refine tsunami watches and warnings covering all U.S. territories and coastal states.
- NWS operates the VOS program, which obtains ship-based weather and oceanographic observations used in marine weather forecasts in both coastal and high seas areas, and informs local surface conditions. The VOS program is supported by NWS Port Meteorological Officers (PMO) located at twelve major port cities across the country. To improve tropical and marine watches, warnings, and global modeling, the *Consolidated Appropriations Act, 2020* (P.L. 116-93) included funding for a data buy contract for meteorological and oceanographic observations from ships
- Acquires meteorological and oceanographic observations from ships to improve tropical and marine watches and warnings, as well as global weather models.

Systems Engineering and Support provides systems acquisition, engineering, and logistics support for NWS mission critical observing systems, as well as the functional expertise necessary to design, acquire, test and provide life cycle support. Actions include:

- Perform system engineering and acquisition to support operational weather systems;

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(Dollar amounts in thousands)

- Plan, coordinate, and implement hardware modifications, retrofits and rehabilitation programs to meet changing program requirements and improving system performance;
- Direct product identification, configuration control, auditing, and status accounting for all systems that are under formal NWS Configuration Management control;
- Prescribe and manage efficient logistics for stocking levels (i.e. level of stock needed to balance the need for the part, without carrying the overhead of having unneeded items on hand) and ensuring procurement of initial and replenishment spares for depot-level stock (i.e. required level of on-hand spare parts inventory needed to repair a particular system or system component);
- Provide maintenance, repair, quality assurance, and warehousing of new and reconditioned parts;
- Develop and maintain software for observing systems; and,
- Perform system and operational tests and evaluation of alternative systems.

Without the continued support for Upper Air, Radar, Surface, and Marine observations and support, provided for in Observations ORF, NWS cannot enhance observation capabilities and outputs by: (1) improving assimilation of data collected by NWS and others; (2) improving research community collaboration through creative approaches; (3) improving the techniques used by expert forecasters; (4) making NWS information available quickly, efficiently, and in useful forms; (5) incorporating forecast uncertainty to help customers make better-informed decisions; (6) leveraging emerging technologies to disseminate information; and (7) maintaining an up-to-date technology base and a trained workforce to integrate these tools to maximum effect.

PROGRAM CHANGES FOR FY 2021

NOAA requests a net decrease of \$7,355,000 and 0 FTE/ 0 positions in FY 2021 program changes for the Observations Activity. Following this section are program change narratives for this Activity that represent program changes greater than \$250,000 or new starts or terminations. Complete program changes by Subactivity can be found in the NOAA Control Table (p. Control Table – 4).

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**

(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Observations	Pos./BA	698	237,644	698	233,444	0	-4,200
	FTE/OBL	688	237,644	688	233,444	0	-4,200

National Mesonet Program (-\$4,200, 0 FTE/0 Positions) – This program change will reduce funding for the National Mesonet Program by \$4,200, for a total of \$16,000 to focus and retain highest priority data sets within the current program.

This request will leverage previous Congressional direction and continue the National Mesonet Program. The program provides a network of automated weather stations installed closely together in order to gather “mesoscale meteorological” observations such as temperature, humidity, and atmospheric pressure. Due to their proximity to each other, mesonet data can identify small-scale features at the surface which can indicate rapidly deteriorating weather conditions which are not shown by other observations. This consortium of 23 individual networks – or mesonets – provides data coverage in all 50 states. The types of included meteorological data have expanded to include TAMDAR (Tropospheric Airborne Meteorological Data Reporting) profiles, road measurements, soil moisture, and solar. With the requested decrease, NWS will sustain a core set of ongoing activities and procurement of non-Federal surface and near-surface mesonet observational data from external partners, which will strengthen this private/public partnership. NWS will reduce the scope of the National Mesonet Program to highest priority geographic extent and observations that support severe weather watches and warnings over the continental U.S.

Despite decades of progress in our ability to observe and predict the weather, we remain 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. 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 5,000 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 is critical to improving NWS service delivery capabilities that save lives and enhance the nation’s economy.

This funding request is consistent with DOC Strategic Objective 3.3 to Reduce Extreme Weather Impacts, specifically, “Develop and deploy next-generation environmental observation and modeling systems to make informed planning, resources management, and investment decision.”

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Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021

(Dollar amounts in thousands)

Schedule and Milestones:

FY 2021-2025

- Reduce to sustain the minimum requirements to the National Mesonet Program capabilities and infrastructure to continue availability at 99 percent or greater of observations purchased under this program

Deliverables:

- Maintain the core of the National Mesonet Program and observations that support severe weather watches and warnings
- Maintain at least 99 percent availability of observational data within this program

Performance Measures	2021	2022	2023	2024	2025
Number of Mesonet observation platforms with decrease	14,500	14,500	14,500	14,500	14,500
Number of Mesonet observation platforms without decrease	20,300	20,300	20,300	20,300	20,300
Outyear Costs:					
Direct Obligations	(4,200)	(4,200)	(4,200)	(4,200)	(4,200)
Capitalized	(4,200)	(4,200)	(4,200)	(4,200)	(4,200)
Uncapitalized					
Budget Authority	(4,200)	(4,200)	(4,200)	(4,200)	(4,200)
Outlays	(2,604)	(2,604)	(2,604)	(2,604)	(2,604)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Observations

Subactivity: Observations

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	66,321	68,918	72,014	72,014	0
11.3 Other than full-time permanent	30	42	42	42	0
11.5 Other personnel compensation	2,362	2,438	2,550	2,550	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	68,714	71,397	74,606	74,606	0
12 Civilian personnel benefits	25,118	28,062	30,721	30,721	0
13 Benefits for former personnel	42	47	49	49	0
21 Travel and transportation of persons	2,267	2,198	2,246	2,246	0
22 Transportation of things	4,145	3,898	3,987	3,987	0
23.1 Rental payments to GSA	6,179	6,505	6,610	6,610	0
23.2 Rental Payments to others	2,099	2,122	2,156	2,156	0
23.3 Communications, utilities and misc charges	9,784	10,011	10,171	10,171	0
24 Printing and reproduction	15	16	16	16	0
25.1 Advisory and assistance services	23,742	24,457	24,701	24,701	0
25.2 Other services from non-Federal sources	41,998	46,705	47,184	42,984	-4,200
25.3 Other goods and services from Federal sources	1,544	1,600	1,618	1,618	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	27	28	29	29	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	26,628	25,114	25,687	25,687	0
31 Equipment	3,533	3,925	4,001	4,001	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	3,930	3,746	3,831	3,831	0
42 Insurance claims and indemnities	1	1	1	1	0
43 Interest and dividends	30	30	30	30	0
44 Refunds	0	0	0	0	0
99 Total obligations	219,795	229,862	237,644	233,444	-4,200

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021**

(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Increase from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Observations	Pos./BA	698	237,644	698	241,644	0	4,000
	FTE/OBL	688	237,644	688	241,644	0	4,000

Increase Data Sharing for Integrated Global Observing System and Global Basic Observing Network (+\$4,000, 0 FTE/ 0 Positions)

– This request will improve the frequency and reliability of observational data used to generate weather and water forecasts, watches, and warnings; improve interoperability with international partners; and enable the results of successful research and development to be fully transitioned and implemented into NWS operations.

NWS will increase observational data sharing with international partners, with \$4,000 for the World Meteorological Organization (WMO) Integrated Global Observing System (WIGOS) and its components, including the Global Basic Observing Network (GBON). WIGOS is a framework for all WMO observing systems guiding planning, management, operations, and maintenance of these systems. The requested funds will go towards providing hardware and software support for systems that collect observational data. These efforts ensure data quality through real-time monitoring of surface-based observations and upper-air based radiosonde and aircraft data used in Global Numerical Weather Prediction (NWP) and forecast office operations. GBON is a subset of the surface-based systems of WIGOS.

Global NWP is a starting point for nearly all weather forecasts, and a continuous real-time supply of observational data from all areas of the globe to Global NWP is critical for forecast generation and service delivery capabilities in the U.S. and around the globe. The quality of weather predictions will decrease without good global coverage of observations. WIGOS and GBON will support requirements for improved interoperability with international partners and thus improve the quality of NWP.

This funding request is consistent with DOC Strategic Objective 3.3 to Reduce Extreme Weather Impacts, specifically, “Develop and deploy next-generation environmental observation and modeling systems to make informed planning, resources management, and investment decision.”

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National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021**

(Dollar amounts in thousands)

Schedule and Milestones:

FY 2021

- Provide hardware and software support for systems acquiring data in support of WIGOS
- Initiate WIGOS Data Quality Monitoring System pilot project

FY 2022-2025

- Provide hardware and software support for systems acquiring data in support of WIGOS

Deliverables:

- Maintain at least 99 percent availability of observational data within this program
- Increase the volume of data acquired for coupled global numerical weather prediction, to meet the requirements of GBON
- Increase interoperability of observation data formats with key international partners

Performance Measures	2021	2022	2023	2024	2025
Percent availability of observations to meet GBON requirements with increase	33%	40%	50%	65%	99%
Percent availability of observations to meet GBON requirements without increase	33%	34%	35%	36%	36%
Outyear Costs:					
Direct Obligations	4,000	4,000	4,000	4,000	4,000
Capitalized	4,000	4,000	4,000	4,000	4,000
Uncapitalized					
Budget Authority	4,000	4,000	4,000	4,000	4,000
Outlays	2,480	2,480	2,480	2,480	2,480
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Observations

Subactivity: Observations

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1 Full-time permanent compensation	66,321	68,918	72,014	72,014	0
11.3 Other than full-time permanent	30	42	42	42	0
11.5 Other personnel compensation	2,362	2,438	2,550	2,550	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	68,714	71,397	74,606	74,606	0
12 Civilian personnel benefits	25,118	28,062	30,721	30,721	0
13 Benefits for former personnel	42	47	49	49	0
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22 Transportation of things	4,145	3,898	3,987	3,987	0
23.1 Rental payments to GSA	6,179	6,505	6,610	6,610	0
23.2 Rental Payments to others	2,099	2,122	2,156	2,156	0
23.3 Communications, utilities and misc charges	9,784	10,011	10,171	10,171	0
24 Printing and reproduction	15	16	16	16	0
25.1 Advisory and assistance services	23,742	24,457	24,701	24,701	0
25.2 Other services from non-Federal sources	41,998	46,705	47,184	51,184	4,000
25.3 Other goods and services from Federal sources	1,544	1,600	1,618	1,618	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	27	28	29	29	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	26,628	25,114	25,687	25,687	0
31 Equipment	3,533	3,925	4,001	4,001	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	3,930	3,746	3,831	3,831	0
42 Insurance claims and indemnities	1	1	1	1	0
43 Interest and dividends	30	30	30	30	0
44 Refunds	0	0	0	0	0
99 Total obligations	219,795	229,862	237,644	241,644	4,000

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National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Observations	Pos./BA	698	237,644	698	236,144	0	(1,500)
	FTE/OBL	688	237,644	688	236,144	0	(1,500)

Reduce Marine Observations (-\$1,500, 0 FTE/0 Positions) – This program change reduces the scope and operations of marine observations. Tsunamis are low probability/high impact events and difficult decisions and tradeoffs must be made among program priorities to ensure that NOAA most effectively meets its mission mandates and supports stakeholders. NOAA will maintain its full array of 39 Deep-ocean Assessment and Reporting of Tsunamis (DART®) moorings to support the tsunami mission, but will remove 17 of the 210 NOAA Water Level Observation Network (NWLON) stations and NOAA’s contribution to the U.S. Geological Survey Seismic network which also support the tsunami mission. This also includes cutting direct funding support to the University of Alaska Fairbanks for the Consolidated Reporting of Earthquakes and Tsunamis (CRESTnet) and the University of Hawaii’s Sea Level Center.

Performance Measures	2021	2022	2023	2024	2025
Number of water level and seismic network platforms with decrease	0	0	0	0	0
Number of water level and seismic network platforms without decrease	472	472	472	472	472
Outyear Costs:					
Direct Obligations	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)
Capitalized	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)
Uncapitalized	0	0	0	0	0
Budget Authority					
Outlays	(930)	(930)	(930)	(930)	(930)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Observations

Subactivity: Observations

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	66,321	68,918	72,014	72,014	0
11.3 Other than full-time permanent	30	42	42	42	0
11.5 Other personnel compensation	2,362	2,438	2,550	2,550	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	68,714	71,397	74,606	74,606	0
12 Civilian personnel benefits	25,118	28,062	30,721	30,721	0
13 Benefits for former personnel	42	47	49	49	0
21 Travel and transportation of persons	2,267	2,198	2,246	2,246	0
22 Transportation of things	4,145	3,898	3,987	3,987	0
23.1 Rental payments to GSA	6,179	6,505	6,610	6,610	0
23.2 Rental Payments to others	2,099	2,122	2,156	2,156	0
23.3 Communications, utilities and misc charges	9,784	10,011	10,171	10,171	0
24 Printing and reproduction	15	16	16	16	0
25.1 Advisory and assistance services	23,742	24,457	24,701	24,701	0
25.2 Other services from non-Federal sources	41,998	46,705	47,184	45,684	-1,500
25.3 Other goods and services from Federal sources	1,544	1,600	1,618	1,618	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	27	28	29	29	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	26,628	25,114	25,687	25,687	0
31 Equipment	3,533	3,925	4,001	4,001	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	3,930	3,746	3,831	3,831	0
42 Insurance claims and indemnities	1	1	1	1	0
43 Interest and dividends	30	30	30	30	0
44 Refunds	0	0	0	0	0
99 Total obligations	219,795	229,862	237,644	236,144	-1,500

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Observations	Pos./BA	698	237,644	698	236,344	0	(1,300)
	FTE/OBL	688	237,644	688	236,344	0	(1,300)

Reduce Marine Observations Tropical Atmosphere Ocean Platform (-\$1,300, 0 FTE/0 Positions) – This program change reduces the scope and operations of marine observations.

NOAA will reduce the Tropical Atmosphere Ocean (TAO) Platform. The TAO array studies and monitors climatic variations in the Pacific Ocean that have profound impacts on the Nation’s weather. NOAA will reduce the 55-buoy array by 15 while maintaining 80 percent availability for the remaining network. This reduction may delay recognition of the onset of an El Niño and the Southern Oscillation (ENSO) phenomenon and increase the uncertainty of seasonal weather forecasts issued around the world, in turn delaying the ability to mitigate impacts of drought or other conditions signaled by the ENSO phenomenon.

Schedule and Milestones

FY 2021-2025

- Reduce TAO Array by 15 buoys, maintaining the remaining 40-buoy array at 80 percent availability

Deliverables

- Support operations of the reduced TAO buoy array with annual average data availability of 80 percent

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Number of observations from TAO array with decrease	280,320	280,320	280,320	280,320	280,320
Number of observations from TAO array without decrease	384,440	384,440	384,440	384,440	384,440
Outyear Costs:					
Direct Obligations	(1,300)	(1,300)	(1,300)	(1,300)	(1,300)
Capitalized	(600)	(600)	(600)	(600)	(600)
Uncapitalized	(700)	(700)	(700)	(700)	(700)
Budget Authority	(1,300)	(1,300)	(1,300)	(1,300)	(1,300)
Outlays	(806)	(806)	(806)	(806)	(806)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Observations

Subactivity: Observations

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	66,321	68,918	72,014	72,014	0
11.3 Other than full-time permanent	30	42	42	42	0
11.5 Other personnel compensation	2,362	2,438	2,550	2,550	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	68,714	71,397	74,606	74,606	0
12 Civilian personnel benefits	25,118	28,062	30,721	30,721	0
13 Benefits for former personnel	42	47	49	49	0
21 Travel and transportation of persons	2,267	2,198	2,246	2,246	0
22 Transportation of things	4,145	3,898	3,987	3,887	-100
23.1 Rental payments to GSA	6,179	6,505	6,610	6,610	0
23.2 Rental Payments to others	2,099	2,122	2,156	2,156	0
23.3 Communications, utilities and misc charges	9,784	10,011	10,171	10,171	0
24 Printing and reproduction	15	16	16	16	0
25.1 Advisory and assistance services	23,742	24,457	24,701	24,701	0
25.2 Other services from non-Federal sources	41,998	46,705	47,184	46,584	-600
25.3 Other goods and services from Federal sources	1,544	1,600	1,618	1,618	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	27	28	29	29	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	26,628	25,114	25,687	25,087	-600
31 Equipment	3,533	3,925	4,001	4,001	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	3,930	3,746	3,831	3,831	0
42 Insurance claims and indemnities	1	1	1	1	0
43 Interest and dividends	30	30	30	30	0
44 Refunds	0	0	0	0	0
99 Total obligations	219,795	229,862	237,644	236,344	-1,300

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Observations	Pos./BA	698	237,644	698	235,989	0	(1,655)
	FTE/OBL	688	237,644	688	235,989	0	(1,655)

Reduce Upper Air Observations (-\$1,655, 0 FTE/0 Positions) – This program change reduces the scope and operations of upper air observations platforms. The Aircraft-based Observations Data Buy provides over 3.7 million observations per year from aircraft worldwide, both over land and data sparse areas over the oceans. These observations provide valuable information for aviation forecasters and input into global forecast models. NOAA will reduce the geographic scope of the observations and purchase observations over the continental U.S. (CONUS) and major air routes over the oceans, and will eliminate aircraft observations over other parts of the oceans and in other continents.

Radiosondes provide atmospheric profiles of pressure, temperature, relative humidity and winds aloft. These data are critical inputs for NWS weather prediction models and forecaster operations supporting severe storm, aviation and marine forecasts, and climate and other research uses.

Schedule and Milestones

FY 2021-2025

- Reduce number of aircraft observations to concentrate on higher priority CONUS and Atlantic Ocean routes

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Number of Aircraft-based observations with decrease	1.7M	1.7M	1.7M	1.7M	1.7M
Number of Aircraft-based observations without decrease	3.7M	3.7M	3.7M	3.7M	3.7M
Outyear Costs:					
Direct Obligations	(1,655)	(1,655)	(1,655)	(1,655)	(1,655)
Capitalized	(1,155)	(1,155)	(1,155)	(1,155)	(1,155)
Uncapitalized	(500)	(500)	(500)	(500)	(500)
Budget Authority	(1,655)	(1,655)	(1,655)	(1,655)	(1,655)
Outlays	(1,026)	(1,026)	(1,026)	(1,026)	(1,026)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Observations

Subactivity: Observations

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	66,321	68,918	72,014	72,014	0
11.3 Other than full-time permanent	30	42	42	42	0
11.5 Other personnel compensation	2,362	2,438	2,550	2,550	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	68,714	71,397	74,606	74,606	0
12 Civilian personnel benefits	25,118	28,062	30,721	30,721	0
13 Benefits for former personnel	42	47	49	49	0
21 Travel and transportation of persons	2,267	2,198	2,246	2,246	0
22 Transportation of things	4,145	3,898	3,987	3,987	0
23.1 Rental payments to GSA	6,179	6,505	6,610	6,610	0
23.2 Rental Payments to others	2,099	2,122	2,156	2,156	0
23.3 Communications, utilities and misc charges	9,784	10,011	10,171	10,171	0
24 Printing and reproduction	15	16	16	16	0
25.1 Advisory and assistance services	23,742	24,457	24,701	24,701	0
25.2 Other services from non-Federal sources	41,998	46,705	47,184	46,029	-1,155
25.3 Other goods and services from Federal sources	1,544	1,600	1,618	1,618	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	27	28	29	29	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	26,628	25,114	25,687	25,187	-500
31 Equipment	3,533	3,925	4,001	4,001	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	3,930	3,746	3,831	3,831	0
42 Insurance claims and indemnities	1	1	1	1	0
43 Interest and dividends	30	30	30	30	0
44 Refunds	0	0	0	0	0
99 Total obligations	219,795	229,862	237,644	235,989	-1,655

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**

(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel Amount		Personnel Amount		Personnel	Amount
Observations	Pos./BA	698	237,644	698	237,144	0	(500)
	FTE/OBL	688	237,644	688	237,144	0	(500)

Reduce Ship Observations Data Buy (-\$500, 0 FTE/0 Positions) - This request will decrease the purchase of commercial ship observations data by 23 percent. These meteorological and oceanographic observations improve tropical and marine weather watches and warnings, as well as global weather and ocean model skill.

NOAA’s most sparse *in situ* measurements are on the oceans, and these data fill a significant gap in support for maritime commerce and warnings of extreme events (e.g. hurricanes, winter storms, etc.). As NOAA operationally implements fully coupled weather and ocean models, it will be crucial to have as much data about the maritime environment as possible. While satellites provide some of these data over the oceans, remotely sensed data do not adequately represent weather conditions occurring on the ocean surface any more they do over land. Additional *in situ* data, such as those collected by ships, are necessary to improve forecasts and warnings for extreme weather events at sea.

As a result of this decrease, NOAA will continue to be reliant on an extremely sparse Volunteer Observing Ship (VOS) network to support its forecast and warning responsibilities in all its areas of maritime responsibility, and it will miss the opportunity of increasing the level of data available in data sparse areas.

Schedule and Milestones

FY 2021-2025

- Purchase commercial ship observations via a data buy program, to include the infrastructure necessary to ensure availability at 96 percent or greater for observations purchased under this program

Deliverables

- Acquire weather observations from commercial ships to improve tropical and marine weather watches and warnings
- Maintain at least 96 percent availability of observational data acquired from ships at sea under this program

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**

(Dollar amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Number of Ships Observations collected with decrease	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000
Number of Ships Observations collected without decrease	3,700,000	3,700,000	3,700,000	3,700,000	3,700,000
Outyear Costs:					
Direct Obligations	(500)	(500)	(500)	(500)	(500)
Capitalized	(500)	(500)	(500)	(500)	(500)
Uncapitalized	0	0	0	0	0
Budget Authority	(500)	(500)	(500)	(500)	(500)
Outlays	(310)	(310)	(310)	(310)	(310)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Activity: Observations

Subactivity: Observations

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	66,321	68,918	72,014	72,014	0
11.3 Other than full-time permanent	30	42	42	42	0
11.5 Other personnel compensation	2,362	2,438	2,550	2,550	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	68,714	71,397	74,606	74,606	0
12 Civilian personnel benefits	25,118	28,062	30,721	30,721	0
13 Benefits for former personnel	42	47	49	49	0
21 Travel and transportation of persons	2,267	2,198	2,246	2,246	0
22 Transportation of things	4,145	3,898	3,987	3,987	0
23.1 Rental payments to GSA	6,179	6,505	6,610	6,610	0
23.2 Rental Payments to others	2,099	2,122	2,156	2,156	0
23.3 Communications, utilities and misc charges	9,784	10,011	10,171	10,171	0
24 Printing and reproduction	15	16	16	16	0
25.1 Advisory and assistance services	23,742	24,457	24,701	24,701	0
25.2 Other services from non-Federal sources	41,998	46,705	47,184	46,684	-500
25.3 Other goods and services from Federal sources	1,544	1,600	1,618	1,618	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	27	28	29	29	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	26,628	25,114	25,687	25,687	0
31 Equipment	3,533	3,925	4,001	4,001	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	3,930	3,746	3,831	3,831	0
42 Insurance claims and indemnities	1	1	1	1	0
43 Interest and dividends	30	30	30	30	0
44 Refunds	0	0	0	0	0
99 Total obligations	219,795	229,862	237,644	237,144	-500

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**

(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel Amount		Personnel Amount		Personnel	Amount
Observations	Pos./BA	698	237,644	698	236,644	0	(1,000)
	FTE/OBL	688	237,644	688	236,644	0	(1,000)

Reduce NEXRAD Radome and Tower Maintenance Services (-\$1,000, 0 FTE/0 Positions) - This request will decrease NWS' contract for NEXRAD Radome and Tower Maintenance Services. This reduction would result in the diminished ability to maintain and repair radomes and towers by half, which is approximately seven radomes and nine towers each year, beginning in FY 2021. As a result, the NEXRAD program would need to defer some routine repair and maintenance necessitated by damage from lightning strikes, high winds, hail, vandalism, and normal degradation. The inability to perform this activity would lead to more costly damage to the NEXRAD structure and/or the components inside the radome, and reduce system availability below the required 96 percent.

Schedule and Milestones

FY 2021-2025

- Complete maintenance on four radomes in the third quarter and four radomes in the fourth quarter
- Complete maintenance on four towers in the third quarter and five towers in the fourth quarter

Deliverables

- Refurbish radomes and towers to assure data quality and protection of radar components.

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**

(Dollar amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Number of radomes maintained with decrease	8	8	8	8	8
Number of radomes maintained without decrease	15	15	15	15	15
Number of towers maintained with decrease	9	9	9	9	9
Number of towers maintained without decrease	18	18	18	18	18
NEXRAD operational availability with decrease	93%	90%	87%	84%	81%
NEXRAD operational availability without decrease	96%	96%	96%	96%	96%
Outyear Costs:					
Direct Obligations	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Capitalized	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Uncapitalized	0	0	0	0	0
Budget Authority	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Outlays	(620)	(620)	(620)	(620)	(620)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Activity: Observations

Subactivity: Observations

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	66,321	68,918	72,014	72,014	0
11.3 Other than full-time permanent	30	42	42	42	0
11.5 Other personnel compensation	2,362	2,438	2,550	2,550	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	68,714	71,397	74,606	74,606	0
12 Civilian personnel benefits	25,118	28,062	30,721	30,721	0
13 Benefits for former personnel	42	47	49	49	0
21 Travel and transportation of persons	2,267	2,198	2,246	2,246	0
22 Transportation of things	4,145	3,898	3,987	3,987	0
23.1 Rental payments to GSA	6,179	6,505	6,610	6,610	0
23.2 Rental Payments to others	2,099	2,122	2,156	2,156	0
23.3 Communications, utilities and misc charges	9,784	10,011	10,171	10,171	0
24 Printing and reproduction	15	16	16	16	0
25.1 Advisory and assistance services	23,742	24,457	24,701	24,701	0
25.2 Other services from non-Federal sources	41,998	46,705	47,184	46,184	-1,000
25.3 Other goods and services from Federal sources	1,544	1,600	1,618	1,618	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	27	28	29	29	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	26,628	25,114	25,687	25,687	0
31 Equipment	3,533	3,925	4,001	4,001	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	3,930	3,746	3,831	3,831	0
42 Insurance claims and indemnities	1	1	1	1	0
43 Interest and dividends	30	30	30	30	0
44 Refunds	0	0	0	0	0
99 Total obligations	219,795	229,862	237,644	236,644	-1,000

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**

(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Observations	Pos./BA	698	237,644	698	236,444	0	(1,200)
	FTE/OBL	688	237,644	688	236,444	0	(1,200)

Reduce Weather and Ocean Platform Buoys (-\$1,200, 0 FTE/0 Positions) - The Weather and Ocean Platform network provides forecasters with frequent, high-quality marine observations for forecast and warning preparation (including for hurricanes and other extreme storms at sea) and verifies forecasts after they are produced. The data these buoys collect provide the only ground-truth measurement of surface weather conditions in tropical cyclones. NOAA will eliminate seven buoys that are farthest from U.S. shores in the tropical Atlantic Ocean and are the most costly to operate, while maintaining 80 percent availability for the remaining nine buoys in the tropical Atlantic (this region is defined as that portion of the Atlantic in which tropical cyclones routinely develop and move through). This will reduce by 44 percent the number of buoy observations taken in the tropical Atlantic Ocean, impacting forecasters' ability to properly analyze surface weather conditions during tropical cyclones and other extreme storms when they are most needed, endangering lives and property at sea.

Schedule and Milestones

FY 2021-2025

- Reduce number of weather buoys in the tropical Atlantic by seven buoys, maintaining the remaining weather buoy network at 80 percent availability

Deliverables

- Support operations of the reduced Weather buoy network with annual average data availability of 80 percent

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**

(Dollar amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Number of NWS weather buoy observations in the tropical Atlantic Ocean with decrease	378,432	378,432	378,432	378,432	378,432
Number of NWS weather buoy observations in the tropical Atlantic Ocean without decrease	672,768	672,768	672,768	672,768	672,768
Outyear Costs:					
Direct Obligations	(1,200)	(1,200)	(1,200)	(1,200)	(1,200)
Capitalized	(900)	(900)	(900)	(900)	(900)
Uncapitalized	(300)	(300)	(300)	(300)	(300)
Budget Authority	(1,200)	(1,200)	(1,200)	(1,200)	(1,200)
Outlays	(744)	(744)	(744)	(744)	(744)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Activity: Observations

Subactivity: Observations

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	66,321	68,918	72,014	72,014	0
11.3 Other than full-time permanent	30	42	42	42	0
11.5 Other personnel compensation	2,362	2,438	2,550	2,550	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	68,714	71,397	74,606	74,606	0
12 Civilian personnel benefits	25,118	28,062	30,721	30,721	0
13 Benefits for former personnel	42	47	49	49	0
21 Travel and transportation of persons	2,267	2,198	2,246	2,246	0
22 Transportation of things	4,145	3,898	3,987	3,987	0
23.1 Rental payments to GSA	6,179	6,505	6,610	6,610	0
23.2 Rental Payments to others	2,099	2,122	2,156	2,156	0
23.3 Communications, utilities and misc charges	9,784	10,011	10,171	10,171	0
24 Printing and reproduction	15	16	16	16	0
25.1 Advisory and assistance services	23,742	24,457	24,701	24,701	0
25.2 Other services from non-Federal sources	41,998	46,705	47,184	46,284	-900
25.3 Other goods and services from Federal sources	1,544	1,600	1,618	1,618	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	27	28	29	29	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	26,628	25,114	25,687	25,387	-300
31 Equipment	3,533	3,925	4,001	4,001	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	3,930	3,746	3,831	3,831	0
42 Insurance claims and indemnities	1	1	1	1	0
43 Interest and dividends	30	30	30	30	0
44 Refunds	0	0	0	0	0
99 Total obligations	219,795	229,862	237,644	236,444	-1,200

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE**

(Dollar amounts in thousands)

Activity: Central Processing

Subactivity: Central Processing

Goal Statement

Central Processing is the next step in the NWS forecast process. Through this Activity, NWS ingests data obtained from observing infrastructure, and delivers it in a usable form to NWS modelers and meteorologists in support of the Department of Commerce 2018-2022 Strategic Plan, Strategic Objective 3.3 Reduce Extreme Weather Impacts.

Base Program

Activities under Central Processing include managing the Weather and Climate Operational Supercomputing System (WCOS), the Advanced Weather Interactive Processing System (AWIPS), hydrology information technology initiatives, and the information technology (IT) infrastructure that supports national centers and field operations. Together these ensure the uninterrupted flow of information from collection of observations to central guidance production and local access to all essential weather and climate data products.

Specific activities in Central Processing include:

- Operate NWS' IT processing infrastructure;
- Sustain reliability of NWS' IT processing by keeping infrastructure up to date;
- Identify NWS' processing requirements and gaps;
- Review NWS' processing system capabilities;
- Seek solutions to fulfill NWS processing requirements;
- Coordinate NWS' processing system activities across NOAA; and,
- Maintain a 24/7 help desk for all forecast systems.

Statement of Operating Objectives

Schedule and Milestones

FY 2021-2025

- Manage high performance computing (HPC) usage, reliability, and resources including a major system upgrade
- Support scheduled improvements to National Centers for Environmental Prediction (NCEP) production suite
- Deploy updated AWIPS hardware infrastructure at National Centers

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JUSTIFICATION OF PROGRAM AND PERFORMANCE**

(Dollar amounts in thousands)

- Maintain updated AWIPS architecture and infrastructure at National Centers, Weather Forecast Offices (WFOs), and River Forecast Centers (RFCs)
- Continue to improve flood lead time and accuracy improvement

Deliverables

- WCOSS meeting or exceeding reliability metrics
- 43 million numerical prediction products produced per day for weather, climate, ocean, river, and space-weather forecasts
- 4,011 operational Advanced Hydrologic Prediction System (AHPS) forecast locations
- AHPS performance meeting or exceeding flood lead time and accuracy goals
- National Center and Regional IT infrastructure that meets operational reliability goals through improved annual maintenance

Explanation and Justification

Line Item	2019 Actual		2020 Enacted		2021 Base		
	Personnel	Amount	Personnel	Amount	Personnel	Amount	
Central Processing	Pos/BA	226	97,366	228	97,980	228	102,538
	FTE/OBL	225	98,477	227	97,980	227	102,538

In 2015, NWS completed the deployment of AWIPS II. AWIPS II is an underlying software design enhancement that enables the AWIPS software, NWS' primary forecasting software, to more rapidly integrate new data sources and forecast capabilities into operations while improving system maintainability. In FY 2020, NWS awarded a new follow-on Weather and Climate Operational Supercomputing System (WCOSS) contract. In FY 2021, NWS will continue to integrate new forecast capabilities into AWIPS and will be transitioning operations to systems under a new WCOSS contract to enable future model improvements.

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Central Processing maintains the following programs to accomplish this activity:

NCEP Central Operations (NCO) provides support for WCOSS including the software and infrastructure that forms the basis for predictions from NCEP Centers and WFOs through its Weather and Climate Computing Infrastructure Services (WCCIS) program.

WCCIS provides the following services:

- Performs quality assurance of incoming observations and outgoing products;
- Transitions and disseminates numerical weather and climate prediction models from development into operational use by forecasters at NCEP and the WFOs;
- Performs 24/7 system maintenance and administration service;
- Performs software development for data processing, display, interaction, and product generation; and,
- Monitors the creation of all products in the NCEP production suite on a 24/7 basis.

Advanced Weather Interactive Processing System (AWIPS) is the information processing, display, and telecommunications system that is the cornerstone of NWS field operations. AWIPS provides the following services:

- Integrates and displays observing data (meteorological, hydrological, satellite, and radar) at NWS field offices;
- Processes and displays forecast data at operational sites;
- Provides an interactive communications system including the Satellite Broadcast Network to connect NWS field locations and allows a mechanism for external partners to access the data;
- Initiates the dissemination of weather and flood warnings and forecasts in a rapid and highly reliable manner; and,
- Provides the communication interface for the public to see NOAA's data.

Hydrology Information Technology Initiatives gather, integrate and utilize advanced and localized water and related observations to predict streamflow and produce water resources information to inform decisions, which optimize water use and mitigate the impacts of floods and droughts.

- The Advanced Hydrologic Prediction System (AHPS) is a web-based suite of graphical river-forecast products that provide advanced information on the magnitude and likelihood of floods and droughts. Advanced river forecast information is provided at 4,011 locations throughout the United States to enable government agencies, private institutions, and individuals to make more informed decisions about risk-based policies and actions to mitigate the dangers posed by floods and droughts. This advanced forecast information includes uncertainty information generated by the Hydrologic Ensemble Forecast Service.
- Community Hydrologic Prediction System (CHPS) is the information technology infrastructure that all 13 RFCs use to develop and run operational hydrologic forecast models. This infrastructure generates data and information that water resource

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managers and emergency managers use to effectively respond to flooding events.

National Centers and Regional IT Infrastructure maintain the information technology infrastructure and standards that enable the National Centers and regional offices, including forecast offices, to effectively work together. This includes:

- Computing that occurs outside of AWIPS;
- Local area networking;
- Security; and
- Data center power and cooling.

Without the continued support for NCEP, NCO, AWIPS, Hydrology Information Technology Initiatives, and National Centers and Regional IT Infrastructure, provided for in Central Processing ORF, NWS cannot continue to support the information technology necessary to process weather data and run weather models in support of national centers and field operations. These include not only the systems and initiatives outlined above, but also the WCOSS, AHPS, and other hydrology information technology initiatives.

PROGRAM CHANGES FOR FY 2021

NOAA requests a net decrease of \$14,166,000 and 84 FTE/84 positions in FY 2021 program changes for the Central Processing Activity. Following this section are program change narratives for this Activity that represent program changes greater than \$250,000 or new starts or terminations. Complete program changes by Subactivity can be found in the NOAA Control Table (p. Control Table – 4).

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

	2021 Base		2021 Estimate		Decrease from 2021 Base		
	<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>	
Central Processing	Pos./BA	228	102,538	144	90,621	(84)	(11,917)
	FTE/OBL	227	102,538	143	90,621	(84)	(11,917)

Establishment of Regional Enterprise Application Development and Integration Teams (-\$11,917, -84 FTE/-84 Positions) –

This program change reflects the significant efficiencies that can be achieved by transitioning to a new information technology (IT) service delivery model for the NWS Weather Forecast Offices (WFO). This initiative is consistent with NOAA’s cloud initiative, which will migrate suitable IT services to commercial cloud computing environments to reduce costs, improve efficiency, provide unlimited seamless scalability, and maintain high levels of security.

The NWS has realized efficiencies in the delivery of IT support services to field offices through investments in open source software and implementation of IT best practices. In FY 2021, NWS proposes to initiate a phased consolidation of its 122 Information Technology Officer (ITO) full-time equivalents (FTE). Consolidating IT support functions is a critical part of evolving the NWS, including a right-sized workforce and appropriate organizational structure. ITO officers were hired at each WFO in 2000 to support the initial installation of Advanced Weather Interactive Processing System (AWIPS), which required frequent software installation and technology upgrades. The deployment of AWIPS II, with simplified software code and strengthened system performance, has since reduced the need for on-site local maintenance. The latest follow-on contract for AWIPS will further reduce the hardware footprint through virtualization and greatly reduce maintenance needs.

These advances in technology allow NWS to decouple from a one-to-one WFO to ITO relationship and establish Regional Enterprise Application Development and Integration (READI) teams. READI teams will ensure the working order of all computer applications and software, including regular maintenance and installation, at all WFOs remotely.

NWS will cease recruiting and hiring personnel into the legacy ITO positions and employees encumbering 84 of the 122 ITO positions will be assigned to the NWS budget Portfolio and program for which their educational background and skill sets most closely support. This will achieve the planned FTE reduction and will provide NWS the ability to phase in changes in IT support and employee position duties. Due to existing and projected NWS personnel vacancies across all of the portfolios, there will be sufficient FTE personnel capacity and budget authority to absorb these incumbent staff during FY 2021.

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Employees' organizational assignment and position description will not change immediately but will be transitioned to established NWS position billets over a four-year implementation period. Final placement of employees into established billets in the proper grade, series, and position description will depend on 1) establishment and successful implementation of READI teams; and 2) alignment of staff to requirements, first using voluntary personnel reassignments and then directed reassignments where necessary. In many cases, employees will be able to quickly fill corresponding vacancies in their assigned portfolio once READI teams are established. Examples include IT specialists in Central Processing or meteorologist forecaster positions under Analyze, Forecast and Support where the employee qualifications and operational skills are commensurate with a vacancy in the same series and grade.

Specific performance measure impacts are not determined at this time. NOAA would evaluate the best approach to streamline key activities to achieve the efficiencies needed if this reduction were enacted. NOAA does not foresee any impacts to the related performance measures.

Schedule and Milestones

FY 2021-2025

- 84 ITO FTE redirected to other NWS budget portfolios
- Initiate limited scope implementation
- Test and evaluation of READI team concept
- Phased transition to full implementation
- Phased transition of former ITO into other NWS positions

Deliverables

- READI teams meeting or exceeding current service levels

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(Dollar amounts in thousands)

Outyear Costs:					
Direct Obligations	(11,917)	(11,917)	(11,917)	(11,917)	(11,917)
Capitalized	0	0	0	0	0
Uncapitalized	(11,917)	(11,917)	(11,917)	(11,917)	(11,917)
 Budget Authority					
Outlays	(7,389)	(7,389)	(7,389)	(7,389)	(7,389)
FTE	(84)	(84)	(84)	(84)	(84)
Positions	(84)	(84)	(84)	(84)	(84)

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PROGRAM CHANGE PERSONNEL DETAIL
(Dollar amounts in thousands)**

Activity: Central Processing
 Subactivity: Central Processing
 Program Change: Establishment of Regional Enterprise Application Development and Integration Teams

Title	Location	Grade	Number	Annual Salary	Total Salaries
Information Technology Officer	Various	GS-13	84	109,130	9,166,920
Total			84		9,166,920
Less lapse	0.00%		0		0
Total full-time permanent (FTE)			84		9,166,920
2021 Pay Adjustment (0%)	0.00%				0
Total					9,166,920

Personnel Data

Full-time Equivalent Employment	
Full-time permanent	84
Other than full-time permanent	0
Total	84
Authorized Positions:	
Full-time permanent	84
Other than full-time permanent	0
Total	84

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Central Processing
Subactivity: Central Processing

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	26,905	27,519	28,135	18,968	-9,167
11.3 Other than full-time permanent	103	107	109	109	0
11.5 Other personnel compensation	934	953	975	975	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	27,943	28,579	29,220	20,053	-9,167
12 Civilian personnel benefits	9,559	10,432	11,155	8,405	-2,750
13 Benefits for former personnel	17	18	19	19	0
21 Travel and transportation of persons	494	342	381	381	0
22 Transportation of things	45	32	36	36	0
23.1 Rental payments to GSA	2,340	2,466	2,519	2,519	0
23.2 Rental Payments to others	0	0	0	0	0
23.3 Communications, utilities and misc charges	457	491	499	499	0
24 Printing and reproduction	3	3	3	3	0
25.1 Advisory and assistance services	5,962	6,139	6,207	6,207	0
25.2 Other services from non-Federal sources	39,606	40,194	42,105	42,105	0
25.3 Other goods and services from Federal sources	371	391	397	397	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	1	1	1	1	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	5,621	3,121	3,653	3,653	0
31 Equipment	5,576	5,475	6,005	6,005	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	473	290	332	332	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	8	5	6	6	0
44 Refunds	0	0	0	0	0
99 Total obligations	98,477	97,980	102,538	90,621	-11,917

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PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

	2021 Base		2021 Estimate		Decrease from 2021 Base		
	Pos./BA	Amount	Pos./BA	Amount	Personnel	Amount	
Central Processing	228	102,538	144	100,538	0	(2,000)	
	FTE/OBL	227	102,538	143	100,538	0	(2,000)

Slow Advanced Hydrologic Prediction Services System Expansion (-\$2,000, 0 FTE/0 Positions) – This program change will slow the expansion of new technology at Advanced Hydrologic Prediction Services (AHPS) forecast locations.

AHPS is a web-based suite of graphical river-forecast products that provide advanced information on the magnitude and likelihood of floods and droughts for specific locations. The Hydrologic Ensemble Forecast Service (HEFS) is the key piece of the AHPS program providing forecast likelihood (uncertainty) information. NOAA expects to complete implementation of HEFS version 1 (HEFSv1) at 1306 river forecast locations across the country by the end of FY 2020. Early development and preliminary prototyping of enhanced components for a prospective HEFS version 2 is ongoing in FY 2020. Without additional funding, NOAA will forgo the planned research and development needed to address known limitations in HEFSv1 – such as the ability to provide accurate forecasts of outflows (and predictions of uncertainty) from reservoirs and other river regulations, the ability to provide more accurate forecasts of large and extreme precipitation amounts, and the ability to provide more accurate forecasts of temperatures for mixed precipitation events, which are important for water supply and flood control in snow basins. Training and implementation support also will be eliminated or significantly reduced for the HEFS. As a result, there will be fewer AHPS forecast locations with HEFS-based uncertainty information.

HEFS is an operational ensemble prediction service that leverages the skill in weather and climate forecasts to produce reliable ensemble forecasts of precipitation, temperature, and streamflow at forecast lead times ranging from one hour to one year. HEFS provides uncertainty ranges for hydrologic forecasts at all-time scales and enables better risk-informed decisions to support water management.

Schedule and Milestones

FY 2021-2025

- Maintain existing HEFS services

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(Dollar amounts in thousands)

Deliverables

- HEFS services at 1,500 water forecast service locations

Performance Measures	2021	2022	2023	2024	2025
Number of AHPS forecast locations with HEFS integration with Decrease	1,381	1,456	1,500	1,500	1,500
Number of AHPS forecast locations with HEFS integration without Decrease	1,556	1,856	2,206	2,606	3,006
Outyear Costs:					
Direct Obligations	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)
Capitalized	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)
Uncapitalized	0	0	0	0	0
Budget Authority	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)
Outlays	(1,240)	(1,240)	(1,240)	(1,240)	(1,240)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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

Activity: Central Processing
Subactivity: Central Processing

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	26,905	27,519	28,135	28,135	0
11.3 Other than full-time permanent	103	107	109	109	0
11.5 Other personnel compensation	934	953	975	975	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	27,943	28,579	29,220	29,220	0
12 Civilian personnel benefits	9,559	10,432	11,155	11,155	0
13 Benefits for former personnel	17	18	19	19	0
21 Travel and transportation of persons	494	342	381	381	0
22 Transportation of things	45	32	36	36	0
23.1 Rental payments to GSA	2,340	2,466	2,519	2,519	0
23.2 Rental Payments to others	0	0	0	0	0
23.3 Communications, utilities and misc charges	457	491	499	499	0
24 Printing and reproduction	3	3	3	3	0
25.1 Advisory and assistance services	5,962	6,139	6,207	6,207	0
25.2 Other services from non-Federal sources	39,606	40,194	42,105	40,105	-2,000
25.3 Other goods and services from Federal sources	371	391	397	397	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	1	1	1	1	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	5,621	3,121	3,653	3,653	0
31 Equipment	5,576	5,475	6,005	6,005	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	473	290	332	332	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	8	5	6	6	0
44 Refunds	0	0	0	0	0
99 Total obligations	98,477	97,980	102,538	100,538	-2,000

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JUSTIFICATION OF PROGRAM AND PERFORMANCE

(Dollar amounts in thousands)

Activity: Analyze, Forecast and Support

Subactivity: Analyze, Forecast and Support

Goal Statement

NWS' mission is to provide forecasts and warnings for the protection of life and property, and to support the national economy. The Analyze, Forecast and Support (AFS) Activity leverages innovations from the Science and Technology Integration (STI) Activity, and utilizes output and support services from the Observations, Central Processing, and Dissemination Activities by applying expertise to the observed data, model outputs, and dissemination systems, resulting in forecasts, warnings, and Impact-based Decision Support Services (IDSS) for the Nation in support of the Department of Commerce 2018-2022 Strategic Plan, Strategic Objective 3.3 Reduce Extreme Weather Impacts.

Base Program

NWS' distributed network of forecast offices, specialized centers, and associated workforce of meteorologists, hydrologists, climatologists, and space physicists is supported through the AFS Activity. This expert workforce monitors the weather, water, climate and space weather from our oceans to the surface of the sun, 24 hours a day, seven days a week. These professionals provide information using a collaborative forecast process that enables forecasts and warnings to benefit from the NWS' fully integrated forecast process. Forecasts globally support agriculture, transportation, energy production and water management among other missions and industries. Forecasts and warnings, provided days in advance of pending winter storms or hurricanes, wildland fire conditions, tornado outbreaks, heat waves or river floods enable the public, industry, and emergency managers to plan effective preparation and response strategies. Warnings for high impact, rapidly evolving hazards such as solar storms, tornadoes, tsunamis, flash floods or ash plumes following volcanic eruptions, enable decision makers to keep the public out of harm's way to protect their lives and livelihoods.

NOAA's network of Weather Forecast Offices (WFOs), River Forecast Centers (RFCs), and specialized national centers house the NOAA equipment and expertise that results in weather forecasts, warnings, and the provision of IDSS. Like any other physical asset, this infrastructure must be maintained to support NWS' mission delivery and efforts to build a Weather-Ready Nation. As such, NWS conducts facility condition assessments (FCAs) for all leased and owned facilities. A first assessment of all facilities was completed in FY 2019, and NWS has a comprehensive analysis of site conditions, itemized deferred maintenance, and projected life cycle cost for the following ten years. In some instances, the FCA identifies issues that might significantly affect operational readiness, service delivery, or occupant safety. Significant progress was made from FY 2018 through 2020 via investments in prioritized deferred maintenance projects and capital improvements.

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(Dollar amounts in thousands)

Statement of Operating Objectives

Schedule and Milestones

FY 2021–2025

- Operate national network of 24/7 and part time WFOs, that provide weather surveillance, IDSS, forecast and warning services
- Operate national network of RFCs that provide river stage, flow and flood guidance
- Operate the National Centers for Environmental Prediction (NCEP) service centers that monitor the tropics, high seas, and national airspace, warn of space weather hazards, predict tornadoes, provide outlooks for subseasonal and seasonal conditions and develop and deliver foundational data sets
- Operate the National Water Center (NWC) to support water resource decision making across the Nation
- Operate NOAA's component of the interagency National Ice Center (NIC) to support sea ice analysis and prediction
- Provide IDSS to core partners during routine and high impact events
- Operate Tsunami Warning Centers to monitor and predict the development and onset of tsunamis along the Nation's coasts and coasts of other countries as agreed by treaty
- Provide weather and financial support to the Nations of the Pacific Island Compact

Deliverables

- Operations and maintenance of all WFOs, RFCs, National Centers, and two Tsunami Warning Centers
- IDSS provided to local, regional and state partners and decision makers from WFOs and National Centers
- Provision of field operational support from National Headquarters
- Operations and maintenance of Weather Service Offices (WSO) outside the continental United States that support the Nations of the Pacific Island Compact
- Operations and maintenance of WSOs and Data Collection Offices in Hawaii and Alaska as important parts of the national observation program
- Improved hydrologic predictions, subseasonal and seasonal outlooks, forecasts of space weather conditions, and forecasts of hurricanes, blizzards, heat waves and severe storms
- Operational sea ice forecasts from the National Ice Center (NIC)
- Aviation weather forecasts for all identified airports and air routes
- Deployments of Incident Meteorologists (IMETs) to support decision makers at wildland fires
- Continued support of StormReady® communities
- Street-level water information for every stream reach in the continental United States, at 2.7 million locations

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(Dollar amounts in thousands)

- A predictive 1-hr-to-10-day national water forecast for the entire Nation
- A 30-day water outlook for the entire Nation (excluding storm influences)
- Flood forecast inundation maps for communities across the Nation

Explanation and Justification

Line Item		2019 Actual		2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Analyze, Forecast and Support	Pos/BA	2,843	500,931	2,861	513,556	2,861	531,535
	FTE/OBL	2,827	505,451	2,846	513,556	2,846	531,535

NWS forecasts, predicts, provides outlooks, and communicates the effects of changing weather, sub-seasonal to seasonal conditions, and water resources to the American public. Weather and water impact every sector of the economy, and businesses rely on NOAA’s information to improve commerce. Timely and accurate warnings for weather-related hazards – provided reliably and on time, every time – are necessary for public safety. NWS measures satisfaction with NOAA information and warning services through surveys of emergency managers, first responders, natural resource and water managers, public health professionals, industry, government, and the public. NWS then uses these results to inform service improvements.

In FY 2019, the Water Prediction Operations Division (WPOD) at the NWC reached its initial operating staffing level of 13 staff as directed in the *Consolidated Appropriations Act, 2017* (P.L. 115-31). WPOD activities include facilitating collaboration within the NWS, across NOAA, and among Federal Water Agencies to improve water resources situational awareness and decision support services. These collaborative activities include daily leadership situational awareness briefings, routine coordination calls, and the annual National Hydrologic Assessment/Spring Flood Outlook. Before, during, and after significant national or multi-regional hydrologic events, WPOD works with NCEP Centers, Regional Operations Centers, RFCs, WFOs, and core Federal agency partners (i.e. U.S. Geological Survey (USGS), U.S. Army Corps of Engineers (USACE), and Federal Emergency Management Agency (FEMA)) to maintain a common operating picture to ensure coordinated decision support services. WPOD also provides routine feedback on rapid analysis and verification of the National Water Model (NWM), and has the capability to provide backup to RFCs.

NOAA’s NWM, introduced in August 2016, is a continental-scale water resources model that combines data from USGS stream gauges with outputs from NOAA’s atmospheric weather models to greatly improve flood forecasting. The NWM represents NOAA’s first foray into high performance computing for water prediction and simulates conditions for 2.7 million stream reaches nationwide every hour (a 700-fold increase over the ~3,600 locations previously available every few hours), providing water information in

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previously underserved locations. The model also improves NOAA's ability to meet the needs of stakeholders by providing more frequent, accurate, and expanded streamflow information, as well as forecasts of soil moisture, evapotranspiration, runoff, snow water equivalent and other water resources parameters on a high resolution grid nationwide. The experimental NWM supports future improvements to hydrologic forecasting by leveraging collaboration with the public, private, and academic sectors.

NWS is continuing to upgrade the NWM. In FY 2019, NWS made specific improvements to expand domain, which now encompasses Hawaii. In FY 2020, NWS will expand the domain even further to include Puerto Rico and the southern Canada (Great Lakes) channel flow network.

In FY 2020, the NOAA component of the tri-agency National Ice Center (NIC) was realigned from the National Environmental Satellite, Data, and Information Service (NESDIS) to NWS, into NCEP's Ocean Prediction Center (OPC), to enable NOAA to meet growing requirements for operational sea ice forecasting. Given NIC's mission to produce global snow cover and sea ice products, this action aligns national and global scale operational weather analysis and prediction functions within NWS/NCEP. This realignment also leverages the organizational synergies within NCEP by combining NIC's existing global sea ice analysis capability with hazardous marine weather forecasting at OPC.

In FY 2019, NWS met or exceeded 13 of its 16 field-based GPRA goals. In addition, NOAA operationalized new time of arrival graphics for tropical storm winds and continued to utilize and improve new storm surge watches and warnings during the hurricane season. Also, in FY 2019, NOAA expanded its storm surge warning capability to include Puerto Rico. Storm surge warnings provide decision makers with even more details about impacts of land falling tropical storms and hurricanes by providing them information about how high the water is likely to get in their area due to wind driven waves and surge.

AFS maintains the following programs to accomplish this and other mission critical activities:

Weather and Climate Services and Warnings provide real-time meteorological and subseasonal to seasonal products and services to the public. To achieve this requirement, NWS operates WFOs and other field offices within the continental United States, Alaska, Hawaii, and the U.S. territories.

- WFOs issue warnings, watches, advisories, statements, and forecasts for their geographic area of responsibility at multiple time scales, from alerting for immediate threats, to seasonal reports. WFOs operate 24/7 all year. WFO forecasts include aviation, fire weather, marine, severe and tropical weather and the prediction of winter storms. WFOs also issue warnings for tornadoes, blizzards, large hail, flash floods (including ice jams and dam failures) and projected tsunami impacts. WFOs control broadcasts of weather information on the NOAA Weather Radio All Hazards stations, provide weather spotter training

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to communities, and foster close ties with both the media and the emergency management community. Staff at WFOs have a close relationship with local, state, territorial and native American government officials and emergency managers and provide IDSS to support their decision making both remotely and at their operations centers during hazardous conditions.

- Weather Service Offices (WSO) and Data Collection Offices (DCOs) are located within Alaska and Pacific Regions and provide a collection of expert hydro-meteorological data in support of local, regional, national, and global weather, hydrologic, climatic, and warning programs. WSOs support the mission of their associated WFO through public service, education, and outreach. They differ from WFOs in that they do not issue forecasts or warnings, are responsible primarily for observations and data collection, and are not operated 24 hours a day.
- Through an interagency agreement with the FAA, NWS forecasters are embedded within all 21 Air Route Traffic Control Centers and at the Air Traffic Control System Command Center to provide direct decision support services to air traffic managers promoting aviation safety and supporting efficient airspace management.

National Centers provide specialized forecast guidance and products for NWS field offices and other direct users (such as FEMA HQ) through NCEP. Each National Center depends on data from the Observations Subactivity, model output from the supercomputers in Central Processing, dissemination infrastructure from the Dissemination Subactivity, and innovations from the Science and Technology Integration Subactivity to provide expert analysis and prediction services to the local WFO and RFC infrastructure and other core partners. The National Centers provide an integrated suite of numerical weather and environmental forecast guidance, at scales ranging from local to global, at various time frames. National Centers also issue watches and warnings that include tornado watches, hurricane watches and warnings, gale, storm, and hurricane-force wind warnings for large oceanic storms, aviation weather warnings and advisories for hazards to aircraft, space weather alerts, and seasonal predictions for El Niño and La Niña events. NWS Forecasters and the weather enterprise use this information and the suite of weather model output as the basis for consistent forecast products, advisories and warnings. The AFS Subactivity supports seven NCEP National Centers:

- **Aviation Weather Center (AWC)** delivers consistent, timely and accurate weather information to support safe air navigation for the world airspace system. AWC provides aviation warnings and forecasts of hazardous flight conditions (including volcanic ash), at all levels within domestic and international airspace, and has an embedded group of forecasters at the FAA's Air Traffic Control System Command Center.
- **Climate Prediction Center (CPC)** delivers predictions for the onset and duration of El Niño and La Niña events, which can have a significant impact on the nation's weather from the potential extremes of flood, drought, excessive heat or cold, and severe weather. Scientists at CPC work with partners around the world to understand and predict modes of natural global climate variability.
- **National Hurricane Center (NHC)** issues watches, warnings, forecasts and analyses of hazardous tropical weather (e.g., tropical storms and hurricanes including storm surge), and offshore and high seas marine forecasts for a large part of the

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southwest North Atlantic (south of 30 Degrees North), Caribbean Sea, Gulf of Mexico and the eastern North Pacific (east of 140 Degrees West). NHC also leads a substantial education and outreach program on tropical hazards both domestically and internationally.

- **Ocean Prediction Center (OPC)** issues marine warnings, forecasts, and guidance for maritime users and continually monitors and analyzes maritime data for protection of life and property, safety at sea, and enhancement of economic opportunity. OPC issues gale, storm and hurricane-force wind warnings for the Atlantic and Pacific Oceans, north of 30 Degrees North. As part of OPC, NOAA's component of the interagency NIC produces global snow cover and operational sea ice prediction products.
- **Space Weather Prediction Center (SWPC)** provides real-time monitoring and forecasting of solar and geophysical events and disturbances such as geomagnetic storms and solar flares. SWPC researchers and partners develop advanced models to improve understanding of the space weather environment and predict future events. Model improvements enable better prediction of these events and their potential impact on Earth. Impacts could include disruptions to satellite communications, impacts to the terrestrial electric grid and communication outages to cross polar airline flights. SWPC supports the Space Weather Operations, Research and Mitigation (SWORM) national space weather strategy and serves as an International Civil Aviation Organization (ICAO) Space Weather Center.
- **Storm Prediction Center (SPC)** provides forecasts and watches for tornadoes, severe thunderstorms, large hail, lightning, wildfire potential, and heavy precipitation for the United States.
- **Weather Prediction Center (WPC)** is responsible for preparing a variety of analyses, national guidance products, and reliable national forecasts through a collaborative forecast process that ensures consistency and accuracy. The mission of WPC includes the prediction of winter storms and heavy rain.

Hydrologic Services and Warnings provides hydrologic data, analysis, forecast information, and decision support services through the Office of Water Prediction (OWP), RFCs, and WFOs to address the Nation's growing water resources challenges. The OWP National Water Center (NWC) serves as a cornerstone for Integrated Water Resources Science and Services (IWRSS), and interagency collaboration on water capabilities and information, and as a central hub to integrate and advance national and regional hydrologic field operations and services.

- RFCs provide daily river stage data, river forecasts and flash flood guidance for emergency and water management. A wide range of users depend on these forecasts including those in agriculture, hydroelectric dam operation, and water supply resources. The information is the basis for river and flash flood warnings, watches, and advisories issued by the WFOs. NWS operates 13 RFCs.
- IWRSS facilitates interagency collaboration among a consortium of Federal water agencies including NOAA, the USACE, the USGS, and the FEMA. IWRSS' overarching objective is to integrate water resources capabilities and information to establish

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a common operating picture for water resources that better informs water-related planning, preparedness and response activities.

- The NWC acts as a catalyst for interagency activities as they relate to the transformation of NOAA's water prediction capability and decision support services. Moreover, it serves as an operational forecasting center, which is envisioned to be staffed with personnel from multiple Federal agencies. The goal is to establish an integrated and common operating picture for water resources. The NWC is focused on developing and improving new national water prediction capabilities such as the National Water Model. A second new transformational hydrologic forecasting capability is the Hydrologic Ensemble Forecasting Service (HEFS), which produces reliable and skillful ensemble streamflow forecasts at lead times ranging from one hour to one year. HEFS is particularly useful for long-range water resource planning and risk-based water resources decision-making.

Tsunami Warning Program provides 24/7 monitoring of seismic events that could generate a tsunami that could impact the Atlantic or Pacific coastlines (including Pacific and Caribbean islands). In the event of a tsunami, the program generates timely and precise warnings, predictions of wave impact times and heights, and operational tools for emergency managers and public officials to guide rapid, critical decisions in which lives and property are at stake. The program uses information from DART® buoys within the Observations program as critical input and verification of tsunami forecasts.

The program coordinates with a variety of national and international partners and is supported by two Tsunami Warning Centers (TWC) which collaborate with academia or scientific institutions and partners with agencies such as USGS. The TWC issues tsunami watches and warnings for all U.S. communities at risk and for international areas by agreement or compact. The program also provides education and mitigation grant funding to states and territories via the national tsunami hazard mitigation program (NTHMP) and operations the International Tsunami Information Center (ITIC) to provide data and materials to support improved understanding and preparedness for tsunamis.

Pacific Island Compact is part of the U.S. Compact of Free Association with the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau in which the U.S. government provides basic government and commerce services including weather services to these island nations. The Compact provides the necessary funding to support the NWS WSOs and associated weather warning, forecast, and observation services for these islands. This continued investment preserves critical weather observation infrastructure and services 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.

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Without the continued support for Weather and Climate Services and Warnings, the National Centers, Hydrologic Services and Warnings, and the Pacific Island Compact, provided for in AFS ORF, NWS cannot continue to support a distributed network of WFOs and specialized centers comprising a workforce of meteorologists, hydrologists, climatologists, and space physicists whose expertise convert observational data and model outputs, to timely and accurate weather forecasts, warnings, and outlooks.

PROGRAM CHANGES FOR FY 2021

NOAA requests a net decrease of \$30,755,000 and 143 FTE/281 positions in FY 2021 program changes for the Analyze, Forecast and Support Activity. Following this section are program change narratives for this Activity that represent program changes greater than \$250,000 or new starts or terminations. Complete program changes by Subactivity can be found in the NOAA Control Table (p. Control Table – 4).

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		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Analyze, Forecast and Support	Pos./BA	2,861	531,535	2,613	516,535	-248	(15,000)
	FTE/OBL	2,846	531,535	2,736	516,535	-110	(15,000)

Reduce NWS Workforce (-\$15,000, -110 FTE/-248 Positions) – This program change request reduces 110 FTE forecast personnel by implementing recommendations outlined in NWS’ Operations and Workforce Analysis (OWA), which will enable NWS to continue to evolve and build a Weather-Ready Nation. The OWA recognizes inherent inefficiencies associated with the rigid field office structure of NWS and provides various recommendations to make the agency more effective and efficient to protect lives and property. Of these recommendations, OWA suggested increasing flexibility within NWS’ operating model. This workforce savings is the initial step of implementing OWA recommendations.

NWS will immediately begin implementing a series of operational reforms aimed at increasing staffing flexibility to best match service demands with available resources, including implementing three operational changes that will enable these reductions. NWS believes it is prudent to continually test and evaluate the impacts of the staffing reforms, and prefers to reduce positions only through attrition. NWS will continually monitor and evaluate performance to maintain the products and services provided by the offices. (FTE savings distribution based on OWA estimates only, subject to test and evaluation):

1. As discussed in the OWA, increasing flexibility while streamlining administrative processes at NWS offices will enable the agency to meet demand for its products and services. For instance, not all forecast offices serve the same constituency. Some offices respond to and serve a wide population, while others serve more remote locations. With this in mind, operation times at various offices will be reduced to address partner needs to the maximum extent possible. To minimize potential risk to the public and partners, offices will collaborate with other NWS offices for met watch and services during off hours, while sustaining situational awareness, allowing for certain offices to reduce operation times while increasing focus on addressing partner needs. NWS will move away from the current uniform staffing model, redistributing staff to best meet partner needs. In FY 2021, NWS will implement, test, and evaluate this reform and estimates a 33 FTE savings. The operational change is similar to the backup practice used today when there is a system or communications failure of an office. Service Backup offices will require available surge capacity and may require the supporting office to increase staffing.

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2. As discussed in the OWA, evolving the agency’s weather forecast office field structure through collaborative forecast processes and technological innovation and changes to forecasters’ career paths will help unlock current resources to meet service demand. In FY 2021, NWS will implement, test, and evaluate these reforms and estimates a 33 FTE savings. NWS offices set staffing levels to best serve their partners and population. Safety and security of NWS employees is paramount and must be ensured where an office would have only one person in the building on duty. This operational change will also require the office to be able to recall employees, or leverage Service Backup, if unexpected local operations or high-impact weather events occur.

3. NWS will vary office sizes to best match the needs of the local public and its many partners given available resources. NWS will move away from the current uniform staffing model, redistributing staff to best meet partner needs. In FY 2021, NWS will implement, test, and evaluate this reform and estimates a 44 FTE savings.

As noted above, these operational reforms intended to increase staffing flexibility will be conducted in FY 2021. Their testing and implementation could present some short-term risks that will need to be managed effectively to minimize any impact to operations. Finally, OWA suggested NWS would realize operating efficiencies by adopting time unlocks, which would then be leveraged to increase capacity for Impacts-based Decision Support Services (IDSS). By applying the operational efficiencies to implement IDSS as envisioned by OWA, these time savings will be used in part or in full to meet these reductions.

	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations	(15,000)	(15,000)	(15,000)	(15,000)	(15,000)
Capitalized	0	0	0	0	0
Uncapitalized	(15,000)	(15,000)	(15,000)	(15,000)	(15,000)
Budget Authority	(15,000)	(15,000)	(15,000)	(15,000)	(15,000)
Outlays	(9,300)	(9,300)	(9,300)	(9,300)	(9,300)
FTE	(110)	(110)	(110)	(110)	(110)
Positions	(248)	(248)	(248)	(248)	(248)

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PROGRAM CHANGE PERSONNEL DETAIL**

(Dollar amounts in thousands)

Activity: Analyze, Forecast and Support
 Subactivity: Analyze, Forecast and Support
 Program Change: Reduce NWS Workforce

Title	Location	Grade	Number	Annual Salary	Total Salaries
Meteorologist	Various	Various	-110	111,381	-12,251,910
Total			-110		-12,251,910
Less lapse		0.00%	0		0
Total full-time permanent (FTE)			-110		-12,251,910
2021 Pay Adjustment (0%)		0.00%			0
Total					-12,251,910
Personnel Data					
Full-time Equivalent Employment					
Full-time permanent			-110		
Other than full-time permanent			0		
Total			-110		
Authorized Positions:					
Full-time permanent			-248		
Other than full-time permanent			0		
Total			-248		

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PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Activity: Analyze, Forecast and Support
Subactivity: Analyze, Forecast and Support

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	279,723	287,560	290,884	278,632	-12,252
11.3 Other than full-time permanent	758	786	795	795	0
11.5 Other personnel compensation	25,877	26,547	26,852	26,852	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	306,358	314,894	318,532	306,280	-12,252
12 Civilian personnel benefits	104,546	114,882	121,942	119,194	-2,748
13 Benefits for former personnel	290	318	321	321	0
21 Travel and transportation of persons	5,063	922	1,451	1,451	0
22 Transportation of things	2,944	317	832	832	0
23.1 Rental payments to GSA	11,194	11,704	11,869	11,869	0
23.2 Rental Payments to others	5,183	5,240	5,824	5,824	0
23.3 Communications, utilities and misc charges	11,494	11,873	12,057	12,057	0
24 Printing and reproduction	61	13	14	14	0
25.1 Advisory and assistance services	8,807	10,326	11,427	11,427	0
25.2 Other services from non-Federal sources	33,459	32,644	34,464	34,464	0
25.3 Other goods and services from Federal sources	2,217	2,311	2,333	2,333	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	3	5	5	5	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,373	887	1,909	1,909	0
31 Equipment	1,892	1,150	1,162	1,162	0
32 Lands and structures	314	29	31	31	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	8,232	6,030	7,350	7,350	0
42 Insurance claims and indemnities	5	0	0	0	0
43 Interest and dividends	16	11	11	11	0
44 Refunds	0	0	0	0	0
99 Total obligations	505,451	513,556	531,535	516,535	-15,000

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	2021 Base		2021 Estimate		Decrease from 2021 Base	
	<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Analyze, Forecast and Support	Pos./BA	2,861 531,535	2,836	520,535	-25	(11,000)
	FTE/OBL	2,846 531,535	2,821	520,535	-25	(11,000)

Reduce Tsunami Warning Program (-\$11,000, -25 FTE/-25 Positions) – This program change eliminates NOAA’s Tsunami Research and Operational Warning program as a national service program and merges the Pacific Tsunami Warning Center (PTWC) in Hawaii and the National Tsunami Warning Center (NTWC) in Alaska into one center.

NOAA proposes to continue to fund critical operational tsunami program components to ensure high-quality tsunami watches, warnings, and advisories at one center, eliminating the nation’s backup capability, and puts at risk some international agreements established under the International Oceanic Commission. This reduction also eliminates all NWS-sponsored R&D to improve tsunami warning models, and partner funding for education and awareness programs including National Tsunami Hazard Mitigation Program (NTHMP) grant funding to state and territory education, awareness, and inundation and evacuation map development, and the TsunamiReady® Program. This reduction also eliminates the International Tsunami Information Center and the Caribbean Tsunami Warning Program. NOAA will continue to explore options in the 2010 National Academies of Sciences report, *Tsunami Warning and Preparedness: An Assessment of the U.S. Tsunami Program and the Nation’s Preparedness Efforts*, to merge the two Tsunami Warning Centers or co-locate them with (1) academic or scientific institutions or (2) warning or mission-critical centers such as the National Centers for Environmental Prediction.¹

Schedule and Milestones

FY 2021-2025

- Operate Tsunami Warning Center

Deliverables

- Operational Tsunami Warning Center

¹ <https://www.nap.edu/read/12628/chapter/8#188> and <http://dels.nas.edu/Report/Tsunami-Warning-Preparedness-Assessment/12628>

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Performance Measures:	2021	2022	2023	2024	2025
Percent improvement in warning accuracy (in tsunami arrival times) with decrease	0	0	0	0	0
Percent improvement in warning accuracy (in tsunami arrival times) without decrease	2	5	7	8	9
Outyear Costs:					
Direct Obligations	(11,000)	(11,000)	(11,000)	(11,000)	(11,000)
Capitalized	0	0	0	0	0
Uncapitalized	(11,000)	(11,000)	(11,000)	(11,000)	(11,000)
Budget Authority	(11,000)	(11,000)	(11,000)	(11,000)	(11,000)
Outlays	(6,820)	(6,820)	(6,820)	(6,820)	(6,820)
FTE	(25)	(25)	(25)	(25)	(25)
Positions	(25)	(25)	(25)	(25)	(25)

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PROGRAM CHANGE PERSONNEL DETAIL
(Dollar amounts in thousands)**

Activity: Analyze, Forecast, and Support
 Subactivity: Analyze, Forecast, and Support
 Program Change: Reduce Tsunami Warning Program

Title	Location	Grade	Number	Annual Salary	Total Salaries
Admin Support Assistant	TBD	GS-08	-1	64,461	-64,461
Computer Scientist	TBD	GS-13	-1	121,756	-121,756
Director	TBD	GS-15	-1	170,613	-170,613
Electronics Systems Analyst	TBD	GS-13	-1	121,756	-121,756
Electronics Technician	TBD	GS-12	-1	103,249	-103,249
Electronics Technician	TBD	GS-11	-1	86,140	-86,140
Geophysicist	TBD	GS-14	-2	144,065	-288,130
IT Specialist	TBD	GS-13	-2	121,756	-243,512
Oceanographer	TBD	GS-14	-1	144,065	-144,065
Oceanographer	TBD	GS-13	-2	121,756	-243,512
Oceanographer	TBD	GS-12	-1	103,249	-103,249
Physical Scientist	TBD	GS-14	-3	144,065	-432,195
Physical Scientist	TBD	GS-13	-7	121,756	-852,292
Tsunami Warning Science Officer	TBD	GS-14	-1	144,065	-144,065
Total			-25		-3,118,995
Less lapse	0.00%		0		0
Total full-time permanent (FTE)			-25		-3,118,995
2021 Pay Adjustment (0%)	0.00%				0
Total					-3,118,995
Personnel Data					
Full-time Equivalent Employment					
Full-time permanent			-25		
Other than full-time permanent			0		
Total			-25		
Authorized Positions:					
Full-time permanent			-25		
Other than full-time permanent			0		
Total			-25		

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

Activity: Analyze, Forecast and Support
Subactivity: Analyze, Forecast and Support

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	279,723	287,560	290,884	287,765	-3,119
11.3 Other than full-time permanent	758	786	795	795	0
11.5 Other personnel compensation	25,877	26,547	26,852	26,852	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	306,358	314,894	318,532	315,413	-3,119
12 Civilian personnel benefits	104,546	114,882	121,942	121,561	-381
13 Benefits for former personnel	290	318	321	321	0
21 Travel and transportation of persons	5,063	922	1,451	1,451	0
22 Transportation of things	2,944	317	832	832	0
23.1 Rental payments to GSA	11,194	11,704	11,869	11,869	0
23.2 Rental Payments to others	5,183	5,240	5,824	5,824	0
23.3 Communications, utilities and misc charges	11,494	11,873	12,057	10,557	-1,500
24 Printing and reproduction	61	13	14	14	0
25.1 Advisory and assistance services	8,807	10,326	11,427	11,427	0
25.2 Other services from non-Federal sources	33,459	32,644	34,464	34,464	0
25.3 Other goods and services from Federal sources	2,217	2,311	2,333	2,333	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	3	5	5	5	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,373	887	1,909	1,909	0
31 Equipment	1,892	1,150	1,162	1,162	0
32 Lands and structures	314	29	31	31	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	8,232	6,030	7,350	1,350	-6,000
42 Insurance claims and indemnities	5	0	0	0	0
43 Interest and dividends	16	11	11	11	0
44 Refunds	0	0	0	0	0
99 Total obligations	505,451	513,556	531,535	520,535	-11,000

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	2021 Base		2021 Estimate		Decrease from 2021 Base	
	<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Analyze, Forecast and Support	Pos./BA	2,861 531,535	2,861	529,729	0	(1,806)
	FTE/OBL	2,846 531,535	2,846	529,729	0	(1,806)

Terminate Aviation Science Research to Operations (-\$1,806, 0 FTE/0 Positions) – This program change terminates aviation science research and development and R2O transition efforts within the Analyze, Forecast and Support Subactivity. This program change is in coordination with the decrease in aviation science R2O termination request from the Science and Technology Integration Subactivity (NWS-101).

With this reduction, NOAA will be able to maintain current levels of operational aviation weather forecast products and services. However, NOAA will discontinue efforts to complete, develop and implement aviation tools and capabilities to support futures advances in the Federal Aviation Administration’s (FAA) Next Generation Air Transportation System (NextGen). Specifically, NWS will lose access to objective forecast performance data required to be tracked and reported routinely to the FAA, lose support to the convective weather collaborative forecast process among government and airline industry meteorologists, and be unable to support the safety of flight need for plain language destination forecasts at 157 airports in Alaska.

Schedule and Milestones

FY 2021-2025

- Maintain currently deployed aviation products and services

Deliverables

- No new innovations transitioned to operations

Performance Measures:

	2021	2022	2023	2024	2025
Number of aviation forecasting innovations with decrease	0	0	0	0	0
Number of aviation forecasting innovations without decrease	2	2	2	2	2

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

Activity: Analyze, Forecast and Support
Subactivity: Analyze, Forecast and Support

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	279,723	287,560	290,884	290,884	0
11.3 Other than full-time permanent	758	786	795	795	0
11.5 Other personnel compensation	25,877	26,547	26,852	26,852	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	306,358	314,894	318,532	318,532	0
12 Civilian personnel benefits	104,546	114,882	121,942	121,942	0
13 Benefits for former personnel	290	318	321	321	0
21 Travel and transportation of persons	5,063	922	1,451	1,451	0
22 Transportation of things	2,944	317	832	832	0
23.1 Rental payments to GSA	11,194	11,704	11,869	11,869	0
23.2 Rental Payments to others	5,183	5,240	5,824	5,824	0
23.3 Communications, utilities and misc charges	11,494	11,873	12,057	12,057	0
24 Printing and reproduction	61	13	14	14	0
25.1 Advisory and assistance services	8,807	10,326	11,427	11,427	0
25.2 Other services from non-Federal sources	33,459	32,644	34,464	32,658	-1,806
25.3 Other goods and services from Federal sources	2,217	2,311	2,333	2,333	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	3	5	5	5	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,373	887	1,909	1,909	0
31 Equipment	1,892	1,150	1,162	1,162	0
32 Lands and structures	314	29	31	31	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	8,232	6,030	7,350	7,350	0
42 Insurance claims and indemnities	5	0	0	0	0
43 Interest and dividends	16	11	11	11	0
44 Refunds	0	0	0	0	0
99 Total obligations	505,451	513,556	531,535	529,729	-1,806

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(Dollar amounts in thousands)**

	2021 Base		2021 Estimate		Decrease from 2021 Base	
	<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Analyze, Forecast and Support	Pos./BA	2,861 531,535	2,853	530,335	-8	(1,200)
	FTE/OBL	2,846 531,535	2,838	530,335	-8	(1,200)

Consolidate Climate Prediction Center/Weather Prediction Center Functions (-\$1,200, -8 FTE/-8 Positions) – NOAA will consolidate functions at the National Centers for Environmental Prediction (NCEP) Climate Prediction Center (CPC) and Weather Prediction Center (WPC).

Specifically, this consolidation will result in the following:

- Create one national center that will span the continuum of prediction services from the present through existing sub-seasonal and seasonal time domains
- Eliminate overlap between the ever-changing transition at the weather and climate scale domains to develop a more continuous suite of products
- Improve efficiency and create more staffing flexibility as the WPC’s contributions toward Evolving the NWS expands
- Promote consistency in presentation of data and forecast information with increased ability to respond to extreme weather
- Base products, such as routine monthly and seasonal predictions of temperature and precipitation and El Nino/La Nina products will continue

While some efficiency will be realized, this consolidation will limit some of NOAA’s products and services such as climate prediction products with domains over hemispheres other than North America/Arctic. Some of these global climate predictions have supported national security planning and execution activities at the Department of Defense and the United States Agency for International Development including food security and disaster risk reduction, as well as pandemic health planning.

Schedule and Milestones

FY 2021-2025

- Weather Prediction Center provides a continuum of products and services from near term through sub-seasonal to seasonal timeframes

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(Dollar amounts in thousands)

Deliverables

- Operations of the Weather Prediction Center providing weather and climate predictions from near term through sub-seasonal to seasonal timeframes

Performance Measures:	2021	2022	2023	2024	2025
Number of climate scale innovations with decrease	1	1	1	1	1
Number of climate scale innovations without decrease	3	4	4	3	3
Outyear Costs:					
Direct Obligations	(1,200)	(1,200)	(1,200)	(1,200)	(1,200)
Capitalized	0	0	0	0	0
Uncapitalized	(1,200)	(1,200)	(1,200)	(1,200)	(1,200)
Budget Authority	(1,200)	(1,200)	(1,200)	(1,200)	(1,200)
Outlays	(744)	(744)	(744)	(744)	(744)
FTE	(8)	(8)	(8)	(8)	(8)
Positions	(8)	(8)	(8)	(8)	(8)

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PROGRAM CHANGE PERSONNEL DETAIL
(Dollar amounts in thousands)**

Activity: Analyze, Forecast, and Support
 Subactivity: Analyze, Forecast, and Support
 Program Change: Consolidate Climate Prediction Center/Weather Prediction Center

Title	Location	Grade	Number	Annual Salary	Total Salaries
Director	Maryland	SES	-1	175,835	-175,835
Lead Physical Scientist	Maryland	GS-14	-2	130,875	-261,750
Physical Scientist	Maryland	GS-13	-4	110,628	-442,512
Admin Assistant	Maryland	GS-08	-1	57,703	-57,703
Total			-8		-937,800
Less lapse		0.00%	0		0
Total full-time permanent (FTE)			-8		-937,800
2021 Pay Adjustment (0%)		0.00%			0
Total					-937,800

Personnel Data

Full-time Equivalent Employment					
Full-time permanent			-8		
Other than full-time permanent			0		
Total			-8		
Authorized Positions:					
Full-time permanent			-8		
Other than full-time permanent			0		
Total			-8		

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

Activity: Analyze, Forecast and Support
Subactivity: Analyze, Forecast and Support

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	279,723	287,560	290,884	289,946	-938
11.3 Other than full-time permanent	758	786	795	795	0
11.5 Other personnel compensation	25,877	26,547	26,852	26,852	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	306,358	314,894	318,532	317,594	-938
12 Civilian personnel benefits	104,546	114,882	121,942	121,680	-262
13 Benefits for former personnel	290	318	321	321	0
21 Travel and transportation of persons	5,063	922	1,451	1,451	0
22 Transportation of things	2,944	317	832	832	0
23.1 Rental payments to GSA	11,194	11,704	11,869	11,869	0
23.2 Rental Payments to others	5,183	5,240	5,824	5,824	0
23.3 Communications, utilities and misc charges	11,494	11,873	12,057	12,057	0
24 Printing and reproduction	61	13	14	14	0
25.1 Advisory and assistance services	8,807	10,326	11,427	11,427	0
25.2 Other services from non-Federal sources	33,459	32,644	34,464	34,464	0
25.3 Other goods and services from Federal sources	2,217	2,311	2,333	2,333	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	3	5	5	5	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,373	887	1,909	1,909	0
31 Equipment	1,892	1,150	1,162	1,162	0
32 Lands and structures	314	29	31	31	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	8,232	6,030	7,350	7,350	0
42 Insurance claims and indemnities	5	0	0	0	0
43 Interest and dividends	16	11	11	11	0
44 Refunds	0	0	0	0	0
99 Total obligations	505,451	513,556	531,535	530,335	-1,200

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(Dollar amounts in thousands)

	2021 Base		2021 Estimate		Decrease from 2021 Base	
	<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Analyze, Forecast and Support	Pos./BA	2,861 531,535	2,861	530,035	0	(1,500)
	FTE/OBL	2,846 531,535	2,846	530,035	0	(1,500)

Reduction to Office of Water Prediction Center Staffing Support (-\$1,500, 0 FTE/0 Positions) – The Water Prediction Operations Division (WPOD) within the Office of Water Prediction (OWP) at the National Water Center (NWC) achieved Initial Operating Capability (IOC) on October 1, 2019. NOAA is committed to maintaining these staffing levels in the WPOD. However, with this decrease WPOD will delay meeting Full Operating Capability (FOC) as previously directed in the *Consolidated Appropriations Act, 2020* (P.L. 116-93).

Schedule and Milestones

FY 2021 - 2025

- Maintain IOC staffing levels at the NWC WPOD

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Performance Measures	2021	2022	2023	2024	2025
Number of hours per day WPOD provides operational forecast guidance and analyses, and inundation information for all hydrologic events in the United States with decrease	14	14	14	14	14
Number of hours per day WPOD provides operational forecast guidance and analyses, and inundation information for all hydrologic events in the United States without decrease	18	24	24	24	24
Outyear Costs:					
Direct Obligations	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)
Capitalized	0	0	0	0	0
Uncapitalized	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)
Budget Authority	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)
Outlays	(930)	(930)	(930)	(930)	(930)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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

Activity: Analyze, Forecast and Support
Subactivity: Analyze, Forecast and Support

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	279,723	287,560	290,884	289,759	-1,125
11.3 Other than full-time permanent	758	786	795	795	0
11.5 Other personnel compensation	25,877	26,547	26,852	26,852	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	306,358	314,894	318,532	317,407	-1,125
12 Civilian personnel benefits	104,546	114,882	121,942	121,567	-375
13 Benefits for former personnel	290	318	321	321	0
21 Travel and transportation of persons	5,063	922	1,451	1,451	0
22 Transportation of things	2,944	317	832	832	0
23.1 Rental payments to GSA	11,194	11,704	11,869	11,869	0
23.2 Rental Payments to others	5,183	5,240	5,824	5,824	0
23.3 Communications, utilities and misc charges	11,494	11,873	12,057	12,057	0
24 Printing and reproduction	61	13	14	14	0
25.1 Advisory and assistance services	8,807	10,326	11,427	11,427	0
25.2 Other services from non-Federal sources	33,459	32,644	34,464	34,464	0
25.3 Other goods and services from Federal sources	2,217	2,311	2,333	2,333	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	3	5	5	5	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,373	887	1,909	1,909	0
31 Equipment	1,892	1,150	1,162	1,162	0
32 Lands and structures	314	29	31	31	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	8,232	6,030	7,350	7,350	0
42 Insurance claims and indemnities	5	0	0	0	0
43 Interest and dividends	16	11	11	11	0
44 Refunds	0	0	0	0	0
99 Total obligations	505,451	513,556	531,535	530,035	-1,500

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JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Dissemination
Subactivity: Dissemination

Goal Statement

The ability to communicate warnings and forecasts to the American public is essential to protecting property and saving lives. To be effective, NWS requires a scalable, robust, secure, 24 hours a day, 7 days a week operational dissemination infrastructure, an optimized network that meets capacity requirements, and a sophisticated suite of communications systems to meet varied customer needs in a timely, reliable and authoritative manner in support of the Department of Commerce 2018-2022 Strategic Plan, Strategic Objective 3.3 Reduce Extreme Weather Impacts.

Base Program

Forecasts and warnings are transmitted using the infrastructure provided by the Dissemination Activity. Dissemination maintains communication technology required by NWS for the collecting, tailoring, and distribution of data and products. The resilient Integrated Dissemination Program (IDP) is an on-premise private cloud located in Boulder, CO, and College Park, MD. The IDP collects and distributes watches, warnings, advisories, data, and products internally and externally. Information is provided to multiple users in a variety of formats including satellite broadcast and terrestrial (Earth-based) networks, internet, radio, and partner briefing webinars. Current major systems included in IDP are the NWS Geostationary Weather Satellite Antenna System (GWSAS), OneNWS Network, NWS web and GIS services, NOAA Weather Radio (NWR), the Emergency Managers Weather Information Network (EMWIN), and an extensive network connecting NWS sites to one another and to NWS partners. The IDP infrastructure is the main communications hub that delivers information to different dissemination networks, such as to NWS offices, over the OneNWS Network, to the public with wireless emergency alerts (WEA) through FEMA Integrated Public Alert and Warning System (IPAWS), and to emergency managers via EMWIN.

Building on the successes in the last few years of implementing robust geographically-diverse dissemination systems and upgrading the network infrastructure, NWS will operationally maintain, operate, and enhance the existing IDP application services. In FY 2021, NWS will continue to maintain a NWR system availability rate of 96 percent and have a maximum transit time for warning messages of one second or less for system latency. Furthermore, NWS will maintain an IDP system availability rate of 99 percent providing 24x7 support to maintain existing infrastructure and dissemination services with application failover between IDP sites in 15 minutes or less. In FY 2021, NWS will support and preserve existing IDP capabilities including Web and GIS-based Services to accommodate data providers and data throughput. In coordination with FEMA IPAWS, NWS will support a more efficient ability to amplify non-weather emergency messages from First Responders and the Emergency Management community through the Common Alerting Protocol (CAP) Handler application on IDP for broadcast over appropriate NWR transmitters.

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To ensure a WRN and optimize the delivery of scalable and agile dissemination capabilities, the NWS organized the Dissemination Subactivity around infrastructure, networks, web services and other warning-delivery services.

In general, activities in the Dissemination portfolio will perform the following:

- Operate NWS' information technology (IT) dissemination infrastructure and services;
- Identify NWS' dissemination requirements and gaps;
- Analyze NWS' system capabilities;
- Maintain, and support a scalable and geographically diverse redundant NWS dissemination architecture (IDP) consistent with, and part of, the NOAA enterprise architecture;
- Maintain a strategy to maximize effectiveness while minimizing cost; and
- Maintain and operate NWS' dissemination system capabilities including IDP and NWS networks at 99 percent operational availability.

Statement of Operating Objectives

Schedule and Milestones

FY 2021–2025

- Maintain NWR service at 96 percent availability
- Maintain IDP services and NWS Global Information System Centers (GISC) services at 99 percent reliability
- Maintain existing Enterprise Geospatial and Web Services to accommodate data providers, users and increase data throughput
- Execute approved Roadmap for future Weather Distribution Services to support a WRN
- Operate and maintain OneNWS Network bandwidth/reliability
- Manage IDP system usage, reliability, and resources
- Operate and maintain IDP Applications
- Maintain operational support and maintenance of IDP on-premise private cloud infrastructure in College Park, MD, and Boulder, CO
- Maintain operational support and maintenance of NWS Geostationary Weather Satellite Antenna System (GWSAS)
- Maintain operational support and maintenance of a backup NWS network through a Very-Small-Aperture Terminal (VSAT) antenna system at each NWS Weather Forecast Office (WFO)
- Maintain existing Enterprise Geospatial and Web Services to accommodate data providers, users and increase data throughput antenna system at each NWS WFO

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(Dollar amounts in thousands)**

- Maintain and support NWS networks under the GSA Enterprise Infrastructure Solutions (EIS) contract

Deliverables

- Delivery of NWS core watches, warnings, and advisories at 99.8 percent availability
- Maximum transit time for warning messages of less than 15 second
- NWR service availability at 96 percent
- Overall IDP system availability at 99 percent
- Integration of enhanced weather data and web services operationally supported on IDP system with resilience
- 24 hours a day/7 days a week support of Operational Terrestrial and Satellite Networking Services

Explanation and Justification

Line Item		2019 Actual		2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Dissemination	Pos/BA	78	49,995	81	76,843	81	79,112
	FTE/OBL	77	52,792	79	76,843	79	79,112

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 United States and its territories, 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 its private-cloud IDP systems, web and GIS services, public cloud services, and the OneNWS Network.

Dissemination maintains the following programs to accomplish this activity:

Dissemination IT Infrastructure and Virtualized Application Services within the IDP provides a scalable, robust, secure dissemination IT infrastructure in two geographically diverse locations, for NWS, NOAA and Federal partners.

- Weather and environmental disturbances can disrupt virtually every major public infrastructure system including transportation systems, power grids, telecommunications, and emergency response systems that protect the public. Facing these interruptions, users could be cut off from government services. Minutes (sometimes seconds) count in saving lives and the performance of the NWS dissemination systems to supply necessary information quickly is crucial.
- The IDP infrastructure is the Nation's hub for collecting and distributing weather data and products. Applications within the

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IDP systems automatically collect and distribute a wide variety of environmental data such as observations, analysis, and forecast products to WFOs, National Centers, NWS web-services, broadcasters, the commercial meteorological community, and major international partners. These time-perishable data products are distributed to ensure the fastest availability of the fully integrated information within IDP in College Park, MD, and Boulder, CO.

- NWS IDP applications and services provide users with flexible access to observational weather data, hazardous weather information, and other weather forecast products required for air traffic management. NOAA provides data discovery services, data format translation, and dissemination services to improve the accuracy and availability of weather information.
- NWS has begun exploring the use of the public cloud in order to expand the capabilities of IDP, considering it for applications that do not perform primary mission essential functions. In FY 2020, the NWS is exploring the use of the public cloud for the development environment of one of its largest applications currently on IDP, thereby conserving space on the IDP private cloud for the operational environment. NWS is making operational in the public cloud the Damage Assessment Toolkit, an application that does not require high availability or low latency, but is for use by the NWS in the aftermath of severe weather. In FY 2021, the NWS will investigate if the public cloud could meet the requirements of other applications with reengineering efforts, create efficiencies, and be cost effective.

Terrestrial and Satellite Networking Services ensures the required networking capacity and reliability to deliver critical weather data for internal and external partners. NWS operates and maintains critical terrestrial and satellite networking capabilities. With its updated IT infrastructure, NWS ensures adequate processing, delivery, and exploitation of new environmental satellite, model, and radar data. These terrestrial and satellite operational networks enable NWS to use the new data to improve the accuracy and timeliness of weather warnings and forecasts.

- NWS manages the OneNWS Network, a distributed network of terrestrial telecommunication circuits, satellite communications space segments, wireless, and broadband capabilities that span the Nation, including the Pacific and Alaskan regions, delivering essential NOAA data.
- NWS manages the backup satellite network services, Very Small Aperture Terminals (VSAT) implemented at CONUS WFOs.
- NWS National Centers, Pacific Region, and Alaska Region Offices require full resolution and aerial coverage of satellite imagery and products to achieve their mission. NWS provides the operational support and maintenance for the GOES-16, GOES-17, and Himawari-8 Re-Broadcast Antennas at the National Hurricane Center, Inouye Research Center, WFO Guam, WFO Anchorage, Aviation Weather Center, Storm Prediction Center, Space Weather Prediction Center, and NOAA Center for Weather and Climate Prediction.
- In FY 2019, Initial Operational Readiness of the GOES-17 imagery was achieved along with further enhancements to receive broadcasts from the NWS direct readout antennas located at NWS National Centers, Pacific Region, and Alaska Region. In FY 2021, NWS will continue to sustain and operate the infrastructure to meet the NWS mission.

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- In FY 2020, NOAA plans to award a contract to begin the transition of network services from GSA's Networx contract to the Enterprise Infrastructure Solutions contract. This transition is expected to be completed in FY 2023 pending resource availability for transition costs.

Weather Information Distribution Services provides the capabilities to communicate weather-related warnings directly to emergency managers and the American public. These services include providing NWS data and product access for international partners via the World Meteorological Organization (WMO) Information Systems (WIS) and the robust NWS Global Information System Centers (GISC). NWS operates several weather warning services systems:

- NOAA Weather Radio (NWR) is a national warning network consisting of 1,030 transmitter stations with a broadcast coverage that reaches more than 95 percent of the Nation's population, providing critical weather and other hazard information to the U.S. public and media outlets. NWR is the only NWS dissemination system capable of reaching individuals at nominal cost (individual purchase of NOAA weather radio) in both rural and urban locations as well as across the coastal marine waters to serve the boater community.
- EMWIN provides the emergency management community with direct access to a set of NWS warnings, watches, forecasts, and other products via either satellite broadcast or an internet connection.
- NOAA Weather Wire Service (NWWS) is a satellite data collection and dissemination system that provides NWS partners, Federal, state, local emergency managers, and the public with timely delivery of meteorological, hydrological, climatological, and geophysical information. The vast majority of NWWS products are weather and hydrologic forecasts and warnings issued around the clock from NWS Forecast Offices. NWWS is one method used to activate the Emergency Alert System.
- HazCollect/Common Alerting Protocol (CAP) Handler application has the ability to amplify non-weather emergency messages out through NWS delivery channels. These non-weather emergency messages, such as Civil Emergencies, from authorized local, state, and Federal partners are delivered to NWS IDP by FEMA's Integrated Public Alert and Warning System (IPAWS)
- Web and Geographic Information System (GIS) services enable the access and delivery of NOAA and NWS data and products to forecasters, NOAA users, Federal partners (FAA, FEMA), the Weather Enterprise, as well as the international community and public.

Without the continued support for Dissemination IT Infrastructure and Virtualized Application Services, Terrestrial and Satellite Networking Services, and the Weather Information Distribution System, provided for in Dissemination ORF, NWS cannot continue to support the operations of the network and communication infrastructure. This includes the OneNWS Network, the on-premise private loud (IDP infrastructure) and applications, and NOAA Weather Radio, all of which are required in order to distribute forecasts, warnings, and other products to customers, partners, and the American public.

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PROGRAM CHANGES FOR FY 2021

NOAA requests a net decrease of \$750,000 and 0 FTE/ 0 positions in FY 2021 program changes for the Dissemination Activity. Following this section are program change narratives for this Activity that represent program changes greater than \$250,000 or starts or terminations. Complete program changes by Subactivity can be found in the NOAA Control Table (p. Control Table – 4).

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(Dollar amounts in thousands)

	2021 Base		2021 Estimate		Increase from 2021 Base	
	<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Dissemination						
	Pos./BA	81 79,112	81 80,112		0	1,000
	FTE/OBL	79 79,112	79 80,112		0	1,000

Enhancing the World Meteorological Organization Information System (+\$1,000, 0 FTE/0 Positions) – This initiative will bring the U.S. Global Information System Center (GISC) up to the World Meteorological Organization’s (WMO) new standards for information sharing. NOAA and the U.S. GISC can improve the collection and sharing of weather observations and information across the globe, as well as interoperability with international partners. This request will provide for the acquisition of new hardware and software to support the WMO systems, located in College Park, MD, and Boulder, CO. In addition, this request will support NWS’ ability to create and maintain the metadata associated with the GISC data, as well as to provide the additional contractor support to standardize the data.

The WMO approved the concept of a WMO Information System (WIS) to provide a single coordinated global infrastructure for the collection and sharing of information in support of all WMO and related international programs. In 2020, the WMO will outline their vision for WIS 2.0 and each of the GISCs will need to make enhancements and upgrades to meet these new requirements. This initiative provides \$1.0 million to begin these newly required upgrades for the NWS WIS to continue the support of data distribution from WMO to all international partners and ensure the U.S. Washington GISC can deliver data to the international community.

Accurate metadata enables users to understand the data that in turn ensures that it is correctly used. Without routinely updating existing metadata, the information will become stale. Reliable weather forecasts are essential for public services that help save lives, protect property, and foster economic prosperity. This is made possible by continued access to a wealth of real-time environmental observations from the entire globe.

Without this increased funding, NWS will only maintain the current version of WIS and will be unable to bring the U.S. GISC up to the same standards as other GISCs around the world, which will increase security risks and limit the information the U.S. can share with its customers. Sustainment activities would not include any expansion of capability, but only required upgrades such as those to the operating system, to keep the same functionality running for our customers.

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This funding request is consistent with DOC Strategic Objective 3.3 to Reduce Extreme Weather Impacts, specifically, “Develop and deploy next-generation environmental observation and modeling systems to make informed planning, resources management, and investment decision.”

Schedule and Milestones:

FY 2021

- Provide hardware and software maintenance to support WMO systems
- Establish contractual services to support WIS and GISC

FY 2022-2025

- Provide hardware and software maintenance to support WMO systems
- Develop, test, and implement GISC-Washington upgrade and migration to WIS 2.0 standards

Deliverables:

- Maintain at least 99 percent availability of WIS 2.0
- Increase interoperability of observational data with key international partners

Performance Measures	2021	2022	2023	2024	2025
Percentage of WIS 2.0 software development moved into operations with increase	20%	30%	50%	100%	100%
Percentage of WIS 2.0 software development moved into operations without increase	0%	0%	0%	0%	0%
Outyear Costs:					
Direct Obligations	1,000	1,000	1,000	1,000	1,000
Capitalized	800	800	800	800	800
Uncapitalized	200	200	200	200	200
Budget Authority	1,000	1,000	1,000	1,000	1,000
Outlays	620	620	620	620	620
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Dissemination
Subactivity: Dissemination

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1 Full-time permanent compensation	9,786	10,144	10,598	10,598	0
11.3 Other than full-time permanent	14	11	12	12	0
11.5 Other personnel compensation	339	357	373	373	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	10,139	10,513	10,983	10,983	0
12 Civilian personnel benefits	3,293	3,539	3,855	3,855	0
13 Benefits for former personnel	4	4	5	5	0
21 Travel and transportation of persons	375	166	188	188	0
22 Transportation of things	52	19	22	22	0
23.1 Rental payments to GSA	2,483	2,590	2,649	2,649	0
23.2 Rental Payments to others	4,503	4,553	4,625	4,625	0
23.3 Communications, utilities and misc charges	5,651	22,589	23,150	23,150	0
24 Printing and reproduction	2	2	2	2	0
25.1 Advisory and assistance services	1,839	1,922	1,950	1,950	0
25.2 Other services from non-Federal sources	21,999	27,564	28,154	28,954	800
25.3 Other goods and services from Federal sources	276	290	297	297	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	1	1	1	1	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	587	195	230	230	0
31 Equipment	987	2,764	2,830	3,030	200
32 Lands and structures	1	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	595	129	168	168	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	6	3	3	3	0
44 Refunds	0	0	0	0	0
99 Total obligations	52,792	76,843	79,112	80,112	1,000

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**

(Direct Obligations amounts in thousands)

	2021 Base		2021 Estimate		Decrease from 2021 Base	
	Personnel Amount		Personnel Amount		Personnel	Amount
	Pos./BA					
Dissemination		81 79,112	81	77,362	0	(1,750)
	FTE/OBL	79 79,112	79	77,362	0	(1,750)

Reduction in NOAA Weather Radio Transmitters (-\$1,750, 0 FTE/0 Positions) - This request will reduce the number of NOAA Weather Radio (NWR) transmitters by 27 percent, from 1,030 to 754. This will provide a cost reduction of \$1,750 to the Office of Dissemination.

NOAA will initiate the termination of 276 NWR transmitters at targeted locations based on combined lease, telecom, utilities, and maintenance costs, as well as taking into account high population areas, including urban areas with greater cell phone coverage and other means of warning communication services. While NOAA will reduce the overall long-term cost of the NWR program by removing these sites, there are additional costs for decommissioning each site such as removal of government equipment. This removal requires tower rigger contracts to remove the antennas, as well as government staff to disconnect the transmitters and move the equipment to the appropriate facility. The estimate for removing the equipment and decommissioning a site can run from \$750 to \$1,500, and has been factored into the estimate for cost reduction.

Each location has its own termination policy and required timelines for notification of termination range from 30 days to 180 days. Terminating 276 locations, including decommissioning costs, and providing the notice of termination as soon as approved by Congress will reduce ongoing operations and maintenance costs for NWR by \$1,750 beginning in FY 2021. If termination notice cannot be provided until early to mid FY 2021, then NOAA will increase the number of transmitters to be terminated. The Broadcast U.S. Population Coverage is currently 95.8 percent, and decommissioning 276 transmitters will reduce overall U.S. Population Coverage by 12 percent to 16 percent depending on the sites chosen. The NWS will ensure that transmitters will be removed in areas where there are other means of receiving warning communication services, such as urban areas. Overall, NWR Broadcast availability will be maintained at 96 percent or greater.

Schedule and Milestones

FY 2021 - 2025

- Provide notice of termination to 276 NWR lease holders
- Contract with tower rigger companies
- Remove antennas and transmitters from 276 NWR locations

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PROGRAM DECREASE FOR 2021**

(Direct Obligations amounts in thousands)

Deliverables

- Terminate service at 276 NWR locations (a reduction from 1,030 to 754 locations)
- NWR Broadcast population coverage at 84 percent
- Maintain NWR broadcast Reliability at 96 percent at 754 locations

Performance Measures	2021	2022	2023	2024	2025
NWR Broadcast Population Coverage with decrease	84%	84%	84%	84%	84%
NWR Broadcast Population Coverage without decrease	95.8%	95.8%	95.8%	95.8%	95.8%
Outyear Costs:					
Direct Obligations	(1,750)	(1,750)	(1,750)	(1,750)	(1,750)
Capitalized	(560)	(560)	(560)	(560)	(560)
Uncapitalized	(1,190)	(1,190)	(1,190)	(1,190)	(1,190)
Budget Authority	(1,750)	(1,750)	(1,750)	(1,750)	(1,750)
Outlays	(1,085)	(1,085)	(1,085)	(1,085)	(1,085)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Dissemination
Subactivity: Dissemination

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	9,786	10,144	10,598	10,598	0
11.3 Other than full-time permanent	14	11	12	12	0
11.5 Other personnel compensation	339	357	373	373	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	10,139	10,513	10,983	10,983	0
12 Civilian personnel benefits	3,293	3,539	3,855	3,855	0
13 Benefits for former personnel	4	4	5	5	0
21 Travel and transportation of persons	375	166	188	88	-100
22 Transportation of things	52	19	22	2	-20
23.1 Rental payments to GSA	2,483	2,590	2,649	2,649	0
23.2 Rental Payments to others	4,503	4,553	4,625	4,625	0
23.3 Communications, utilities and misc charges	5,651	22,589	23,150	22,150	-1,000
24 Printing and reproduction	2	2	2	2	0
25.1 Advisory and assistance services	1,839	1,922	1,950	1,950	0
25.2 Other services from non-Federal sources	21,999	27,564	28,154	27,594	-560
25.3 Other goods and services from Federal sources	276	290	297	297	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	1	1	1	1	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	587	195	230	180	-50
31 Equipment	987	2,764	2,830	2,810	-20
32 Lands and structures	1	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	595	129	168	168	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	6	3	3	3	0
44 Refunds	0	0	0	0	0
99 Total obligations	52,792	76,843	79,112	77,362	-1,750

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National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE

(Dollar amounts in thousands)

Activity: Science and Technology Integration

Subactivity: Science and Technology Integration

Goal Statement

NWS improves the overall quality of the environmental information needed to safeguard life and livelihoods by integrating new science and technology into its operations. Funding in NWS' STI Subactivity leverages the entire weather enterprise including users, research communities, partner agencies, and industry, to provide improved weather forecast guidance for the Nation in support of the Department of Commerce 2018-2022 Strategic Plan, Strategic Objective 3.3 Reduce Extreme Weather Impacts.

Base Program

STI engages partners in outreach efforts, supporting targeted development efforts, improving a suite of forecast guidance models and post-processing, continuously training the workforce on scientific advances, and infusing new science into operations. Transition of new research into operations (R2O) is a fundamental activity of this portfolio. NWS identifies and transfers new science concepts and techniques to improved operational warning, forecast, and decision support services, thus enabling the NWS vision to build a Weather-Ready Nation through improved products and services.

In 2019, NWS linked the terrestrial and coastal water models to improve the ability to assess flood risk nationwide. NWS implemented the operational Next Generation Global Prediction System (NGGPS) Version 1.0; and version 2.0 of the National Water Model. In 2020, NWS will be implementing the Finite-Volume Cubed Sphere Dynamical Core (FV3)-based operational Global Ensemble Forecast System (GEFS version 12); National Blend of Models (NBM) version 3.2; and is continuing to implement the results from the Operations and Workforce Analysis.

For FY 2021, key actions included in the STI portfolio include the following:

- Develop applications (i.e. ways to use the data) of advanced observing capabilities including data assimilation;
- Continue to develop and implement advances to operational numerical forecast models and applications of HPC capabilities;
- Develop the next generation warning and forecast guidance paradigm, taking into account user perspectives about warning and forecast information;
- Use testbeds and proving grounds to enable the research community to leverage operational infrastructure to conduct research, thus laying the groundwork for R2O transition;
- Continue development of training approaches to enable the workforce to keep pace with advanced science and technologies;
- Develop solutions to address regional and local forecast issues through partnership within NOAA and with the university research community;

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(Dollar amounts in thousands)

- Complete transition of operational models to next-generation HPC systems;
- Implement operational seasonal Arctic sea ice outlook;
- Continue development of version 3 of the operational Seasonal Forecast System
- Continue to implement results from Operations and Workforce Analysis study; and
- Carryout the biannual upgrade of the Next Generation Global Prediction System.

Statement of Operating Objectives

Schedule and Milestones

FY 2021–2025

- Conduct testing, demonstration and validation of new science and service capabilities through testbeds and proving grounds
- Implement model upgrades routinely
- Improve weather model and post processing guidance
- Update product suite based on customer requirements
- Demonstrate high resolution large watershed modeling with nested hyper-resolution modeling over three regional areas
- Annual upgrade of National Blend of Models

FY 2021

- Run transitioned operational models on next-generation HPC systems
- Implement Next Generation Global Prediction System version 2.0, with higher resolution atmosphere
- Implement version 3 of the operational Seasonal Forecast System
- Implement Hurricane Weather Research and Forecasting (HWRF) model Upgrade
- Implement Version 3.0 of the National Water Model
- Implement National Blend of Models version 4.0

FY 2022

- Implement HWRF Upgrade
- Implement Global Ensemble Forecast System version 13, with higher vertical resolution and with coupling of ocean, waves, sea-ice and aerosols

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(Dollar amounts in thousands)

FY 2023

- Demonstrate operational probability-based forecasts of high impact weather for extended ranges (weeks 3 and 4)
- Replace the High-Resolution Rapid Refresh (HRRR) with the Rapid Refresh Forecast System (RRFS) regional system version 1.0
- Implement HWRF Upgrade
- Implement NGGPS version 3.0
- Implement Version 4.0 of the National Water Model

FY 2024

- Implement FV3-based Hurricane Forecast & Analysis System (to replace HWRF)
- Implement decision support tools for week 3-4 precipitation forecasts targeted toward water resource managers
- Implement operational high resolution large watershed modeling with nested hyper-resolution capability in at least five regional areas
- Implement version 14 of the Global Ensemble Forecast System, with coupling to dynamic land model

FY 2025

- Implement FV3-HRRR version 2.0
- Implement NGGPS version 4.0

Deliverables

- Biannual upgrade to global operational atmospheric prediction system
- Annual upgrades to operational NOAA Hurricane Forecast System
- Implement FV3-based HRRR regional system
- Probabilistic hydrologic forecasts for assessing river level and flood risks
- Continuous improvements to NOAA's suite of operational forecast models
- New and improved modeling techniques, evaluated by the Developmental Testing Center and Global Modeling Test Bed, and delivered to NWS, for incorporation in the Operational Modeling Suite
- Increased horizontal and vertical resolution of atmosphere, within bounds of computational capability
- Annual upgrades to operational Data Assimilation System, toward coupled-system Data Assimilation
- Annual upgrades to the NOAA Environmental Modeling System infrastructure
- Upgraded ocean, atmosphere, sea ice, land surface, aerosol, wave component models

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JUSTIFICATION OF PROGRAM AND PERFORMANCE**

(Dollar amounts in thousands)

- Agile HPC environment with quicker operational transition of research and development efforts
- Upgraded operational storm surge warning service products (e.g., inundation maps)
- Upgraded probabilistic storm surge guidance
- Operational seasonal sea ice outlook guidance products for Arctic Ocean
- Forecaster applications (tools, methodologies, datasets) of near real-time data products from research ocean remote sensing satellites
- Week-2, 3 & 4 to seasonal outlook tools/products for local decision support services
- New NWS experimental products focused on extreme events
- Global operational coupled atmosphere-ocean-land-wave-sea ice prediction system extending today's operational weather outlooks from 16 days out to 35 days
- Improved forecasts provided to the Nation's critical infrastructure to ensure lives and property are protected from the effects of space weather
- Evaluation of NWS testing/demonstration plans and results
- Improved public access to Federal water information
- Atmospheric, coastal, and terrestrial modeling components integrated into the community WRF-Hydro Earth system modeling framework
- Upgraded ozone and particulate prediction system

Explanation and Justification

Line Item		2019 Actual		2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Science and Technology Integration	Pos/BA	419	155,034	414	147,460	414	151,423
	FTE/OBL	417	161,542	412	147,460	412	151,423

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.

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JUSTIFICATION OF PROGRAM AND PERFORMANCE

(Dollar amounts in thousands)

STI maintains the following programs to accomplish this activity:

Weather-Ready Nation (WRN) is a nationwide initiative to build community resilience in the face of increasing vulnerability to extreme weather, water, and climate events. WRN empowers emergency managers, first responders, government officials, businesses, and the public to make faster, smarter decisions to save lives and protect livelihoods. Key actions that enable implementation of the WRN roadmap include the following:

- Develop, transition, and improve advanced forecast tools, techniques, service products and next generation warning and forecast paradigms to enhance NWS' national, regional and local warning, forecast, and guidance services.
- Incorporate and integrate social science into forecasting process to develop more effective decision support capabilities, improving the effectiveness of warnings and forecasts, and to better convey forecast risk and uncertainty.
- Develop high-resolution probabilistic weather information consistent across space and time to support safe air traffic operations.
- Extend warning and forecast lead times for tornado, hurricane, storm surge, fire weather, and winter storms with increased certainty and confidence. Develop/improve models, tools, and data sets to forecast and monitor real-time climate variations.
- Improve space weather warnings and forecasts for geomagnetic and radiation storms and ionospheric disturbances to protect the reliability and resilience of the Nation's electric power system, satellite navigation, and telecommunication infrastructure, and support aviation and space flight safety.

Operational Environmental Prediction Modeling Suite is the foundation for all warning, forecast and decision support services. The Environmental Modeling Center (EMC) develops, enhances, and maintains complex software of numerical weather, ocean, climate, sea ice, and coastal prediction models and data assimilation systems that span the globe. These forecast systems underpin all NOAA forecast capabilities. The operational modeling suite provides the basic numerical guidance that NWS forecasters rely on in making forecasts, warnings, and decision support service products.

- EMC collaborates with partners at universities and research laboratories to integrate advancements of environmental prediction modeling research and development into NWS operational models.
- EMC also collaborates with partners within NOAA and with other Federal agencies to conduct studies to validate observing requirements and data impacts for existing and new observing platforms and technologies such as satellites and radar.

Improving Effectiveness of Warning and Forecasts aims to accelerate the transition of advanced modeling research into operations. This program is focused on improving warning and forecast lead-times and accuracy of severe weather events associated with hurricanes, tornadoes, flash floods and other severe weather hazards. Major efforts include:

- Improving the accuracy and reliability of hurricane track and intensity forecasts, through the Hurricane Forecast Improvement

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(Dollar amounts in thousands)

Project (HFIP), as required by the *Weather Research and Forecasting Innovation Act of 2017* (P.L. 115-25), to reduce unnecessary evacuations. This effort also focuses on advanced data assimilation and improved global atmospheric and ocean models, which underpin forecast systems for all severe weather.

- Providing the Next Generation Global Prediction System (NGGPS) to the research community, including necessary infrastructure to facilitate engagement and improvements from community collaborators. NGGPS forms the backbone of NOAA's future operational numerical weather prediction capability meeting the public's evolving needs for more accurate, more specific, and longer lead time weather forecasts. NGGPS provides significant advancements for warning and forecast skill across multiple service areas.
- Developing and evaluating national air quality forecast models to provide national pollutant forecast information for states, local communities, commercial sectors, the U.S. Environmental Protection Agency, and the U.S. Department of State.
- Extending forecast of extreme and high impact weather to four weeks through the development of improved outlooks and transitioning into modeling operations of advancements in prediction science coming from the scientific research community. Extending foundational forecasts of subseasonal and seasonal temperature and precipitation is a key requirement of the *Weather Research and Forecasting Innovation Act of 2017*.
- Unifying NOAA's operational model suite based on FV3 atmospheric Dynamic Core, with coupling to the MOM6 ocean model.

Hydrology and Water Resource Programs leverage NOAA partnerships in the areas of atmosphere, watersheds, estuaries and oceans to improve and integrate water resource prediction modeling capabilities. NWS' Hydrology Laboratory conducts studies, investigations and analyses, leading to the application of new scientific and computer technologies to hydrologic forecasting and related water resources problems.

- NWS transitions research in atmosphere, watershed, estuary and ocean modeling, and data assimilation science and technology into operational hydrologic and water resource forecast capabilities in order to provide integrated decision support tools that offer a seamless suite of summit-to-sea forecasts.
- Through partnerships, especially the IWRSS Consortium, NWS is developing a new suite of high-resolution forecasts of streamflow, soil moisture, soil temperature and other variables directly related to watershed conditions to enable monitoring and forecasting of hydrologic conditions from floods to droughts.

Training Infrastructure is critical to preparing the current and future workforce for WRN. Effective training leads to better integration of new models, transition of science and technology into operations, and improved service to the Nation. The NWS workforce must remain agile and flexible to meet core partner needs. NWS uses a blended learning approach including online courses, webinars, and residence training. Implementation of these training initiatives requires new and enhanced methods and technologies for training delivery, such as simulations and on-demand training, integrated into applications and other systems. As a part of this effort:

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JUSTIFICATION OF PROGRAM AND PERFORMANCE

(Dollar amounts in thousands)

- NWS identifies and addresses local training needs, facilitates professional development, and addresses individual strengths and weaknesses of the local forecast staff.
- NWS ensures local operations and management teams are fully proficient and knowledgeable in protocols, tools, forecast and warning operations for delivery of effective IDSS.

Improve Operational Forecast Products and Services through a continuous infusion of science and technology. This is critical for improving services and ensuring the current and future workforce is prepared to meet the requirements of a WRN. These actions include:

- Centrally manage national and regional implementation of research to operations transitions at the local level including applications that improve model guidance;
- Maintain local science and training expertise through the Science and Operations Officers and the Development and Operations Hydrologists to lead coordinated improvements of operations through adopting new science and technology by the forecasting staff, and addressing local forecast and warning issues;
- Maintain close connections with the research community to enable, and accelerate, research to operations, including sponsoring the Collaborative Science and Technology Applied Research program, supporting testbeds, and supporting visiting scientists programs, a priority of the *Weather Research and Forecasting Innovation Act of 2017* (P.L. 115- 25), to improve NWS services;
- Enhance testbeds and operational proving grounds; and,
- Provide operational platforms for the broad research and development community across NOAA, academia, core partners, and the weather enterprise to conduct demonstration, simulation, verification, and validation of new science and service capabilities.

Without continued support for WRN, the Operational Environmental Prediction Modeling Suite, Hydrology and Water Resource Programs and this training infrastructure, provided for in STI ORF, NWS cannot continue to support research and research-to-operations activities that advance weather and climate prediction and improve NWS products and information in the future.

NOAA requests a net decrease of \$12,350,000 and 0 FTE/ 0 positions in FY 2021 program changes for the Science and Technology Integration Activity. Following this section are program change narratives for this Activity that represent program changes greater than \$250,000 or new starts or terminations. Complete program changes by Subactivity can be found in the NOAA Control Table (p. Control Table – 4).

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PROGRAM DECREASE FOR 2021**

(Direct Obligations amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Science and Technology Integration	Pos./BA	414	151,423	414	149,322	0	(2,101)
	FTE/OBL	412	151,423	412	149,322	0	(2,101)

Reduce the Investment in Numerical Weather Prediction Modeling (-\$2,101, 0 FTE/0 Positions) – This program change will decelerate investment that would transition advanced modeling research into operations for improved warnings and forecasts.

NOAA proposes to slow down the development of the Next Generation Global Prediction System (NGGPS) and Hurricane Forecast Improvement Project (HFIP) by reducing grants for collaborative research activities and NOAA’s testbeds. This includes the Development Test Center, Global Modeling Test Bed, and Joint Center for Satellite Data Assimilation.

The Earth Prediction Innovation Center, established in the *National Integrated Drought Information System Reauthorization Act of 2018*, and funded within OAR, will have software engineering resources focused on the community modeling effort.

Deliverables

- Implement Next Generation Global Modeling System
- Complete transition of Operational Models to next-generation High Performance Computing Systems

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PROGRAM DECREASE FOR 2021**

(Direct Obligations amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Finite Volume Cubed-Sphere Dynamical Core (FV3) Global Forecast System (GFS) useful forecast lead time in days without decrease	8.3	8.3	8.3	8.4	8.4
FV3 GFS useful forecast lead time in days with decrease	8.2	8.2	8.2	8.3	8.3
Outyear Costs:					
Direct Obligations	(2,101)	(2,101)	(2,101)	(2,101)	(2,101)
Capitalized	0	0	0	0	0
Uncapitalized	(2,101)	(2,101)	(2,101)	(2,101)	(2,101)
Budget Authority					
Outlays	(1,303)	(1,303)	(1,303)	(1,303)	(1,303)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Science and Technology Integration

Subactivity: Science and Technology Integration

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	54,789	52,719	54,054	54,054	0
11.3 Other than full-time permanent	198	167	171	171	0
11.5 Other personnel compensation	1,638	1,614	1,656	1,656	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	56,624	54,500	55,880	55,880	0
12 Civilian personnel benefits	20,137	19,733	21,210	21,210	0
13 Benefits for former personnel	38	38	39	39	0
21 Travel and transportation of persons	2,005	1,964	2,006	2,006	0
22 Transportation of things	151	153	156	156	0
23.1 Rental payments to GSA	6,168	6,367	6,463	6,463	0
23.2 Rental Payments to others	7	7	7	7	0
23.3 Communications, utilities and misc charges	1,531	1,045	1,061	1,061	0
24 Printing and reproduction	51	48	49	49	0
25.1 Advisory and assistance services	25,766	22,792	23,012	21,911	-1,101
25.2 Other services from non-Federal sources	20,387	12,347	12,473	12,473	0
25.3 Other goods and services from Federal sources	2,217	2,166	2,188	2,188	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	34	30	30	30	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	1,236	842	859	859	0
31 Equipment	862	962	978	978	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	24,308	24,450	24,996	23,996	-1,000
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	20	16	17	17	0
44 Refunds	0	0	0	0	0
99 Total obligations	161,542	147,460	151,423	149,322	-2,101

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PROGRAM DECREASE FOR 2021**

(Direct Obligations amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Science and Technology Integration	Pos./BA	414	151,423	414	145,423	0	(6,000)
	FTE/OBL	412	151,423	412	145,423	0	(6,000)

Terminate Hydrology and Additional Water Resources (-\$6,000, 0 FTE/0 Positions) – This program change will reduce external grants as part of NOAA’s effort to focus on core mission functions. Congressionally directed funding in the *Consolidated Appropriations Act, 2020* (P.L. 116-93), is being used to collaborate with external academic partners to improve fine and large-scale measurements of snow depth and soil moisture data that can be used to expand and improve the National Water Model (NWM). This request will terminate the multi-year project focused on (1) Sensors and Miniaturization; (2) Antenna & Arrays; (3) Platforms & Integration; (4) Field Programs & Data Collection; (5) Data Processing & Data Projects; and (6) Models & Synthesis. NOAA will continue research-to-operations efforts with academia and other external partners to maintain and enhance the operational NWM to provide valuable river forecast guidance.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Science and Technology Integration

Subactivity: Science and Technology Integration

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	54,789	52,719	54,054	54,054	0
11.3 Other than full-time permanent	198	167	171	171	0
11.5 Other personnel compensation	1,638	1,614	1,656	1,656	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	56,624	54,500	55,880	55,880	0
12 Civilian personnel benefits	20,137	19,733	21,210	21,210	0
13 Benefits for former personnel	38	38	39	39	0
21 Travel and transportation of persons	2,005	1,964	2,006	2,006	0
22 Transportation of things	151	153	156	156	0
23.1 Rental payments to GSA	6,168	6,367	6,463	6,463	0
23.2 Rental Payments to others	7	7	7	7	0
23.3 Communications, utilities and misc charges	1,531	1,045	1,061	1,061	0
24 Printing and reproduction	51	48	49	49	0
25.1 Advisory and assistance services	25,766	22,792	23,012	23,012	0
25.2 Other services from non-Federal sources	20,387	12,347	12,473	12,473	0
25.3 Other goods and services from Federal sources	2,217	2,166	2,188	2,188	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	34	30	30	30	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	1,236	842	859	859	0
31 Equipment	862	962	978	978	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	24,308	24,450	24,996	18,996	-6,000
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	20	16	17	17	0
44 Refunds	0	0	0	0	0
99 Total obligations	161,542	147,460	151,423	145,423	-6,000

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**

(Direct Obligations amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Science and Technology Integration	Pos./BA	414	151,423	414	146,423	0	(5,000)
	FTE/OBL	412	151,423	412	146,423	0	(5,000)

Terminate COASTAL Act (-\$5,000, 0 FTE/0 Positions) – This program change will terminate actions associated with the implementation within the National Weather Service of the Consumer Option for an Alternative System To Allocate Losses (COASTAL) Act of 2012. This includes efforts to develop the capability to produce detailed “post-storm assessments” in the aftermath of a damaging tropical cyclone that strikes the U.S. or its territories, using output from the Named Storm Event Model (NSEM) that indicate the strength and timing of damaging winds and water at a given location. This also terminates efforts to create a Coastal Wind and Water Event Database (CWWED) to provide the public access to “covered data” (the observations collected during the storm to assist with the assessment). This includes ending developmental efforts necessary for building NSEM and CWWED (including high-resolution hurricane model-based post storm assessments, coastal storm surge and wave model upgrades, and integration), as well as execution and maintenance requirements.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Science and Technology Integration

Subactivity: Science and Technology Integration

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	54,789	52,719	54,054	54,054	0
11.3 Other than full-time permanent	198	167	171	171	0
11.5 Other personnel compensation	1,638	1,614	1,656	1,656	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	56,624	54,500	55,880	55,880	0
12 Civilian personnel benefits	20,137	19,733	21,210	21,210	0
13 Benefits for former personnel	38	38	39	39	0
21 Travel and transportation of persons	2,005	1,964	2,006	2,006	0
22 Transportation of things	151	153	156	156	0
23.1 Rental payments to GSA	6,168	6,367	6,463	6,463	0
23.2 Rental Payments to others	7	7	7	7	0
23.3 Communications, utilities and misc charges	1,531	1,045	1,061	1,061	0
24 Printing and reproduction	51	48	49	49	0
25.1 Advisory and assistance services	25,766	22,792	23,012	20,012	-3,000
25.2 Other services from non-Federal sources	20,387	12,347	12,473	12,473	0
25.3 Other goods and services from Federal sources	2,217	2,166	2,188	2,188	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	34	30	30	30	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	1,236	842	859	859	0
31 Equipment	862	962	978	978	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	24,308	24,450	24,996	22,996	-2,000
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	20	16	17	17	0
44 Refunds	0	0	0	0	0
99 Total obligations	161,542	147,460	151,423	146,423	-5,000

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021**

(Direct Obligations amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Science and Technology Integration	Pos./BA	414	151,423	414	150,423	0	(1,000)
	FTE/OBL	412	151,423	412	150,423	0	(1,000)

Terminate Aviation Science Research to Operations (-\$1,000, 0 FTE/0 Positions) – NOAA proposes to terminate aviation science research and development and research into operations (R2O) transition efforts within the NWS. This program change is in coordination with the decrease aviation science R2O termination request in the Analyze, Forecast and Support Subactivity (NWS-64).

The NWS will maintain the current level of operational aviation weather forecast products and services. However, this reduction will terminate efforts to develop and implement key aviation tools and capabilities. Specifically, NWS will terminate support for the development and implementation of the following:

- Automated aviation forecast verification tools associated with gridded aviation forecasts to meet obligations to the Federal Aviation Administration (FAA) for implementing the Quality Management System (QMS) for aviation weather services;
- Digital aviation service tools for improved consistency of aviation weather information across the National Airspace System;
- Collaborative aviation weather statement (CAWS) and convective forecast planning guidance (CCFP) to support FAA for effective traffic flow management;
- Local aviation model statistical guidance supporting aviation weather services by Center Weather Service Units, Weather Forecast Offices and FAA; and
- Integrated support for impacted air-traffic environment (INSITE) tool supporting NOAA’s Aviation Weather Center and the FAA’s Air Traffic Control System Command Center to improve management of National Airspace System.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Science and Technology Integration

Subactivity: Science and Technology Integration

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	54,789	52,719	54,054	54,054	0
11.3 Other than full-time permanent	198	167	171	171	0
11.5 Other personnel compensation	1,638	1,614	1,656	1,656	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	56,624	54,500	55,880	55,880	0
12 Civilian personnel benefits	20,137	19,733	21,210	21,210	0
13 Benefits for former personnel	38	38	39	39	0
21 Travel and transportation of persons	2,005	1,964	2,006	2,006	0
22 Transportation of things	151	153	156	156	0
23.1 Rental payments to GSA	6,168	6,367	6,463	6,463	0
23.2 Rental Payments to others	7	7	7	7	0
23.3 Communications, utilities and misc charges	1,531	1,045	1,061	1,061	0
24 Printing and reproduction	51	48	49	49	0
25.1 Advisory and assistance services	25,766	22,792	23,012	22,512	-500
25.2 Other services from non-Federal sources	20,387	12,347	12,473	12,473	0
25.3 Other goods and services from Federal sources	2,217	2,166	2,188	2,188	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	34	30	30	30	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	1,236	842	859	859	0
31 Equipment	862	962	978	978	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	24,308	24,450	24,996	24,496	-500
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	20	16	17	17	0
44 Refunds	0	0	0	0	0
99 Total obligations	161,542	147,460	151,423	150,423	-1,000

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021**

(Direct Obligations amounts in thousands)

		2021 Base		2021 Estimate		Increase from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Science and Technology Integration	Pos/BA	414	151,423	414	153,423	0	2,000
	FTE/OBL	412	151,423	412	153,423	0	2,000

Establish National Weather Service Pilots (+\$2,000, 0 FTE/0 Positions) – Through the Evolve Initiative, NWS proposed efforts to improve operational efficiency. This increase will allow NWS to accelerate Evolve Initiative efforts, focusing on NWS model technology that is foundational to the Collaborative Forecast Process (CFP); specifically, the National Blend of Models (NBM).

The NWS is evolving to meet changing and increasing needs for weather, water, and climate forecasts and warnings for the protection of life and property and enhancement of the Nation’s economy. In FY 2021, NWS will continue focus on improving efficiency and effectiveness of forecasting and Impact-based Decision Support Services (IDSS). The NBM as a primary science and technology tool that will enable the CFP by allowing forecasters the ability to have a scientifically valid common starting point for forecasts. A common starting point will improve national forecast consistency, and improve NWS customers’ confidence in the forecast. Early testing of the NBM as a common starting point suggests that there may be efficiencies in the forecast process, these efficiencies and productivity gains can in turn be used to redirect staff time to provide additional IDSS to NWS partners or to maintain current services with fewer resources.

Testing in recent years of NBM has identified improvement needed in the NBM and its underlying components in order to have it operating at the capability necessary for the CFP. This increase will allow NWS to improve the NBM in areas identified during initial demonstration projects, such as mountainous terrain. This increase may also be used to support the Operations Proving Ground (OPG) to do limited testing of the CFP. The OPG represents NWS field offices in the research into operations (R2O) process by conducting pre-deployment readiness evaluations of promising new science and technology innovations in a realistic operational environment.

Schedule and Milestones

FY 2021-2025

- Improve capabilities and technologies that enable NBM to support and improve CFP
- Improve the ability to disseminate the capabilities to deliver the NBM
- Demonstrate the use of NBM as the common starting point for the CFP

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PROGRAM INCREASE FOR 2021**

(Direct Obligations amounts in thousands)

- Demonstration and transition into operations

Deliverables

- Improved NBM
- Improved underlying components of the NBM
- Report outlining dissemination needs for future year for the NBM
- Improved verification and validation tools for NBM

Performance Measures	2021	2022	2023	2024	2025
National Blend of Models useful forecast lead time in days with increase	4.6	4.7	4.8	4.9	5.0
National Blend of Models useful forecast lead time in days without increase	4.5	4.5	4.6	4.6	4.7
Outyear Costs:					
Direct Obligations	2,000	2,000	2,000	2,000	2,000
Capitalized	0	0	0	0	0
Uncapitalized	2,000	2,000	2,000	2,000	2,000
Budget Authority	2,000	2,000	2,000	2,000	2,000
Outlays	1,240	1,240	1,240	1,240	1,240
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Science and Technology Integration

Subactivity: Science and Technology Integration

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1 Full-time permanent compensation	54,789	52,719	54,054	54,054	0
11.3 Other than full-time permanent	198	167	171	171	0
11.5 Other personnel compensation	1,638	1,614	1,656	1,656	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	56,624	54,500	55,880	55,880	0
12 Civilian personnel benefits	20,137	19,733	21,210	21,210	0
13 Benefits for former personnel	38	38	39	39	0
21 Travel and transportation of persons	2,005	1,964	2,006	2,006	0
22 Transportation of things	151	153	156	156	0
23.1 Rental payments to GSA	6,168	6,367	6,463	6,463	0
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24 Printing and reproduction	51	48	49	49	0
25.1 Advisory and assistance services	25,766	22,792	23,012	23,012	0
25.2 Other services from non-Federal sources	20,387	12,347	12,473	12,473	0
25.3 Other goods and services from Federal sources	2,217	2,166	2,188	2,188	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	34	30	30	30	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	1,236	842	859	859	0
31 Equipment	862	962	978	978	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	24,308	24,450	24,996	26,996	2,000
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	20	16	17	17	0
44 Refunds	0	0	0	0	0
99 Total obligations	161,542	147,460	151,423	153,423	2,000

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
JUSTIFICATION OF PROGRAM AND PERFORMANCE**

(Direct Obligations amounts in thousands)

Activity: Systems Acquisition

Subactivity: Observations

Goal Statement

The Procurement, Acquisition, and Construction (PAC) Observations Programs, Projects, and Activities (Subactivity) supports the life-cycle of all NWS observing system investments by providing technical solutions to meet NWS' operational observational requirements. With PAC funding, NOAA improves current observational capabilities, provides large scale recapitalization of significant observational systems, and engineers technical solutions for systems to meet evolving requirements and demands in support of the Department of Commerce 2018-2022 Strategic Plan, Strategic Objective 3.3 Reduce Extreme Weather Impacts.

Base Program

Observations is responsible for the collection of space, atmosphere, water, and climate observational data owned or leveraged by NWS. Observations is also responsible for the development, acquisition and management of cost-effective observing technologies, hardware and software enhancements, maintenance and repairs, logistics, cost management, technical data verification, and life-cycle replacements of NWS observational platforms.

Specifically, with the PAC appropriation, the funds in the PAC Observations Subactivity are used to:

- Extend the service life of the Nation's weather radar network; and
- Extend the service life of the Nation's primary surface weather observing network supporting aviation operations, and the needs of the meteorological, hydrological, and climatological research communities.

Statement of Operating Objectives

Schedule and Milestones

FY 2021-2025

Next Generation Weather Radar (NEXRAD) Service Life Extension Program (SLEP)

- Complete modification of radar transmitters
- Complete pedestal refurbishments
- Complete refurbishment of radar shelters
- Complete refurbishment of engine/generator systems

Automated Surface Observing System (ASOS) SLEP

- Complete production and installation of Acquisition Control Unit (ACU) and Data Collection Package (DCP) upgrades

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JUSTIFICATION OF PROGRAM AND PERFORMANCE**
(Direct Obligations amounts in thousands)

- Complete telecommunications architecture upgrades

Deliverables:

NEXRAD SLEP

- Refurbish pedestals with expected service life beyond 2030
- Refurbish Engine/generator systems with expected service life beyond 2030
- Refurbish radar shelters

ASOS SLEP

- Total refreshment of ACU-DCU with expected service life to at least 2040
- Increase data flow and remote maintenance capabilities

Explanation and Justification

Line Item	2019 Actual		2020 Enacted		2021 Base		
	Personnel	Amount	Personnel	Amount	Personnel	Amount	
Observations	Pos/BA	2	21,102	0	16,250	0	16,250
	FTE/OBL	2	22,795	0	16,250	0	16,250

PAC Observation objectives are achieved through the following programs:

Next Generation Weather Radar (NEXRAD) SLEP is an effort to sustain the aging NEXRAD infrastructure that underpins severe weather forecast and warning services for high-impact events critical for a WRN. NEXRAD is a tri-agency program with the U.S. DoD and the U.S. Department of Transportation (DOT). Though the system is nearing end of life, the Federal government is 20 years away from full deployment of the next generation of weather radar design. Therefore, NWS is undertaking a technology refresh effort to sustain NEXRAD fleet availability until the current network is replaced.

Automated Surface Observing System (ASOS) SLEP is a cost effective approach to maintaining the aging ASOS infrastructure that provides critical aviation weather parameters at airports supporting the air transportation industry, and provides high quality meteorological data supporting NWS’s forecast and warning mission. The original capital investment for this system was \$227 million and was initiated in the mid-1980s. In addition to extending its longevity, the ASOS SLEP enhances overall system capabilities by enabling high speed/high resolution data transmissions; provides greater safety to aviation operations by increasing reliability of the system, as well as a stable platform for more consistent and accurate data; and allows for remote and cost effective maintenance,

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(Direct Obligations amounts in thousands)

logistics, and training. ASOS is an inter-agency effort supporting meteorological observational requirements of NOAA, DoD and DOT.

In FY 2019, NWS made good progress in all NEXRAD SLEP projects toward achieving performance goals and extending the system's service life beyond 2030.

In FY 2021, NWS will continue its Next Generation Weather Radar (NEXRAD) Service Life Extension Program (SLEP), continuing transmitter, pedestal, and shelter refurbishments to extend overall service life, and reduce the average time between failures. NWS will also continue the Automated Surface Observing System (ASOS) SLEP with production and installation of the upgraded Acquisition Control Unit (ACU) and Data Collection Package (DCP), in partnership with and including reimbursable funding from tri-agency partners, the FAA and the DoD.

Without continued support for the NEXRAD and ASOS SLEP projects, provided in Observations PAC, NWS cannot continue to support necessary enhancements and life-cycle replacements of these systems that collect and process observations necessary to provide weather forecasts, warning, and outlooks.

Outyear Funding Estimates*

Observations	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	-732	-868	-11,190	-16,250	-16,250	N/A	N/A
Total Request	115,607	15,518	14,832	4,510	0	0	N/A	150,467

*Outyears are estimates. Future requests will be determined through the annual budget process.

NEXRAD	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	-550	-1,050	-6,990	-8,750	-8,750	N/A	N/A
Total Request	80,607	8,200	7,150	1,210	0	0	N/A	97,167

*Outyears are estimates. Future requests will be determined through the annual budget process.

ASOS	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	-182	182	-4,200	-7,500	-7,500	N/A	N/A
Total Request	35,000	7,318	7,682	3,300	0	0	N/A	53,300

*Outyears are estimates. Future requests will be determined through the annual budget process.

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Observations	Pos./BA	0	16,250	0	15,700	0	(550)
	FTE/OBL	0	16,250	0	15,700	0	(550)

Reduce Service Life Extension Program for Next Generation Weather Radar (-\$550, 0 FTE/0 Positions) – NOAA proposes a planned decrease for the Service Life Extension Program (SLEP) to sustain aging Next Generation Weather Radar (NEXRAD) infrastructure. This reflects the award of major contracts on the pedestal and shelter refurbishments, and generator replacement projects, now in deployment.

NEXRAD SLEP is a multi-year effort that began in FY 2015 and will be complete in FY 2024. NEXRAD underpins severe weather forecast and warning services for high-impact events critical for a Weather-Ready Nation. The current NEXRAD system was fielded in the mid-1990s with an original design life of 20 years. The SLEP will extend the useful life of the NEXRAD array by approximately 15 years. Refurbishing the existing system is a cost effective approach to preserving this \$3.1 billion capital investment.² Investment in this SLEP mitigates high operational risk by extending the useful life of the radars.

Schedule and Milestones

FY 2021

- *Pedestal* - 31 pedestals rebuilt - Total to date 83
- *Shelter* - Refurbish shelters at 15 radar sites - Complete refurbishment of 147 sites
- *Generator* - Replace 36 generator sets - Complete replacement of 66

FY 2022

- *Pedestal* - 30 pedestals rebuilt - Total to date 113
- *Generator* - Replace 36 generator sets - Complete replacement of 102

² Derived from "The Federal Plan for Meteorological Services and Supporting Research," FY 1980-2000.

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(Dollar amounts in thousands)**

FY 2023

- *Pedestal* - 30 pedestals rebuilt - Total to date 143
- *Generator* - Replace 22 generator sets - Complete replacement of 124

FY 2024

- *Pedestal* - 25 pedestals rebuilt - Complete refurbishment of 168 pedestals

Deliverables

- New signal processor replacing obsolete hardware; implementation of new signal processor software replacing obsolete antenna control cards
- Refurbished pedestals with expected service life beyond 2030
- Refurbished transmitters with expected service life beyond 2030
- Refurbished radar shelters
- New Generator Set replacing obsolete backup power systems with expected service life beyond 2030

Outyear Funding Estimates*

NEXRAD	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	-550	-1,050	-6,990	-8,750	-8,750	N/A	N/A
Total Request	80,607	8,200	7,150	1,210	0	0	N/A	97,167

*Outyears are estimates. Future requests will be determined through the annual budget process.

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Systems Acquisition

Subactivity: Observations

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	97	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	97	0	0	0	0
12 Civilian personnel benefits	7	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	154	125	125	125	0
22 Transportation of things	68	50	50	50	0
23.1 Rental payments to GSA	438	469	469	469	0
23.2 Rental Payments to others	0	0	0	0	0
23.3 Communications, utilities and misc charges	76	65	66	66	0
24 Printing and reproduction	1	1	1	1	0
25.1 Advisory and assistance services	3,315	2,364	2,365	2,365	0
25.2 Other services from non-Federal sources	13,602	9,636	9,636	9,086	-550
25.3 Other goods and services from Federal sources	71	73	73	73	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	3,782	2,633	2,632	2,632	0
31 Equipment	746	530	530	530	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	433	302	302	302	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	3	3	3	3	0
44 Refunds	0	0	0	0	0
99 Total obligations	22,795	16,250	16,250	15,700	-550

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Systems Acquisition
Subactivity: Central Processing

Goal Statement

The PAC Central Processing Subactivity ensures the uninterrupted flow of information from the collection of observations, to central guidance production, to local applications of all essential weather and climate data products, and continuity of public watches and warnings in support of the Department of Commerce 2018-2022 Strategic Plan, Strategic Objective 3.3 Reduce Extreme Weather Impacts.

Base Program

Central Processing is responsible for program and budget planning for the Weather and Climate Operational Supercomputing System (WCOSS) and the Advanced Weather Interactive Processing System (AWIPS). Central Processing is also responsible for maintaining an optimum processing systems configuration and an enterprise architecture for processing systems to meet current and future NWS mission requirements, including the strategy for maximizing effectiveness while minimizing operating costs and coordination with the Office of Dissemination.

Statement of Operating Objectives

Schedule and Milestones

FY 2021–2025

- Provide Operations and Maintenance support for WCOSS
- Provide Operations and Maintenance support for NOAA's R&D HPC System
- Phased implementation of new forecast tools and capabilities into AWIPS.

FY 2021

- Transition to a new WCOSS computing configuration under new contract
- Provide Operations and Maintenance support for new WCOSS computing configuration

FY 2022

- Transition operations to new WCOSS contract
- Provide Operations and Maintenance support for new WCOSS computing configuration

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
JUSTIFICATION OF PROGRAM AND PERFORMANCE**
(Dollar amounts in thousands)

Deliverables

- Operational WCOSS with full backup capability
- Production Suite On-Time Product Generation at 99 percent
- Sustained WCOSS capacity at 4.2 TFLOPS, in each of the primary and backup systems
- New forecast tools and capabilities for IDSS/WRN operations
- Weather Event Simulator integration into AWIPS

Explanation and Justification

Line Item	2019 Actual		2020 Enacted		2021 Base		
	Personnel	Amount	Personnel	Amount	Personnel	Amount	
Central Processing	Pos/BA	24	91,232	23	66,761	23	66,761
	FTE/OBL	24	70,453	23	66,761	23	66,761

PAC Central Processing objectives are achieved through the following programs:

Weather and Climate Operational Supercomputing System (WCOSS) supports (a) weather and climate forecasting capabilities 24 hours per day/7 days a week, (b) numerical environmental prediction model development and testing, and (c) dissemination of operational products using a wide area network. These products include national and global weather, water, climate and space weather guidance, forecasts, warnings and analyses to a broad range of users and partners including other NOAA programs, government agencies, military, and the general public.

WCOSS is composed of primary and backup operational supercomputing systems, storage resources, wide area network, support services, and developmental research and development computing systems. The primary system runs the NCEP production suite. The backup is used to thoroughly test new weather and climate forecasting applications when it is not being used to run the production suite (during a backup system test or an actual emergency). The backup supercomputer system is capable of handling 100 percent of the operational workload should the primary supercomputer system be disrupted. In accordance with NOAA Critical Infrastructure Protection plans, implementation and maintenance of a redundant WCOSS architecture ensures uninterrupted flow of weather and climate data and products, such as storm watch and warning services to the public.

WCOSS also provides NWS access to developmental computing systems through the NOAA-wide enterprise Research and Development High Performance Computing System.

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
JUSTIFICATION OF PROGRAM AND PERFORMANCE**
(Dollar amounts in thousands)

Advanced Weather Interactive Processing System (AWIPS) is an information processing, display, and telecommunications system that is the cornerstone of NWS field operations. AWIPS provides the following services:

- Integrates and displays radar, satellite, and other meteorological and hydrological data at NWS field offices;
- Acquires and processes data from sensors and local sources;
- Provides computational and display functions at the forecaster’s desk;
- Provides an interactive communications system to interconnect NWS operational sites;
- Initiates the dissemination of weather and flood warnings and forecasts in a rapid and highly reliable manner; and,
- Provides the communication interface for internal and external users of much of NOAA's real-time environmental data.

Sustained investments in the AWIPS hardware, communications, and software infrastructure, are necessary for integrating many other programs such as NEXRAD, and other weather radars, weather satellites, sensors, and instruments. NWS GPRA goals are based on the effective use of these technology investments along with advanced decision assistance tools, forecast preparation and advanced database capabilities. As the NWS continues to evolve toward an IDSS-based WRN, improvements to AWIPS technology will be needed to ensure NWS meteorologists and hydrologists have the necessary tools and technology. Continued AWIPS improvements produce increased performance in the GPRA goals of Tornado Warning Lead Time, Flash Flood Warning Lead Time, and Winter Storm Warning Lead Time.

In FY 2021, NWS will continue to develop new Advanced Weather Interactive Processing System (AWIPS-II) forecast capabilities, take delivery of new operational systems under the follow-on Weather and Climate Operational Supercomputing System (WCOSS) contract, and begin the transition of operational modeling applications.

Without continued support for WCOSS and for investments in AWIPS, provided in Central Processing PAC, NWS cannot provide operational and developmental high performance computing (HPC) capacity, and forecast and process improvements within AWIPS.

Outyear Funding Estimates*

Central Processing	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	(8,821)	(8,821)	(8,821)	(8,821)	(8,821)	N/A	N/A
Total Request	N/A	57,940	57,940	57,940	57,940	57,940	N/A	Recurring

*Outyears are estimates. Future requests will be determined through the annual budget process.

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Central Processing	Pos./BA	23	66,761	23	62,589	0	(4,172)
	FTE/OBL	23	66,761	23	62,589	0	(4,172)

Eliminate Integrated Water Prediction High Performance Computing (-\$4,172, 0 FTE/0 Positions) – This program change will eliminate high performance computing funding for continued improvement of the Nation’s first Integrated Water Prediction (IWP) capability.

As the Federal agency charged with water prediction and warning responsibilities, NOAA is uniquely positioned to address water challenges facing our Nation. NOAA is establishing the Integrated Water Program (IWP) to deliver water intelligence products to stakeholders such as emergency managers and local decision makers. In FY 2016, the NWS implemented the National Water Model providing forecast guidance for every stream reach in the continental United States, at 2.7 million locations. Efforts to address compute resource for IWP may be offset through the Earth Prediction Innovation Center, established in the *National Integrated Drought Information System Reauthorization Act of 2018*. Likewise, NOAA is pursuing cloud computing pilot projects, consistent with the Act, to reduce computer hardware needs while increasing resource availability.

This request eliminates funding for NOAA to procure additional operational HPC resources to support coupling of the current generation of terrestrial and coastal models and develop the next generation of integrated Earth system coupled models necessary to expand NOAA’s hydrologic products and services. This reduction significantly limits any further expansion of the existing water modeling capability which sustains the current situation where over 20 million Americans living in major cities on the coast do not have access to hydrological forecasts.

Performance Measures	2021	2022	2023	2024	2025
Percent of Coastal Populations with hydrological forecasts with Decrease	0%	0%	0%	0%	0%
Percent of Coastal Populations with hydrological forecasts without Decrease	8%	22%	41%	69%	100%

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

Outyear Funding Estimates*

Central Processing	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	-4,172	-4,172	-4,172	-4,172	-4,172	N/A	N/A
Total Request	N/A	62,589	62,589	62,589	62,589	62,589	N/A	Recurring

*Outyears are estimates. Future requests will be determined through the annual budget process.

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Systems Acquisition
Subactivity: Central Processing

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	3,808	3,918	3,957	3,957	0
11.3 Other than full-time permanent	64	64	65	65	0
11.5 Other personnel compensation	65	67	68	68	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	3,938	4,050	4,090	4,090	0
12 Civilian personnel benefits	1,581	1,724	1,782	1,782	0
13 Benefits for former personnel	2	2	2	2	0
21 Travel and transportation of persons	239	248	248	248	0
22 Transportation of things	11	12	12	12	0
23.1 Rental payments to GSA	867	945	947	947	0
23.2 Rental Payments to others	0	0	0	0	0
23.3 Communications, utilities and misc charges	1,298	1,308	1,307	1,307	0
24 Printing and reproduction	2	2	2	2	0
25.1 Advisory and assistance services	3,894	3,941	3,942	3,942	0
25.2 Other services from non-Federal sources	53,120	50,573	50,477	46,305	-4,172
25.3 Other goods and services from Federal sources	136	147	148	148	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	61	61	61	61	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	384	390	391	391	0
31 Equipment	2,151	579	579	579	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	2,754	2,764	2,758	2,758	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	15	15	15	15	0
44 Refunds	0	0	0	0	0
99 Total obligations	70,453	66,761	66,761	62,589	-4,172

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM DECREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel Amount		Personnel Amount		Personnel	Amount
Central Processing	Pos./BA	23	66,761	23	62,361	0	(4,400)
	FTE/OBL	23	66,761	23	62,361	0	(4,400)

Reduce Research and Development High Performance Computing (-\$4,400, 0 FTE/0 Positions) – This program change will reduce the NWS contribution to NOAA’s Research and Development High Performance Computing System (R&D HPCS).

NOAA proposes to eliminate the “Jet” supercomputing system and associated contract support in Boulder, CO, and reduce NWS’s supercomputing use (and, to a lesser degree, capacity) and associated contract support in Fairmont, WV. Major transition projects including hurricane forecast improvement, the Next Generation Global Prediction System, and storm surge modeling will need to compete for space on NOAA’s remaining supercomputing assets, potentially resulting in delays to implementation of and upgrades to operational models and improvements to forecasts and warnings, as NWS priorities will compete with other NOAA priorities.

NOAA will address priority computational needs through the Earth Prediction Innovation Center, established in the *National Integrated Drought Information System Reauthorization Act of 2018*. Likewise, NOAA is pursuing cloud computing pilot projects, consistent with the Act, to reduce computer hardware needs while increasing resource availability.

The R&D HPCS enterprise approach enables each NOAA program requiring resources to achieve its computing needs by sharing in the cost of investment. The NWS currently uses a portion of the R&D HPC to accomplish transition to operations projects resulting in operational model improvements, mostly in Boulder and Fairmont.

Schedule and Milestones

FY 2021 - 2025

- Eliminate existing R&D supercomputing system in Boulder, Colorado
- Reduce R&D supercomputing capacity and use in Fairmont, West Virginia
- Sustain existing operational computing capacity

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

Deliverables

- Sustain existing National Water Model capability

Performance Measures	2021	2022	2023	2024	2025
Reduction of R&D Computing with Decrease	20%	20%	20%	20%	20%
Reduction of R&D Computing without Decrease	0%	0%	0%	0%	0%

Outyear Funding Estimates*

Central Processing	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	-4,400	-4,400	-4,400	-4,400	-4,400	N/A	N/A
Total Request	N/A	62,361	62,361	62,361	62,361	62,361	N/A	Recurring

*Outyears are estimates. Future requests will be determined through the annual budget process.

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Systems Acquisition
Subactivity: Central Processing

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	3,808	3,918	3,957	3,957	0
11.3 Other than full-time permanent	64	64	65	65	0
11.5 Other personnel compensation	65	67	68	68	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	3,938	4,050	4,090	4,090	0
12 Civilian personnel benefits	1,581	1,724	1,782	1,782	0
13 Benefits for former personnel	2	2	2	2	0
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22 Transportation of things	11	12	12	12	0
23.1 Rental payments to GSA	867	945	947	947	0
23.2 Rental Payments to others	0	0	0	0	0
23.3 Communications, utilities and misc charges	1,298	1,308	1,307	1,307	0
24 Printing and reproduction	2	2	2	2	0
25.1 Advisory and assistance services	3,894	3,941	3,942	3,942	0
25.2 Other services from non-Federal sources	53,120	50,573	50,477	46,077	-4,400
25.3 Other goods and services from Federal sources	136	147	148	148	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	61	61	61	61	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	384	390	391	391	0
31 Equipment	2,151	579	579	579	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	2,754	2,764	2,758	2,758	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	15	15	15	15	0
44 Refunds	0	0	0	0	0
99 Total obligations	70,453	66,761	66,761	62,361	-4,400

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
JUSTIFICATION OF PROGRAM AND PERFORMANCE

(Dollar amounts in thousands)

Activity: Systems Acquisition
Subactivity: Dissemination

Goal Statement

The NOAA Integrated Dissemination Program (IDP) is a multi-year NWS response to organizational and technical dissemination challenges created through the years as individual efforts built stovepipes across the NWS enterprise. These weaknesses resulted in telecommunications, web sites and other system outages with near-national impacts during severe weather events. These outages highlighted the urgent need for organizational change and the development of a reliable and scalable NWS on-premise private cloud (a dissemination infrastructure) to sustain 24 hours a day/7 days a week mission operations in support of the Department of Commerce 2018-2022 Strategic Plan, Strategic Objective 3.3 Reduce Extreme Weather Impacts.

IDP reached Full Operating Capability in FY 2018, and by early FY 2020 NWS will have succeeded in migrating 40 mission essential applications to IDP. By the end of FY 2021, NWS anticipates that 48 applications will be running operationally on the on-premise private cloud, but there will remain approximately 19 additional mission essential applications running on legacy stovepipe systems and no additional space on IDP for future migration. In light of this fact, NWS has begun exploring the use of the public cloud for applications that do not perform primary mission essential functions. In FY 2020 the NWS is exploring the use of the public cloud for the development environment of one of its largest applications, thereby conserving space on the IDP private cloud for the operational environment. The NWS continues to evaluate this option, as well as the possibility of migrating non-mission critical applications that remain on legacy hardware to determine if the public cloud could provide a viable and secure option.

Base Program

To ensure a Weather-Ready Nation and optimize the delivery of scalable and agile dissemination capabilities, the PAC Dissemination Subactivity is organized around infrastructure, networks, web services and warning dissemination services.

Specific to the PAC appropriation, funding within the PAC Dissemination Subactivity:

- Procures NWS' IT dissemination infrastructure and services;
- Closes NWS' dissemination requirements and gaps;
- Enhances NWS' dissemination system capabilities; and
- Develops a strategy to maximize effectiveness while minimizing cost.

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Direct Obligations amounts in thousands)
Statement of Operating Objectives

Schedule and Milestones

FY 2021-2025

- Provide processing and storage resources to support WRN
- Conduct phased implementation of enhanced applications and capabilities into IDP
- Upgrade NWR telecoms to digital Enterprise Systems
- Replace obsolete transmitter site monitoring equipment
- Transition from the General Services Administration (GSA) Network contract to GSA Enterprise Infrastructure Solutions contract based on the budget
- Replace obsolete and end-of-life NWR site components
- Complete upgraded backup of NWS Network through Very Small Aperture Terminals (VSAT).
- Conduct enhancements of existing IDP applications and services
- Conduct annual phase of five-year refresh of Dissemination Infrastructure hardware

Deliverables

- Robust and high capacity websites for NWS Field Offices
- Improved reliability of enterprise GIS capabilities on IDP
- Enabled AWIPS access to IDP services

Explanation and Justification

Line Item		2019 Actual		2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Dissemination	Pos/BA	2	34,553	0	9,934	0	9,934
	FTE/OBL	2	46,559	0	9,934	0	9,934

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Direct Obligations amounts in thousands)

To achieve these goals, NWS manages the following programs:

NOAA Weather Radio

NOAA Weather Radio (NWR) provides the NWS with the capability to quickly disseminate severe and high impact weather warnings, watches and forecasts and non-weather emergency messages to the public. In FY 2019, NWS began the transition of NWR legacy technology to Ethernet/Internet Protocol-based services. Furthermore, in FY 2020, NWS has continued to strengthen its partnership with FEMA to look for efficiencies in delivering both weather and non-weather emergency messages via NWR and FEMA's Integrated Public Alert and Warning System. This partnership ensures that messages from both the Federal Communication Commission managed Emergency Activation System (EAS) and Wireless Emergency Alerts (WEA) are distributed appropriately. This has included recent efforts to expand the WEA alerts from 90 characters to 360 characters, as well as providing the messages in Spanish.

Improve Dissemination Reliability Project

The improved dissemination reliability project encompasses the efforts under NWS Telecommunications Gateway (NWSTG) and the Ground Readiness Project (GRP). Together, these projects mitigate risk to mission operations during severe weather events by enhancing capabilities to reduce single points of failure and increase website capacity.

Providing phased hardware refresh of the IDP architecture and modest enhancements to existing core applications on IDP ensures reliable delivery of NWS products to users and capitalizes on better observation data and prediction models to improve services.

Acquiring backup communication paths to NWS WFOs, will make the NWS network infrastructure more resilient and robust while also decreasing the risk of product delivery outages.

Specific activities, spanning multiple years, include:

- Reducing Enterprise Single Points of Failure: Acquiring robust and reliable networking capabilities by upgrading networking lines (such as aging copper lines) with fiber optics and providing a backup satellite-based network path at mission-critical NWS WFOs.
- Conducting enhancements and upgrades of existing IDP applications and services.
- Providing Robust and Enterprise Web and GIS services: Increasing web and GIS services for NWS WFOs at the primary and backup integrated dissemination sites to ensure the services align with growing requirements and increased use during severe weather events. NWS will acquire computing and storage to augment the existing IT dissemination infrastructure at the primary and backup IDP sites providing 100 percent backup capabilities.

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Procurement, Acquisition, and Construction
JUSTIFICATION OF PROGRAM AND PERFORMANCE**

(Direct Obligations amounts in thousands)

- Integrating IT Infrastructure Redesign and Upgrades: Enhance the delivery of web and GIS services, as well as the radar, model, and observational data necessary as new satellites with increased data collection become operational.
- Initiating an effort to assess applications currently on IDP, as well as those identified for migration to IDP, to determine if utilizing the public cloud as a host would meet the requirement of the application with reengineering efforts, create efficiencies, and be cost effective.

Without the continued support for NWR and the Improve Dissemination Reliability Project, provided for in Dissemination PAC, NWS cannot continue to enhance the infrastructure of NWS dissemination systems and upgrade existing applications, including web and GIS services, to meet new satellite and model data requirements, as well as upgrades to select NOAA Weather Radio locations.

Outyear Funding Estimates

Dissemination	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	0	0	0	0	0	N/A	N/A
Total Request	N/A	9,934	9,934	9,934	9,934	9,934	N/A	Recurring

*Outyears are estimates. Future requests will be determined through the annual budget process.

Department of Commerce
National Oceanic and Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Budget Estimates, Fiscal Year 2021

Executive Summary

For FY 2021, NOAA requests a total of \$1,503,982,000 and 972 FTE/ 986 positions for the National Environmental Satellite, Data, and Information Service (NESDIS) including a net decrease of \$8,294,000 and 0 FTE/ 0 positions in program changes.

NESDIS (<http://www.nesdis.noaa.gov/>) provides timely access to global environmental data from satellites and other sources to enhance the Nation's economy, security, environment, and quality of life. Information derived from NESDIS-collected data powers investments and resource utilization in the economy, including agriculture, transportation, energy, construction, and other infrastructure. Businesses, communities, governments, and the general public have come to rely on NOAA satellite data and products to provide reliable, accurate information to make decisions regarding public safety and emergency preparedness. Billions of dollars in damage are incurred each year due to natural disasters and extreme weather events such as tornadoes, hurricanes, floods, and drought. In 2018 alone, there were 14 weather and climate disaster events with losses exceeding \$1 billion each across the U.S. and directly resulting in 247 deaths and totaling more than \$91 billion.¹ Using NESDIS data and information, decision makers are able to reduce the losses incurred by these destructive events, making it imperative to ensure the continuity of these satellite systems.

To fulfill its responsibilities, NESDIS procures, launches, and manages the Nation's civil operational environmental satellites. Along with managing and operating NOAA's satellites in real time, NESDIS develops and distributes products and information based on data from NOAA, multiple partner satellites, and commercial sources. NOAA satellite-based observations support a broad range of environmental monitoring for weather, climate, oceans, coasts, and ecosystems impacting the general public and their decision-making. Satellite-based observations assist with disaster mitigation through monitoring severe weather, precipitation, fires and smoke, volcano eruptions, dust storms, and other air quality issues. NESDIS-developed products, information from NOAA and partner satellite observations, and commercial sources underpin weather and other environmental forecasts, saving lives and property. NESDIS is also developing the next generation of satellites to continue meeting primary mission essential functions without incurring gaps in data coverage.

NOAA satellite systems provide information used for critical national security decisions, and positively impacts many sectors of the economy including, agriculture, transportation, energy, construction, infrastructure, emergency management, and hazard mitigation. NOAA satellites are essential to the agency's integrated observing system, which is the foundation of the environmental intelligence that the agency provides. NESDIS maintains primary constellations of environmental satellites in the polar and geostationary orbits, and in deep space at Lagrange point 1, directly along the sun-earth line. Along with operating its satellites in real time, NESDIS

¹ Credit National Centers for Environmental Information (NCEI): <http://www.ncdc.noaa.gov/billions/>

Department of Commerce
National Oceanic and Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Budget Estimates, Fiscal Year 2021

manages the global data gathered by these satellites, by numerous partner-deployed satellites, and by other sources to develop and distribute products and information that support a broad range of environmental monitoring for weather, climate, coasts, oceans, and ecosystems.

NOAA satellites, along with its partner and commercial observations, provide uninterrupted global coverage critical for generating short-term and long-term weather forecasts. Integrating these observations with NESDIS' extensive environmental data archives at the National Centers for Environmental Information (NCEI), NESDIS provides critical information and analyses of long term monitoring and understanding of planetary environmental change. NESDIS is committed to the international effort to establish a global observing system that meets the Nation and the world's need for environmental intelligence. A fully implemented global observing system will yield increasingly accurate and reliable warnings of severe weather and other environmental events in the U.S. and all around the world.

The weather and environmental data landscape has been changing rapidly over recent years, both domestically and internationally. There are more reliable data providers and many more knowledgeable data users. We now see more nations launching operational satellites that provide high quality observations, and a commercial market that may be able to provide certain observations more efficiently. The number of public and private sector applications for Earth observations is growing rapidly in areas of environmental monitoring, and emergency preparedness and response, as well as traditional sectors of the economy (e.g., transportation, energy), and these sectors are well served by the calibrated, validated, and reliable environmental data and information NESDIS provides.

NOAA has taken essential steps to prepare for operating in a new paradigm in which NOAA satellites continue to provide NOAA's core space-based observational capability, while leveraging commercial and governmental partnerships to expand its observational datasets. Specifically, last year NOAA satellites initiated the first phase of a budget restructure, including the creation of two new Subactivities: the Polar Weather Satellites (PWS) and Systems/Services Architecture and Engineering (SAE). These changes will help facilitate entry into this new paradigm and support the delivery of an observing system that exploits commercial and governmental partnerships. In addition, based on the NOAA Satellite Observing System Architecture (NSOSA) study, NESDIS initiated a series of studies and plans to define the next generation polar and geostationary satellite capabilities and systems. NESDIS also began initiating activities to pursue commercial data purchases as they are deemed cost-effective and ready for operations. The FY 2021 budget continues the phased approach to the budget restructure and the NSOSA-based development of future satellite systems by focusing on developing requirements, engaging industry, and conducting analysis of alternatives to refine the next generation polar and geostationary architecture.

**Department of Commerce
National Oceanic and Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Budget Estimates, Fiscal Year 2021**

FY 2021 BUDGET RESTRUCTUREBenefits

The new architecture and paradigm provides NOAA's core space-based observational capability, while leveraging commercial and governmental partnerships to expand its observational datasets. It will allow NOAA to continue as the world leader in operational Earth observations and to expand commercial space activity. The proposed combination of NOAA-owned and managed assets, partner assets, commercial partnerships, and the purchase of data will allow:

- **Implementation of NSOSA:** NSOSA has identified value in future flight architectures featuring a larger variety of data sources, partners, and platforms, which are best planned, developed, and operated as portfolios.
- **Better Optimization of Investments:** Current and future Portfolio Management will improve the balance of personnel and resources to optimize NESDIS' outputs integrating observations from multiple sources, rather than optimizing within missions.
- **Innovation Efficiencies:** Supports an increased focus on data source-agnostic mission functions, deriving maximum use of data, and optimizing product distribution to users.

Budget Transfers

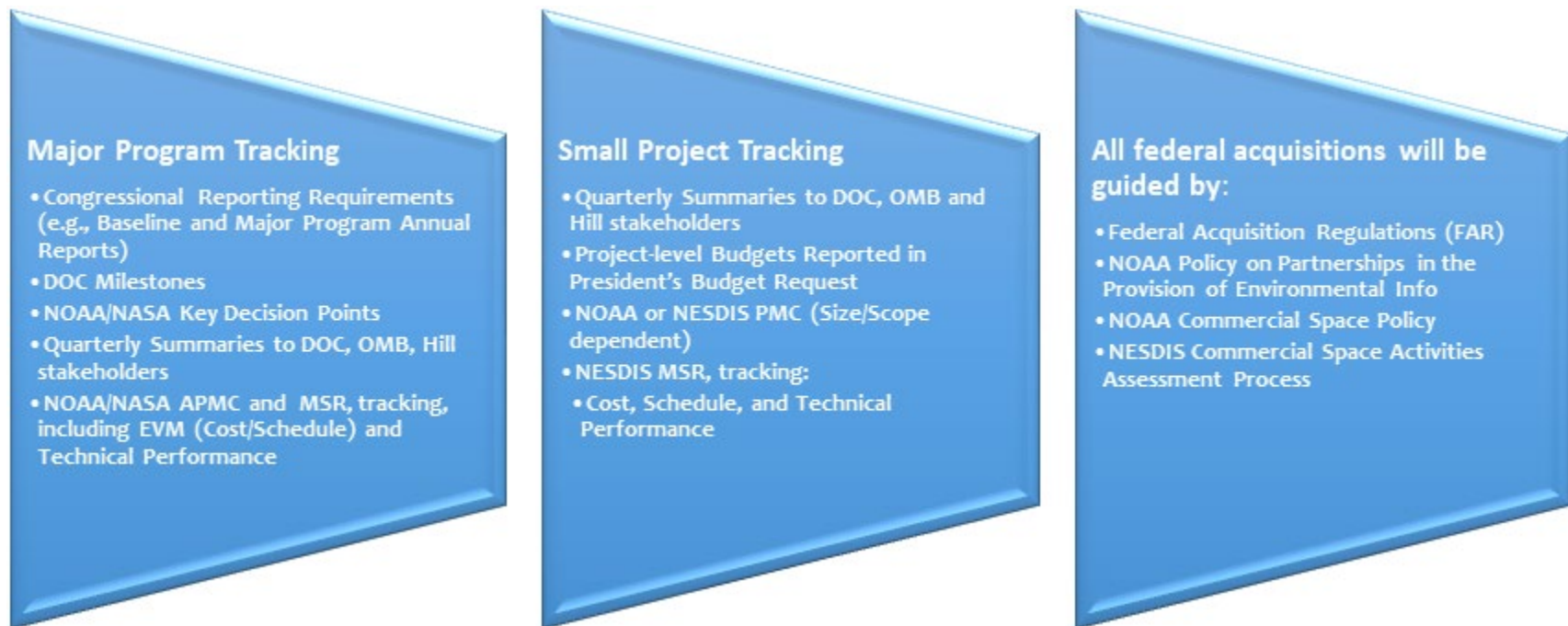
The FY 2021 budget request will continue the next phase of the NESDIS budget restructure by completing the transfers to SAE and SPO, and creating the Geostationary Earth Orbit (GEO) Subactivity:

- **SAE:** NOAA will transfer engineering and research to operations support from the Projects, Planning, and Analysis (PPA) Subactivity into the SAE Subactivity. The consolidation of these activities will support NESDIS' transition to more agile flight and ground architectures, allowing it to leverage and explore technology innovations. 11 Positions and 11 FTE will be transferred from PPA to SAE.
- **SPO:** NOAA will transfer the long-term maintenance to preserve the form, fit, and function of legacy systems from SGS to SPO. NOAA will also transfer the on-orbit anomaly support for the GOES-N and POES series of satellites from PPA to SPO. 13 Positions and 13 FTE will be transferred from SGS to SPO.
- The new GEO Subactivity will manage future geostationary and space weather observations as a portfolio. The FY 2021 request includes a technical transfer of the Geostationary and Extended Orbits (GEO-XO) program from SAE to the GEO Subactivity; the technical transfer is described in more detail below. The GEO observations will serve the near real time requirements supporting NOAA's weather forecast offices and severe storm alerts and warnings. This Subactivity will provide definition and initiation for future GEO program development, including the continuity missions to follow the GOES-R Series and SWFO programs, once pre-formulation work is completed in the SAE portfolio.

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Program and Project Visibility

Within the NESDIS Portfolios, NESDIS will continue to provide oversight bodies with visibility into program and project budgets:



Major Program Tracking

- Congressional Reporting Requirements (e.g., Baseline and Major Program Annual Reports)
- DOC Milestones
- NOAA/NASA Key Decision Points
- Quarterly Summaries to DOC, OMB, Hill stakeholders
- NOAA/NASA APMC and MSR, tracking, including EVM (Cost/Schedule) and Technical Performance

Small Project Tracking

- Quarterly Summaries to DOC, OMB and Hill stakeholders
- Project-level Budgets Reported in President’s Budget Request
- NOAA or NESDIS PMC (Size/Scope dependent)
- NESDIS MSR, tracking:
 - Cost, Schedule, and Technical Performance

All federal acquisitions will be guided by:

- Federal Acquisition Regulations (FAR)
- NOAA Policy on Partnerships in the Provision of Environmental Info
- NOAA Commercial Space Policy
- NESDIS Commercial Space Activities Assessment Process

Throughout the budget restructure, NESDIS will continue to adhere to and track the life cycle costs (LCCs) for major satellite programs such as GOES-R Series, JPSS, PFO, and SWFO. To ensure NESDIS maintains its commitment to the LCC for the existing JPSS and PFO programs, the amounts for will each be separately reported through annual program plans.

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Table 1: Crosswalk of NESDIS FY 2020 Enacted to FY 2021 Proposed Restructure Subactivities:

FY 2020 Enacted Funding ORF Crosswalk ⁽¹⁾						
Current Budget Structure ↓	SPO	PDR&A	CRSRA	OSC	USGEO	NCEI
Subactivity						
SPO	\$166,063					
PDR&A		\$28,434				
CRSRA			\$1,800			
OSC				\$2,300		
USGEO					\$500	
NCEI						\$61,642
SGS - PAC to ORF ⁽²⁾	\$17,198					
PPA - PAC to ORF ⁽³⁾	\$4,727					
Total, NESDIS ORF Subactivities	\$187,988	\$28,434	\$1,800	\$2,300	\$500	\$61,642

- (1) This table aligns the FY 2020 Enacted amounts with the new FY 2020 Proposed Restructure. It does not include any of the Calculated ATBs, Technical Adjustments or Operational Phase Transfers outlined in the Adjustments section (NESDIS-8). Final post-adjustment FY 2021 base amounts are reflected in Exhibit 10 (NESDIS-26).
- (2) As part of this restructure, the long-term maintenance to preserve the form, fit, and function of legacy systems contained in the previous PAC SGS Subactivity is transferred to the SPO ORF Subactivity.
- (3) As part of this restructure, the on-orbit anomaly support for the GOES-N Series and POES contained in the previous PPA Subactivity is transferred to the SPO ORF Subactivity.

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FY 2020 Enacted PAC Funding Crosswalk ⁽¹⁾														
Current Budget Structure ↓	GOES-R	Polar Weather Satellites (PWS)		CDARS	SWFO	COSMIC-2 / GNSS RO	SGS	PPA	SAE				GEO	Satellite CDA Facility
Line Item		JPSS	PFO						Architecture, Requirements, and Planning	Commercial Data Program	Joint Venture	GEO-XO		
GOES-R	304,056													
PWS		425,082	319,918											
CDARS				11,350										
SWFO					64,000									
COSMIC 2						5,892								
SGS							38,509							
PPA								15,941	7,600		2,732			
SAE									13,722	8,000	2,268	10,000		
CDA Facility														2,450
Total, NESDIS - PAC Line Items	304,056	425,082	319,918	11,350	64,000	5,892	38,509	15,941	21,322	8,000	5,000	10,000	0	2,450
Total, NESDIS - PAC Subactivities	304,056	745,000		11,350	64,000	5,892	38,509	15,941	44,322			0	2,450	

This table aligns the FY 2020 Enacted with the new FY 2021 Proposed Restructure. It does not include any of the Calculated ATBs, Technical Adjustments or Operational Phase Transfers outlined in the Adjustments section (NESDIS-8). Final post-adjustment FY 2021 base amounts are reflected in Exhibit 10 (NESDIS-27).

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Table 2: NESDIS Subactivity to New Line Item Crosswalk

Activity	Subactivity	Line Item	FY 2021 Program Changes
Environmental Satellite Observing Systems	SPO	SPO	SPO: (\$5,032)
	PDR&A	PDR&A	PDR&A: (\$1,021)
	USGEO	USGEO	N/A
	NCEI	NCEI	NCEI: (\$10,589)
Systems Acquisition	GOES-R	GOES-R	GOES-R: \$30,444
	PWS	JPSS	JPSS: (\$53,544)
		PFO	PFO: (\$33,621)
	CDARS	CDARS	CDARS: \$3,500
	SWFO	SWFO	SWFO: \$44,115
	COSMIC 2/GNSSRO	COSMIC 2/GNSSRO	N/A
	SGS	SGS	Data Agnostic Common Services: \$5,015 Satellite Ground Services: (\$4,237)
	PPA	PPA	N/A
	GEO	GEO	N/A
	Systems/Services Architecture & Engineering (SAE)	Architecture, Engineering, & Requirements	
Commercial Data Program			Commercial Weather Data Pilot: \$5,000 Commercial Data Purchase: \$10,000
Joint Venture			N/A

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Adjustments:

Inflationary Adjustments

NOAA’s FY 2021 Base includes a net increase of \$7,620,000 and 0 FTE/ 0 positions to account for the full funding requirement for certain inflationary adjustments to current programs for NESDIS activities. This includes the 2020 civilian pay raise of 3.1 percent, estimated 2021 civilian pay raise of 1.0 percent and military pay raise of 3.0 percent, where applicable, as well as inflationary increases for labor and non-labor activities, including benefits and rent charges from the General Services Administration (GSA).

Technical Adjustments (Transfers)

NOAA also requests the following transfers for a net decrease of \$6,550,000 and a net decrease of 9 FTE/ 11 positions to the agency:

From Office	Subactivity	To Office	Subactivity	Amount
NESDIS	Projects, Planning, and Analysis (PAC)	NESDIS	Systems/Services Architecture & Engineering (PAC)	\$10,332,000/ 11 FTE/ 11 positions
NESDIS	Projects, Planning, and Analysis (PAC)	NESDIS	Satellite and Product Operations (ORF)	\$4,727,000/ 0 FTE/ 0 positions
NESDIS	Satellite Ground Services (PAC)	NESDIS	Satellite and Product Operations (ORF)	\$17,198,000/ 13 FTE/13 positions
NESDIS	Systems/Services Architecture & Engineering (SAE)	NESDIS	Geostationary Earth Orbit (GEO)	\$10,000,000/ 0 FTE/ 0 positions

NOAA requests technical adjustments that will continue the next phase of the NESDIS budget restructure by completing the transfers to SAE and SPO, and creating the Geostationary Earth Orbit (GEO) Subactivity. NOAA requests to transfer \$10,332,000, 11 FTE and 11 positions, for engineering and research to operations support from the Projects, Planning, and Analysis (PPA) Subactivity into the SAE Subactivity. The consolidation of these activities will support NESDIS’ transition to more agile flight and ground

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architectures, allowing it to leverage and explore technology innovations. NOAA requests to transfer \$4,727,000 and 0 FTE and 0 positions for the on-orbit anomaly support for the GOES-N and POES series of satellites from PPA to SPO. NOAA also requests to transfer \$17,198,000 and 13 Positions and 13 FTE for long-term maintenance to preserve the form, fit, and function of legacy systems from SGS to SPO. NOAA requests a technical adjustment to move \$10,000,000 and 0 FTE/ 0 positions from the NESDIS PAC SAE Subactivity to the NESDIS PAC Geostationary Earth Orbit (GEO) Subactivity. This transfer indicates the conclusion of Pre-Phase A activities for the Geostationary & Extended Orbits (GEO-XO) program, and the start of Phase A mission concept and technology development activities.

From Office	Subactivity	To Office	Subactivity	Amount
NESDIS	Commercial Remote Sensing Regulatory Affairs (ORF)	DOC	Operations and Administration (ORF)	\$1,800,000/ 6 FTE/ 6 positions
NESDIS	Office of Space Commerce (ORF)	DOC	Operations and Administration (ORF)	\$2,300,000/ 3 FTE/ 5 positions

NOAA requests a technical adjustment to move \$1,800,000 and 6 FTE/ 6 positions from the NESDIS ORF Commercial and Remote Sensing and Regulatory Affairs Subactivity and \$2,300,000 and 3 FTE/ 5 positions from the NESDIS ORF Office of Space Commerce Subactivity, both to the Department of Commerce ORF Operations and Administration Subactivity.

From Office	Subactivity	To Office	Subactivity	Amount
NESDIS	Satellite CDA Facility	MS	NOAA Construction (PAC)	\$2,450,000 / 0 FTE / 0 positions

NOAA requests a technical adjustment to transfer \$2,450,000 and 0 FTE/ 0 positions from the NESDIS PAC Satellite CDA Facility Subactivity to the NOAA Construction Subactivity in Mission Support PAC to consolidate facilities maintenance and construction funding within Mission Support for a more centralized approach to the funding and management of these activities. Routine operations and maintenance of facilities typically funded by field offices, such as janitorial services and minor repairs, will continue to be funded through the Line Offices. This consolidation leverages NOAA's recent efforts for more consistent, corporate approaches to facilities management and planning and reflects NOAA's commitment to advancing the Department's strategic objective to achieve cost savings through consolidated

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functions.

FY 2021 Operational Phase Transfers

The NOAA satellite budget profiles in the PAC account are formulated to reflect the design, development, and operations of satellite programs. An Operational Phase Transfer (OPT) is required to transfer the funding currently budgeted within a PAC Subactivity to the appropriate subactivities in the ORF account for operational functions. It results in a net change of zero to the NESDIS budget.

In FY 2021, NOAA requests one OPT from the PAC account to the ORF account to support the operations functions for the Southwest USA (SUSA) Medium Earth Orbiting Local User Terminal (MEOLUT) ground station in New Mexico, as detailed below.

Cooperative Data and Rescue Services (CDARS):

From Office	Subactivity	To Office	Subactivity	Amount/ FTE
NESDIS	CDARS (PAC)	NESDIS	Satellite and Product Operations (ORF)	\$450,000/ 0 FTE / 0 positions

NOAA requests a technical adjustment to move \$450,000 and 0 FTE/ 0 positions from the CDARS Subactivity in PAC to the SPO Subactivity in ORF. This OPT for the CDARS Search and Rescue Satellite Aided Tracking (SARSAT) Medium Earth Orbit Search and Rescue (MEOSAR) program transfers the operations funding for the completed MEOLUT ground station in New Mexico, currently budgeted in the CDARS Subactivity, from the PAC to the ORF account. The CDARS profile will be reduced by the OPT amount in the outyear profile to reflect these operational requirements.

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Life cycle costs: The following tables provide the details of the total LCC of NOAA satellites that have a required base funding level of over \$250 million.

GOES-R LCC (\$ in thousands):

GOES-R LCC*	FY 2020 & Prior**	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	CTC	Total
GOES-R LCC (PAC & ORF)	9,045,642	368,400	326,400	283,900	283,900	119,927	TBD	TBD
<i>Procurement, Acquisition, and Construction (PAC)</i>								
Total PAC	8,910,042	334,500	292,500	250,000	250,000	86,027	TBD	TBD
GOES-R Series	8,910,042	334,500	292,500	250,000	250,000	86,027	TBD	TBD
<i>Operations, Research and Facilities (ORF)</i>								
Total ORF	135,600	33,900	33,900	33,900	33,900	33,900	372,900	678,000
Satellite and Product Operations (SPO)	105,960	26,490	26,490	26,490	26,490	26,490	291,390	529,800
Product Development, Readiness & Application (PDR&A)	24,000	6,000	6,000	6,000	6,000	6,000	66,000	120,000
National Centers for Environmental Information (NCEI)	5,640	1,410	1,410	1,410	1,410	1,410	15,510	28,200

* The GOES-R LCC is pending an update to reflect the requirements for the server replacement and sustainment costs for the GOES-R Series ground system through 2036. This profile will be updated after the Department of Commerce completes their Independent Cost Estimate (ICE) and the Milestone Decision Memorandum (MDM) is approved and released.

** The FY 2020 & Prior column has been adjusted to account for the FY 2020 Enacted amount, including the mandatory deobligation assessment.

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Polar Weather Satellites (PWS; JPSS and PFO) LCC* (\$ in thousands):

PWS**		FY 2020 & Prior***	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	CTC	Total
Total PWS (PAC & ORF)		11,940,785	677,835	685,020	594,521	628,130	482,399	TBD	TBD
JPSS LCC (PAC & ORF)		10,190,027	391,538	273,020	159,521	155,576	152,443	0	11,322,125
PFO LCC (PAC & ORF)		1,750,758	286,297	412,000	435,000	472,554	329,956	TBD	TBD
<i>Procurement, Acquisition and Construction (PAC)</i>									
Total PAC		11,920,785	657,835	665,020	574,521	608,130	462,399	TBD	TBD
Subactivity	Program								
Polar Weather Satellites	JPSS	10,170,027	371,538	253,020	139,521	135,576	132,443	0	11,202,125
	PFO	1,750,758	286,297	412,000	435,000	472,554	329,956	TBD	TBD
<i>Operations, Research and Facilities (ORF)</i>									
Total ORF		20,000	20,000	20,000	20,000	20,000	20,000	20,000	120,000
Subactivity	Program								
Satellite and Product Operations	JPSS	20,000	20,000	20,000	20,000	20,000	20,000	0	120,000

* The PFO LCC will be updated after the Department of Commerce completes their Independent Cost Estimate (ICE) and the MDM is approved and released. This outyear profile is consistent with the current program estimate, established with the 2016 MDM.

** The table reflects the requested funding levels in the ORF and PAC accounts for the total PWS.

*** The FY 2020 & Prior column has been adjusted to account for the FY 2020 Enacted level, including the mandatory deobligation assessment.

Narrative Information:

NOAA requests a total net decrease of \$8,294,000 and 0 FTE/ 0 positions in program changes for NESDIS. Following this section are base justification materials by activity and program change narratives for each Subactivity that represent program changes of \$250,000 or greater and/or are new starts or terminations. Complete program changes by Subactivity can be found in the NOAA Control Table (p. Control Table – 6 and 11). Please contact NOAA if details for any of these changes are required.

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Activity: Systems Acquisition

Subactivity: Projects, Planning and Analysis (PAC) - Transfer of Engineering and Research to Operations Support to Systems/Services
Architecture, and Engineering (PAC)

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	3,898	(1,485)	2,413
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	63	0	63
11.7 NOAA Corps	0	0	0
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	3,961	(1,485)	2,476
12 Civilian personnel benefits	941	(475)	466
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	142	0	142
22 Transportation of things	1	0	1
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	685	0	685
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	8	0	8
25.1 Advisory and assistance services	13,559	(7,032)	6,527
25.2 Other services from non-Federal sources	2,561	(1,340)	1,221
25.3 Other goods and services from Federal sources	5,816	0	5,816
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	3,300	0	3,300
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	26	0	26
31 Equipment	0	0	0
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	31,000	(10,332)	20,668

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Activity: System Acquisition

Subactivity: Systems/Services Architecture, and Engineering (PAC) - Transfer of Engineering and Research to Operations Support from Projects, Planning, and Analysis (PAC)

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	3,631	1,485	5,116
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	29	0	29
11.7 NOAA Corps	0	0	0
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	3,660	1,485	5,145
12 Civilian personnel benefits	1,098	475	1,573
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	240	0	240
22 Transportation of things	0	0	0
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	544	0	544
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	50	0	50
24 Printing and reproduction	4	0	4
25.1 Advisory and assistance services	7,505	7,032	14,537
25.2 Other services from non-Federal sources	8,940	1,340	10,280
25.3 Other goods and services from Federal sources	5,442	0	5,442
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	2,480	0	2,480
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	22	0	22
31 Equipment	18	0	18
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	3,987	0	3,987
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	33,990	10,332	44,322

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Activity: Systems Acquisition

Subactivity: Projects, Planning, and Analysis (PAC) - Transfer of On-Orbit Anomaly Support to Satellite and Product Operations (ORF)

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	3,898	0	3,898
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	63	0	63
11.7 NOAA Corps	0	0	0
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	3,961	0	3,961
12 Civilian personnel benefits	941	0	941
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	142	0	142
22 Transportation of things	1	0	1
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	685	0	685
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	8	0	8
25.1 Advisory and assistance services	13,559	0	13,559
25.2 Other services from non-Federal sources	2,561	0	2,561
25.3 Other goods and services from Federal sources	5,816	(4,727)	1,089
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	3,300	0	3,300
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	26	0	26
31 Equipment	0	0	0
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	31,000	(4,727)	26,273

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Activity: Environmental Satellite Observing System

Subactivity: Satellite and Product Operations (ORF) - Transfer of On-Orbit Anomaly Support from Projects, Planning, and Analysis (PAC)

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	31,112	0	31,112
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	4,290	0	4,290
11.7 NOAA Corps	135	0	135
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	35,537	0	35,537
12 Civilian personnel benefits	11,372	0	11,372
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	625	0	625
22 Transportation of things	200	0	200
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	8,824	0	8,824
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	4,029	0	4,029
24 Printing and reproduction	35	0	35
25.1 Advisory and assistance services	23,141	0	23,141
25.2 Other services from non-Federal sources	51,457	0	51,457
25.3 Other goods and services from Federal sources	27,232	4,727	31,959
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	2,425	0	2,425
31 Equipment	1,186	0	1,186
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	166,063	4,727	170,790

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Activity: Systems Acquisition

Subactivity: Satellite Ground Services (PAC) - Transfer of Legacy System Maintenance to Office of Satellite and Product Operations (ORF)

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	7,278	(1,755)	5,523
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	0	0	0
11.7 NOAA Corps	135	0	135
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	7,413	(1,755)	5,658
12 Civilian personnel benefits	2,373	(562)	1,811
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	120	0	120
22 Transportation of things	0	0	0
23 Rent, communications, and utilities	740	0	740
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	0	0	0
25.1 Advisory and assistance services	6,780	0	6,780
25.2 Other services from non-Federal sources	17,500	(5,220)	12,280
25.3 Other goods and services from Federal sources	17,500	(9,661)	7,839
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	1,400	0	1,400
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	381	0	381
31 Equipment	1,500	0	1,500
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	55,707	(17,198)	38,509

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Activity: Environmental Satellite Observing System

Subactivity: Satellite and Product Operations (ORF) - Transfer of Legacy System Maintenance from Satellite Ground Services (PAC)

Object Class	2020	2021	2021
	Enacted	Transfer	Base
11.1 Full-time permanent compensation	31,112	1,755	32,867
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	4,290	0	4,290
11.7 NOAA Corps	135	0	135
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	35,537	1,755	37,292
12 Civilian personnel benefits	11,372	562	11,934
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	625	0	625
22 Transportation of things	200	0	200
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	8,824	0	8,824
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	4,029	0	4,029
24 Printing and reproduction	35	0	35
25.1 Advisory and assistance services	23,141	0	23,141
25.2 Other services from non-Federal sources	51,457	5,220	56,677
25.3 Other goods and services from Federal sources	27,232	9,661	36,893
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	2,425	0	2,425
31 Equipment	1,186	0	1,186
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	166,063	17,198	183,261

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Systems Acquisition

Subactivity: Systems/Services Architecture, and Engineering (PAC) – Transfer of GEO-XO to Geostationary Earth Orbit (PAC)

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	3,631	0	3,631
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	29	0	29
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	3,661	0	3,661
12 Civilian personnel benefits	1,098	0	1,098
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	240	0	240
22 Transportation of things	0	0	0
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	544	0	544
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	50	0	50
24 Printing and reproduction	4	0	4
25.1 Advisory and assistance services	7,505	(4,558)	2,947
25.2 Other services from non-Federal sources	8,940	(5,442)	3,498
25.3 Other goods and services from Federal sources	5,442	0	5,442
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	2,480	0	2,480
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	22	0	22
31 Equipment	18	0	18
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	3,987	0	3,987
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	33,990	(10,000)	23,990

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Systems Acquisition

Subactivity: Geostationary Earth Orbit (PAC) – Transfer of GEO-XO from Systems/Services Architecture, and Engineering (PAC)

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	0	0	0
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	0	0	0
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	0	0	0
12 Civilian personnel benefits	0	0	0
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	0	0	0
22 Transportation of things	0	0	0
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	0	0	0
25.1 Advisory and assistance services	0	4,558	4,558
25.2 Other services from non-Federal sources	0	5,442	5,442
25.3 Other goods and services from Federal sources	0	0	0
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	0	0	0
31 Equipment	0	0	0
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	0	10,000	10,000

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Environmental Satellite Observing System
Subactivity: Commercial Remote Sensing Regulatory Affairs (ORF) - Transfer to DOC (ORF)

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	596	(596)	0
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	0	0	0
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	596	(596)	0
12 Civilian personnel benefits	183	(183)	0
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	96	(96)	0
22 Transportation of things	0	(0)	0
23 Rent, communications, and utilities	61	(61)	0
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	0	0	0
25.1 Advisory and assistance services	0	0	0
25.2 Other services from non-Federal sources	162	(162)	0
25.3 Other goods and services from Federal sources	692	(692)	0
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	5	(5)	0
31 Equipment	5	(5)	0
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	1,800	(1,800)	0

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Environmental Satellite Observing Systems
Subactivity: Office of Space Commerce (ORF) - Transfer to DOC Operations and Administration (ORF)

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	496	(496)	0
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	0	0	0
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	496	(496)	0
12 Civilian personnel benefits	153	(153)	0
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	80	(80)	0
22 Transportation of things	0	0	0
23 Rent, communications, and utilities	50	(50)	0
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	0	0	0
25.1 Advisory and assistance services	610	(610)	0
25.2 Other services from non-Federal sources	889	(889)	0
25.3 Other goods and services from Federal sources	0	0	0
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	2	(2)	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	5	(5)	0
31 Equipment	15	(15)	0
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	2,300	(2,300)	0

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Construction
Subactivity: Satellite CDA Facility (PAC) – Transfer to Mission Support (PAC)

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1	Full-time permanent compensation	0	0
11.3	Other than full-time permanent	0	0
11.5	Other personnel compensation	0	0
11.8	Special personnel services payments	0	0
11.9	Total personnel compensation	0	0
12	Civilian personnel benefits	0	0
13	Benefits for former personnel	0	0
21	Travel and transportation of persons	3	(3)
22	Transportation of things	0	0
23	Rent, communications, and utilities	0	0
23.1	Rental payments to GSA	0	0
23.2	Rental Payments to others	0	0
23.3	Communications, utilities and misc charges	0	0
24	Printing and reproduction	0	0
25.1	Advisory and assistance services	0	0
25.2	Other services from non-Federal sources	0	0
25.3	Other goods and services from Federal sources	2,445	(2,445)
25.4	Operation and maintenance of facilities	0	0
25.5	Research and development contracts	0	0
25.6	Medical care	0	0
25.7	Operation and maintenance of equipment	0	0
25.8	Subsistence and support of persons	0	0
26	Supplies and materials	2	(2)
31	Equipment	0	0
32	Lands and structures	0	0
33	Investments and loans	0	0
41	Grants, subsidies and contributions	0	0
42	Insurance claims and indemnities	0	0
43	Interest and dividends	0	0
44	Refunds	0	0
99	Total obligations	2,450	(2,450)

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Systems Acquisition
Subactivity: Cooperative Data and Rescue Services (PAC) – Operational Phase Transfer of MEOSAR to Satellite and Product Operations (ORF)

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	540	0	540
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	1	0	1
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	541	0	541
12 Civilian personnel benefits	173	0	173
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	22	0	22
22 Transportation of things	0	0	0
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	0	0	0
25.1 Advisory and assistance services	543	0	543
25.2 Other services from non-Federal sources	1,556	0	1,556
25.3 Other goods and services from Federal sources	8,513	(450)	8,063
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	2	0	2
31 Equipment	0	0	0
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	11,350	(450)	10,900

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(Direct Obligations amounts in thousands)

Activity: Environmental Satellite Observing Systems
Subactivity: Satellite and Product Operations (ORF) – Operational Phase Transfer of MEOSAR from Cooperative Data and Rescue Services (PAC)

Object Class	2020 Enacted	2021 Transfer	2021 Base
11.1 Full-time permanent compensation	31,112	0	31,112
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	4,290	0	4,290
11.7 NOAA Corps	135	0	135
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	35,537	0	35,537
12 Civilian personnel benefits	11,372	0	11,372
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	625	0	625
22 Transportation of things	200	0	200
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	8,824	0	8,824
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	4,029	0	4,029
24 Printing and reproduction	35	0	35
25.1 Advisory and assistance services	23,141	0	23,141
25.2 Other services from non-Federal sources	51,457	450	51,907
25.3 Other goods and services from Federal sources	27,232	0	27,232
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	2,425	0	2,425
31 Equipment	1,186	0	1,186
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	166,063	450	166,513

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Comparison by Subactivity		2019		2020		2021		2021		Increase/Decrease	
		Actuals		Enacted		Base		Estimate		from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE (NESDIS)											
Satellite and Product Operations	Pos/BA	230	146,521	313	166,063	326	194,131	326	189,099	0	(5,032)
	FTE/OBL	229	151,006	308	166,063	321	194,131	321	189,099	0	(5,032)
Product Development, Readiness & Application	Pos/BA	75	35,838	99	28,434	99	28,907	99	27,886	0	(1,021)
	FTE/OBL	74	35,622	97	28,434	97	28,907	97	27,886	0	(1,021)
Commercial Remote Sensing Regulatory Affairs	Pos/BA	3	1,788	6	1,800	0	0	0	0	0	0
	FTE/OBL	3	1,875	6	1,800	0	0	0	0	0	0
Office of Space Commerce	Pos/BA	4	1,796	5	2,300	0	0	0	0	0	0
	FTE/OBL	4	1,848	3	2,300	0	0	0	0	0	0
Group on Earth Observations	Pos/BA	0	496	0	500	0	500	0	500	0	0
	FTE/OBL	0	505	0	500	0	500	0	500	0	0
National Centers for Environmental Information	Pos/BA	158	59,941	225	61,642	225	63,096	225	52,507	0	(10,589)
	FTE/OBL	157	61,021	222	61,642	222	63,096	222	52,507	0	(10,589)
TOTAL NESDIS - ORF	Pos/BA	470	246,380	648	260,739	650	286,634	650	269,992	0	(16,642)
	FTE/OBL	467	251,877	636	260,739	640	286,634	640	269,992	0	(16,642)

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Comparison by Subactivity		2019		2020		2021		2021		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Geostationary Systems-R	Pos/BA	59	406,514	68	304,056	68	304,056	68	334,500	0	30,444
	FTE/OBL	58	409,685	67	304,056	67	304,056	67	334,500	0	30,444
Jason-3	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	201	0	0	0	0	0	0	0	0
Joint Polar Satellite System	Pos/BA	116	543,314	0	0	0	0	0	0	0	0
	FTE/OBL	115	550,777	0	0	0	0	0	0	0	0
Polar Follow On	Pos/BA	28	325,219	0	0	0	0	0	0	0	0
	FTE/OBL	28	326,699	0	0	0	0	0	0	0	0
Polar Weather Satellites	Pos/BA	0	0	142	745,000	142	745,000	142	657,835	0	(87,165)
	FTE/OBL	0	0	140	745,000	140	745,000	140	657,835	0	(87,165)
Cooperative Data and Rescue Services	Pos/BA	2	26,468	4	11,350	4	10,900	4	14,400	0	3,500
	FTE/OBL	2	16,749	4	11,350	4	10,900	4	14,400	0	3,500
Space Weather Follow On	Pos/BA	3	26,965	11	64,000	11	64,000	11	108,115	0	44,115
	FTE/OBL	3	26,804	11	64,000	11	64,000	11	108,115	0	44,115
COSMIC-2/GNSS RO	Pos/BA	2	5,707	2	5,892	2	5,892	2	5,892	0	0
	FTE/OBL	2	6,392	2	5,892	2	5,892	2	5,892	0	0
Satellite Ground Services	Pos/BA	46	56,034	73	55,707	60	38,509	60	39,287	0	778
	FTE/OBL	46	55,952	72	55,707	59	38,509	59	39,287	0	778
System Architecture & Advanced Planning	Pos/BA	9	4,789	0	0	0	0	0	0	0	0
	FTE/OBL	9	6,169	0	0	0	0	0	0	0	0
Projects, Planning and Analysis	Pos/BA	21	39,642	25	31,000	14	15,941	14	15,941	0	0
	FTE/OBL	21	36,761	25	31,000	14	15,941	14	15,941	0	0
Commercial Weather Data Pilot	Pos/BA	1	5,734	0	0	0	0	0	0	0	0
	FTE/OBL	1	6,855	0	0	0	0	0	0	0	0

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Geostationary Earth Orbit	Pos/BA	0	0	0	0	0	10,000	0	10,000	0	0
	FTE/OBL	0	0	0	0	0	10,000	0	10,000	0	0
Systems/Services Architecture & Engineering	Pos/BA	0	0	24	33,990	35	34,322	35	49,322	0	15,000
	FTE/OBL	0	0	24	33,990	35	34,322	35	49,322	0	15,000
Satellite CDA Facility	Pos/BA	0	2,290	0	2,450	0	0	0	0	0	0
	FTE/OBL	0	3,532	0	2,450	0	0	0	0	0	0
Transfer to OIG	Pos/BA	0	0	0	(1,302)	0	(1,302)	0	(1,302)	0	0
	FTE/OBL	0	0	0	(1,302)	0	(1,302)	0	(1,302)	0	0
TOTAL NESDIS - PAC	Pos/BA	287	1,442,676	349	1,252,143	336	1,227,318	336	1,233,990	0	6,672
	FTE/OBL	285	1,446,576	345	1,252,143	332	1,227,318	332	1,233,990	0	6,672
TOTAL NESDIS	Pos/BA	757	1,689,056	997	1,512,882	986	1,513,952	986	1,503,982	0	(9,970)
	FTE/OBL	752	1,698,453	981	1,512,882	972	1,513,952	972	1,503,982	0	(9,970)

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Activity: Environmental Satellite Observing System

Goal Statement

NOAA manages environmental satellites and related ground systems to provide timely and accurate environmental data and products for forecasts and warnings to ensure the safety of U.S. citizens, public property, and infrastructure.

Base Program

NOAA's Environmental Satellite Observing Systems activities are to:

- Maintain and operate a system of polar-orbiting satellites which provide global imaging and sounding for medium and long-range weather forecasting and climate analysis crucial to numerical weather prediction models.
- Maintain and operate a system of geostationary satellites to provide near-continuous environmental observations of the Earth's Western Hemisphere critical for weather forecasting and severe storm tracking.
- Supply data and operational products to the public and decision-makers. Operate and maintain the mission control center for the search and rescue satellite system.

Statement of Operating Objectives

Satellite and Product Operations (SPO): See the Program Change for the proposed schedule, milestones, deliverables, performance goals and measurement data, and the budget profile.

Product Development, Readiness & Application (PDR&A): See the Program Change for the proposed schedule, milestones, deliverables, performance goals and measurement data, and the budget profile.

U.S. Group on Earth Observations (USGEO)

Schedule and Milestones

FY 2021 – FY 2025

- Support the development and growth of U.S. programmatic contributions to the GEO Work Program in support to U.S. national and international policy and NOAA mission objectives
- Coordinate and manage the participation of USGEO leadership in regular meetings of the GEO Executive Committee, annual GEO Plenary sessions and Ministerial Summit

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- Coordinate U.S. Government participation in the implementation of GEO's strategic plan through a grant to the GEO Trust Fund

Deliverables

- Reports for the Executive Office of the President as requested
- Participation in major GEO meetings and activities to promote international engagement and coordination with stakeholders and outreach

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Explanation and Justification

Line Item		2019 Actuals		2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Satellite and Product Operations	Pos/BA	230	146,521	313	166,063	326	194,131
	FTE/OBL	229	151,006	308	166,063	321	194,131
Product Development, Readiness & Application	Pos/BA	75	35,838	99	28,434	99	28,907
	FTE/OBL	74	35,622	97	28,434	97	28,907
Commercial Remote Sensing Regulatory Affairs	Pos/BA	3	1,788	6	1,800	0	0
	FTE/OBL	3	1,875	6	1,800	0	0
Office of Space Commerce	Pos/BA	4	1,796	5	2,300	0	0
	FTE/OBL	4	1,848	3	2,300	0	0
Group on Earth Observations	Pos/BA	0	496	0	500	0	500
	FTE/OBL	0	505	0	500	0	500
Total Environmental Satellite Observing Systems	Pos/BA	312	186,439	423	199,097	425	223,538
	FTE/OBL	310	190,856	414	199,097	418	223,538

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Product Development, Readiness & Application (PDR&A) (<http://www.star.nesdis.noaa.gov/star/index.php>): provides technical capabilities enabling state-of-the-art satellite-based information delivery to NOAA and partner missions, capitalizing on NOAA's investment in the acquisition and management of the Nation's operational environmental satellites including: transformation of raw observations and data feeds from NOAA-managed, partner, and commercial satellite missions into information products and services to support NOAA's mission; development of instrument and future mission observational requirements; support to development of NOAA sensors and missions, including transition to operations; scientific maintenance and sustainment of satellite data quality; and user support, training, distribution services. PDR&A:

- Leads comprehensive and rigorous calibration/validation of all data in NOAA's satellite operations and to the extent necessary for partner and commercial satellite data sources to assure the accuracy of satellite products to meet user performance requirements throughout mission life cycles, collaborates with other satellite data providers to foster consistency and usability;
- Supports resolution of instrument anomalies either pre-launch or on-orbit through compensating changes to data product algorithms and tables;
- Combines NOAA's environmental satellite measurements with other available information to create fit for purpose blended data, products, and services;
- Provides data products and quality assurance for critical real time satellite data and information products to meet the needs of NOAA's National Weather Service, NOAA's other line offices, and partner U.S. Government and international agencies. These products feed forecast models and operational forecasts;
- Provides non-real time data and information products to meet the needs of NOAA's line offices and partner U.S. Government and international agencies for model validation, training and user readiness, retrospective assessments, and long term data sets improving environmental understanding;
- Through research and development into remote-sensing solutions to NOAA mission goals and science challenges, improves NOAA services that protect lives, property, and livelihoods by addressing challenges such as increasing lead times for severe weather warning, severe ocean condition warning, and providing accurate warnings of related environmental phenomena such as floods, droughts, volcanic ash, toxic algal blooms, sea ice, water quality, etc.;
- Supports users through training, science support, risk reduction, consulting, enterprise distribution services complementing satellite product operations, and support to archive services; and
- Supports future NOAA and partner satellite instrument and mission requirements development to meet NOAA mission objectives, and supports development through transition to operations of NOAA instruments and missions.

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JUSTIFICATION OF PROGRAM AND PERFORMANCE

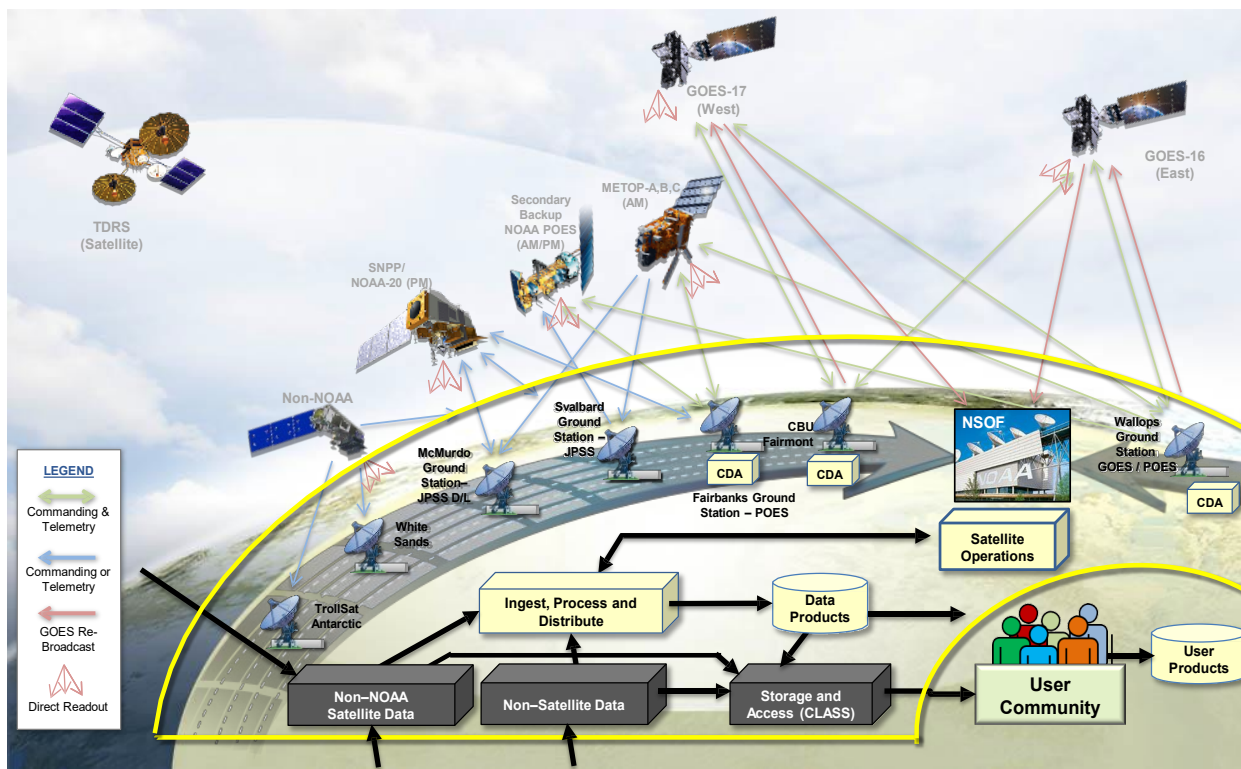
(Dollar amounts in thousands)

U.S. Group on Earth Observations (USGEO): provides program resources to support the domestic cooperative activities of the U.S. Group on Earth Observations (USGEO) - a Subcommittee of the National Science and Technology Council's Committee on Environment, Natural Resources, and Sustainability. USGEO:

- Is comprised of twelve Federal departments and agencies;
- Coordinates, plans, and assesses U.S. federal Earth Observation activities
- Fosters improved data interoperability
- Fulfills legislative requirements to deliver National Plan for Civil Earth Observations
- Identifies high priority user needs
- Coordinates the participation and representation of the United States government to the Group on Earth Observations

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(Dollar amounts in thousands)

Satellite and Product Operations (SPO) (<http://www.ospo.noaa.gov/>): The SPO acquires and delivers accurate, timely, and reliable satellite observations and integrated products. The SPO provides support during launch, activation, and evaluation of new satellites; satellite health and safety monitoring, satellite operations, and data acquisition to meet user needs; and, assessment of satellite and ground station anomalies and support to appropriate recovery actions for those anomalies. SPO manages and directs NOAA’s command and control of the suite of on-orbit satellites that supply the environmental data critical for developing weather and climate products used daily by industry and citizens across the Nation. To this end, SPO works with NOAA’s National Weather Service (NWS) to supply the satellite data that makes up approximately 93 percent of the information used in their numerical weather prediction models.



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Overall, SPO:

- Maintains and operates a system of polar-orbiting satellites which provide global imaging and sounding for medium and long-range weather forecasting and climate analysis crucial to numerical weather prediction models;
- Maintains and operates a system of geostationary satellites to provide near-continuous environmental observations of the Western Hemisphere critical for weather forecasting and severe storm tracking;
- Performs long-term maintenance to preserve the form, fit, and function of legacy ground systems;
- Performs on-orbit anomaly support for the legacy Geostationary Operational Environmental Satellites (GOES) and Polar-orbiting Operational Environmental Satellites (POES) series of satellites, Deep Space Climate Observatory (DSCOVR), and Jason-3;
- Supplies data and operational products to the public and decision-makers; and,
- Operates and maintains the U.S. Mission Control Center for the search and rescue satellite system.

In FY 2020, SPO operated and supported a total of 18 on-orbit satellites including: legacy GOES and POES; Suomi National Polar-orbiting Partnership (Suomi NPP) and Joint Polar Satellite System (JPSS) satellites; GOES-R Series satellites; Department of Defense (DOD) Defense Meteorological Satellite Program (DMSP); DSCOVR; Jason-3; as well as other non-NOAA operational environmental satellites. SPO's IT Security implements vulnerability management against the latest threats on satellite ground systems to lower the operational risk, which will ensure continuity of critical satellite data flow to key customers such as NOAA's NWS.

SPO sustains NOAA's legacy ground systems through capability enhancements; periodic technology refresh, including hardware and software upgrades; and IT security. SPO currently sustains ground segments supporting the following satellite constellations: GOES; POES; Jason; Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC); DSCOVR; and DMSP. SPO also supports elements of the GOES-R Series ground segment and sustains ground system antennas, which send and receive data to and from satellites.

SPO supports:

- The NOAA Satellite Operations Facility (NSOF) for NOAA's 24 hours a day, 365 days a year, environmental satellite operations. Through NSOF, NOAA operates the ground systems that command, control, and acquire data from on-orbit satellites. Each day, NSOF processes more than 25 terabytes of environmental satellite raw data from on-orbit DOD and NOAA satellites;
- The Satellite Operations Control Center, which serves as the vital link between satellites and users by providing uninterrupted availability of critical observations and real-time delivery of satellite data to product processing centers. These include the Command and Data Acquisition Stations at Wallops, Virginia, and Fairbanks, Alaska, and the consolidated backup (CBU) at Fairmont, West Virginia;
-

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- The Comprehensive Large Array-data Stewardship System (CLASS), providing the long-term preservation of and access to the ever-increasing input of data from our observing systems (e.g., satellites, radar, and other ground observations);
- The U.S. Search and Rescue Satellite Aided Tracking (SARSAT) system, an integral part of the Cospas-Sarsat system, an international humanitarian search and rescue system which detects and relays distress signals from mariners, aviators, and recreational enthusiasts, anywhere in the world, at any time to Mission Control Centers that coordinate with local rescue authorities to rescue the person(s) in distress. NOAA coordinates U.S. participation in the international Cospas-Sarsat Program, and operates and maintains the U.S. Mission Control Center and the Local User Terminals, which are the satellite receiving ground stations that receive emergency beacon distress alerts; and
- The NOAA instruments on the Metop C satellite by providing data processing and distribution of environmental data, as well as anomaly support of the NOAA instruments on the satellite.

PROGRAM CHANGES FOR FY 2021

NOAA requests a decrease of \$5,032 and 0 FTE/ 0 positions in FY 2021 program changes for the SPO activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by Subactivity can be found in the NOAA Control Table (p. Control Table - 6).

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National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease	
		<u>Personnel</u>		<u>Personnel</u>		<u>Personnel</u>	<u>Amount</u>
		Amount		Amount			
Satellite and Product Operations	Pos./BA	326	194,131	326	189,099	0	(5,032)
	FTE/OBL	321	194,131	321	189,099	0	(5,032)

Satellite and Product Operations Deferred and Extended Maintenance (-\$5,032, 0 FTE/ 0 Positions) – In order to fully support existing NOAA priorities, NOAA proposes a decrease to satellite operations and maintenance. SPO will implement this through a decrease to support activities by deferring and extending maintenance schedules of projects such as Uninterruptable Power Supply replacements and general infrastructure upgrades. NOAA will prioritize operational and primary satellite support activities, such as NOAA’s Satellite Operations Facility (NSOF) operations, and focus on annual recurring operating requirements. This reduction will not affect the performance targets.

**Satellite and Product Operations
Schedule and Milestones**

FY 2021 – FY 2025

- Maintain Satellite Operation Facilities at Suitland, Maryland; Wallops, Virginia; Fairbanks, Alaska; and Fairmont, West Virginia
- 24/7 operations and anomaly support for NOAA geostationary and polar-orbiting satellites, DSCOVR, and Jason-3 satellites; and, backup operations for Jason Continuity of Service (Jason CS) mission
- Complete the acceptance into operation of the SARSAT Program’s Phased Array Antenna MEOLUT ground station in New Mexico and associated test system at NSOF
- Process and distribute environmental data from GOES, POES, Metop A, B, C, and EUMETSAT Polar System Second Generation (EPS-SG)
- Conduct annual penetration testing on all NOAA IT systems
- Continuously monitor all NOAA IT Systems
- Enhance common processes in response to IT Security events or incidents including moving NESDIS non-satellite control high impact networks into NOAA OCIO’s secure active directory
- Provide collision avoidance support for the Metop constellation (A, B and C), JPSS, and Jason-3

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(Dollar amounts in thousands)

- Provide engineering services to support on-orbit anomalies for GOES-16,17, and 18 satellites; NOAA-20 and 21; POES (NOAA-19); and U.S. instruments on Metop satellites (A, B, and C)

FY 2021

- Command and control 10 NOAA satellites and support 9 non-NOAA satellites
- Process and distribute GOES-R series, Suomi NPP, NOAA-20, legacy GOES and POES, and Metop data
- Maintain infrastructure for 14 National/Mission High and Moderate Critical IT Systems
- Maintain SARSAT infrastructure

FY 2022

- Command and control 12 NOAA satellites and support 8 non-NOAA satellites
- Process and distribute GOES-R Series, Suomi NPP, NOAA-20, legacy GOES, and Metop data
- Accept handover of GOES-T after completion of on-orbit testing
- Maintain infrastructure for 13 National/Mission High and Moderate Critical IT Systems
- Maintain SARSAT infrastructure

FY 2023

- Command and control 8 NOAA satellites and support 8 non-NOAA satellites
- Process and distribute GOES-R Series, Suomi NPP, NOAA-20, NOAA-21, legacy GOES, Metop, and EPS-SG data
- Maintain infrastructure for 11 National/Mission High and Moderate Critical IT Systems
- Maintain SARSAT infrastructure

FY 2024

- Command and control 8 NOAA satellites and support 8 non-NOAA satellites
- Process and distribute GOES-R Series, Suomi NPP, NOAA-20, NOAA-21, legacy GOES, and EPS-SG data
- Maintain infrastructure for 11 National/Mission High and Moderate Critical IT Systems
- Maintain SARSAT infrastructure

FY 2025

- Command and control 7 NOAA satellites and support 8 non-NOAA satellites
- Process and distribute GOES-R Series, NOAA-20, NOAA-21, legacy GOES, and EPS-SG data
- Maintain infrastructure for 11 National/Mission High and Moderate Critical IT Systems
- Maintain SARSAT infrastructure

Deliverables

- Maintain infrastructure for National/Mission High and Moderate Critical IT Systems
- Delivery of Suomi NPP, JPSS, GOES-R Series, legacy GOES, legacy POES, DSCOVR, Jason-3, Metop, and EPS-SG data and products to users

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(Dollar amounts in thousands)

- Engineering support for the on-orbit GOES–R Series, legacy GOES, JPSS, POES, DSCOVR, and support to EUMETSAT for U.S. instruments for the on-orbit Metop satellites (A, B, and C)
- Support search and rescue antenna performance checks on POES (NOAA-19) and Metop A and B
- Maintain Satellite Operations Facilities at Suitland, Maryland; Wallops, Virginia; Fairbanks, Alaska; and Fairmont, West Virginia

	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations Uncapitalized	(5,032)	(5,032)	(5,032)	(5,032)	(5,032)
Budget Authority	(5,032)	(5,032)	(5,032)	(5,032)	(5,032)
Outlays	(3,120)	(3,120)	(3,120)	(3,120)	(3,120)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Environmental Satellite Observing Systems
Subactivity: Satellite and Product Operations

Object Class	2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base	
11.1	Full-time permanent compensation	26,836	31,112	33,938	33,938	0
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	3,969	4,290	4,290	4,290	0
11.7	NOAA Corps	131	135	139	139	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	30,936	35,537	38,367	38,367	0
12	Civilian personnel benefits	8,886	11,372	12,744	12,744	0
13	Benefits for former personnel	1	0	0	0	0
21	Travel and transportation of persons	445	625	632	632	0
22	Transportation of things	88	200	202	202	0
23.1	Rental payments to GSA	8,427	8,824	9,109	9,109	0
23.2	Rental Payments to others	0	0	0	0	0
23.3	Communications, utilities and misc charges	3,957	4,029	4,159	4,159	0
24	Printing and reproduction	35	35	36	36	0
25.1	Advisory and assistance services	22,279	23,141	23,597	23,597	0
25.2	Other services from non-Federal sources	55,051	51,457	59,390	54,358	(5,032)
25.3	Other goods and services from Federal sources	12,776	27,232	42,155	42,155	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	208	0	0	0	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	2,195	2,425	2,465	2,465	0
31	Equipment	5,146	1,186	1,275	1,275	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	551	0	0	0	0
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	25	0	0	0	0
44	Refunds	0	0	0	0	0
99	Total obligations	151,006	166,063	194,131	189,099	(5,032)

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Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		<u>2021 Base Personnel Amount</u>		<u>2021 Estimate Personnel Amount</u>		<u>Decrease Personnel Amount</u>	
Product Development, Readiness & Application	Pos./BA	99	28,907	99	27,886	0	(1,021)
	FTE/OBL	97	28,907	97	27,886	0	(1,021)

Decrease Data Products Developed (-\$1,021, 0 FTE/ 0 Positions) – In order to fully support existing NOAA priorities, NOAA proposes a decrease to PDR&A. This program change will reduce the number of PDR&A data products, applications, techniques and systems developed. PDR&A will continue to identify new requirements for satellite data and environmental information, determine what information is necessary to meet those requirements, support formulation of new sensors and missions; develop new products and applications, support development and transition to operations of future NOAA missions, and partner and commercial satellite data sets; and continue to provide user support and complementary dissemination services. NESDIS will continue to focus on calibration and validation in order to provide accurate products to customers.

**Product Development, Readiness & Application (PDR&A)
Schedule and Milestones**

FY 2021

- Provide science input /evaluation for ongoing commercial GNSS RO data pending commercial offerings
- Promote KOMPSAT-6 and Sentinel-6 radio occultation observations into operations
- Complete pre-launch calibration/validation, look up tables and Integrated Cal/Val System (ICVS) readiness for JPSS -2 pre-launch readiness
- Complete GOSAT AMSR-3 cal/val plan and start to prepare pre-launch algorithms and look up tables
- Complete algorithm requirements review for Metop SG
- Jason CS-1/Sentinel-6A post-launch evaluation, initial validation of products, implement work packages in 1-year commissioning phase with Jason-3
- Complete validation of GOES-R Series Level 2 products produced by enterprise algorithms

FY 2022 – FY 2025

- Complete pre-launch preparations and post launch cal/val for GOES-T, and transition to routine calibration, validation, algorithm maintenance and anomaly resolution

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(Dollar amounts in thousands)

- Complete algorithms, pre-launch readiness, support initial calibration, conduct NOAA initial product validation, and transition to routine algorithm maintenance and anomaly resolution, and support routine calibration maintenance for Metop SG A1 and B1 satellites instruments
- Provide science input /evaluation for ongoing commercial GNSS-RO data pending commercial offerings
- Provide science input / support / evaluation for CWDP Rounds 4 and 5 depending on commercial sector readiness
- Deliver enterprise algorithms for operational implementation in cloud computing to enable transition off of legacy algorithms processing in legacy ground product generation
- Complete initial validation of JPSS-2 products, and transition to routine calibration, validation, algorithm maintenance, and anomaly resolution
- Develop requirements, algorithms, test and verify then transition to operations and routine maintenance/anomaly resolution for updated LEO/GEO blended products incorporating Metop SG
- Develop requirements, algorithms, test and verify then transition to operations and routine maintenance/anomaly resolution for Geostationary ring and LEO/GEO blended products incorporating Meteosat Third Generation
- Complete GOSAT AMSR-3 algorithms, and initial calibration/validation and look up table delivery and transition to routine calibration, validation, algorithm maintenance and anomaly resolution
- Final validation of Jason CS/Sentinel 6A, Jason CS-2/Sentinel-6B pre-launch development, post-launch evaluation, initial validation of products, implement work packages in 6-month commissioning phase with Jason CS-1/Sentinel-6A, and final validation of Jason CS/Sentinel 6B, transition of both to routine cal/val maintenance and anomaly resolution
- Complete pre-launch preparations and post launch cal/val for GOES-U and transition to routine calibration, validation, algorithm maintenance and anomaly resolution
- Complete pre-launch calibration/validation, look up tables and ICVS readiness for JPSS-3 pre-launch readiness

Deliverables

- Maintain algorithms and data product validation to translate raw data into useful products meeting quality requirements for GOES-R Series, Jason, POES, Metop, COSMIC, CWDP, EOS, Himawari, Meteosat, Sentinel, Scatsat, and lead for JPSS series and GCOM-W, GOSAT AMSR 3, Metop SG, Sentinels 4, 5
- Conduct pre-launch initial instrument calibration and product validation for satellites to be launched, and complete initial instrument calibration and product validations for recently launched satellites
- Perform suitability assessment, and validation of non-NOAA data sources for NOAA use, and incorporate non-NOAA data flows into NOAA enterprise algorithms and NOAA models (in cooperation with NWS, OAR, NOS)
- Provide science coordination with National and International Partners, including NASA, Navy, USAF, EUMETSAT, ESA, JMA, KARI, ISRO etc.

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PROGRAM DECREASE FOR 2021**

(Dollar amounts in thousands)

- Provide observing requirements inputs to future satellite sensor and mission studies and support their optimization for NOAA mission needs and subsequent development
- Provide user services including training, consultation, risk reduction, help, and complementary dissemination services

Performance Measure	2021	2022	2023	2024	2025
Number of major groups of products, applications, techniques, systems or services developed and/or transitioned to operations per year.					
with decrease	12	12	12	12	12
without decrease	13	13	13	13	13

	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations Uncapitalized	(1,021)	(1,021)	(1,021)	(1,021)	(1,021)
Budget Authority Outlays	(1,021) (613)	(1,021) (613)	(1,021) (613)	(1,021) (613)	(1,021) (613)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Environmental Satellite Observing Systems
Subactivity: Product Development, Readiness and Application

Object Class	2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base	
11.1	Full-time permanent compensation	10,383	10,383	10,576	10,576	0
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	184	184	184	184	0
11.7	NOAA Corps	195	201	201	201	
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	10,762	10,768	10,961	10,961	0
12	Civilian personnel benefits	3,308	3,446	3,512	3,512	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	289	250	251	251	0
22	Transportation of things	3	3	3	3	0
23	Rent, communications, and utilities	0	0	0	0	0
23.1	Rental payments to GSA	2,531	2,590	2,625	2,625	0
23.2	Rental Payments to others	0	0	0	0	0
23.3	Communications, utilities and misc charges	178	0	0	0	0
24	Printing and reproduction	9	20	20	20	0
25.1	Advisory and assistance services	273	273	280	280	0
25.2	Other services from non-Federal sources	2,642	2,340	2,396	1,375	(1,021)
25.3	Other goods and services from Federal sources	1,019	1,025	1,050	1,050	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	3,221	3,291	3,370	3,370	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	49	49	52	52	0
31	Equipment	211	211	219	219	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	11,123	4,168	4,168	4,168	0
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	4	0	0	0	0
44	Refunds	0	0	0	0	0
99	Total obligations	35,622	28,434	28,907	27,886	(1,021)

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JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: National Centers for Environmental Information

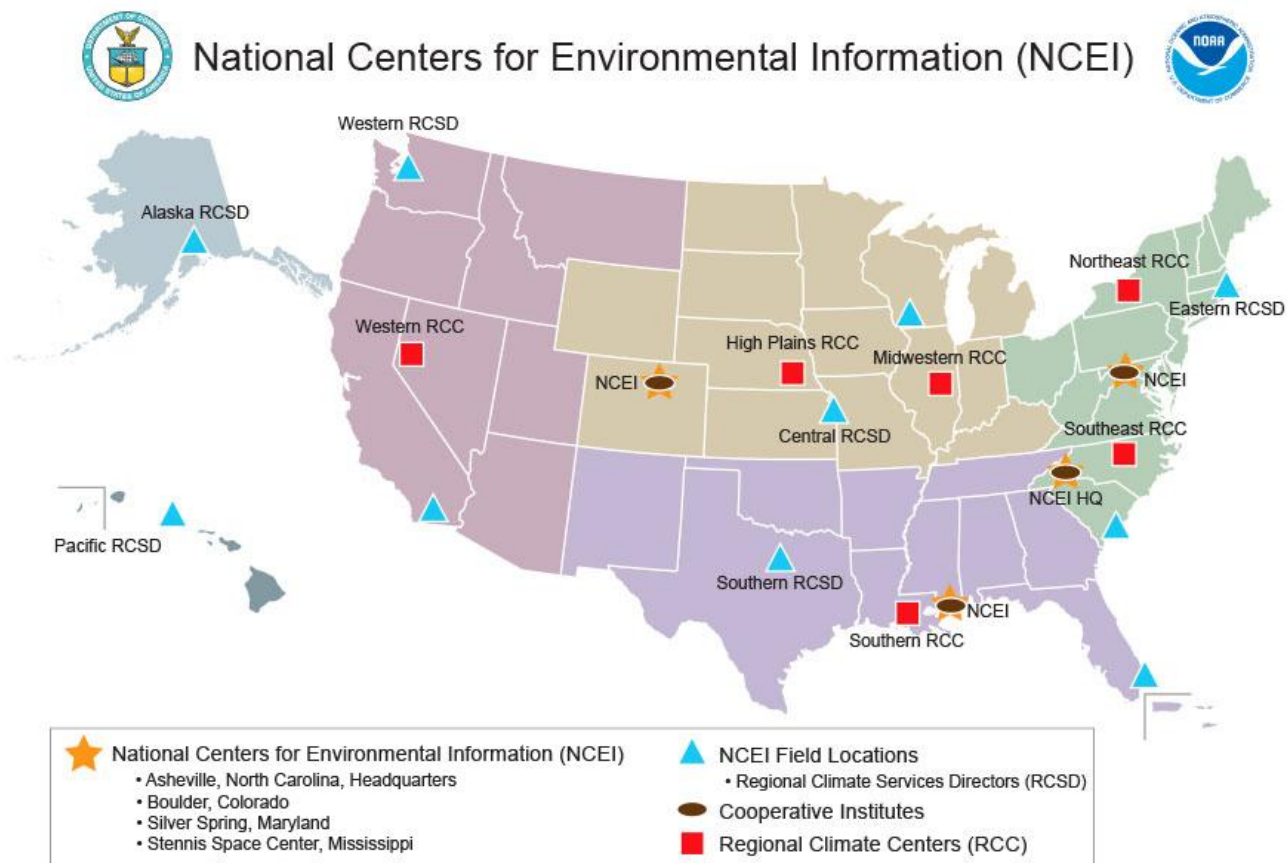
Goal Statement

NOAA's National Centers for Environmental Information (NCEI) are responsible for preserving and providing access to one of the most significant environmental archives on earth, with comprehensive historical oceanic, atmospheric, and geophysical data and information.

Base Program

The amount and demand for high-value environmental data and information has dramatically increased in recent years. NCEI is continually working to foster innovative and value-added strategies, including the development of newly integrated products and services that span the science disciplines and enable better data discovery.

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(Dollar amounts in thousands)



NCEI has a nationwide presence. NCEI’s headquarters are in Asheville, NC, with major presences in Boulder, CO; Stennis Space Center, MS; and Silver Spring, MD. NCEI works with many partners, including all NOAA Line Offices as well as Cooperative Institutes, state and Federal agencies, national and international contributors, and users of NCEI data.

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(Dollar amounts in thousands)

Explanation and Justification

Line Item		2019		2020		2021	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
National Centers for Environmental Information	Pos/BA	158	59,941	225	61,642	225	63,096
	FTE/OBL	157	61,021	222	61,642	222	63,096
Total National Centers for Environmental Information	Pos/BA	158	59,941	225	61,642	225	63,096
	FTE/OBL	157	61,021	222	61,642	222	63,096

National Centers for Environmental Information (NCEI) (<https://www.ncei.noaa.gov/>): provides products and services to private industry, governments, academia, and the general public by preserving, stewarding, and maximizing the value and utility of the Federal government's multi-billion dollar investment in high-quality environmental data. NCEI:

- Provides billions of dollars of benefit to the US economy, across sectors including Finance, Agriculture, Fisheries, Transportation, Energy, Insurance, and Manufacturing, enabling future investments informed by authoritative and actionable environmental data to minimize possible future consequences;
- Transforms complex, long-term data from a variety of legacy and modern observing systems into consistent use-inspired, operational products and information to meet the needs of government, academia, and U.S. industry;
- Provides data preservation and access services that enable full use of the Nation's multi-billion dollar investment in satellite, ship, aircraft, and *in situ* observations;
- Advances and enables environmental science and decision making for resilient ocean and coastal communities, the Arctic, and space weather through derived products, authoritative assessments, and information services in support of customer requirements;
- Provides authoritative U.S. and global retrospective weather and climate data and information for decision making through use-inspired applied science, products, services, and assessments and monitoring;
- Maintains the Nation's archive of environmental information, as well as international data holdings through the World Data System, leveraging data portals and cloud services to maximize the availability and accessibility of official, archived records;
- Conducts integrated scientific analyses of coastal and marine environmental data sets to better understand historical trends, anomalies, and the frequency of event occurrences; and

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JUSTIFICATION OF PROGRAM AND PERFORMANCE

(Dollar amounts in thousands)

- Provides regional and sectoral climate services in coordination with other NOAA and federal entities to ensure that broad national comprehensive data and information, products, and services are available to public and private sector users at the local, state, regional, and Federal levels.

National Centers for Environmental Information (NCEI)

Schedule and Milestones

FY 2021 – FY 2025

- Archive a minimum of 83 percent of all ingested data, including the U.S. Climate Reference Network (USCRN) data, ocean observations from NOAA vessels, and space weather data from NOAA geostationary satellites
- Provide access to environmental data and products for use in ecosystem baselines, monitoring, and assessments including Large Marine Ecosystem data
- Collect, review, and adjudicate user community needs across as many U.S. sectors as possible to identify the highest priority, core needs for improving existing products and informing new product development at a reduced rate with this reduction

Deliverables

FY 2021 – FY 2025

- Focus on developing the highest return on investment enterprise capabilities to provide archive and access services for NOAA and NOAA partners' environmental data and their derived products from in-situ and satellite observations, including from geostationary, polar-orbiting, and space weather platforms
- Focus on the highest priority, core needs in developing environmental (oceanographic, atmospheric, geophysical and space) datasets, products and tiered services from basic preservation to international leadership
- Continue to archive and provide access to Large Marine Ecosystem data
- Provide an annual analysis of user engagement at the National, rather than at the regional level with this decrease.

Department of Commerce
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JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

PROGRAM CHANGES FOR FY 2021

NOAA requests a total decrease of \$10,589 and 0 FTE/ 0 positions in FY 2021 program changes for the NCEI activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by Subactivity can be found in the NOAA Control Table (p. Control Table - 6).

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		<u>2021 Base Personnel Amount</u>		<u>2021 Estimate Personnel Amount</u>		<u>Decrease Personnel Amount</u>	
National Centers for Environmental Information	Pos/BA	225	63,096	225	58,507	0	(4,589)
	FTE/OBL	222	63,096	222	58,507	0	(4,589)

NCEI External Grant Reduction (-\$4,589, 0 FTE/ 0 Positions) – In order to fully support existing NOAA priorities, NOAA requests to significantly reduce external grants within NCEI. This reduction will affect grants provided to the Cooperative Institutes at the University of Colorado in Boulder, University of Maryland at College Park, North Carolina State University, and Mississippi Sea Grant. These grants have previously been used to fund innovative developmental activities that improve data products and services to meet the needs of NCEI’s user community across all U.S. economic sectors. This decrease will limit NCEI's science innovation efforts, reducing the quantity of products and services, and impacting users, particularly in business sectors (e.g. energy, transportation). Of note, this decrease will impact NCEI's ability to support retrospective analysis of past extreme events (Hurricane Dorian, for example) that enables improvements in modeling and forecasting of future extreme events to protect lives and property and support the economy.

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Percent of all ingested data that is successfully archived and can be accessed (impacted by significant reduction in NCEI external grants)					
with decrease	98%	97%	95%	91%	83%
without decrease	98%	98%	98%	98%	98%
Direct Obligations Uncapitalized	(4,589)	(4,589)	(4,589)	(4,589)	(4,589)
Budget Authority	(4,589)	(4,589)	(4,589)	(4,589)	(4,589)
Outlays	(1,927)	(1,927)	(1,927)	(1,927)	(1,927)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: National Centers for Environmental Information
Subactivity: National Centers for Environmental Information

Object Class	2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base	
11.1	Full-time permanent compensation	18,683	19,671	20,264	20,264	0
11.3	Other than full-time permanent	340	0	0	0	0
11.5	Other personnel compensation	271	0	0	0	0
11.7	Military personnel	125	135	137	137	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	19,419	19,806	20,401	20,401	0
12	Civilian personnel benefits	6,250	6,338	6,544	6,544	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	569	639	641	641	0
22	Transportation of things	33	27	28	28	0
23	Rent, communications, and utilities	5,742	6,012	6,118	6,118	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	Communications, utilities and misc charges	0	0	0	0	0
24	Printing and reproduction	64	66	66	66	0
25.1	Advisory and assistance services	13,800	7,743	7,917	7,917	0
25.2	Other services from non-Federal sources	6,596	13,966	14,278	14,278	0
25.3	Other goods and services from Federal sources	1,400	1,442	1,467	1,467	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	13	15	15	15	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	394	406	416	416	0
31	Equipment	393	593	616	616	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	6,341	4,589	4,589	0	(4,589)
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	7	0	0	0	0
44	Refunds	0	0	0	0	0
99	Total obligations	61,021	61,642	63,096	58,507	(4,589)

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		<u>2021 Base Personnel Amount</u>		<u>2021 Estimate Personnel Amount</u>		<u>Decrease Personnel Amount</u>	
National Centers for Environmental Information	Pos./BA	225	63,096	225	57,096	0	(6,000)
	FTE/OBL	222	63,096	222	57,096	0	(6,000)

Regional Climate Services Termination (-\$6,000, 0 FTE/ 0 Positions) – In order to fully support existing NOAA priorities, NOAA requests to terminate Regional Climate Services.

NOAA’s Regional Climate Services include the nationally coordinated development and delivery of regionally-focused environmental information, regional user engagement, the collection of requirements for product sustainment and development, and assessments of user value and impact. NOAA is proposing to continue to produce and deliver climate data, information, and knowledge for decision makers and other users at the national level, while State-funded Universities and State Climatologists may produce and deliver climate data, information, and knowledge for decision makers and other users at the local, state, and regional levels. The amount and quality of output would vary from state to state and region to region, and there will be indirect impacts over time to the quality of monthly, quarterly, annual, and National Climate Assessments.

The RCC program is a component of NOAA’s Regional Climate Services and is located at six universities and research institutions that are responsible for managing the RCC resources from NOAA and non-NOAA sources alike. Each RCC provides climate services tailored to the specific needs of the region within which it is located and responds to emerging issues, such as droughts and floods. NOAA funding largely supports the staff in the RCCs responsible for product production and delivery, and enables RCCs to respond to customer phone requests, collect current weather and climate information, and provide an active website that includes value-added climate information and products. Terminating the RCCs will result in a reassignment of staff, which will enable NOAA to better support other existing NOAA priorities. Other funding sources for RCCs include other Federal agencies, and partners at the local, regional, and state level.

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Performance Measure	2021	2022	2023	2024	2025
Percent of reported NOAA Cooperative Observer Data collected and disseminated (impacted by Regional Climate Services termination)					
with decrease	0%	0%	0%	0%	0%
without decrease	98%	98%	98%	98%	98%
Direct Obligations Uncapitalized	(6,000)	(6,000)	(6,000)	(6,000)	(6,000)
Budget Authority	(6,000)	(6,000)	(6,000)	(6,000)	(6,000)
Outlays	(2,520)	(2,520)	(2,520)	(2,520)	(2,520)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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(Direct Obligations amounts in thousands)

Activity: National Centers for Environmental Information
Subactivity: National Centers for Environmental Information

Object Class	2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	18,683	19,671	20,264	20,264	0
11.3	340	0	0	0	0
11.5	271	0	0	0	0
11.7	125	135	137	137	0
11.8	0	0	0	0	0
11.9	19,419	19,806	20,401	20,401	0
12	6,250	6,338	6,544	6,544	0
13	0	0	0	0	0
21	569	639	641	626	(15)
22	33	27	28	28	0
23	5,742	6,012	6,118	6,068	(50)
23.1	0	0	0	0	0
23.2	0	0	0	0	0
23.3	0	0	0	0	0
24	64	66	66	65	(1)
25.1	13,800	7,743	7,917	7,695	(222)
25.2	6,596	13,966	14,278	8,567	(5,711)
25.3	1,400	1,442	1,467	1,467	0
25.4	0	0	0	0	0
25.5	13	15	15	15	0
25.6	0	0	0	0	0
25.7	0	0	0	0	0
25.8	0	0	0	0	0
26	394	406	416	415	(1)
31	393	593	616	616	0
32	0	0	0	0	0
33	0	0	0	0	0
41	6,341	4,589	4,589	4,589	0
42	0	0	0	0	0
43	7	0	0	0	0
44	0	0	0	0	0
99	61,021	61,642	63,096	57,096	(6,000)

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Goal Statement

NOAA's satellite portfolio provides the backbone for the operational data products that support NOAA's work related to weather, climate, oceans, coasts, and ecosystems. NOAA satellite data drives critical decision-making and impacts national security and various sectors of the economy including agriculture, transportation, energy, construction, infrastructure, emergency management, and hazard mitigation.

Base Program

NOAA maintains two primary constellations of environmental satellites that produce crucial set of observations: polar-orbiting and geostationary satellites. The FY 2021 request enables NOAA satellite programs to continue to meet milestones, as well as to plan for future programs and comprehensive engineering solutions.

Statement of Operating Objectives

Geostationary Systems-R (GOES - R): See the Program Change for the proposed schedule, milestones, deliverables, performance goals and measurement data, and the budget profile.

Polar Weather Satellites (PWS): See the Program Change for the proposed schedule, milestones, deliverables, performance goals and measurement data, and the budget profile.

Projects, Planning, and Analysis (PPA):
Schedule and Milestones

FY 2021

- Metop SG: A/B System Preliminary Design Review (PDR)
- Metop SG: A/B System PDR

FY 2022

- Metop SG: Primary Ground System Test Readiness Review

FY 2023

- Metop SG: A1 Operational Readiness Review
- Metop SG: Start of A1 Product Operations

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FY 2024

- Metop SG: B1 Operational Readiness Review
- Metop SG: Start of B1 Product Operations

FY 2025

- Metop SG: Systems Acceptance Review

Deliverables

- Provide Metop SG data products to NWS

Outyear Funding Estimates

Projects, Planning and Analysis (PPA)	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	0	0	0	0	0	N/A	N/A
Total PPA Request	N/A	15,941	15,941	15,941	15,941	15,941	N/A	N/A

Cooperative Data and Rescue Services (CDARS): See the Program Change for the proposed schedule, milestones, deliverables, performance goals and measurement data, and the budget profile.

Space Weather Follow On (SWFO): See the Program Change for the proposed schedule, milestones, deliverables, performance goals and measurement data, and the budget profile.

**Geostationary Earth Orbit (GEO):
Schedule and Milestones**

FY 2021

- Initiate industry competitive Phase A studies of next gen GEO Imager instrument

FY 2022

- Initiate industry competitive Phase A studies for other next gen GEO instruments
- Initiate industry competitive Phase A studies of next gen GEO spacecraft

FY 2023

- Complete industry competitive Phase A studies of next gen GEO spacecraft

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- Finalize instrument requirements for implementation of next gen GEO instruments and complete acquisition strategy decision
- Complete GEO mission Systems Requirement Review/System Definition Review and Key Decision Point B

FY 2024

- Initiate procurements for instrument and spacecraft development (phase B-D)

FY 2025

- Complete procurements for instrument and spacecraft development
- Complete GEO mission Preliminary Design Review

Deliverables

- Mission Concept Review for GEO mission
- Initial Observational Requirements for GEO mission
- GEO-XO User Engagement Plan

Outyear Funding Estimates*

Geostationary Earth Orbit (GEO) (GEO-XO)	2020 & Prior	2021	2022*	2023*	2024*	2025*	CTC*	Total*
Change from 2021 Base	10,000	0	TBD	TBD	TBD	TBD	N/A	N/A
Total GEO Request*	10,000	10,000	TBD	TBD	TBD	TBD	N/A	N/A

* Outyear profiles for the GEO Phase B-E to be included in future budget requests.

**Systems/Services Architecture & Engineering (SAE):
Schedule and Milestones**

FY 2021

- Continue guiding NESDIS future architecture decisions as a result of the NSOSA study
- Continue demonstration of capabilities favored by NSOSA study results
- Develop Requirements documentation for next generation programs
- Release BAA to industry for detailed Joint Venture LEO technology capability and mission concept study proposals
- Award contracts for LEO capability technology and mission concept studies based on proposals received

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- Oversee the selected technology and capability demonstration efforts
- Collaborate with NASA on operational demonstration under the Earth Venture Mission 3 phased by NASA Announcement of Opportunity schedule
- Initiate infrastructure and product development for the first LEO SounderSat Joint Venture mission
- Collaborate with NASA to select the observation and/or technology to be pursued within the second Joint Venture mission
- Award contract for first Commercial Data Purchase
- Continue Commercial Weather Data Pilot activities
- Provide comprehensive assessments for integration, optimization, and sustainment of NOAA's Observing System Portfolio Management capability

FY 2022

- Continue guiding NESDIS future architecture decisions as a result of the NSOSA study
- Initiate additional elements of next generation architecture based on Analyses of Alternatives (AoAs), demonstrations, and formulation progress to date
- Develop and refine Requirements documentation for next generation programs
- Issue additional solicitation to industry and/or collaborate with NASA on technology/operational demonstrations for priority next generation observational needs
- Oversee the previously initiated technology and capability demonstration efforts
- Continue to collaborate with NASA on operational demonstration under the Earth Venture Mission 3 phased by NASA Announcement of Opportunity schedule
- Issue solicitation to industry for priority next generation observational needs and award contracts based on proposals received
- Evaluate and award proposals for the LEO SounderSat demonstration mission elements
- Initiate infrastructure and product development for follow-on Joint Venture LEO and GEO missions
- Continue purchase of radio occultation data under the first Commercial Data Purchase
- Continue Commercial Weather Data Pilot activities
- Provide comprehensive assessments for integration, optimization, and sustainment of NOAA's Observing System Portfolio Management capability

FY 2023 – 2025

- Initiate additional elements of next generation architecture based on AoAs, demonstrations, and formulation progress to date
- Initiate additional phases of technology and capability demonstration efforts
- Develop and refine requirements documentation for next generation programs

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- Develop mission elements for LEO SounderSat demonstration mission.
- Issue additional solicitations to industry for priority next generation observational needs and award contracts based on proposals received
- Continue evaluating proposals and awarding contracts for future Joint Venture missions
- Continue to collaborate with NASA on operational demonstrations under the Earth Venture Mission Program
- Continue purchase of radio occultation data under the first Commercial Data Purchase
- Issue additional solicitations for purchase of commercial weather data as warranted by evaluation of Commercial Weather Data Pilots
- Continue Commercial Weather Data Pilot activities
- Provide comprehensive assessments for integration, optimization, and sustainment of NOAA's Observing System Portfolio Management capability

Deliverables

- Preliminary Requirements Documents for the next generation of programs in pre-formulation
- Active enterprise risk management
- Active enterprise configuration control/management
- Industry contract award(s) for next generation concept studies
- Results of technology and capability demonstrations
- Assessment reports on commercial data pilots
- RFP to industry in support of future LEO sounding architecture
- Development and demonstration of evolving capabilities for NOAA's operational use, including new observations and/or technologies that will inform NESDIS' future space architecture and suite of products
- Faster transition of research capabilities into operational use, and at a lower cost

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Explanation and Justification

Line Item		2019 Actuals		2020 Enacted		2021 Base Program	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Geostationary Systems - R	Pos/BA	59	406,514	68	304,056	68	304,056
	FTE/OBL	58	409,685	67	304,056	67	304,056
Jason-3	Pos/BA	0	0	0	0	0	0
	FTE/OBL	0	201	0	0	0	0
Joint Polar Satellite Systems	Pos/BA	116	543,314	0	0	0	0
	FTE/OBL	115	550,777	0	0	0	0
Polar Follow On	Pos/BA	28	325,219	0	0	0	0
	FTE/OBL	28	326,699	0	0	0	0
Polar Weather Satellites	Pos/BA	0	0	142	745,000	142	745,000
	FTE/OBL	0	0	140	745,000	140	745,000
Cooperative Data and Rescue Services	Pos/BA	2	26,468	4	11,350	4	10,900
	FTE/OBL	2	16,749	4	11,350	4	10,900
Space Weather Follow On	Pos/BA	3	26,965	11	64,000	11	64,000
	FTE/OBL	3	26,804	11	64,000	11	64,000
COSMIC 2/GNSS RO	Pos/BA	2	5,707	2	5,892	2	5,892
	FTE/OBL	2	6,392	2	5,892	2	5,892
Satellite Ground Services	Pos/BA	46	56,034	73	55,707	60	38,509
	FTE/OBL	46	55,952	72	55,707	59	38,509
System Architecture and Advanced Planning	Pos/BA	9	4,789	0	0	0	0
	FTE/OBL	9	6,169	0	0	0	0
Projects, Planning and Analysis	Pos/BA	21	39,642	25	31,000	14	15,941
	FTE/OBL	21	36,761	25	31,000	14	15,941
Commercial Weather Data Pilot	Pos/BA	1	5,734	0	0	0	0
	FTE/OBL	1	6,855	0	0	0	0
Geostationary Earth Orbit (GEO)	Pos/BA	0	0	0	0	0	10,000
	FTE/OBL	0	0	0	0	0	10,000
Systems/Services Architecture & Engineering (SAE)	Pos/BA	0	0	24	33,990	35	34,322
	FTE/OBL	0	0	24	33,990	35	34,322
Total NESDIS Systems Acquisition	Pos/BA	287	1,440,386	349	1,250,995	336	1,228,620
	FTE/OBL	285	1,443,044	345	1,250,995	332	1,228,620

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Geostationary Systems – R (GOES-R) (<http://www.goes-r.gov>): provides NOAA's latest generation of Geostationary Operational Environmental Satellites (GOES). The GOES-R Series provides advanced imagery and atmospheric measurements of Earth's weather, oceans and environment, real-time mapping of lightning activity, and improved monitoring of solar activity and space weather. Observations from these satellites will provide coverage of the western hemisphere from a geostationary orbit, allowing continuous monitoring of severe storms, tropical cyclones, volcanic eruptions, fire hot spots, cloud and atmospheric moisture changes, lightning, currents flow dynamics, and atmospheric smoke and dust. The GOES-R Series program will provide end-to-end system development and integration through the acquisition and deployment of the space, ground system, and satellite launch. NOAA will maintain two operational GOES satellites designated as GOES East and GOES West and will further maintain one on-orbit spare positioned midway between them. This on-orbit spare allows NOAA to quickly replace a failed satellite and ensure continuous coverage within the geostationary orbit. This program also supports risk reduction efforts for future geostationary requirements as part of its continuing work with SAE on future GEO architecture efforts.

The GOES program, which has provided essential observational data since 1975, supports NOAA's National Weather Service (NWS) in forecasting, tracking, and monitoring severe storms. The GOES-R Series launched the second satellite on March 1, 2018. GOES-S became GOES-17 when it reached geostationary orbit. GOES-17 became operational as GOES West on February 12, 2019. The GOES-R Series satellites provide significant enhancements for all operational users of geostationary observations, in particular NWS. For example, calculating the probability that a developing storm will produce severe weather within the next hour will be improved in the GOES-R Series era, given the additional information from the Advanced Baseline Imager (ABI) and total lightning data from the Geostationary Lightning Mapper (GLM). The products resulting from this data will improve as a result of more frequent images, a factor of four improvement in spatial resolution, more spectral bands for inferring cloud properties, and lightning mapping. The increased quantity, quality, and accuracy of satellite data that the GOES-R Series produces will enable NWS to issue improved and timelier weather watches, warnings, and advisories to the public, protecting life and property.

The GOES-R Series provides data that enhances a number of NOAA products and services, including:

- Cloud images and precipitation estimates for hurricanes and other coastal storms;
- Images of the U.S. and adjacent ocean areas to enable the detection, tracking, and intensity changes of hurricanes and other major weather events; and
- Improved numerical weather prediction models and flood/drought assessments.

Polar Weather Satellites (PWS): includes the NOAA/NASA Suomi NPP, the NOAA-20/JPSS-1, JPSS-2, JPSS-3, and JPSS-4 satellites. It also encompasses the JPSS ground segment, as well as the operational science, maintenance, and archiving through FY 2038 to ensure that NOAA continues to provide accurate and timely weather forecasts and warnings. NOAA is developing the JPSS-3 and JPSS-4 instruments and spacecraft buses as copies of JPSS-2. This allows NOAA to take advantage of the JPSS-2 instrument

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development and spacecraft bus contracts to reduce cost and risk. The full NOAA JPSS-2, -3 and -4 missions are comprised of the Advanced Technology Microwave Sounder (ATMS), Cross-track Infrared Sounder (CrIS), Visible Infrared Imaging Radiometer Suite (VIIRS), and the Ozone Mapping Profiler Suite-Nadir (OMPS-N) instruments. NASA's Radiation Budget Instrument (RBI) was demanifested from JPSS-2. NOAA will also continue the development, maintenance, and sustainment of the ground systems, evolve ground systems to align with changing technologies and threats, and conduct risk reduction efforts to support current and future polar data acquisition requirements.

The primary purpose of the PWS program is to provide global meteorological observations to enable short-term (0-3 days), and mid-range (3-7 days) warnings of severe weather events critical for emergency managers and communities to make timely decisions to protect life and property. In addition, JPSS missions provide an array of global environmental observations for short term, mid-range, and seasonal monitoring and forecasting of weather and a wide variety of environmental phenomena, including:

- Operational and short-term forecasts in Alaska;
- Severe storm and flood warnings;
- Tropical cyclone and hurricane warnings;
- Hydrologic forecasts;
- Ocean surface temperature, ocean color for ocean monitoring e.g., reef conditions, harmful algal bloom warnings, etc.;
- Aviation forecasts (domestic, military, and international);
- Ice monitoring and forecasting;
- Ozone monitoring;
- Environmental air quality monitoring;
- Detection and analysis of wildfires and volcanic eruptions including volcanic ash warnings for aviation safety;
- Short-term and mesoscale forecasts;
- Seasonal and inter-annual climate forecasts;
- Decadal-scale monitoring of climate variability; and
- Assessment of long-term global environmental change.

PWS contributes to the U.S./European partnership of operational civilian polar-orbiting satellites that together provide the primary input data for all numerical weather prediction (NWP) models. Polar satellites contribute ~85 percent of all data for NWP models.

This program also supports risk reduction efforts for future polar requirements as part of its continuing work with SAE on future low Earth orbiting (LEO) architecture efforts.

Projects, Planning, and Analysis (PPA): PPA evaluates and develops space-based earth and solar observation collection methods that advance NOAA's various missions, working in collaboration with domestic and foreign organizations when appropriate. The PPA

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mission scope includes managing the projects and partnerships for diverse missions including: Space Weather Follow On (SWFO), radio occultation (COSMIC-2/GNSS-RO), Cooperative Data and Rescue Services (CDARS), data exploitation from EUMETSAT with Metop Second Generation (Metop SG) satellites, and legacy geostationary (GOES-N Series) mission.

PPA integrates systems engineering, mission assurance, science planning, and product development into its missions, with guidance on these matters coming from the Office of Systems/Services Architecture and Engineering (SAE).

PPA's core responsibilities include:

- Project management and execution of diverse flight projects
- Conceptual and detailed engineering for these flight project activities
- Acquisition of partnership-based flight and ground project systems (e.g., spacecraft, instruments, launch services, and data acquisition services).
- Conducting pre-formulation activities to match available technologies with observational requirements.
- Support OPMA-managed flight projects through validation and transition to operations

PPA's role in developing and maintaining our partnership-based flight project systems is increasingly important as U.S. forecasting continues to depend on the collaborations and contributions of the world's space agencies to the global observing system.

NOAA's long-standing international partnership with EUMETSAT under the Joint Polar System Agreement provides high-quality, timely, global observations required for weather and environmental prediction over the next twenty years. EUMETSAT will launch their Metop SG A1 and B1 satellites in late 2022 and late 2023, respectively. In order to continue to deliver products from the Metop SG satellites, NOAA must be able to securely ingest the Metop SG data, and implement the ground system modifications necessary to process, distribute and archive Metop SG and other partner mission data. Advanced infrared and microwave instruments on Metop SG will provide finer details of moisture content and temperature inside storms that the NWS' NWP models need in order to a) forecast if storms are strengthening or weakening, b) estimate wind speed and precipitation of storms 3-5 days in advance, and c) forecast storms that will evolve to dangerous superstorms.

Cooperative Data and Rescue Services (CDARS) (<https://www.noaasis.noaa.gov/POLAR/ARGOS/argos.html>): The CDARS program supports the space-based component of Argos Data Collection System (DCS).

The Argos Data Collection and location System (DCS) is a data collection and relay program that provides global coverage and platform location services dedicated to studying and protecting the environment. The Argos system supports a wide variety of applications including environmental monitoring, marine fisheries applications, and maritime security applications. The Argos system

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consists of DCS instruments that are hosted on polar-orbiting satellites operated by EUMETSAT, the Indian Space Research Organisation (ISRO), and NOAA in three sun synchronous orbits that ensure timely reporting at all latitudes. The current DCS instruments on the NOAA polar-orbiting satellites (NOAA-15,-18,-19) are operating well beyond their design life. To provide continuity of service, the NOAA CDARS program, under an international agreement with the French space agency Centre National d'Etudes Spatiales (CNES), is providing accommodation for the next Argos DCS payload (Argos-4), built and provided by CNES, on a commercial spacecraft using a US Air Force Hosted Payload Solutions (HoPS) contract. In 2018, a delivery order was awarded to General Atomics to integrate and launch the Argos-4 payload on the Orbital Test Bed (OTB)-3 spacecraft by December 31, 2021.

Space Weather Follow On (SWFO): The SWFO is designed to meet NOAA's need for operational coronal mass ejection (CME) imagery and solar wind measurements. NOAA is working to have instruments in place to address the very high risk of loss of these observations before legacy space-based systems cease to provide useful data. CME and solar wind measurements are necessary for NOAA to provide warnings for the two major types of space weather events that affect the Earth: solar radiation storms and geomagnetic storms. Satellites are mostly impacted by solar radiation storms. Commercial airlines are re-routed during both radiation and/or geomagnetic storms. These storms cause communication blackouts and impacts to navigation accuracy. The most extreme geomagnetic storms have resulted in severe impacts to commercial power grids and impacted hundreds of millions of people. Satellite data, including CME imagery and measurement of solar wind plasma, are critical to providing accurate and early warnings of these potentially destructive space weather events. Requirements for these measurements derive from the NOAA Space Weather Mission Service Area Observational User Requirements Document (OURD) baselined by the NOAA Observing System Council (NOSC) in November 2017.

Currently, CME measurements at the Earth-Sun Lagrange-1 (L1) point are only being provided by the NASA-European Space Agency research Solar and Heliophysics Observatory (SOHO) that was launched in 1995. SOHO is more than 20 years old and is operating well past its mission design life. Without CME imagery, the 1-4 day lead-time of likely storm conditions will be degraded, thereby affecting the accuracy of geomagnetic storm watches and endangering U.S. infrastructure. SWFO design ensures the continuity of CME imagery for operational use by the NWS's Space Weather Prediction Center for geomagnetic storm watches beyond SOHO. NOAA has been working with Naval Research Laboratory (NRL) to develop flight compact coronagraphs (CCOR) to obtain CME imagery necessary for tracking eruptive events from the sun and provide initial estimates of the likelihood and severity of any impacts to Earth.

NOAA will also replenish the capability of detecting solar wind upstream from Earth. Currently, solar wind measuring capability is provided by NOAA's DSCOVR, with the 25-year-old Advanced Composition Explorer (ACE) providing backup. However, DSCOVR is a research-grade satellite susceptible to mission failure with the loss of any of several single string critical components. Loss of DSCOVR without a replacement will significantly reduce NOAA's ability to monitor solar wind and provide short-term warnings (15-45 minutes) of

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space weather storms. The Solar Wind Instrument Suite (SWIS) to be accommodated on the SWFO-L1 satellite mission will provide the required solar wind data. The SWIS will include a Solar Wind Plasma Sensor (SWiPS), a set of magnetometers (MAG), and a low-energy ion spectrometer called the SupraThermal Ion Sensor (STIS).

The SWFO Program is being developed to take advantage of a rideshare opportunity on NASA's Interstellar Mapping and Acceleration Probe (IMAP) mission scheduled for launch in 2024. NOAA has established an Interagency Agreement (IAA) with NASA for assisted acquisition of the SWFO-L1 spacecraft and the SWIS instruments. The NRL is responsible for the development and delivery of the CCOR instruments under an IAA with NOAA oversight. On November 19, 2019, the Deputy Secretary of Commerce signed the SWFO Milestone 2/3 Decision Memorandum establishing the program baseline.

Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC)-2 / Global Navigation Satellite System (GNSS) Radio Occultation (RO): COSMIC-2/GNSS RO observations use signals of opportunity from GNSS sources such as the U.S. Global Positioning System (GPS) to measure environmental parameters as Earth's atmosphere occults the GNSS source. New satellite configurations of GNSS signal processing can yield additional environmental parameters from reflections of these signals of opportunity off of the ocean and land surface. The measurements support the NWS mission to provide weather, water, climate, and space weather forecasts for the protection of life, property, and enhancement of the national economy. RO has been shown to be one of the most impactful observations for medium and long-term forecast skill. It also yields measurements of the ionosphere important for space weather prediction. The COSMIC-2/GNSS RO program seeks to provide consistent global geographically and temporally distributed RO sounding profiles to the NWS to improve the quality of forecast. NOAA participates in the COSMIC-2 collaboration with Taiwan and the U.S. Air Force (USAF). COSMIC-2 is a six-satellite constellation of spacecraft with RO instruments launched to the equatorial orbit by the USAF on June 24, 2019. The USAF provided the RO sensors and Taiwan provided the spacecraft. Taiwan is the satellite operator. NOAA operates a ground system consisting of a network of ground reception stations and a RO data processing center. NOAA has data access partnerships to acquire satellite-based GNSS data from other agencies, including NASA, EUMETSAT, German Aerospace Center (DLR), Japanese Aerospace Exploration Agency (JAXA), the Korea Aerospace Research Institute (KARI), and the Spanish National Research Council and will continue to pursue others as they are available. The COSMIC-2/GNSS RO program will leverage our ground system for timely acquisition and processing of satellite-based GNSS data from these partner agencies. The program will assist NOAA and partner agencies efforts to improve the on-orbit performance of satellite instruments that exploit GNSS signals of opportunity, to host these instruments on new satellites, and to better use the data in terrestrial and space weather applications.

Satellite Ground Services (SGS): The SGS plans and executes common ground services for NOAA's satellite and information capabilities. Ground services are critical to deriving benefit from NOAA's satellite missions.

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SGS' core responsibilities include planning, acquisition, development, integration, transition to operations, and sustainment of common ground services for NOAA's environmental satellite systems and long term stewardship of environmental data. SGS provides engineering and project management for ground systems design, development, integration and testing, infrastructure, and facilities. In addition, SGS participates in system verification and validation efforts and also in life cycle reviews for satellite acquisition programs and projects.

SGS is evolving the way data is ingested, processed, accessed, and archived. SGS' Operational Secure Ingest Service will ingest data from external partners and commercial providers, and securely screen the data, expanding the amount and diversity of data available for NOAA's weather forecasting and environmental monitoring missions. SGS will provide this, and other services in the cloud; providing flexibility, enabling collaboration and application of new techniques such as artificial intelligence, while avoiding costs of operating equipment at government data centers.

Geostationary Earth Orbit (GEO): GEO observations and measurements, provided by NOAA assets, partner assets or commercially procured, are critical for issuing short term watches and warnings for weather, and space weather events. GEO observations and measurement include data products from specific missions, as well as enterprise or blended products that are source-agnostic. By 2031, GOES-16 and GOES-17 will have reached the end of their design lives and NOAA will no longer be able to provide an on-orbit spare satellite in geostationary orbit. The NOAA GEO will provide the development of the next generation of satellites in geostationary and other Earth and Solar orbits to provide continuity of data from the GOES-R Series. GEO-XO moves into the formulation phase in FY 2021 and transfers into the new GEO budget line. During the formulation phase, GEO will establish the final definition of the overall program scope and architecture based on impact analysis and cost/benefit assessments. NOAA will integrate community and industry input into potential options, inform development activities for future systems, and confirm the viability of commercial hosting architectures.

Systems/Services Architecture & Engineering (SAE): SAE provides governance over the NESDIS Enterprise Architecture, including flight, ground, and related services, to enable the achievement of NESDIS strategic goals and objectives in a cost-effective manner, and provides stewardship across NESDIS in the implementation of its strategic plan. SAE manages the mission concept development activities for the next generation Low Earth Orbit (LEO), Geostationary Earth Orbit (GEO), and Space Weather programs. SAE also manages the Commercial Data Program, which focuses on acquiring, expanding, and evaluating commercial data, and Joint Venture Partnerships, which initiates activities with NASA, other agencies, or the commercial sector.

- **Architecture, Requirements & Planning:** leads and manages NESDIS' assessments of and planning for future enterprise architectures. This includes performing trade studies with industry, pre-formulation activities, and demonstrations, as well as

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developing roadmaps for achieving future architectures. It manages the NESDIS requirements development process, including the development of project Level 1 requirements in collaboration with other NESDIS offices. Architecture, Requirements & Planning maintains the NESDIS products and services baseline, leads the prioritization and governance process to make changes to that baseline, and validates that baseline products are meeting requirements.

Architecture, Requirements & Planning also guides NESDIS in the implementation of its strategic plan, interfaces with other agencies in service to NESDIS strategic goals, manages the NESDIS enterprise risk process, and develops and maintains systems engineering and program management guidance applicable to all NESDIS programs and activities.

Additional Architecture, Requirements & Planning responsibilities include:

- Undertaking quantitative assessments for objective analyses to evaluate relative value and benefits of future data sources and satellite architectures;
 - Providing an independent assessment to the milestone decision authority for all Key Decision Points and other milestones to ensure systemic compliance with architecture and effective implementation of requirements; and
 - Managing the implementation of the NOAA Administrative Order 212-16 “Observing Systems Portfolio Management,” including validation of NOAA observation requirements, conducting observing system impact and portfolio analyses. The NOAA Technology, Planning and Integration for Observation division (TPIO) supports all branches of NOAA and manages the NOAA Observing System Integrated Analysis (NOSIA) which is used to manage NOAA’s current and future observing system investments.
- **Commercial Data Program:** The NOAA Commercial Space Policy calls for NOAA to undertake projects as appropriate to demonstrate the viability of integrating commercial data into the NOAA operational data stream, and the ability of the commercial sector to establish and sustain capabilities to meet NOAA’s ongoing operational needs. NESDIS regularly conducts assessments to determine the viability of commercial solutions to address NOAA observing system objectives prior to considering the purchase of commercial data for operational use. In FY 2016, NESDIS initiated Commercial Weather Data Pilot (CWDP) Round 1 to purchase, evaluate, and calibrate available commercial satellite data. After evaluating the commercial data in FY 2017, NOAA awarded an expanded CWDP Round 2 contract in FY 2018. Each pilot project includes a Request for Proposal (RFP) and contract(s) for sample(s) of one type of data or other capability; for data pilots, securely ingesting the delivered data; engineering, quality, and performance assessments of the delivered capability; and assessing the potential weather forecast and/or mission impact of the vendor’s capability.

The Commercial Data Program will continue to assess new types of data and capabilities that are available on the commercial

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market. Through CWDP, NESDIS will continue to:

- Test commercially available capabilities to assess the accuracy, value, and impact of the commercial data or service - to the extent possible such capabilities will be evaluated by comparison to established and validated NOAA operational products and deliverables;
- Ensure the necessary ground systems, services, IT security interfaces, and data processing are in place for ingesting the commercial data selected; and
- Deliver assessment report(s) on the viability of the pilot data set(s) and the capabilities of the commercial systems to meet NOAA observation requirements for operational services.

If NOAA determines that data or services licensed and evaluated through the CWDP are cost effective, operationally viable, and appropriate for meeting a NOAA observation requirement, NESDIS will pursue purchase of the commercial data or service based on its ability to provide an ongoing operational service as part of the NOAA observation architecture.

- **Joint Venture Partnerships:** The National Academies' 2017 Earth Science and Applications from the Space Decadal Survey recommended that NOAA and NASA develop a cost effective and joint framework for identifying and executing activities that advance NOAA's observation capabilities; the Decadal Survey also recommended that NOAA provide funding to support its share of the collaboration. The *National Integrated Drought Information System Reauthorization Act of 2018* amends the *Weather Research and Forecasting Innovation Act of 2017* and requests NOAA to analyze data sources that can lower the cost of observations or provide value-adding technological advancements to improve weather forecasting. Additionally, community feedback on implementation of recommendations from the NSOSA study indicated the need for funded engagement with industry early on in program and project development to best leverage industry's investments and ability to innovate.

In FY 2020, Joint Venture Partnerships was established to initiate activities with NASA, other agencies, or the commercial sector. Through Joint Venture Partnerships, NESDIS will continue to:

- Leverage NASA's Earth Science and Heliophysics satellite programs including their observation of the atmosphere, oceans, land surface, and the Sun and sun-earth environment, to develop and demonstrate evolving capabilities for NOAA's operational use.
- Co-implement a NASA Announcement of Opportunity, either through an Earth Venture mission, which demonstrates new observations, or through the Earth Science Technology Office, which demonstrates new technologies.
- Further optimize partnerships to fully leverage ongoing industry development of new observation capabilities, spacecraft design, and/or ground system capabilities. These partnerships address areas across NOAA's broad mission objectives, including the coupling of the water and energy cycles, extending and improving weather and water quality forecasts, and

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- sea level rise.
- Manage unique operational characteristics for the selected capabilities, such as download bandwidth, ingest and processing of data on operational timelines, and the development of operational algorithms for NOAA use. Data types of mutual interest to NOAA and NASA and/or aligned to current work in industry include microwave and infrared atmospheric soundings, ocean color, sea surface height, 3D winds, visible and infrared imagery, microwave imagery, and global precipitation rate.

PROGRAM CHANGES FOR FY 2021

NOAA requests a total increase of \$6,672 and 0 FTE/ 0 positions in FY 2021 program changes for the Systems Acquisition activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by Subactivity can be found in the NOAA Control Table (p. Control Table - 6).

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(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Polar Weather	Pos./BA	142	745,000	142	657,835	0	(87,165)
Satellites	FTE/OBL	140	745,000	140	657,835	0	(87,165)

Polar Weather Satellites Decrease (-\$87,165, 0 FTE/ 0 Positions) –NOAA proposes a decrease to Polar Weather Satellites (PWS) which is sufficient to maintain the planned production and launch cadence. NOAA will continue the build of the JPSS-2 instruments and spacecraft, as well as the JPSS-2 satellite level integration and testing, in order to maintain the JPSS-2 launch schedule. NOAA will continue the development of the spacecraft and ATMS, CrIS, VIIRS, and OMPS instruments for JPSS-3 and JPSS-4, in order to maintain synergies with JPSS-2 and efficiencies of the block buy approach for these elements of the PWS. NOAA will continue the maintenance and sustainment of the ground system supporting the Suomi NPP and NOAA-20 satellites and continue development and testing of the ground system to support JPSS-2. NOAA will also continue to work to refine its constellation strategy to assure PWS continuity.

To keep NOAA’s commitment for a robust polar orbiting weather satellite program, during FY 2021 NOAA will focus its efforts on the JPSS-2 launch and on development of the JPSS-3 instruments on the critical path. This reduction in funds will not impact the development schedule and planned launch dates for JPSS 3 and 4. The budget estimates above, and those located in the PFO LCC tables, are placeholders. These numbers and the schedule will be updated after the Department of Commerce completes its Independent Cost Estimate (ICE) and JPSS-3 and JPSS-4 are baselined in FY 2020.

Schedule and Milestones

FY 2021

- Continue assembly, integration, and test of JPSS-3 spacecraft
- Conduct pre-environmental reviews for JPSS-3 ATMS and OMPS instruments
- Initiate JPSS-4 instrument level environmental testing
- Sustain and maintain Suomi NPP and NOAA-20
- Sustain and maintain ground system to support Suomi NPP, NOAA-20, and prepare for JPSS-2

FY 2022

- Deliver JPSS-2 satellite to launch site

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(Dollar amounts in thousands)

- Integrate potential ride-shares for JPSS-2 launch
- Conduct launch site integration and test in preparation for JPSS-2 launch
- Launch JPSS-2
- Deliver JPSS-3 instruments
- Continue assembly, integration, and test of JPSS-3 spacecraft
- Conduct JPSS-4 VIIRS instrument level environmental testing
- Sustain and maintain Suomi NPP, NOAA-20
- Sustain and maintain ground system to support Suomi NPP, NOAA-20, and prepare for JPSS-2

FY 2023

- Commission and operate JPSS-2
- Conduct System Integration Review for JPSS-3
- Continue JPSS-4 instrument level environmental testing
- Initiate procurement of JPSS-3 launch services
- Sustain and maintain NOAA-20 and JPSS-2
- Sustain and maintain ground system to support NOAA-20 and JPSS-2

FY 2024

- Deliver JPSS-4 instruments
- Sustain and maintain NOAA-20 and JPSS-2
- Sustain and maintain ground system to support NOAA-20 and JPSS-2

FY 2025

- Continue JPSS-4 satellite integration and testing
- Sustain and maintain ground system to support NOAA-20 and JPSS-2

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(Dollar amounts in thousands)**

Deliverables

- JPSS-2 satellite for launch by Q1 FY 2023
- On-orbit support for Suomi NPP and NOAA-20

Satellite*	Launch Commitment Date**	Target Launch Date***
JPSS-2	Q1 FY 2023	Q2 FY 2022
JPSS- 3**	Q4 FY 2026	TBD
JPSS-4**	Q4 FY 2031	TBD

* Launch Readiness Dates were previously reported due to their relevance in contingency mission discussions. NOAA will no longer be reporting them to remain consistent with the Annual Satellite Reports.

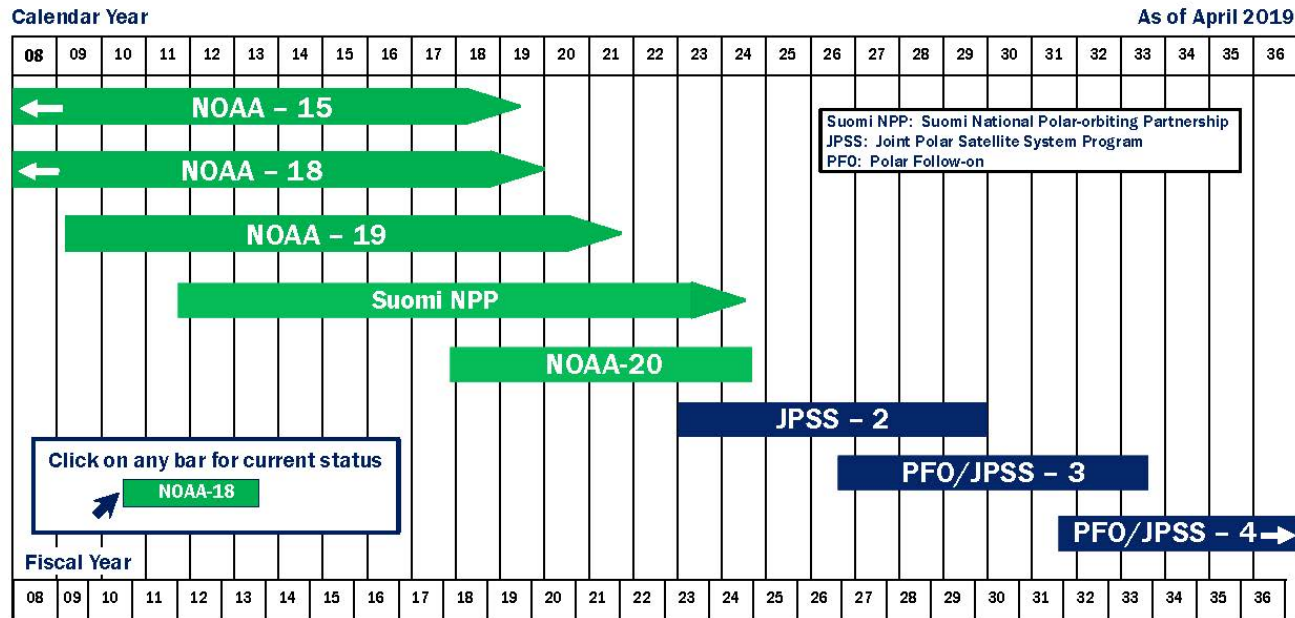
** Launch Commitment Dates for JPSS-3/4 will be re-evaluated after PFO is baselined in FY 2020.

*** Target Launch Date is only known after coordination with the launch services provider and in accordance with the NESDIS 1330 Polar-Orbiting Launch Policy.

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NOAA Polar Satellite Programs Continuity of Weather Observations



Approved: *[Signature]*
 Assistant Administrator for Satellite and Information Services

The Polar Flyout Chart above will be updated after the PFO baseline is complete.

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Performance Measures	2021	2022	2023	2024	2025
Percent of milestones completed on time with decrease	75%	75%	75%	75%	75%
Percent of milestones completed on time without decrease	75%	75%	75%	75%	75%
Outyear Costs:					
Direct Obligations	(87,165)	(61,359)	(176,885)	(146,908)	(296,278)
Uncapitalized	0	0	0	0	0
Budget Authority	(87,165)	(61,359)	(176,885)	(146,908)	(296,278)
Outlays					
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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(Dollar amounts in thousands)

Outyear Funding Estimates*

PWS	2020 & Prior	2021	2022	2023	2024	2025	CTC*	Total*
Change from 2021 Base	N/A	(87,165)	(90,018)	(176,885)	(146,908)	(296,278)	N/A	N/A
Total PWS PAC Request	11,920,785	657,835	665,020	574,521	608,130	462,399	TBD	TBD
Total JPSS ORF Request	20,000	20,000	20,000	20,000	20,000	20,000	0	120,000
JPSS PAC**	10,170,027	371,538	253,020	139,521	135,576	132,443	0	11,202,125
JPSS LCC***	10,190,027	391,538	273,020	159,521	155,576	152,443	0	11,322,125
PFO LCC***	1,750,758	286,297	412,000	435,000	472,554	329,956	TBD	TBD

* Outyears are estimates. Future requests will be determined through the annual budget process. The outyears estimates maintain the established LCCs for the combined programs.

** The FY 2020 & Prior column accounts for the FY 2020 Enacted level and the NOAA deobligations assessment.

*** The PFO LCC will change once the program is baselined. The outyear profile for the FY 2021 Budget request reflects the program plan in place prior to the baseline, and will be updated.

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Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Systems Acquisition
Subactivity Polar Weather Satellites

Object Class	2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	20,137	20,530	20,684	20,684	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	1,110	1,132	1,132	1,132	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	21,247	21,662	21,816	21,816	0
12 Civilian personnel benefits	6,407	6,532	6,576	6,576	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	287	259	259	259	0
22 Transportation of things	3	0	0	0	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	488	488	488	488	0
23.2 Rental Payments to others	6	6	6	6	0
23.3 Communications, utilities and misc charges	235	235	235	235	0
24 Printing and reproduction	13	6	6	6	0
25.1 Advisory and assistance services	272,722	14,215	14,215	14,215	0
25.2 Other services from non-Federal sources	23,181	25,503	25,503	25,503	0
25.3 Other goods and services from Federal sources	519,880	645,142	644,813	557,648	(87,165)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	10,732	12,244	12,244	12,244	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	237	169	300	300	0
31 Equipment	315	735	735	735	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	21,674	17,804	17,804	17,804	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	50	0	0	0	0
44 Refunds	0	0	0	0	0
99 Total obligations	877,477	745,000	745,000	657,835	(87,165)

**Department of Commerce
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Procurement, Acquisition, and Construction
PROGRAM INCREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Increase	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Geostationary Systems - R	Pos./BA	68	304,056	68	334,500	0	30,444
	FTE/OBL	67	304,056	67	334,500	0	30,444

GOES-R Series Sustainment (\$30,444, 0 FTE/ 0 Positions) - NOAA proposes an increase for the near term sustainment funds in the GOES-R Series program. These funds will continue sustainment of the GOES-R Series Ground System, including replacement of the IBM servers, in compliance with requirements under the *Consolidated Appropriations Act, 2014* (P.L. 113-76) that limits DOC, DOJ, NASA, and NSF from using appropriated funds to acquire a high- or moderate-impact system produced, manufactured, or assembled by China, and the Committee on Foreign Investment in the United States (CFIUS) to discontinue use of Chinese data systems by FY 2022.

Schedule and Milestones

FY 2021

- Complete GOES-T satellite environmental test
- Continue GOES-U I&T
- Continue sustainment of GOES-R Series Ground System, including replacement of IBM servers

FY 2022

- Continue GOES-U I&T
- Continue sustainment of GOES-R Series Ground System, including completing the replacement of IBM servers

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PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

FY 2023

- Continue GOES-U I&T

FY 2024

- Complete GOES-U I&T
- Ship GOES-U to launch base and prepare to launch GOES-U

FY 2025

- Launch GOES-U

Deliverables

Spacecraft*	Launch Commitment Date	Target Launch Date
GOES-T	Q4 FY 2022***	Dec 2021***
GOES-U**	Q1 FY 2025	TBD

* Launch Readiness Dates were previously reported due to their relevance in contingency mission discussions. NOAA will no longer be reporting them to remain consistent with the Annual Satellite Reports.

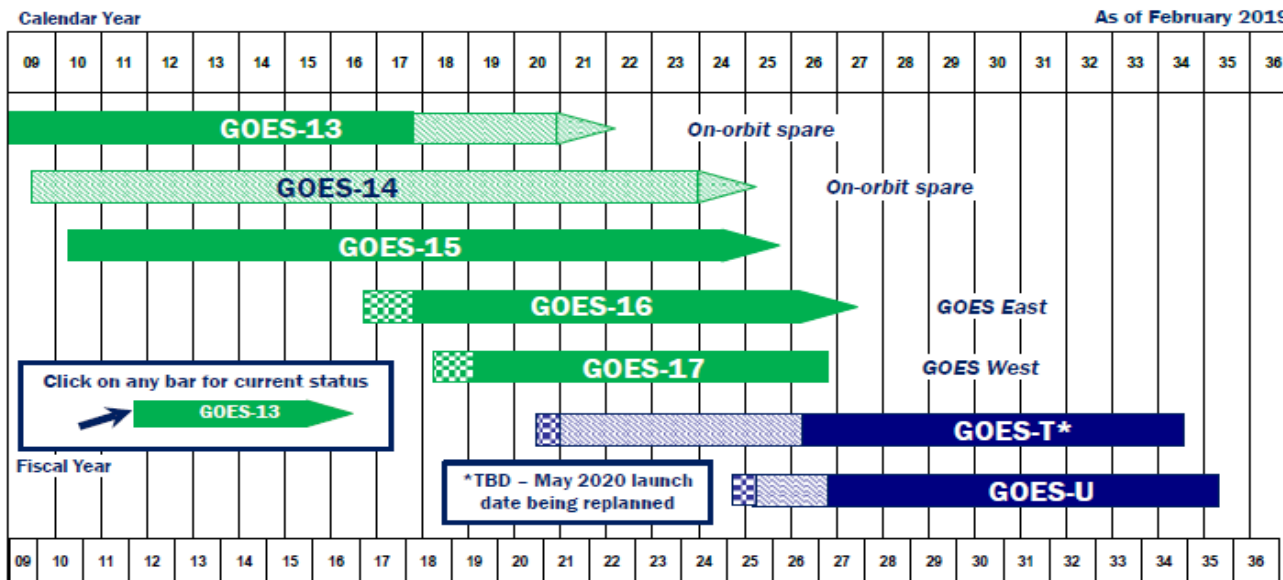
** The GOES-U target launch date will be identified in coordination with the launch services provider within three years of the Launch Commitment Date.

*** The GOES-R LCC is pending an update to reflect the requirements for the server replacement and sustainment costs for the GOES-R Series ground system through 2036. This profile will be updated after the Department of Commerce completes their ICE and the MDM is approved and released.

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PROGRAM INCREASE FOR 2021
 (Dollar amounts in thousands)



NOAA Geostationary Satellite Programs Continuity of Weather Observations



Approved:
 Assistant Administrator for Satellite and Information Services

- In orbit, operational
- In orbit, storage
- In orbit, checkout
- Planned in-orbit Storage
- Planned in-orbit Checkout
- Planned Mission Life
- Reliability analysis-based extended weather observation life estimate (60% confidence) for satellites on orbit for a minimum of one year – Most recent analysis: June 20, 2018

**Department of Commerce
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PROGRAM INCREASE FOR 2021**
(Dollar amounts in thousands)

Performance Measures	2021	2022	2023	2024	2025
Percent of milestones completed on time with increase	75%	75%	75%	75%	75%
Percent of milestones completed on time without increase	75%	75%	75%	75%	75%
Outyear Costs:					
Direct Obligations	30,444	(11,556)	(54,056)	(54,056)	(218,029)
Uncapitalized	0	0	0	0	0
Budget Authority	30,444	(11,556)	(54,056)	(54,056)	(218,029)
Outlays	12,786	(4,854)	(22,704)	(22,704)	(91,572)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

**Department of Commerce
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PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

Outyear Funding Estimates*

GOES-R Series	2020 & Prior**	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	30,444	(11,556)	(54,056)	(54,056)	(218,029)	N/A	N/A
Total GOES-R Series PAC Request	8,910,042	334,500	292,500	250,000	250,000	86,027	TBD	TBD
Total GOES-R Series ORF Request	135,600	33,900	33,900	33,900	33,900	33,900	372,900	678,000
GOES-R Series life cycle costs (LCC)***	9,045,642	368,400	326,400	283,900	283,900	119,927	TBD	TBD

* Outyears are estimates. Future requests will be determined through the annual budget process.

** The FY 2020 & Prior column has been adjusted to account for the FY 2020 Enacted amount, including the mandatory deobligation assessment.

*** The GOES-R Series LCC is pending an update to reflect the requirements for the server replacement and sustainment costs for the GOES-R Series ground system through 2036. This profile will be updated after the Department of Commerce completes their ICE and the MDM is approved and released.

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Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Systems Acquisition
Subactivity: Geostationary Systems - R

Object Class		2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1	Full-time permanent compensation	8,173	8,385	8,469	8,469	0
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	39	40	40	40	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	8,212	8,425	8,509	8,509	0
12	Civilian personnel benefits	2,625	2,696	2,723	2,723	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	267	382	382	382	0
22	Transportation of things	0	1	0	0	0
23	Rent, communications, and utilities	0	0	0	0	0
23.1	Rental payments to GSA	633	390	390	390	0
23.2	Rental Payments to others	2	2	2	2	0
23.3	Communications, utilities and misc charges	0	0	0	0	0
24	Printing and reproduction	0	1	1	1	0
25.1	Advisory and assistance services	265	265	265	265	0
25.2	Other services from non-Federal sources	5,149	5,149	5,149	5,149	0
25.3	Other goods and services from Federal sources	178,406	258,990	258,880	289,324	30,444
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	1,472	625	625	625	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	21	5	5	5	0
31	Equipment	202,090	20,328	20,328	20,328	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	10,435	6,797	6,797	6,797	0
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	108	0	0	0	0
44	Refunds	0	0	0	0	0
99	Total obligations	409,685	304,056	304,056	334,500	30,444

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(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Increase	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Cooperative Data and Rescue Services	Pos./BA	4	10,900	4	14,400	0	3,500
	FTE/OBL	4	10,900	4	14,400	0	3,500

Cooperative Data and Rescue Services (\$3,500, 0 FTE/0 Positions) – NOAA requests an increase of \$3,500 and 0 FTE/ 0 Positions to continue the USAF Hosted Payload Solutions (HoPS) firm fixed price contract for a scheduled launch in August 2021 of the Argos-4 Advanced Data Collection System (A-DCS) instrument provided by the French space agency Centre National d’Etudes Spatiales (CNES).

Schedule and Milestones

FY 2020

- Critical Design Review for Host Spacecraft
- Pre-Ship Review for Argos A-DCS instrument
- Delivery of Argos A-DCS instrument to the Host Spacecraft contractor

FY 2021

- Complete integration of Argos A-DCS instrument on Host Spacecraft
- Complete Pre-ship review of the Orbital Testbed (OTB)-3 spacecraft

FY 2022:

- Launch of Host Spacecraft to the desired 1730 sun synchronous orbit
- Initiate Argos A-DCS operations

FY 2023:

- Continue post launch support of A-DCS operations

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Deliverables:

Operation of the Argos-4 instrument in the desired 1730 sun synchronous orbit as a NOAA contribution to the joint international Argos system through FY 2026

Performance Measures	2021	2022	2023	2024	2025
Percent of Argos HoPS contract milestones completed on time with increase	75%	75%	75%	75%	75%
Percent of Argos HoPS contract milestones completed on time without increase	75%	75%	75%	75%	75%

Description: Percentage of projected milestones to be completed annually to plan and implement accommodation of the A-DCS instrument. This includes key decision points, major reviews, testing accommodation using HoPS.

Outyear Costs:

Direct Obligations	3,500	1,300	1,300	1,300	1,300
Uncapitalized	0	0	0	0	0
Budget Authority	3,500	1,300	1,300	1,300	1,300
Outlays	1,470	546	546	546	546
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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Outyear Funding Estimates

CDARS	2020 & Prior	2021	2022*	2023*	2024*	2025*	CTC	Total
Change from 2021 Base	N/A	3,500	(13,100)	(13,100)	(13,100)	(13,100)	TBD	TBD
Total CDARS Request	57,738	14,400	1,300	1,300	1,300	1,300	TBD	TBD

* Outyears are estimates only. Future requests will be determined through the annual budget process.

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(Direct Obligations amounts in thousands)**

Activity: Systems Acquisition
Subactivity: Cooperative Data and Rescue Services

Object Class		2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1	Full-time permanent compensation	120	122	124	124	0
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	1	1	1	1	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	121	123	125	125	0
12	Civilian personnel benefits	39	57	57	57	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	22	22	22	22	0
22	Transportation of things	0	0	0	0	0
23	Rent, communications, and utilities	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	Communications, utilities and misc charges	0	0	0	0	0
24	Printing and reproduction	0	0	0	0	0
25.1	Advisory and assistance services	1,235	1,235	1,235	1,235	0
25.2	Other services from non-Federal sources	1,556	1,556	1,556	1,556	0
25.3	Other goods and services from Federal sources	13,771	8,357	7,905	11,405	3,500
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	0	0	0	0	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	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	5	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	16,749	11,350	10,900	14,400	3,500

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		2021 Base		2021 Estimate		Increase	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Space Weather Follow On	Pos./BA	11	64,000	11	108,115	0	44,115
	FTE/OBL	11	64,000	11	108,115	0	44,115

Space Weather Follow On (\$44,115, 0 FTE/0 Positions) – NOAA requests an increase of \$44,115 and 0 FTE/ 0 Positions for the Space Weather Follow On (SWFO) program. Funding will support a SWFO-L1 mission with a Space Weather Instrument Suite (SWIS) for solar wind observations and a compact coronagraph (CCOR) for coronal mass ejection (CME) imagery at Lagrange point 1. The NOAA SWFO-L1 mission will ensure continuity of space weather data beyond NOAA’s Deep Space Climate Observatory (DSCOVR) and NASA-European Space Agency research Solar and Heliophysics Observatory (SOHO), which are well past their design life.

The SWFO Program is being developed to take advantage of a rideshare launch opportunity with NASA’s Interstellar Mapping and Acceleration Probe (IMAP) mission scheduled for FY 2025. Funding is essential to allow SWFO to maintain the schedule and milestones to meet the NASA IMAP rideshare. Leveraging the IMAP rideshare opportunity is the most timely and cost effective mechanism to ensure space weather forecasting continuity.

CME and solar wind measurements are necessary for NOAA to provide warnings for the two major types of space weather events that affect the Earth: solar radiation storms and geomagnetic storms. Satellites are mostly impacted by solar radiation storms. Commercial airlines are re-routed during both radiation and/or geomagnetic storms. These storms cause communication blackouts and impacts to navigation accuracy. The most extreme geomagnetic storms have resulted in severe impacts to commercial power grids and impacted hundreds of millions of people. Satellite data, including CME imagery and measurement of solar wind plasma, are critical to providing accurate and early warnings of these potentially destructive space weather events. Requirements for these measurements derive from the NOAA Space Weather Mission Service Area Observational User Requirements Document (OURD) baselined by the NOAA Observing System Council (NOSC) in November 2017.

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Schedule and Milestones

FY 2021:

- Award SWFO Ground Services Contract

FY 2022:

- SWFO-L1 Key Decision Point: Proceed to Fabrication (KDP-C)
- SWFO Program Critical Design Review

FY 2023:

- Instruments ship to SWFO-L1 spacecraft
- SWFO-L1 Key Decision Point: Proceed to integration (KDP-D)

FY 2024:

- Ship SWFO-L1 spacecraft to IMAP launch vehicle for integration

FY 2025:

- Rideshare launch of SWFO-L1 spacecraft with IMAP
- SWFO-L1 spacecraft Initial Operational Capability

Deliverables:

- Provide timely access to operational solar wind data and CME imagery for short and long-term warnings of geomagnetic storms

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Performance Measures	2021	2022	2023	2024	2025
Percentage of projected milestones to be completed annually to meet the LRD for SWFO-L1. This includes key decision points, major reviews, testing, and delivery of the following instruments: CCOR-1, SWiPS, MAG, and STIS with increase.	75%	75%	75%	75%	75%
Percentage of projected milestones to be completed annually to meet the LRD for SWFO-L1. This includes key decision points, major reviews, testing, and delivery of the following instruments: CCOR-1, SWiPS, MAG, and STIS without increase.	20%	5%	0%	0%	0%
Outyear Costs:					
Direct Obligations	44,115	73,000	67,200	23,500	(23,600)
Uncapitalized	0	0	0	0	0
Budget Authority					
Outlays	44,115	73,000	67,200	23,500	(23,600)
FTE	18,528	30,060	28,24	9,870	(13,692)
Positions	0	0	0	0	0

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(Dollar amounts in thousands)**

Outyear Funding Estimates

	2020 & Prior	2021	2022*	2023*	2024*	2025*	CTC	Total
Change from 2021 Base	N/A	44,115	82,900	72,200	33,200	(22,800)	N/A	N/A
Total SWFO Request	105,700	108,115	146,900	136,200	97,200	41,200	57,485	692,800

* Outyears are estimates only. Future requests will be determined through the annual budget process.

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Systems Acquisition
Subactivity: Space Weather Follow On

Object Class		2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1	Full-time permanent compensation	265	1,065	1,073	1,073	0
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	2	2	2	2	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	267	1,067	1,075	1,075	0
12	Civilian personnel benefits	77	334	334	334	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	12	78	78	78	0
22	Transportation of things	0	0	0	0	0
23	Rent, communications, and utilities	0	0	0	0	0
23.1	Rental payments to GSA	0	130	130	130	0
23.2	Rental Payments to others	0	0	0	0	0
23.3	Communications, utilities and misc charges	0	0	0	0	0
24	Printing and reproduction	0	0	0	0	0
25.1	Advisory and assistance services	61	61	53	53	0
25.2	Other services from non-Federal sources	637	637	637	637	0
25.3	Other goods and services from Federal sources	25,744	61,693	61,693	105,808	44,115
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	0	0	0	0	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	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	6	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	26,804	64,000	64,000	108,115	44,115

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		2021 Base		2021 Estimate		Increase	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Satellite Ground Services	Pos./BA	60	38,509	60	43,524	0	5,015
	FTE/OBL	59	38,509	59	43,524	0	5,015

Data-source Agnostic Common Services (DACS) (+\$5,015, 0 FTE/0 Positions) – This request allows NOAA to utilize essential data and observations from an increasingly capable and diverse array of partner and commercial systems to meet mission requirements in a cost-effective manner. NESDIS will transition new and legacy products and services to a cloud architecture to increase end-to-end efficiencies through a more flexible and scalable infrastructure and to enable advanced processing capabilities such as those offered by artificial intelligence and machine learning. The transition in FY 2021 will leverage the FY 2019 and FY 2020 NESDIS Cloud Pilots, which tested the implementation of key NESDIS functionality (in the areas of security, ingest, product generation, and data access) in a commercial cloud environment. The transition will focus on taking the current hardware and software functions to a cloud-enabled framework that will run updated software, generating products and services from any applicable data source (i.e., data-source agnostic). The increased infrastructure capacity will include the ability to securely and efficiently ingest, process, distribute, and archive an increasing volume and complexity of data.

Data from non-NOAA sources are a fundamental component of NOAA's data suite. Current partner data sources (e.g., EUMETSAT, JAXA, Copernicus) significantly augment, and are integrated into the U.S. capability for global, 24/7 environmental observations critical for assessing, monitoring, and forecasting the weather in the U.S. and around the world. Per the guidance in the *Weather Research and Forecasting Innovation Act of 2017*, NESDIS will prioritize more and better access to partner and commercially available space-based observations, in addition to NOAA collected observations, including NASA, ISRO, and others. To support emerging and next generation partner systems and commercial services that carry more complex, smaller, and capable sensors, NOAA will develop and transition to an end-to-end DACS infrastructure to leverage these new capabilities and merge data from multiple sources into an integrated product suite. With additional investments to adapt and leverage new generation data sources coming online over the next several years to replace legacy data sources, NOAA will more fully utilize global environmental observations. This increase will provide funding for continuous improvement of common ground services and infrastructure for

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essential environmental observations required for NESDIS' data and information services.

Schedule and Milestones:

FY 2021

- Develop cloud enabled products for critical new data sources (e.g., Himawari 8, ScatSAT, Sentinel 1, Jason CS)
- Expand the Operational Secure Ingest (in the cloud) for the above sources
- Architect a cloud framework for full end-to-end data management and production functions
- Continue enterprise product transition from existing (legacy) sources to the common cloud framework

FY 2022

- Expand cloud enabled products from additional data sources (e.g., Radarsat Constellation Mission (RCM) 1/2/3, Sentinel 3, and OceanSat)
- Validate and prepare cloud-enabled framework to transition into operations
- Complete enterprise product transition from existing (legacy) sources to the common cloud framework

FY 2023

- Continue to expand cloud enabled products from additional data sources (e.g., Meteosat TG)
- Begin to transition cloud-enabled framework functionality (ingest, generation, distribution, archive) to operations

FY 2024

- Expand operational transition of the cloud-enabled framework functionality (ingest, generation, distribution, archive)

FY 2025

- Complete operational transition of the cloud-enabled framework functionality (ingest, generation, distribution, archive)

Deliverables:

- End to end cloud framework architecture
- Enterprise product transitions per enterprise transition plan
- Cloud enabled products for at least three new data sources
- Operational capability validated for secure ingest of ScatSat, Sentinel 1, Jason CS

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(Dollar amounts in thousands)**

Outyear Funding Estimates*

SGS (DACs)	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	5,015	TBD	TBD	TBD	TBD	N/A	N/A
Total DACs	N/A	5,015	TBD	TBD	TBD	TBD	N/A	N/A
Total SGS Request	N/A	43,524	TBD	TBD	TBD	TBD	N/A	TBD

* Outyears are estimates only. Future requests will be determined through the annual budget process.

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Performance Measures ²	2021	2022	2023	2024	2025
Enhanced or new products and services made available to the designated user community which utilize partner data sources based on NESDIS core mission data product categories.					
With Increase	3	13	27	23	14
Without Increase	3	7	2	2	2
New partner observing system data sources included in operational product and service generation. Metrics are based on utilization of new observing systems to provide NESDIS products and services and may include utilization of multiple sensors on each observing system.					
With Increase	2	4	3	2	2
Without Increase	1	1	1	0	0
Outyear Costs:					
Direct Obligations	5,015	TBD	TBD	TBD	TBD
Uncapitalized	0	0	0	0	0
Budget Authority	5,015	TBD	TBD	TBD	TBD
Outlays	2,106	TBD	TBD	TBD	TBD
FTE	0	0	0	0	0
Positions	0	0	0	0	0

² As science products fluctuate, the years there is less product development, the program will increase technology capabilities and capacity to maintain alignment with future needs. Data product performance measures are derived from known requirements from satellite partners.

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Systems Acquisition
Subactivity: Satellite Ground Services

Object Class	2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base	
11.1	Full-time permanent compensation	6,991	7,278	5,302	5,302	0
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	0	0	0	0	0
11.7	NOAA Corps	131	135	139	139	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	7,122	7,413	5,441	5,441	0
12	Civilian personnel benefits	2,097	2,373	1,536	1,536	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	116	120	145	145	0
22	Transportation of things	1	0	0	0	0
23.1	Rental payments to GSA	627	740	740	740	0
23.2	Rental Payments to others	0	0	0	0	0
23.3	Communications , utilities and misc charges	48	0	0	0	0
24	Printing and reproduction	0	0	0	0	0
25.1	Advisory and assistance services	6,598	6,780	6,780	6,780	0
25.2	Other services from non-Federal sources	17,469	17,500	12,555	17,069	4,515
25.3	Other goods and services from Federal sources	16,963	17,500	8,114	8,368	255
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	1,381	1,400	1,400	1,400	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	371	381	298	298	0
31	Equipment	1,545	1,500	1,500	1,747	245
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	1,607	0	0	0	0
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	7	0	0	0	0
44	Refunds	0	0	0	0	0
99	Total obligations	55,952	55,707	38,509	43,524	5,015

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(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Satellite Ground Services	Pos./BA	60	38,509	60	34,272	0	(4,237)
	FTE/OBL	59	38,509	59	34,272	0	(4,237)

Satellite Ground Services (-\$4,237, 0 FTE/0 Positions) – In order to fully support existing NOAA priorities, NOAA requests a decrease to Satellite Ground Services. The implementation of Data-source Agnostic Common Services (see previous program change statement) is expected to increase performance end-to-end efficiencies. The cloud platform will be based on a flexible and scalable configuration designed to exploit emerging and/or new innovations into a seamless enterprise, requiring less technological re-programming. The requested decrease will not impact performance measures.

Outyear Funding Estimates*

SGS	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	(4,237)	(4,237)	(4,237)	(4,237)	(4,237)	N/A	N/A
Total SGS Request	N/A	34,272	34,272	34,272	34,272	34,272	N/A	TBD

* Outyears are estimates only. Future requests will be determined through the annual budget process.

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	2021	2022	2023	2024	2025
Outyear Costs:					
Direct Obligations	(4,237)	(4,237)	(4,237)	(4,237)	(4,237)
Uncapitalized	0	0	0	0	0
Budget Authority	(4,237)	(4,237)	(4,237)	(4,237)	(4,237)
Outlays	(1,778)	(1,778)	(1,778)	(1,778)	(1,778)
FTE	0	0	0	0	0
Positions	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Systems Acquisition
Subactivity: Satellite Ground Services

Object Class	2019 Actuals	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base	
11.1	Full-time permanent compensation	6,991	7,278	5,302	5,302	0
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	0	0	0	0	0
11.7	NOAA Corps	131	135	139	139	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	7,122	7,413	5,441	5,441	0
12	Civilian personnel benefits	2,097	2,373	1,536	1,536	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	116	120	145	145	0
22	Transportation of things	1	0	0	0	0
23.1	Rental payments to GSA	627	740	740	740	0
23.2	Rental Payments to others	0	0	0	0	0
23.3	Communications, utilities and misc charges	48	0	0	0	0
24	Printing and reproduction	0	0	0	0	0
25.1	Advisory and assistance services	6,598	6,780	6,780	6,780	0
25.2	Other services from non-Federal sources	17,469	17,500	12,555	8,318	(4,237)
25.3	Other goods and services from Federal sources	16,963	17,500	8,114	8,114	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	1,381	1,400	1,400	1,400	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	371	381	298	298	0
31	Equipment	1,545	1,500	1,500	1,500	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	1,607	0	0	0	0
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	7	0	0	0	0
44	Refunds	0	0	0	0	0
99	Total obligations	55,952	55,707	38,509	34,272	(4,237)

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(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Increase	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Systems Architecture & Engineering (SAE)	Pos./BA	35	34,322	35	39,322	0	5,000
	FTE/OBL	35	34,322	35	39,322	0	5,000

Commercial Weather Data Pilot (CWDP) (\$5,000, 0 FTE/ 0 Positions) – This increase request will allow NOAA to continue executing pilots for the next available commercial data type. These pilots are critical to NOAA’s future satellite architecture as they assess operational viability of possible future commercial capabilities. With the additional pilot project work, NOAA will continue to assess new capabilities that are available on the commercial market, and test commercially available capabilities based on market research, in accordance with the NOAA Commercial Space Policy. CWDP will base the next pilot (Round 3) on the outcome of an FY 2018 Request for Information, which focused on commercially available data that may improve numerical weather prediction, consistent with direction in the *Weather Research and Forecasting Innovation Act of 2017*, and on continued regular canvassing of emerging commercial sector capabilities, consistent with the NOAA Commercial Space Policy.

Schedule and Milestones

FY 2021

- Award CWDP Round 3 contract(s), pending commercial sector readiness
- Explore additional sources/types of data and capabilities available from the commercial sector through market research

FY 2022

- Conduct the assessment of CWDP Round 3 data/capability, pending contract award
- Explore additional sources/types of data and capabilities available from the commercial sector through market research

FY 2023 – 2025

- Complete the assessment phase of CWDP Round 3
- Develop findings on the results of CWDP Round 3
- Explore additional sources/types of data and capabilities available from the commercial sector through market research
- Initiate CWDP Round 4, pending commercial sector readiness

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

Deliverables

- Provide results of ongoing market research
- Report results of evaluations regarding new data and capabilities
- Prepare for establishing operational services contracts with commercial providers

Performance Measures	2021	2022	2023	2024	2025
Number of calls for commercial data and services issued to industry (cumulative) with increase	3	5	7	9	10
Number of calls for commercial data and services issued to industry (cumulative) without increase	4	6	8	10	11

Outyear Funding Estimates*

SAE (CWDP)	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	5,000	7,000	12,000	17,000	22,000	N/A	N/A
Total Commercial Weather Data Pilot (SAE)	23,000	8,000	10,000	15,000	20,000	25,000	N/A	N/A
Total SAE Request	N/A	39,322	41,322	46,322	51,322	56,322	N/A	N/A

* Outyears are estimates only. Future requests will be determined through the annual budget process.

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Systems Acquisition
Subactivity: Systems/Services Architecture, and Engineering (SAE)

Object Class	2019 Actuals*	2020 Enacted	2021 Base*	2021 Estimate	Increase from 2021 Base
11.1	2,826	3,631	5,116	5,116	0
11.3	5	0	0	0	0
11.5	60	29	29	29	0
11.8	0	0	0	0	0
11.9	2,892	3,661	5,146	5,146	0
12	851	1,098	1,573	1,573	0
13	0	0	0	0	0
21	148	240	240	240	0
22	0	0	0	0	0
23	0	0	0	0	0
23.1	535	544	544	544	0
23.2	0	0	0	0	0
23.3	43	50	50	50	0
24	3	4	4	4	0
25.1	6,752	7,505	9,979	9,979	0
25.2	8,249	8,940	4,838	9,838	5,000
25.3	4,896	5,442	5,442	5,442	0
25.4	0	0	0	0	0
25.5	2,231	2,480	2,480	2,480	0
25.6	0	0	0	0	0
25.7	0	0	0	0	0
25.8	0	0	0	0	0
26	32	22	22	22	0
31	199	18	18	18	0
32	0	0	0	0	0
33	0	0	0	0	0
41	3,869	3,987	3,987	3,987	0
42	0	0	0	0	0
43	3	0	0	0	0
44	0	0	0	0	0
99	30,704	33,990	34,322	39,322	5,000

*The FY 2019 Actuals are estimates for the SAE Subactivity since the SAE Subactivity did not exist in FY 2019.

*The FY 2021 Base includes a technical transfer of \$10,000,000 for GEO-XO from the SAE Subactivity to the GEO Subactivity.

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Increase	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Systems Architecture & Engineering (SAE)	Pos./BA	35	34,322	35	44,322	0	10,000
	FTE/OBL	35	34,322	35	44,322	0	10,000

Commercial Data Purchase (\$10,000, 0 FTE/ 0 Positions) – This request will allow NESDIS to purchase commercial Global Navigation Satellite System (GNSS) Radio Occultation (RO) data for operational use. It will also support continued development and sustainment of the infrastructure and capability to securely import, transfer, process, and store external data from commercial providers for operational use. GNSS RO has the potential to be a cost-effective means of increasing the volume of quality global atmospheric soundings. It provides temperature, water vapor, and pressure profiles, necessary for accurate weather forecasts. In FY 2016, NESDIS initiated the CWDP Round 1 to purchase, evaluate, and calibrate available commercial satellite data, and in FY 2017 initiated an expanded CWDP Round 2. The focus of both CWDP Round 1 and Round 2 was for the purchase of GNSS RO data.

NOAA will confirm the readiness of the commercial sector to provide this data through Round 2 of the CWDP. Once the commercial sector has demonstrated readiness, and where appropriate, cost-effective and feasible, NOAA will initiate operational data purchases to include this data in NOAA’s numerical weather prediction models. This approach is consistent with P.L. 115-25, the *Weather Research and Forecasting Innovation Act of 2017*, and NOAA’s reported plans for obtaining GNSS RO data from a combination of government assets, partner contributions, and commercial purchases. The amount of GNSS RO data purchased will depend on the price, quality, and availability of data from commercial providers. These factors will also impact how quickly future data purchases will occur. NOAA will conduct initial data purchases during the ramp up directly following the pilot phase and support future operational data purchases of GNSS RO data.

Schedule and Milestones

FY 2021

- Award contracts for GNSS RO data, pending commercial sector offerings
- Exercise one or more options on existing contracts for increased amounts of GNSS RO data, pending commercial sector offerings

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

FY 2022

- Release one multi-year solicitation with the target of greatly increasing the efficiency and quantity of purchasing commercial GNSS RO data through FY 2025, pending commercial sector offerings

FY 2023 – 2025

- Award contracts for GNSS RO data, pending commercial sector offerings
- Initiate additional solicitations to purchase available data that meets NESDIS requirements from the commercial market, if other types of on-orbit data become available during this timeframe

Deliverables

- Commercial GNSS RO data included with other satellite data delivered to the NWS for use in operational numerical weather prediction models

Performance Measures	2021	2022	2023	2024	2025
Number of solicitations seeking commercial data for operational use issued to industry (cumulative) with increase	1	2	2	2	2
Number of solicitations seeking commercial data for operational use issued to industry (cumulative) without increase	1	1	1	1	1

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

Outyear Funding Estimates*

SAE (Commercial Data Purchase)	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	10,000	20,000	25,000	30,000	35,000	N/A	N/A
Total Commercial Data Purchase (SAE)	5,000	15,000	25,000	30,000	35,000	40,000	N/A	N/A
Total SAE Request	N/A	44,322	54,322	59,322	64,322	69,322	N/A	N/A

* Outyears are estimates only. Future requests will be determined through the annual budget process.

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Systems Acquisition
Subactivity: Systems/Services Architecture, and Engineering (SAE)

Object Class	2019 Actuals*	2020 Enacted	2021 Base*	2021 Estimate	Increase from 2021 Base
11.1	2,826	3,631	5,116	5,116	0
11.3	5	0	0	0	0
11.5	60	29	29	29	0
11.8	0	0	0	0	0
11.9	2,892	3,661	5,146	5,146	0
12	851	1,098	1,573	1,573	0
13	0	0	0	0	0
21	148	240	240	240	0
22	0	0	0	0	0
23	0	0	0	0	0
23.1	535	544	544	544	0
23.2	0	0	0	0	0
23.3	43	50	50	50	0
24	3	4	4	4	0
25.1	6,752	7,505	9,979	9,979	0
25.2	8,249	8,940	4,838	14,838	10,000
25.3	4,896	5,442	5,442	5,442	0
25.4	0	0	0	0	0
25.5	2,231	2,480	2,480	2,480	0
25.6	0	0	0	0	0
25.7	0	0	0	0	0
25.8	0	0	0	0	0
26	32	22	22	22	0
31	199	18	18	18	0
32	0	0	0	0	0
33	0	0	0	0	0
41	3,869	3,987	3,987	3,987	0
42	0	0	0	0	0
43	3	0	0	0	0
44	0	0	0	0	0
99	30,704	33,990	34,322	44,322	10,000

*The FY 2019 Actuals are estimates for the SAE Subactivity since the SAE Subactivity did not exist in FY 2019.

*The FY 2021 Base includes a technical transfer of \$10,000,000 for GEO-XO from the SAE subactivity to the GEO subactivity.

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**Department of Commerce
National Oceanic and Atmospheric Administration
Mission Support
Budget Estimates, Fiscal Year 2021**

Executive Summary

For FY 2021, NOAA requests a total of \$322,998,000 and 702 FTE/ 748 positions for Mission Support, including a net decrease of \$35,329,000 and 1 FTE and a net increase of 2 positions in program changes.

In FY 2021, Mission Support will continue to provide the services that are essential to the safe and successful execution of NOAA's Mission.

The Mission Support budget is organized into five activities within the Operations, Research, and Facilities (ORF) account.

- Executive Leadership provides centralized executive management as well as policy formulation and direction.
- Mission Services and Management includes such activities as financial reporting, budgeting, information technology, acquisition and grants, human resource services, and facilities management.
- IT Security leads priority cyber security initiatives.
- Payment to the DOC Working Capital Fund provides centralized services to NOAA's Line Offices and Staff Offices.
- Office of Education provides expert support of education activities to NOAA Line, Program, and Staff Offices while promoting NOAA services and products and their benefits to the public.

The Mission Support budget is organized under one activity within the Procurement, Acquisition, and Construction (PAC) account: NOAA Construction provides for restoration of capital assets including alteration or modification of properties.

Significant Adjustments:

Inflationary Adjustments

NOAA's FY 2021 Base includes a net increase of \$13,154,000 and 0 FTE/ 0 positions to account for the full funding requirement for certain inflationary adjustments to current programs for Mission Support activities. This includes the 2020 civilian pay raise of 3.1 percent, the estimated 2021 civilian pay raise of 1.0 percent and the estimated 2021 military pay raise of 3.0 percent as well as inflationary increases for labor and non-labor activities including benefits and rent charges from the General Services Administration (GSA).

Technical Adjustments

NOAA also requests the following transfers for a net change of \$2,220,000 and 0 FTE/ 0 positions to the agency:

**Department of Commerce
National Oceanic and Atmospheric Administration
Mission Support
Budget Estimates, Fiscal Year 2021**

From Office	Subactivity	To Office	Subactivity	Amount
NMFS	Marine Mammals, Sea Turtles, and Other Species (ORF)	MS	Facilities Maintenance (ORF)	\$253,000 / 0 FTE / 0 positions
NMFS	Fisheries Ecosystem Science Programs and Services (ORF)	MS	Facilities Maintenance (ORF)	\$1,536,000 / 0 FTE / 0 positions
NMFS	Habitat Conservation and Restoration (ORF)	MS	Facilities Maintenance (ORF)	\$255,000 / 0 FTE / 0 positions
MS	Mission Services and Management (ORF)	MS	NOAA Construction (PAC)	\$1,000,000 / 0 FTE / 0 positions
NOS	Marine Sanctuaries Construction Base (PAC)	MS	NOAA Construction (PAC)	\$2,538,000 / 0 FTE / 0 positions
NWS	Facilities Construction and Major Repairs (PAC)	MS	NOAA Construction (PAC)	\$10,000,000 / 0 FTE / 0 positions
NESDIS	Satellite CDA Facility (PAC)	MS	NOAA Construction (PAC)	\$2,450,000 / 0 FTE / 0 positions

NOAA requests a technical adjustment to transfer \$2,044,000 and 0 FTE/ 0 positions to a newly created Facilities Maintenance subactivity in Mission Support ORF and \$15,988,000 and 0 FTE/ 0 positions to the NOAA Construction subactivity in Mission Support PAC to consolidate facilities maintenance and construction funding within Mission Support for a more centralized approach to the funding and management of these activities. Routine operations and maintenance of facilities typically funded by field offices, such as janitorial services and minor repairs, will continue to be funded through the Line Offices. This consolidation leverages NOAA's recent efforts for more consistent, corporate approaches to facilities management and planning and reflects NOAA's commitment to advancing the Department's strategic objective to achieve cost savings through consolidated functions.

From Office	Subactivity	To Office	Subactivity	Amount
MS	Mission Services and Management (ORF)	DOC	Departmental Management	\$799,000 / 0 FTE / 0 positions
MS	Payment to the DOC Working Capital Fund (ORF)	DOC	Departmental Management	\$1,421,000 / 0 FTE / 0 positions

**Department of Commerce
National Oceanic and Atmospheric Administration
Mission Support
Budget Estimates, Fiscal Year 2021**

The Department of Commerce (DOC) is proposing to transfer nine projects and funding out of the Working Capital Fund and the Advances and Reimbursable account to the Departmental Management Salaries and Expense account as part of its annual review to properly align and account programs and costs. These transfers execute the NOAA portion of the DOC transfer. For more information regarding the specific projects and funding transfers for the Department of Commerce please refer to Exhibit 3 of the Departmental Management FY 2021 Congressional Justification Budget.

Department of Commerce Enterprise Services Initiative:

Department of Commerce's leadership established the Enterprise Services Office (ESO) to improve customer service and enhance the delivery of the Human Resources, Acquisition Services, Financial Management and Information Technology functional areas with Human Resources (HR) being the first functional area to transition to the Enterprise Services model. In late FY 2016, NOAA began a transition to an Enterprise Services model in concert with the Department to streamline the delivery of human resources services. This new delivery model and approach has outsourced many HR clerical and transactional tasks, such as Personnel Action Requests (PAR), pay, separations, compensation and benefits. In FY 2021, ESO intends to provide additional HR services for recruiting and hiring (also identified as talent acquisition). The transition of services is intended to allow NOAA's Office of Human Capital Services (OHCS) to develop expertise and provide strategic workforce planning and solutions to the NOAA Line and Staff Offices. In FY 2021, OHCS will continue to provide NOAA with expert consultative services in the areas of executive resources management, labor and employee relations, administrative investigations, quality assurance, program performance, detailed HR data modeling and analytics, employee and labor relations, retirement counseling and benefits, and personnel mentoring. OHCS will also institutionalize its talent acquisition approaches and mature its capabilities to understand future workforce needs, predict skills and talents needed, and develop and implement programs and approaches to address potential risks to achieving a balanced, diverse and modern workforce. As a result, OHCS will focus its efforts on implementing advanced strategic solutions that strengthen mission delivery and improve overall customer service.

Narrative Information:

NOAA requests a total net decrease of \$35,329,000 and 1 FTE and a net increase of 2 positions in program changes for Mission Support. Following this section are base justification materials by activity and program change narratives for each subactivity that represent program changes of \$250,000 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-6 and 11). Please contact NOAA if details for any of these changes are required.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Facilities Maintenance
Subactivity: Facilities Consolidation Transfer To MS Facilities Maintenance

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base</u>
11.1 Full-time permanent compensation	0	0	0
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	0	0	0
11.7 NOAA Corps	0	0	0
11.9 Total personnel compensation	0	0	0
12 Civilian personnel benefits	0	0	0
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	0	0	0
22 Transportation of things	0	0	0
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	0	0	0
25.1 Advisory and assistance services	0	0	0
25.2 Other services from non-Federal sources	0	2,044	2,044
25.3 Other goods and services from Federal sources	0	0	0
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	0	0	0
31 Equipment	0	0	0
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	0	2,044	2,044

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)**

Activity: Missoin Services and Management
Subactivity: Facilities Consolidation Transfer to NOAA Construction PAC

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base</u>
11.1 Full-time permanent compensation	62,022	0	63,754
11.3 Other than full-time permanent	32	0	32
11.5 Other personnel compensation	1,050	0	1,050
11.7 NOAA Corps	467	0	475
11.9 Total personnel compensation	63,571	0	65,311
12 Civilian personnel benefits	17,890	0	18,863
13 Benefits for former personnel	81	0	81
21 Travel and transportation of persons	1,208	0	1,217
22 Transportation of things	143	0	143
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	6,200	0	6,447
23.2 Rental Payments to others	250	0	265
23.3 Communications, utilities and misc charges	1,200	0	1,215
24 Printing and reproduction	140	0	143
25.1 Advisory and assistance services	15,000	0	15,000
25.2 Other services from non-Federal sources	37,557	(1,000)	38,552
25.3 Other goods and services from Federal sources	11,000	0	11,000
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	870	0	890
31 Equipment	678	0	690
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	125	0	125
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	22	0	22
44 Refunds	0	0	0
99 Total obligations	155,934	(1,000)	159,963

*The 2021 Base column reflects the full 2021 Base for this Subactivity, including calculated ATBs and any additional transfers.

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: NOAA Construction
Subactivity: Facilities Consolidation Transfer To MS NOAA Construction

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base</u>
11.1 Full-time permanent compensation	0	0	0
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	0	0	0
11.7 NOAA Corps	0	0	0
11.9 Total personnel compensation	0	0	0
12 Civilian personnel benefits	0	0	0
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	0	0	0
22 Transportation of things	0	0	0
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	0	0	0
25.1 Advisory and assistance services	5,821	0	5,821
25.2 Other services from non-Federal sources	30,521	15,988	46,509
25.3 Other goods and services from Federal sources	0	0	0
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	385	0	385
31 Equipment	3,201	0	3,201
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	49	0	49
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	23	0	23
44 Refunds	0	0	0
99 Total obligations	40,000	15,988	55,988

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Payment to the DOC Working Capital Fund
Subactivity: Working Capital Fund Transfer to DOC

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base</u>
11.1 Full-time permanent compensation	0	0	0
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	0	0	0
11.7 NOAA Corps	0	0	0
11.9 Total personnel compensation	0	0	0
12 Civilian personnel benefits	0	0	0
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	0	0	0
22 Transportation of things	0	0	0
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	0	0	0
25.1 Advisory and assistance services	0	0	0
25.2 Other services from non-Federal sources	0	0	0
25.3 Other goods and services from Federal sources	62,070	(1,421)	66,389
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	0	0	0
31 Equipment	0	0	0
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	62,070	(1,421)	66,389

*The 2021 Base column reflects the full 2021 Base for this Subactivity, including calculated ATBs and any additional transfers.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Missoin Services and Management
Subactivity: A&R Transfer to DOC

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base</u>
11.1 Full-time permanent compensation	62,022	0	63,754
11.3 Other than full-time permanent	32	0	32
11.5 Other personnel compensation	1,050	0	1,050
11.7 NOAA Corps	467	0	475
11.9 Total personnel compensation	63,571	0	65,311
12 Civilian personnel benefits	17,890	0	18,863
13 Benefits for former personnel	81	0	81
21 Travel and transportation of persons	1,208	0	1,217
22 Transportation of things	143	0	143
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	6,200	0	6,447
23.2 Rental Payments to others	250	0	265
23.3 Communications, utilities and misc charges	1,200	0	1,215
24 Printing and reproduction	140	0	143
25.1 Advisory and assistance services	15,000	0	15,000
25.2 Other services from non-Federal sources	37,557	(799)	38,552
25.3 Other goods and services from Federal sources	11,000	0	11,000
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	870	0	890
31 Equipment	678	0	690
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	125	0	125
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	22	0	22
44 Refunds	0	0	0
99 Total obligations	155,934	(799)	159,963

*The 2021 Base column reflects the full 2021 Base for this Subactivity, including calculated ATBs and any additional transfers.

**Department of Commerce
National Oceanic and Atmospheric Administration
PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**
(Dollar amounts in thousands)

		2019 Actual		Enacted		2021 Base		2021 Estimate		Increase/Decrease From 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
MISSION SUPPORT (MS)											
Executive Leadership	Pos/BA	105	26,927	125	27,078	125	28,273	125	28,024	0	(249)
	FTE/OBL		26,918	119	27,078	119	28,273	119	28,024	0	(249)
Mission Services and Management	Pos/BA	528	2020 146,351	585	155,934	585	159,963	598	161,163	13	1,200
	FTE/OBL	525	134,838	554	155,934	554	159,963	564	161,163	10	1,200
IT Security	Pos/BA	13	10,024	20	15,079	20	15,378	20	15,378	0	0
	FTE/OBL	13	9,984	14	15,079	14	15,378	14	15,378	0	0
Payment to the DOC Working Capital Fund	Pos/BA	0	55,080	0	62,070	0	66,389	0	66,389	0	0
	FTE/OBL	0	60,909	0	62,070	0	66,389	0	66,389	0	0
Office of Education	Pos/BA	18	28,459	16	30,200	16	30,292	5	1,108	(11)	(29,184)
	FTE/OBL	18	29,514	16	30,200	16		5	1,108	(11)	(29,184)
Hollings Scholarship	Pos/BA	6	5,728	0	0	0	30,292	0	0	0	0
	FTE/OBL	6	5,725		0	0	0	0	0	0	0
Facilities Maintenance	Pos/BA	0	0	0	0	0	2,044	0	9,651	0	7,607
	FTE/OBL	0	0	0	0	0	2,044		9,651	0	7,607
			0								
TOTAL MISSION SUPPORT - ORF	Pos/BA	670	272,569	746	290,361	746	302,339	748	281,713	2	(20,626)
	FTE/OBL	666	267,888	703	290,361	703	302,339	702	281,713	(1)	(20,626)
NOAA Construction	Pos/BA	0	24,939	0	40,000	0	55,988	0	41,285	0	(14,703)
	FTE/OBL	0	15,471	0	40,000	0	55,988		41,285		(14,703)

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TOTAL MISSION SUPPORT - PAC	Pos/BA	0	24,939	0	40,000	0	55,988	0	41,285	0	(14,703)
	FTE/OBL	0	15,471	0	40,000	0	55,988	0	41,285	0	(14,703)
Spectrum Relocation Fund - ORF	Pos/BA	2	0	0	0	0	0	0	0	0	0
	FTE/OBL	2	28,925	0	1,502	0	18,286	0	18,286	0	0
Spectrum Relocation Fund-PAC	Pos/BA	3	0	0	0	0	0	0	0	0	0
	FTE/OBL	3	37,158	0	23,880	0	21,756	0	21,756	0	0
Spectrum Efficient National Surveillance Radar - ORF	Pos/BA	0	1,800	0	0	0	0	0	0	0	0
	FTE/OBL	0	2,274	0	1,855	0	0	0	0	0	0
Spectrum Pipeline - ORF	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	4,071	0	1,218	0	0	0	0	0	0
TOTAL MISSION SUPPORT	Pos/BA	675	299,308	746	330,361	746	358,327	748	322,998	2	(35,329)
	FTE/OBL	671	355,787	703	358,816	703	398,369	702	363,040	(1)	(35,329)

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Activities: Executive Leadership, Mission Services and Management, IT Security, Payment to the DOC Working Capital Fund, Office of Education and Facilities Maintenance

Goal Statement

The objectives of these Mission Support activities are to: 1) develop policies regarding the administration of NOAA programs with Federal agencies, the Congress, and private industry; and 2) develop and implement policy, planning, and program oversight.

Base Program

NOAA's Mission Support services are the backbone of NOAA's programs and mission. These services provide the planning, administrative, financial, procurement, information technology, human resources, and infrastructure services that are essential to the safe and successful execution of NOAA's mission.

Statement of Operating Objectives

Schedule and Deliverables:

AGO

- Continue efforts to decrease backlog of required contract closeouts
- Continue to track fees generated against fee projections (cumulative total including fee for service, NOAALink and ProTech)
- Strengthen alignment of acquisition resources to NOAA program requirements
- Increase AGO/Program Office engagement early in the acquisition/grants lifecycle

OCAO

- Implement near-term actions for the Silver Spring Metro Center campus as informed by the Housing Plan
- Continue implementation of the NOAA Asset Management Program to support data driven decision making and reporting
- Maintain, and possibly increase, focus on timely resolution of commercial leases

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- Institute governance best practices to increase transparency and enhance cross Line Office buy-in of strategic planning initiatives
- Continue the safety culture that has been established at NOAA over the past four years
- Successfully execute construction and repair projects on time and within budget

OCFO

- Continue to deliver DOC Strategic Planning and Performance elements ahead of schedule
- Execute at least one major economic reporting product (e.g. NOAA by the numbers, NOAA's Contribution to the U.S. Economy and Economic Reporting System –ERS)

OCIO

- Incorporate machine learning and automation into Security Operations
- Expand NOAA's enterprise network to achieve economic efficiencies and increased reliability
- Establish a sustainable relationship with industry to provide enhanced, cloud-based access to NOAA's environmental data
- Continue to increase utilization of the cloud

OHCS

- Mature and institutionalize NOAA's talent acquisition and recruitment approaches and programs and significantly improve NOAA hiring in both volume of hires and expanded diversity of personnel
- Mature and broaden use of HRConnect (HR IT system) and other tools and applications throughout NOAA to conduct transactional HR services and provide data-in-depth for detailed HR analytics
- Continue to implement a Full Service HR Model for NOAA within the enterprise architecture
- Continue transformation of OHCS to provide strategic HR services

OICR

- Process EEO complaints of discrimination
- Complete Management Directive MD-715
- Conduct targeted outreach
- Execute the Agency's Diversity and Inclusion Implementation Plan

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WVPRP

- Increase response services spanning across all of NOAA's regions
- Increase prevention services with computer-based training and in-person bystander intervention, development of resiliency training
- Expand the RAINN contract to include dedicated hotline/helpline for SASH response services
- Develop and maintain of a workplace violence database
- Develop and maintain of a workplace violence prevention website
- Develop toolkits for employees and management, outreach materials
- Participate in the National Academies of Science Action Collaborative

OED

- Advance education both within NOAA and with the public we serve
- Provide the Hollings Scholarship Program to prepare the brightest minds in NOAA-related fields
- Establish partnerships to integrate NOAA science into schools and organizations
- Coordinate educational activities across NOAA and with external partners to ensure that these efforts are effective and continually improved

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Explanation and Justification

Comparison by subactivity		2019 Actual		2020 Enacted		2021 Base Program	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Executive Leadership	Pos/BA	105	26,927	125	27,078	125	28,273
	FTE/OBL	104	26,918	119	27,078	119	28,273
Mission Services and Management	Pos/BA	528	146,351	585	155,934	585	159,963
	FTE/OBL	525	134,838	554	155,934	554	159,963
IT Security	Pos/BA	13	10,024	20	15,079	20	15,378
	FTE/OBL	13	9,984	14	15,079	14	15,378
DOC Working Capital Fund	Pos/BA	0	55,080	0	62,070	0	66,389
	FTE/OBL	0	60,909	0	62,070	0	66,389
Education	Pos/BA	18	28,459	16	30,200	16	30,292
	FTE/OBL	18	29,514	16	30,200	16	30,292
Hollings Scholarship	Pos/BA	6	5,728	0	0	0	0
	FTE/OBL	6	5,725	0	0	0	0
Facilities Maintenance	Pos/BA	0	0	0	0	0	2,044
	FTE/OBL	0	0	0	0	0	2,044
Total Mission Support	Pos/BA	670	272,569	746	290,361	746	302,339
	FTE/OBL	666	267,888	703	290,361	703	302,339

Executive Leadership

Executive Leadership supports the 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 (USAO): These offices support NOAA's leadership. Program activities consist of formulating and executing policies for achieving NOAA objectives, responding to Executive

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Branch policy decisions, and exercising delegated authority in committing NOAA to courses of action. USAO also includes the following offices:

Office of Legislative and Intergovernmental Affairs (OLIA): This office serves as the primary liaison for NOAA with the members and staff of Congress. The office is 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.

Office of International Affairs (OIA): This office coordinates NOAA and other leadership officials' relationships 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.

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. This office is funded through an assessment of funds from NWS, OAR, and NESDIS.

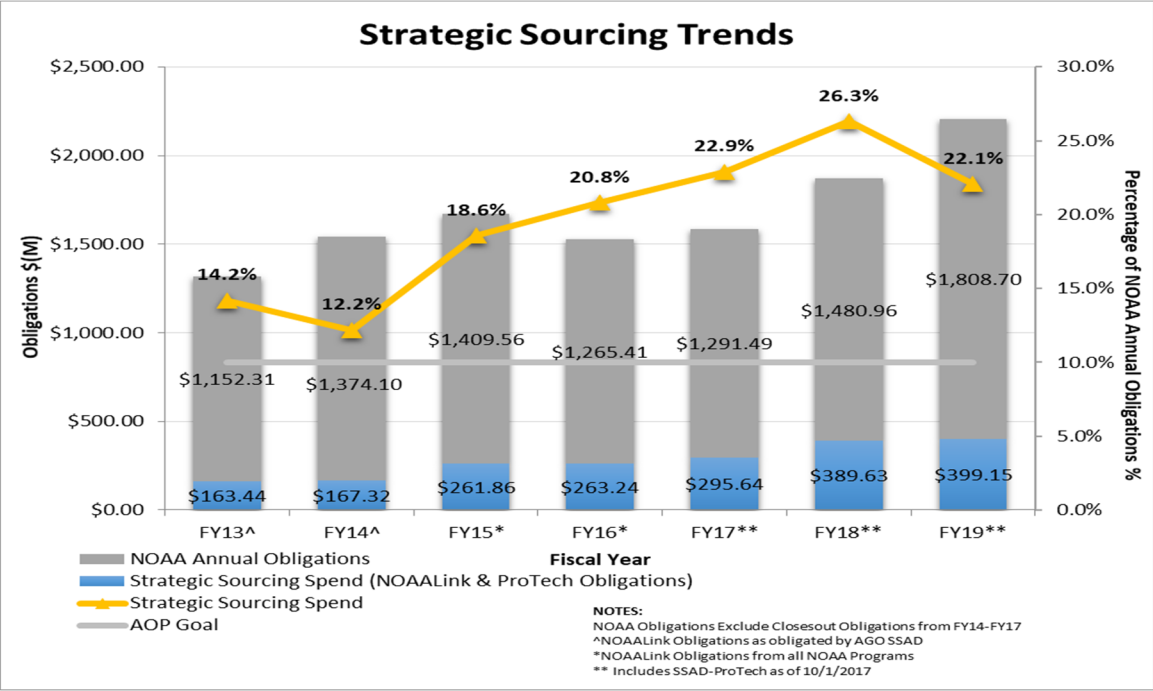
Office of General Counsel (OGC): OGC provides legal advice, review, and representation on a host of complex matters arising from the fulfillment of NOAA's mission. NOAA OGC ensures NOAA management decisions are made with necessary consideration of proper legal requirements, procedures, and options.

Mission Services and Management

Mission Services and Management is the mission-enabling arm of NOAA that supports all operational activities and is essential to its success.

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Acquisition and Grants Office (AGO): AGO provides high-value services to NOAA Line and Staff Offices, compliant with laws and regulations, on time, and at the best value to the government through the planning, solicitation, award, administration, and closeout of nearly 23,000 acquisition and financial assistance transactions annually. NOAA’s ability to accomplish its mission and achieve its goals depends significantly on AGO’s ability to process over \$2.5 billion annually in accordance with statutory and regulatory requirements. In FY 2019 for example, AGO executed 8,589 acquisition transactions to obligate \$1.86 billion and manage over 5,100 active contracts valued at over \$11.5 billion. In addition, AGO executed over 4,300 financial assistance transactions to award \$1.26 billion and manage over 2,400 active awards valued at over \$4.2 billion. NOAA also successfully executed over 4,300 acquisition closeout actions and closed over 600 financial assistance awards in FY 2019.

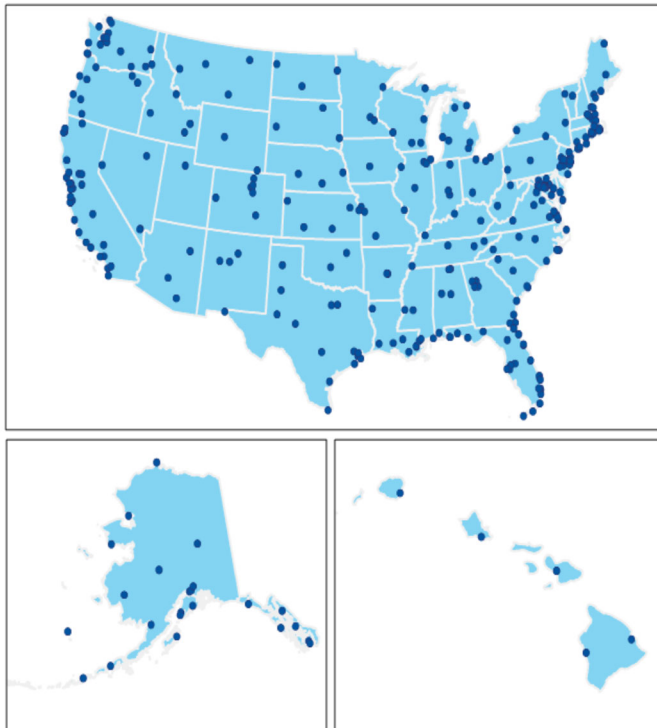


In addition, NOAA continued its strong support of small businesses in FY 2019, obligating \$753 million to small businesses equating to a 47.1 percent overall small business achievement for the year. AGO also continued to place emphasis on NOAA’s two key strategic sourcing initiatives, NOAALink program and ProTech Acquisition Initiative, to improve efficiency and reduce costs. In FY 2019, 22 percent of NOAA dollars were awarded via strategic sourcing vehicles.

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Office of the Chief Administrative Officer (OCAO):

The national scope of NOAA’s mission requires a diverse portfolio of geographically distributed facilities. OCAO supports NOAA-wide activities by managing assets in terms of risk and maintenance, and ensuring efficient use of government resources. OCAO administers a real property portfolio of more than 665 properties in 160 markets, including 401 NOAA-owned facilities with an estimated replacement value of \$3 billion; and administers a personal property portfolio of approximately 186,000 personal property assets valued at over \$8.7 billion. OCAO manages the Safety and Occupational Health program, coordinates security and anti-terrorism risk protection, and ensures best business practices around records and financial controls.



Current NOAA Footprint

NOAA recently launched the NOAA 2030 Footprint initiative to develop and implement best practices in facilities management. The initiative consists of three major projects: developing and implementing a Strategic Facilities Master Plan for 2030; consolidating four locations around the National Capital Region into NOAA Headquarters in Silver Spring, MD; and implementing asset management tools to track facility capabilities, condition and readiness. In FY 2018, NOAA completed a facilities enterprise baseline, footprint framework, and regional opportunities analysis as steps towards the Strategic Facilities Master plan. In FY 2019, NOAA completed a pilot regional analysis of the Northwest and Alaska as the first of several regional studies that will inform the master plan. In FY 2020, NOAA will complete regional analyses in the Northeast and Southeast.

NOAA is implementing asset management tools to document, analyze, track and report conditions, repair needs, space use, replacement value and sustainment cost for its owned assets. Additionally, NOAA created standardized processes for how and what real property data is collected and awarded a contract to validate the data on seventy-five percent (1.8 million gross square feet) of NOAA’s inventory of owned properties. Upon full implementation of the asset management program, NOAA will have a repeatable, traceable, and accurate owned facility data set. With this information NOAA executives will make data-driven decisions to best utilize limited resources to sustain its mission-critical footprint.

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Office of the Chief Financial Officer (OCFO): OCFO serves as NOAA's principal financial manager. NOAA has annual appropriated resources of almost \$6 billion and recorded capital asset value in excess of \$7 billion. OCFO is responsible under the CFO Act to provide the leadership necessary for NOAA to obtain an annual 'unqualified opinion' on the audit of its consolidated financial statements. The areas under the direction of the OCFO are the Budget Office, the Finance Office, Performance, Risk and Social Science Office (PRSSO), the DOC Working Capital Fund (WCF), Common Services and the NOAA Direct Bill. The Budget Office provides oversight, management, outreach and communication of the budget process, which includes coordinating the preparation of budget submissions, and allocating and controlling the execution of all budgetary resources. The Finance Office ensures that the consolidated financial statements and reports are accurate, manages and operates the financial management system, and is responsible for the timely payment of bills. The PRSS Office leads and deploys best practices from social science integration and enterprise performance and risk management to advance NOAA's mission.

DOC Accounting System (CBS application): The CBS application requires that the application (along with associated interfaces and feeder systems) be operated, maintained, and enhanced. Changes to the system 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 and training. Ongoing maintenance and support of CBS allows NOAA to maintain compliance with legal, regulatory and executive requirements such as the OMB Circular A-123 and the Federal Information Security Management Act (FISMA) and allows NOAA managers to have access to financial data necessary to make informed decisions. CBS system components have reached end of life and NOAA is taking mitigating actions in the interim such as extending maintenance agreements and identifying other technical alternatives to continue operations until the hardware upgrades can be completed. NOAA is in the process of upgrading the existing CBS technical architecture (i.e., hardware, system software, supporting infrastructure) to ensure the operability of CBS through FY 2025.

Common Services (CS) account: The Common Services 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 (MOU) and/or Interagency Agreements (IA). CS funds the Departmental Management Advances and Reimbursements (A&R) accounts providing a centralized funding source for special services and tasks provided by the DOC; off-site health services at the Census Bureau Health Unit; OPM USAJobs portal usage and maintenance; and other miscellaneous services and products.

NOAA Direct Bill Process: The NOAA Direct Bill process enables NOAA Line and Staff Office service providers to assess other Line and Staff Offices for their proportionate share of the costs of enterprise-wide programs or services. Direct Bill proposals are only for unique services/products that provide an enterprise-wide benefit or that consolidate funding for enterprise solutions.

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Office of the Chief Information Officer (OCIO): NOAA OCIO's operating model is focused on service delivery, customer support, innovation, and security with a mission to provide a secure and agile information enterprise with advanced computing capability that propels NOAA's scientific and operational missions. The cornerstone of the operating model is delivering shared enterprise information services through technology advancements including cloud computing, mobile devices, and big data. In FY 2019, NOAA's Big Data Project (BDP) won the Best in Class Public Sector Innovation Award at the Government Innovation Awards for making NOAA's data more open and accessible to the public through public-private partnerships. The BDP team works through non-competitive Cooperative Research and Development Agreements (CRADAs) with Amazon, Google, Microsoft, International Business Machines (IBM), and the Open Commons Consortium to explore new ways to improve NOAA's publicly available data. Over 70 NOAA datasets were made available on cloud service provider platforms in FY 2019.

OCIO provides the enterprise IT infrastructure that connects and manages networks, telecommunications, systems, and people to enable NOAA to provide data observation, ingestion, assimilation and modeling, processing, dissemination, and archiving capabilities at greater scales. NOAA OCIO has established four organizational goals: (1) advance the mission using innovative IT; (2) protect the mission; (3) achieve excellence in IT service delivery; and (4) enable the IT workforce. OCIO is actively exploring options with industry for sustaining this partnership in operations. OCIO improved customer satisfaction and productivity by increasing collaboration tool utilization, and focused resources on modernizing and streamlining IT systems to protect against cyber-attack, equipment malfunctions, or natural disasters. OCIO's Homeland Security Program led NOAA's participation in a National Level Exercise (called *Eagle Horizon*), to showcase NOAA's incident preparedness, response, and readiness, test continuity of operations (COOP) during a mock natural disaster, and examine and validate core capabilities nationwide across preparedness mission areas. OCIO's Research and Development (R&D) High Performance Computing (HPC) program implemented the final phase of HPC recapitalization at Oak Ridge National Laboratory, doubling the existing storage available for scientific experimentation.

Office of Human Capital Services (OHCS): OHCS provides human capital policies, programs, consultative services, and processes that facilitate the acquisition, development and retention of a diverse, highly skilled, motivated, and effective workforce capable of accomplishing the Agency's mission. In FY 2019, OHCS strengthened human capital maturity by implementing enhanced employee development programs such as a new NOAA-wide Mentoring Program and the new NOAA Honors Program. This office provides NOAA's human capital functions including strategic human capital planning, labor-management and employee relations, accountability and quality assurance, HR policy, performance management and incentives, executive and employee support, leadership development, training and career development, personnel mentoring, human resources data management, recruitment and hiring, and HR information technology systems.

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OHCS also oversees all HR functions including staffing, classification, hiring actions, personnel action request processing services, and compensation and benefits provided by the Department's new Enterprise Services model of human resources delivery. These enterprise services to provide transactional support were outsourced to provide focused, efficient and cost-effective products and services to NOAA organizations and employees. OHCS has implemented the NOAA Strategic Human Capital Management Plan; engaged new vendors and partners and provided detailed and improved workforce planning support; adopted new technologies and features including those embedded in HR Connect (a multi-faceted human capital transactions software application supporting all of NOAA), and chairs the NOAA Human Resource Directors' Advisory Committee (HRDAC) to provide close coordination with each Line and Staff Office regarding all HR matters. In FY 2019, OHCS created a Consulting Model and Customer Engagement Tool Kit to guide HR personnel with customer interactions and developed a guide to Human Centered Design processes focused on customer-centric approaches to solutions. In FY 2020, OHCS implemented and further developed each element of the model and increased the amount and sophistication of each element of support. These achievements provided improved transparency of human capital actions and greater consistency of services while 1) capitalizing on economies of scale and efficiency and 2) improving the quality of services provided. OHCS also took distinct actions to hire in-house expertise and capture experienced vendor support to improve employee and labor relations for NOAA and eliminated a large historical backlog of inquiries from employees based on allegations of harassment.

In FY 2021, NOAA will continue to charge customers (Line and Staff Offices) directly for HR transactional services provided by the Enterprise Services model. Simultaneously, OHCS will continue to implement and mature its robust consultative services approach to provide human capital expert advisors dedicated to individual Line and Staff offices to ensure mission alignment, unity of purpose and customer satisfaction. In addition, OHCS will continue to mature specific centers of expertise initially organized in FY 2017 to advance strategic and practical developments in workforce strategy, performance culture and learning, and human resource analytics to support all of NOAA. OHCS will also expand its NOAA-wide mentoring program, the NOAA Honors Program, and field additional advanced HR analytic services using artificial intelligence (AI) and state-of-the-art tools and applications.

Office of Inclusion and Civil Rights (OICR): OICR is responsible for ensuring NOAA-wide compliance with Equal Employment Opportunity (EEO) and Civil Rights laws, regulations, executive orders, and policies that prohibit discrimination on the basis of race, color, religion, sex, national origin, age, disability, sexual orientation, and genetic information. This includes the processing of informal EEO complaints and ensuring NOAA complies with any findings of and sanctions from the U.S. Equal Employment Opportunity Commission (EEOC) or Federal courts. Additionally, OICR is now responsible for developing an Agency-wide Diversity and Inclusion (D&I) program and overseeing affirmative employment initiatives. OICR's mission is to ensure that D&I is a business priority for the Agency that becomes ingrained into NOAA's organizational culture leading to the establishment of the Agency as an

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Employer of Choice. For example, in FY 2019, NOAA was selected as one of the Top 50 Science, Technology, Engineering, and Math (STEM) workplaces by the American Indian Science and Engineering Society. NOAA was also selected as one of the Top 20 supporters of Historically Black Colleges and Universities. To accomplish this goal OICR is responsible for providing advice and counsel to Agency leaders regarding D&I issues, developing and providing D&I training, conducting outreach activities to underrepresented groups, organizational climate assessments, and barrier analyses to identify and remove any barriers to hiring, promoting, and retention within the Agency. OICR also plays a pivotal role in the Agency's efforts to prevent Sexual Assault and Sexual harassment.

OICR employs six EEO counselors who together process approximately 155 informal EEO cases and with an average of about 55 of those cases resulting in a Formal filing with the Department of Commerce each year. In FY 2019, OICR completed 100 percent of EEO complaint compliance with all EEOC sanctions; complaint processing timeliness were 89 percent timely. In FY 2021, OICR continues to seek innovative methods to make progress towards meeting all EEO standards and improve its efficiency in complaint processing. OICR leadership continues to meet with senior leaders for all line and staff offices on a quarterly basis to discuss and proactively address EEO/D&I issues. To promote D&I and cultural awareness, each year OICR holds eight special observance programs and hosts a D&I Summit. In FY 2019, NOAA successfully conducted its 3rd Annual Diversity and Inclusion (D&I) Summit with more than 310 in person and 404 online participants. This summit promotes the value of D&I and sponsored some of the most prominent speakers in the field. It was highly successful. Participation from FY 2018 increased by approximately 200 employees and 93 percent of the attendees surveyed rated it positively.

OICR also identifies and deploys D&I best practices to continue to promote D&I Agency-wide. In FY 2020, OICR continues to build out the Organizational Climate Assessments program and promote the use of these assessments to identify issues that may directly impact organizational effectiveness. From an outreach perspective, OICR ensures NOAA's presence at affinity group conferences to assist with increased minority representation within NOAA's workforce. OICR is committed to establishing NOAA as an Employer of Choice and in FY 2021 is continuing to enhance and create new programs to expand its D&I portfolio and further this goal and achieve the mission of the Agency.

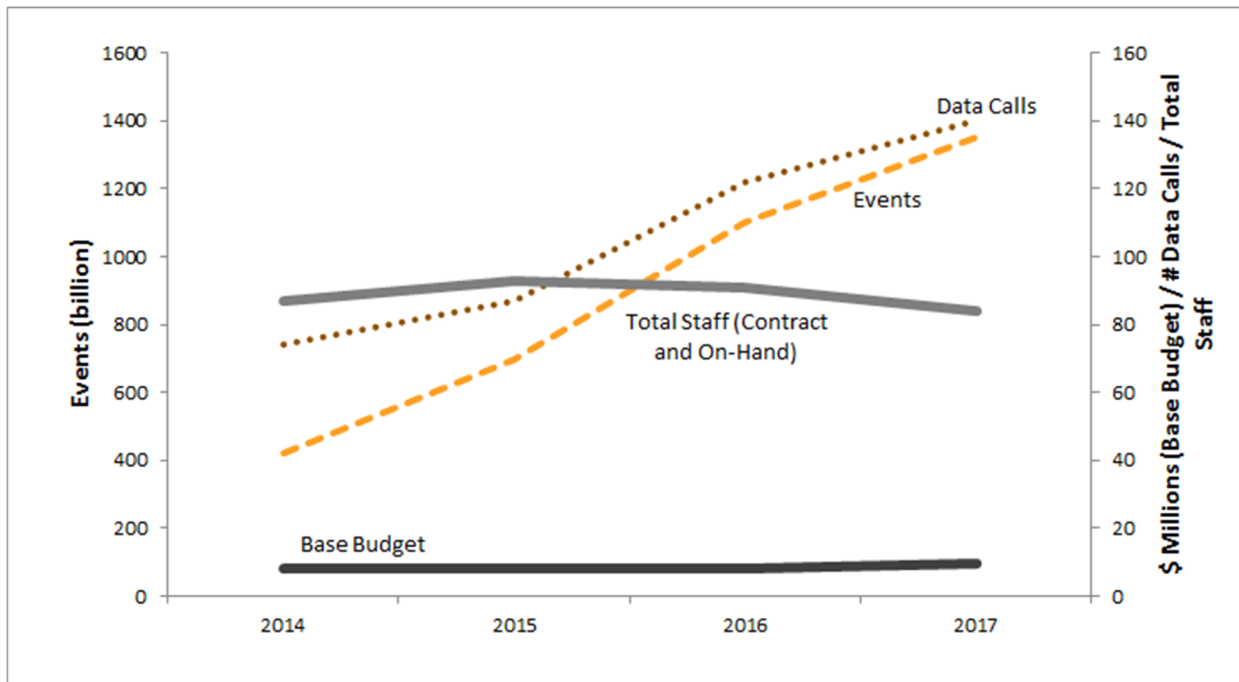
Workplace Violence Prevention and Response Program (WVPRP): The Workplace Violence Prevention and Response Program was created to comply with two separate laws; the 2015 Congressional mandate (33 U.S.C § 893) and the 2016 National Defense Authorization Act (NDAA) for the fiscal year 2017 sections 3542-3547 (Actions to Address Sexual Assault at NOAA). These mandates directed NOAA stand up a Workplace Violence Prevention and Response Program manager who would develop comprehensive services for victims of sexual assault and sexual harassment (SASH) for all NOAA employees, contractors, and affiliates. This dictates that there be full-time victim advocates for the agency and collateral victim advocates across NOAA by region. The program also develops comprehensive and centralized prevention for all NOAA employees; tracks incidents and cases of

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workplace violence and coordinates the annual congressional report; provides ongoing consultation to leadership; and coordinates the development of the workplace violence prevention plan, which creates goals to be reviewed biannually.

IT Security

The mission of the IT Security Program is to defend NOAA’s data, networks, equipment, intellectual property and personnel against a wide variety of adversaries ranging from nation states to lone-wolf attackers. Successful attacks by adversaries could negatively impact NOAA’s ability to keep nearly 330 million Americans, as well as others, safe and informed of weather, environmental, and other events with widespread economic impact. Additionally, with NOAA’s reliance on information systems and data connected to the Internet, cyber-espionage is an effective, low-cost, low-risk way to compromise data and information products and services.



NOAA’s interconnected nature presents significant risk to IT infrastructure components and data. OCIO implements NOAA’s IT Security Program through a risk-based approach that emphasizes vulnerability management to achieve defense in depth via a common prevention, response, and mitigation strategy to manage mission risk related to cyber security threats. The total number and the sophistication of attempts against NOAA systems increases year by year (420 billion events in FY 2014 to an estimated 1.4 trillion events in FY 2017) and is not likely to decrease in the foreseeable future. Over the last three years every measure used to estimate

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threat such as events, incidents, and our attack surface (expressed as the number of systems being monitored) has increased (see chart). Over this same period, although efficiencies have been leveraged to address this delta, the base budget for the IT Security Program has remained essentially flat.

Current high-priority risks include: insider threat, inadequate network segmentation, increasing activity by national/international/non-state adversaries, highly sophisticated social engineering attacks, advanced persistent threats, botnets, and precision-targeted malware (including ransomware). Future trends influencing the IT Security Program include the use of the Internet of Things (IoT) to support attacks, an “arms race” in the use of artificial intelligence by attackers and defenders, additional legislation and regulation driven by high-profile data breaches, and competing demands to improve NOAA’s security posture while simultaneously decreasing program costs. Major initiatives include improving system segmentation to limit adversaries from traversing from external facing systems to internal resources, full monitoring of all NOAA end points, improving the quality of enterprise IT security services and the implementation of all five phases of the DHS Continuous Diagnostic Monitoring Program.

During FY 2019, the IT Security Program continued its efforts to increase the efficiency of base-level functionality, which resulted in significantly increased visibility into defending the NOAA networks and systems. This included building out our sensors so more NOAA systems are sending information to our centralized network defense systems, better integration of cyber threat intelligence, and better processes and procedures to use this data. One particularly significant accomplishment involved completing the infrastructure and network migration for NOAA’s Trusted Internet Connection Access Provider (TICAP) installations at Hawaii, Seattle, Denver, Dallas, and Metro DC. A TICAP optimizes and standardizes the security of individual external network connections currently in use by Federal agencies, including connections to the Internet. This improves the Federal government’s security posture and incident response capability through the reduction and consolidation of external connections and provides enhanced monitoring and situational awareness of external network connections. The IT Security Program also completed and issued a FY 2018-2022 Cybersecurity Roadmap, which sets forth an ambitious plan for NOAA to move from a compliance-based program to one that is risk-based, while also implementing a full suite of effective enterprise IT services. The Roadmap will be a primary driver for FY 2021 IT Security Program activities, and includes acquiring and implementing a Common Operating Picture (COP) capability to share information across the enterprise on current and future threats. Additionally, in response to OMB, DHS, DOC, and NIST policies and recommendations, the NOAA OCIO plans to continue focusing its resources on protecting U.S. intellectual property, defending against insider threats, and bolstering Data Loss Prevention capabilities. All of these initiatives will promote NOAA’s mission of knowledge and information sharing for the American people and the protection of lives and property everywhere.

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Payment to the Department of Commerce (DOC) Working Capital Fund (WCF)

The DOC WCF provides centralized services to NOAA's Line and Staff Offices in the most efficient and economical manner. Organizational units within DOC provide the administrative, legal, information technology, financial, and policy support needed to accomplish NOAA's overall mission. The WCF 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.

Office of Education

The Office of Education (OED) provides advice and counsel to the Under Secretary of Commerce for Oceans and Atmosphere in matters pertaining to education, coordinates education activities throughout NOAA through the NOAA Education Council and represents the Agency in inter-agency education initiatives. The office fosters American competitiveness in science, technology, engineering, and mathematics (STEM) by providing quality educational opportunities for the next generation, including competitive scholarships, internships and professional training for post-secondary students. The Office of Education also supports the José Serrano Educational Partnership Program with Minority Serving Institutions (EPP/MSI) grants, Ernest F. Hollings (Hollings) Scholarships, Competitive Education Grants, and the Bay-Watershed Education and Training Program.

José E. Serrano Educational Partnership Program with Minority Serving Institutions: EPP/MSI provides financial assistance, through competitive processes, to students and MSIs that train students and conduct research in NOAA mission sciences. The program's goal is to increase the number of students, particularly from underrepresented groups, who are trained and earn degrees in sciences directly related to NOAA's mission. Long term goals of the program include increasing the diversity of the STEM and NOAA workforce and fostering American competitiveness in STEM fields. Among EPP's accomplishments:

- Over 2,300 degrees granted to higher education students in NOAA mission fields since 2001
- Approximately 75 percent of graduates are from underrepresented minority groups
- 319 PhDs granted in NOAA mission disciplines
- 327 students in NOAA mission fields currently in the pipeline

EPP/MSI website: <http://www.noaa.gov/epp>

Ernest F. Hollings Scholarship Program: The NOAA Hollings Scholarship Program is a competitive program that increases undergraduate training in oceanic and atmospheric sciences, research, technology, and education. The program catalyzes scientific

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research through work-based learning experiences, improves environmental literacy, and prepares the STEM workforce for the future. It recruits and prepares students for careers with NOAA and other natural resource and science organizations at the Federal, state and local levels of government, in academia and the private sector, as well as in science and environmental education. In 2019, the Hollings Scholarship Program supported 125 scholars while continuing to support 150 scholars from the class of 2018.

Based on the FY 2021 Request of \$4.63 billion, NOAA estimates it will have \$4.63 million for the Hollings Scholarship Program. For more information, please visit the Hollings Scholarship website: <http://www.noaa.gov/hollings>

Competitive Education Grants: NOAA's Competitive Education Grants program is the longest standing and most comprehensive national grants program focused on environmental literacy. This program improves and expands the learning, understanding, and application of Earth systems science and advances science, technology, engineering, and mathematics (STEM) education. Multi-year grants and cooperative agreements are competitively awarded to a variety of educational institutions and organizations within the United States to support formal, informal, and community education projects and programs aligned with NOAA's mission.

Competitive Education Grants accomplishments include the following:

- \$75 million provided through 133 awards since the program's inception in 2005.
- In FY 2019, more than 145 institutions advanced NOAA's mission to enhance awareness and understanding of Earth systems science through NOAA-supported formal (K-12) and informal education initiatives that both inspire and prepare people to make the best social, economic, and environmental decisions.
- In FY 2019, 43 million people visited institutions hosting NOAA-supported exhibits and/or programs (including NOAA Science On a Sphere®) designed to increase their knowledge of the systems of the natural world and ability to use scientific evidence to make informed decisions regarding environmental issues.
- In FY 2019, 244,000 youth and adults participated in NOAA-supported, informal education programs that enhance ecosystem stewardship and promote informed decision making.
- In FY 2019, more than 2,000 educators participated in NOAA-supported professional development programs using evidence-based practices conveying Earth systems science in compelling and relevant ways.

Bay-Watershed Education and Training (B-WET): B-WET is an environmental education program that promotes locally relevant, experiential learning in the K-12 environment through competitive funding that promotes Meaningful Watershed Educational Experiences (MWEEs). B-WET currently serves seven areas of the country: California, Chesapeake Bay, Great Lakes, Gulf of Mexico, Hawai'i, New England, and the Pacific Northwest. B-WET accomplishments include the following:

- B-WET grants reached approximately 70,000 students and 2,500 teachers in 2019 through 141 new and continuing awards.

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- Since the program's inception in 2002 NOAA has awarded over \$91 million to support more than 760 projects.
- B-WET has created a cross-region, internal evaluation system to monitor program implementation and outcomes on an ongoing basis. Results are shared with grantees and applicants to help promote best practices for Meaningful Watershed Educational Experiences.

Facilities Maintenance

In FY 2021, NOAA plans to consolidate facilities maintenance and construction funding within Mission Support for a more centralized approach to the funding and management of these activities. Routine operations and maintenance of facilities typically funded by field offices, such as janitorial services and minor repairs, will continue to be funded through the Line Offices. This consolidation leverages NOAA's recent efforts for more consistent, corporate approaches to facilities management and planning and reflects NOAA's commitment to advancing the Department's strategic objective to achieve cost savings through consolidated functions.

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(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Increase from	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Mission Services and Management	Pos./BA	585	159,963	598	161,663	13	1,700
	FTE/OBL	554	159,963	564	161,663	10	1,700

Workplace Violence Prevention and Response Program (+\$1,700, 10 FTE/13 Positions) – The Workplace Violence Program was created to comply with the National Defense Authorization Act (NDAA) for Fiscal Year 2017 sections 3542-3547 (Actions to Address Sexual Assault at NOAA). This mandate directed that NOAA stand up a Workplace Violence Prevention and Response Office to develop comprehensive services for victims of sexual assault and sexual harassment (SASH) and all NOAA employees, contractors, and affiliates.

This program will increase response services across all of NOAA’s regions, increased prevention services with computer based training and in-person bystander intervention, development of resiliency training for all NOAA employees, expansion and maintenance of the Rape, Abuse & Incest National Network (RAINN) contract to include dedicated hotline/helpline for SASH response services, development and maintenance of a workplace violence database, execution of workplace violence summits, development and maintenance of a workplace violence prevention website, toolkits for employees and management, outreach materials, continued grant assistance to the National Academies of Science, continuing education funds, and travel costs for the annual victim advocate summit.

NOAA began funding the requirements of this program through an assessment of funding allocated to each Line Office. In FY 2020, NOAA received \$1,000 in direct appropriations and continued to fund an additional \$1,000 through the Line Office assessment. In order to continue to expand the program and provide transparency, NOAA believes it would be appropriate to begin providing full dedicated appropriated funding for this effort. If this program is not funded, NOAA will be noncompliant with the congressional mandate and the NDAA, and will be unable to respond to incidents of sexual assault, sexual harassment, domestic violence, stalking, and workplace harassment, and also unable to provide streamlined prevention and response services to NOAA employees.

Schedule and Milestones:

FY 2021-2025

- Increase response services spanning across all of NOAA’s regions

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- Increase prevention services with computer-based training and in-person bystander intervention, development of resiliency training
- Expand the RAINN contract to include dedicated hotline/helpline for SASH response services
- Develop and maintain a workplace violence database
- Develop and maintain a workplace violence prevention website
- Develop toolkits for employees and management, outreach materials
- Participate in the National Academies of Science Action Collaborative
- Develop Resiliency training
- Provide Annual Victim Advocate training
- Ensure continuing education
- Complete stand-up of program with all FTE hired (FY 2022)
- Update the Violence Prevention plan (FY 2022)

Deliverables:

- Workplace violence database
- Victim advocate response satisfaction survey
- SASH/workplace violence training satisfaction survey
- Biannual workplace violence attitudes survey
- Toolkits for employees and management

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Performance Measures	2021	2022	2023	2024	2025
Percent of workforce trained					
With Increase	90	100	100	100	100
Without Increase	90	90	90	90	90
Number of victim advocate contacts					
With Increase	100	100	100	100	100
Without Increase	40	40	40	40	40
Outyear Costs:					
Direct Obligations	1,700	1,700	1,700	1,700	1,700
Capitalized	0	0	0	0	0
Uncapitalized	1,700	1,700	1,700	1,700	1,700
Budget Authority	1,700	1,700	1,700	1,700	1,700
Outlays	1,674	1,674	1,674	1,674	1,674
FTE	10	13	13	13	13
Positions	13	13	13	13	13

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PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Mission Services and Management
Subactivity: Mission Services and Management

Title	Grade	Number	Annual Salary	Total Salaries
Program Director	15	1	145,000	145,000
Deputy Program Director	14	1	120,000	120,000
Regional Program Coordinators	12	9	100,000	900,000
Program Assistant	9	2	80,000	160,000
Total		13		1,325,000
Less lapse	25.0%	(3)		(331,250)
Total full-time permanent (FTE)		10		993,750
2021 Pay Adjustment (1%)	1.0%			9,938
				1,003,688

Personnel Data Summary

Full-time Equivalent Employment (FTE)		
Full-time permanent		10
Total FTE		10
Authorized Positions:		
Full-time permanent		13
Total Positions		13

*NOAA estimates 6 FTE/8 positions on-board through FY 2020 with the program's current funding model. The FY 2021 request would support the full 10 FTE/13 positions shown here.

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Mission Services and Management
Subactivity: Mission Services and Management

Object Class		2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1	Full-time permanent compensation	57,440	62,022	63,754	64,758	1,004
11.3	Other than full-time permanent	27	32	32	32	0
11.5	Other personnel compensation	1,004	1,050	1,050	1,050	0
11.7	Military personnel compensation	453	467	475	475	0
11.9	Total personnel compensation	58,923	63,571	65,311	66,315	1,004
12	Civilian personnel benefits	15,789	17,890	18,863	19,161	298
13	Benefits for former personnel	79	81	81	81	0
21	Travel and transportation of persons	1,208	1,208	1,217	1,232	15
22	Transportation of things	143	143	143	143	0
23	Rent, communications, and utilities	0	0	0	0	0
23.1	Rental payments to GSA	6,369	6,200	6,447	6,527	80
23.2	Rental Payments to others	243	250	265	265	0
23.3	Communications, utilities and misc charges	1,169	1,200	1,215	1,215	0
24	Printing and reproduction	138	140	143	143	0
25.1	Advisory and assistance services	13,106	15,000	15,000	15,303	303
25.2	Other services from non-Federal sources	26,801	37,557	38,552	38,552	0
25.3	Other goods and services from Federal sources	9,332	11,000	11,000	11,000	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	0	0	0	0	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	755	870	890	890	0
31	Equipment	638	678	690	690	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	125	125	125	125	0
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	22	22	22	22	0
44	Refunds	0	0	0	0	0
99	Total obligations	134,838	155,934	159,963	161,663	1,700

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(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Increase from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Mission Services and Management	Pos./BA	585	159,963	585	160,463	0	500
	FTE/OBL	554	159,963	554	160,463	0	500

Business Application Solutions (BAS) and Administrative Systems Program Management Office (PMO) (+\$500, 0 FTE/0 Positions)

– NOAA requests an increase to support the successful implementation of the Department of Commerce-wide Business Applications Solutions (BAS) system. While the Department budget does include centralized funding for BAS, NOAA must conduct planning, integration, and implementation activities within the bureau to ensure readiness for BAS and associated NOAA-specific changes. This includes evaluation of business processes and consideration of NOAA specific requirements that will need to be integrated with the new system. Efforts will be required to sustain and transition these capabilities effectively in the new system. As one example, NOAA specific system interfaces and data extracts will require effort to transition to BAS. Funding from this request will be used to establish a structure within NOAA for administrative systems governance and to support DOC’s BAS initiative in the form of an Administrative Systems Program Management Office (PMO). NOAA does not have a body that governs administrative systems or coordinates cross-enterprise administrative systems initiatives. Such a body will be necessary to not only coordinate BAS tasks across NOAA’s administrative community to ensure a “one NOAA” view of BAS requirements but to also effectively coordinate with the DOC, other DOC bureaus and NOAA leadership throughout the BAS implementation. This governance structure will not only support the administrative systems within the scope of BAS, but all NOAA administrative systems both during the BAS implementation and thereafter.

The NOAA Administrative Systems PMO will:

- Provide program management oversight to NOAA senior leadership of all administrative systems to ensure decisions around modernization, migration, upgrades, acquisitions, and budgeting are tracked, coordinated, and executed in alignment with the integrated overall strategic vision for administrative systems
- Provide dedicated leadership in DOC’s BAS implementation - represent NOAA in departmental discussions; serve as the single voice driving NOAA’s BAS requirements.

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- Coordinate BAS activities across NOAA, ensuring BAS tasks are completed using a consistent approach and with a “one NOAA” or enterprise wide perspective. The PMO will also serve as the hub for information flow between DOC, NOAA leadership, NOAA’s BAS project teams within AGO, OCAO, and OCFO and will be the single point organization for NOAA BAS status.
- Define NOAA standard administrative system data definitions and businesses processes to support BAS requirements and provide long term governance for enterprise-wide administrative systems data and business processes.

NOAA will be the first bureau to transition to BAS. As the largest Commerce bureau representing approximately half of the Department’s non-decennial appropriated budget, sufficient resources will be essential to a successful, timely BAS implementation. Staff will be needed to focus on the transition to BAS, pulling subject matter experts from current duties for this effort. Ongoing duties in areas including financial management, contract administration, property oversight, and IT development and maintenance must be addressed during and after the initial implementation effort.

NOAA must also maintain and operate the current financial system, CBS, until BAS is ready. CBS availability is critical to NOAA’s ability to record payments and obligations and to provide status of funds to NOAA program managers and executives. Without CBS operations in the interim, executing NOAA’s mission and maintaining an unqualified audit opinion for NOAA and DOC would be impossible.

Schedule and Milestones:

- FY 2020: Planned award of BAS contract at the Department
- FY 2021: Stand up the NOAA Administrative Systems PMO
- Beginning of FY 2023: Go live with BAS at NOAA

Outyear Costs:

Direct Obligations	500	500	500	500	500
Capitalized	0	0	0	0	0
Uncapitalized	500	500	500	500	500

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(Dollar amounts in thousands)

Budget Authority	500				
Outlays	310	310	310	310	
FTE	0	0	0	0	0
Positions	0	0	0	0	0
	500	500	500	500	
				310	

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Mission Services and Management
Subactivity: Mission Services and Management

Object Class		2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1	Full-time permanent compensation	57,440	62,022	63,754	63,754	0
11.3	Other than full-time permanent	27	32	32	32	0
11.5	Other personnel compensation	1,004	1,050	1,050	1,050	0
11.7	Military personnel compensation	453	467	475	475	0
11.9	Total personnel compensation	58,923	63,571	65,311	65,311	0
12	Civilian personnel benefits	15,789	17,890	18,863	18,863	0
13	Benefits for former personnel	79	81	81	81	0
21	Travel and transportation of persons	1,208	1,208	1,217	1,217	0
22	Transportation of things	143	143	143	143	0
23	Rent, communications, and utilities	0	0	0	0	0
23.1	Rental payments to GSA	6,369	6,200	6,447	6,447	0
23.2	Rental Payments to others	243	250	265	265	0
23.3	Communications, utilities and misc charges	1,169	1,200	1,215	1,215	0
24	Printing and reproduction	138	140	143	143	0
25.1	Advisory and assistance services	13,106	15,000	15,000	15,400	400
25.2	Other services from non-Federal sources	26,801	37,557	38,552	38,652	100
25.3	Other goods and services from Federal sources	9,332	11,000	11,000	11,000	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	0	0	0	0	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	755	870	890	890	0
31	Equipment	638	678	690	690	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	125	125	125	125	0
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	22	22	22	22	0
44	Refunds	0	0	0	0	0
99	Total obligations	134,838	155,934	159,963	160,463	500

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Mission Services and Management	Pos./BA	585	159,963	585	158,963	0	(1,000)
	FTE/OBL	554	159,963	554	158,963	0	(1,000)

NMFS Operations Contract (-\$1,000, 0 FTE/0 Positions) – This request eliminates additional funds provided in FY 2020 appropriations to enter into a contract with an independent organization to evaluate efficiencies that can be made to NMFS budgetary operations. This review will be completed with the funds provided in FY 2020.

Outyear Costs:							
Direct Obligations		(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Capitalized		0	0	0	0	0	0
Uncapitalized		(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Budget Authority		(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Outlays		(620)	(620)	(620)	(620)	(620)	(620)
FTE		0	0	0	0	0	0
Positions		0	0	0	0	0	0

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Mission Services and Management
Subactivity: Mission Services and Management

Object Class		2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	Full-time permanent compensation	57,440	62,022	63,754	63,754	0
11.3	Other than full-time permanent	27	32	32	32	0
11.5	Other personnel compensation	1,004	1,050	1,050	1,050	0
11.7	Military personnel compensation	453	467	475	475	0
11.9	Total personnel compensation	58,923	63,571	65,311	65,311	0
12	Civilian personnel benefits	15,789	17,890	18,863	18,863	0
13	Benefits for former personnel	79	81	81	81	0
21	Travel and transportation of persons	1,208	1,208	1,217	1,217	0
22	Transportation of things	143	143	143	143	0
23	Rent, communications, and utilities	0	0	0	0	0
23.1	Rental payments to GSA	6,369	6,200	6,447	6,447	0
23.2	Rental Payments to others	243	250	265	265	0
23.3	Communications, utilities and misc charges	1,169	1,200	1,215	1,215	0
24	Printing and reproduction	138	140	143	143	0
25.1	Advisory and assistance services	13,106	15,000	15,000	14,000	(1,000)
25.2	Other services from non-Federal sources	26,801	37,557	38,552	38,552	0
25.3	Other goods and services from Federal sources	9,332	11,000	11,000	11,000	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	0	0	0	0	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	755	870	890	890	0
31	Equipment	638	678	690	690	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	125	125	125	125	0
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	22	22	22	22	0
44	Refunds	0	0	0	0	0
99	Total obligations	134,838	155,934	159,963	158,963	(1,000)

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(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u> <u>Amount</u>		<u>Personnel</u>	<u>Amount</u>
Office of	Pos./BA	16	30,292	9	8,858	(7)	(21,434)
Education	FTE/OBL	16	30,292	9	8,858	(7)	(21,434)

Office of Education Grants (-\$21,434, -7 FTE/-7 Positions) – NOAA proposes to reduce funding for the Office of Education (\$1,184) and eliminate funding for the Competitive Education Grants Program (\$3,050) and the José E. Serrano Educational Partnership Program for Minority Serving Institutions (EPP/MSI) (\$17,200). After a separate reduction in this budget line of \$7,750 for the termination of the Bay-Watershed Education and Training (B-WET) Regional Program (p. MS-44), remaining funds of \$1,108 for the Office of Education will support a streamlined, centralized office focused on coordinating and improving the performance of NOAA’s numerous activities in STEM education. These funds recognize this office’s critical role as primary point of contact for the National Science and Technology Council (NSTC)’s Committee on STEM Education for NOAA and the Department of Commerce.

Schedule and Milestones:

(FY 2021-2025)

- Represent NOAA and the Department of Commerce in interagency Federal STEM Education coordination activities required by America COMPETES Act statutory authority
- Support and manage www.noaa.gov/education to provide an integrated, NOAA-wide portal for education resources and opportunities
- Coordinate the NOAA Citizen Science Community of Practice to increase use of citizen science throughout the agency
- Coordinate partnerships with over 165 informal learning institutions to better connect NOAA resources to their visitors
- Implement NOAA’s Education 2020-2040 Strategic Plan across the Agency by working with the NOAA Education Council as required by America COMPETES Act statutory authority

Deliverables:

- Completion of NOAA Education implementation actions that support the Federal STEM Education Strategic Plan (FY 2021)
- Annual reporting that improves transparency and public awareness of the performance and outcomes of NOAA Education efforts (FY 2021-2025)
- A community of practice that shares best practices and lessons learned to improve program performance (FY 2021-2025)

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- NOAA’s two-year Implementation Plan for the 2020-2040 Education Strategic Plan, fulfilling America COMPETES Act requirements (FY 2021)
- Over 25 updated thematic Resource Collections for the NOAA website, integrating the latest NOAA science into formal and informal education (FY 2021)
- Expanded partnerships with informal learning institutions involving over 165 institutions reaching 50 million visitors (FY 2021-2025)
- Enhanced NOAA Citizen Science Community of Practice providing more than half a million volunteer hours per year through over 160 projects (FY 2021-2025)

Performance Measures	2021	2022	2023	2024	2025
Number of people (in millions) that visit informal learning institutions with a NOAA-funded exhibit or program that integrates NOAA sciences, data and other information					
With Decrease	0	0	0	0	0
Without Decrease	45	45	45	45	45
 Institutions served by Competitive Education Grants					
With Decrease	0	0	0	0	0
Without Decrease	157				
 K-12 teachers and staff served by Competitive Education Grants					
With Decrease	0 ¹⁵⁷	0 ¹⁵⁷	0 ¹⁵⁷	0 ¹⁵⁷	0
Without Decrease	2,000				
 Number of EPP/MSI students from underrepresented communities trained with support from EPP/MSI					
With Decrease	0 ^{2,000}	0 ^{2,000}	0 ^{2,000}	0 ^{2,000}	0
Without Decrease	327				
	327	327	327	327	

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Number of institutions with increased educational capacity supported by EPP/MSI

With Decrease	0	0	0	0	0
Without Decrease	24	24	24	24	24
Outyear Costs:					
Direct Obligations	(21,434)	(21,434)	(21,434)	(21,434)	(21,434)
Capitalized	0	0	0	0	0
Uncapitalized	(21,434)	(21,434)	(21,434)	(21,434)	(21,434)
Budget Authority	(21,434)	(21,434)	(21,434)	(21,434)	(21,434)
Outlays	(13,273)	(13,273)	(13,273)	(13,273)	(13,273)
FTE	(7)	(7)	(7)	(7)	(7)
Positions	(7)	(7)	(7)	(7)	(7)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Office of Education
Subactivity: Office of Education

Title	Grade	Number	Annual Salary	Total Salaries
Supervisory Program Manager	ZA-V	(1)	157,665	(157,665)
Program Specialist	ZA-IV	(2)	137,413	(274,826)
Policy Analyst	ZA-IV	(3)	137,413	(412,239)
Senior Policy Analyst	ZA-IV	(1)	137,413	(137,413)
Total		<u>(7)</u>		<u>(982,143)</u>
Less lapse	0.0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)		(7)		(982,143)
2021 Pay Adjustment (1%)	1.0%			<u>(9,821)</u>
Total				<u>(991,964)</u>

Personnel Data

Full-time Equivalent Employment	
Full-time permanent	(7)
Other than full-time permanent	<u>0</u>
Total	(7)

Authorized Positions:

Full-time permanent	(7)
Other than full-time permanent	<u>0</u>
Total	(7)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Office of Education
Subactivity: Office of Education

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	2,090	1,901	1,951	959	(992)
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	56	56	56	31	(25)
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	2,146	1,957	2,007	990	(1,017)
12 Civilian personnel benefits	648	589	605	278	(327)
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	139	139	139	44	(95)
22 Transportation of things	7	7	7	2	(5)
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	179	179	179	39	(140)
23.2 Rental Payments to others	220	220	220	0	(220)
23.3 Communications, utilities and misc charges	10	10	10	2	(8)
24 Printing and reproduction	15	15	15	5	(10)
25.1 Advisory and assistance services	20	20	20	20	0
25.2 Other services from non-Federal sources	2,157	1,919	1,945	533	(1,412)
25.3 Other goods and services from Federal sources	29	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
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	28	28	28	11	(17)
31 Equipment	17	17	17	9	(8)
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	23,900	25,100	25,100	6,925	(18,175)
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	29,514	30,200	30,292	8,858	(21,434)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Office of	Pos./BA	16	30,292	12	22,542	(4)	(7,750)
Education	FTE/OBL	16	30,292	12	22,542	(4)	(7,750)

NOAA Bay-Watershed Education and Training (B-WET) Regional Program (-\$7,750, -4 FTE/-4 Positions) -- NOAA requests to terminate the Bay-Watershed Education and Training (B-WET) Regional Program. This will eliminate competitive funding to local and state education offices and government agencies, academic institutions, and nonprofit organizations.

Performance Measures	2021	2022	2023	2024	2025
Number of students served by the Bay Regional Watershed Education Program (in thousands)					
With Decrease	0	0	0	0	0
Without Decrease	73	73	73	73	73
Educators served by Bay Regional Watershed Education Program					
With Decrease	0	0	0	0	0
Without Decrease	2,300				
	2,300	2,300	2,300	2,300	

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)

Outyear Costs:					
Direct Obligations	(7,750)	(7,750)	(7,750)	(7,750)	(7,750)
Capitalized	0	0	0	0	0
Uncapitalized	(7,750)				
 Budget Authority	(7,750)				
Outlays	(4,805)(7,750)	(4,805)(7,750)	(4,805)(7,750)	(4,805)(7,750)	
FTE	(4)	(4)	(4)	(4)	(4)
Positions	(4)(7,750)	(4)(7,750)	(4)(7,750)	(4)(7,750)	(4)
				(4,805)	

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Office of Education
Subactivity: Office of Education

Title	Grade	Number	Annual Salary	Total Salaries
Policy Analyst	ZA-IV	(4)	102,663	(410,652)
Total		(4)		(410,652)
Less lapse	0.0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)		(4)		(410,652)
2021 Pay Adjustment (1%)	1.0%			<u>(4,107)</u>
Total				<u>(414,759)</u>

Personnel Data

Full-time Equivalent Employment		
Full-time permanent		(4)
Other than full-time permanent		<u>0</u>
Total		(4)

Authorized Positions:

Full-time permanent	(4)
Other than full-time permanent	<u>0</u>
Total	(4)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)**

Activity: Office of Education
Subactivity: Office of Education

Object Class		2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	Full-time permanent compensation	2,090	1,901	1,951	1,536	(415)
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	56	56	56	56	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	2,146	1,957	2,007	1,592	(415)
12	Civilian personnel benefits	648	589	605	475	(130)
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	139	139	139	122	(17)
22	Transportation of things	7	7	7	7	0
23	Rent, communications, and utilities	0	0	0	0	0
23.1	Rental payments to GSA	179	179	179	179	0
23.2	Rental Payments to others	220	220	220	220	0
23.3	Communications, utilities and misc charges	10	10	10	10	0
24	Printing and reproduction	15	15	15	5	(10)
25.1	Advisory and assistance services	20	20	20	0	(20)
25.2	Other services from non-Federal sources	2,157	1,919	1,945	1,720	(225)
25.3	Other goods and services from Federal sources	29	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
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	28	28	28	20	(8)
31	Equipment	17	17	17	17	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	23,900	25,100	25,100	18,175	(6,925)
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	29,514	30,200	30,292	22,542	(7,750)

**Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Increase from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Facilities Maintenance	Pos./BA	0	2,044	0	9,651	0	7,607
	FTE/OBL	0	2,044	0	9,651	0	7,607

Facilities Maintenance (+\$7,607, 0 FTE/0 Positions) – NOAA requests funds for deferred maintenance and repair (DM&R) projects at NOAA-owned properties. As of fourth quarter FY 2018, third parties completed Facility Condition Assessments (FCAs) that validated repair needs of \$95 million for 227 of 406 NOAA owned properties. These FCAs examined 2,013,941 gross square feet (GSF) of a total 3,373,473 GSF, 60 percent of the owned property portfolio. Based on these figures, projecting the remaining 40 percent of properties yields a Total Estimated Documented Repair Needs figure of \$158 million. With a projected increase of two percent year-over-year, the repair needs will grow to over \$200 million by FY 2030 without further investment. If DM&R projects are not funded, then NOAA must redirect mission resources to address critical maintenance and repairs.

Schedule and Milestones:

- Commence annual scoring and ranking process in order to prioritize all existing and newly proposed facilities projects. The process consists of collecting program requirements and prioritizing those requirements based on the NOAA Facilities Council approved scoring and ranking governance. After producing a final prioritized list approved by the NOAA Facilities Council, a subsequent execution plan will be outlined based on appropriations

Outyear Costs:

Direct Obligations	7,607	7,607	7,607	7,607	7,607
Capitalized	7,607	7,607	7,607	7,607	7,607
Uncapitalized	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)

Budget Authority	7,607					
Outlays	5,194	5,194	5,194	5,194		
FTE	0	0	0	0		0
Positions	07,607	07,607	07,607	07,607	07,607	0
					5,194	

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Facilities Maintenance
Subactivity: Facilities Maintenance

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1	Full-time permanent compensation	0	0	0	0
11.3	Other than full-time permanent	0	0	0	0
11.5	Other personnel compensation	0	0	0	0
11.8	Special personnel services payments	0	0	0	0
11.9	Total personnel compensation	0	0	0	0
12	Civilian personnel benefits	0	0	0	0
13	Benefits for former personnel	0	0	0	0
21	Travel and transportation of persons	0	0	0	0
22	Transportation of things	0	0	0	0
23	Rent, communications, and utilities	0	0	0	0
23.1	Rental payments to GSA	0	0	0	0
23.2	Rental Payments to others	0	0	0	0
23.3	Communications, utilities and misc charges	0	0	0	0
24	Printing and reproduction	0	0	0	0
25.1	Advisory and assistance services	0	0	0	0
25.2	Other services from non-Federal sources	0	0	2,044	9,651
25.3	Other goods and services from Federal sources	0	0	0	7,607
25.4	Operation and maintenance of facilities	0	0	0	0
25.5	Research and development contracts	0	0	0	0
25.6	Medical care	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0
26	Supplies and materials	0	0	0	0
31	Equipment	0	0	0	0
32	Lands and structures	0	0	0	0
33	Investments and loans	0	0	0	0
41	Grants, subsidies and contributions	0	0	0	0
42	Insurance claims and indemnities	0	0	0	0
43	Interest and dividends	0	0	0	0
44	Refunds	0	0	0	0
99	Total obligations	0	0	2,044	9,651
				7,607	

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Construction

Goal Statement

The Construction activity ensures that NOAA has safe and modern facilities to support NOAA's critical science, service, and stewardship mission.

Base Program

NOAA's facilities constitute a significant capital investment with over 665 different facilities and 6,965,592 total Usable Square Feet, including 401 NOAA-owned facilities with an estimated replacement value (CRV) of \$3 billion. These facilities require maintenance, repair, and investment to minimize the impact to operations. Construction acquisition and project planning enables NOAA to complete the analyses, pre-design work, and initial preparation that make the actual construction phase of projects more efficient and effective. Activities include Business Case Analyses, NEPA planning, special environmental studies, condition surveys, site work, and any other preliminary development needed to ensure successful acquisition and completion of construction projects within budget and on schedule.

Statement of Operating Objectives

Schedule and Milestones/Deliverables:

- The Construction activity uses recurring base funds to do centralized project planning, analyses, and site preparation to ensure NOAA is prepared to execute major projects when project funding is received
- In FY 2018, project funding was received to address deferred maintenance and repair across NOAA's facilities; construction of the National Marine Fisheries Service's Northwest Fisheries Science Center Mukilteo Research Station replacement project (aka Mukilteo); and planning activities for the Office of Marine and Aviation Operations U.S. Naval Station Newport project
- In FY 2019 NOAA received funds to complete the Mukilteo project and will award the contract for construction in FY 2020.
- In FY 2020, NOAA received \$40.0 million to address NOAA's highest priority facilities construction projects
- In FY 2021, NOAA plans to consolidate facilities maintenance and construction funding within Mission Support for a more centralized approach to the funding and management of these activities. Routine operations and maintenance of facilities typically funded by field offices, such as janitorial services and minor repairs, will continue to be funded through the Line

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)**

Offices. This consolidation leverages NOAA’s recent efforts for more consistent, corporate approaches to facilities management and planning and reflects NOAA’s commitment to advancing the Department’s strategic objective to achieve cost savings through consolidated functions

- In FY 2021, NOAA will:
 - Allocate \$4.0 million for the repayment of the Judgment Fund for the La Jolla Settlement and use remaining funds to execute projects to address NOAA’s highest priority facilities repair and deferred maintenance requirements
 - Begin construction on the Mukilteo Research Station replacement project (early FY 2021)
 - Complete design work for the Newport Pier construction project to support an award in FY 2022
 - Conduct NEPA environmental assessment and design for the Ketchikan Pier construction project

Explanation and Justification

Comparison by subactivity		2019		2020		2021	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
NOAA Construction	Pos/BA	0	24,939	0	40,000	0	55,988
	FTE/OBL	0		0	40,000	0	55,988
Total Construction	Pos/BA	0	24,939	0	40,000	0	55,988
	FTE/OBL	0	0	0	40,000	0	55,988

NOAA Construction

Constructing new facilities and reinvesting in existing facilities is critical to NOAA’s mission accomplishment. Conducting and effectively managing construction projects on facilities that have major deferred maintenance issues corrects health and life safety issues, averts emergency repairs and associated costs, reduces energy costs through creation of more efficient and sustainable building systems, and brings facilities up to modern standards making sustainment easier.

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Increase from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
NOAA Construction	Pos./BA	0	55,988	0	76,488	0	20,500
	FTE/OBL	0	55,988	0	76,488	0	20,500

Evaluate and Address Northwest Facilities Issues (+\$20,500, 0 FTE/0 Positions) – NOAA requests funds to begin implementation of the Regional Master Plan s in the Northwest region as part of its Strategic Facilities Master Plan for 2030. NOAA will examine options to consolidate facilities across GSA Region 10 (Alaska, Washington, Oregon and Idaho) with the strategic intent to strengthen footprint alignment to mission requirements while reducing facilities-related costs for owned and leased properties. This initiative will align NOAA’s Utilization Rate (UR) with General Services Administration guidelines and the Department of Commerce policy. Key mission investments include evaluating options for relocating functions at the Montlake Lab, which will soon be affected by a massive highway reconstruction project in Seattle, and for consolidating small Washington offices. These additional funds will continue important work started in 2020, with the ultimate goal of strategically and cost-effectively reducing the NOAA footprint, freeing resources to improve critical mission-driven programs.

With funding from FY 2020, NOAA will complete a facilities condition assessment of the Western Regional Center and conduct a macro programming feasibility study to understand both the work needed to sustain the facility as well as the level of consolidation that it can support. NOAA will complete an analysis of alternatives for the Montlake facility that will identify detailed requirements for relocation.

With the additional funding in FY 2021 NOAA will make one-time capital investments, non-capital investments and personnel transition costs to consolidate capabilities at regional labs and renovate office space to adapt to new technology and workplace strategies. Key mission investments include the design for renovating NOAA’s Western Regional Center (WRC) and detailed planning for relocating functions at the Montlake Lab and consolidating small Washington offices into the WRC facility. NOAA will continue to engage in discussions with stakeholders on the next steps for implementation.

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

Schedule and Milestones:

- Northwest region
 - Conduct Macro Programming of the Western Regional Center (WRC)
 - Develop Program of Requirements for relocating Montlake functions
 - Conduct an environmental study: Northwest Fisheries Science Center (NWFSC) Montlake
 - Design and conduct related studies for WRC
- Alaska
 - Develop requirements for NOAA facilities in Alaska

Outyear Costs:

Direct Obligations	20,500	20,500	20,500	20,500	20,500
Capitalized	20,500	20,500	20,500	20,500	20,500
Uncapitalized	0	0	0	0	0
 Budget Authority	 20,500	 20,500	 20,500	 20,500	 20,500
Outlays	7,175	7,175	7,175	7,175	7,175
FTE	0	0	0	0	0
Positions	0	0	0	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)**

Activity: NOAA Construction
Subactivity: NOAA Construction

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1 Full-time permanent compensation	379	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	8	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	388	0	0	0	0
12 Civilian personnel benefits	101	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	34	0	0	0	0
22 Transportation of things	0	0	0	0	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	52	0	0	0	0
23.2 Rental Payments to others	0	0	0	0	0
23.3 Communications, utilities and misc charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.1 Advisory and assistance services	734	5,821	5,821	5,821	0
25.2 Other services from non-Federal sources	13,959	30,521	46,509	67,009	20,500
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
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	202	385	385	385	0
31 Equipment	0	3,201	3,201	3,201	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	49	49	49	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	1	23	23	23	0
44 Refunds	0	0	0	0	0
99 Total obligations	15,471	40,000	55,988	76,488	20,500

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
NOAA Construction	Pos./BA	0	55,988	0	20,785	0	(35,203)
	FTE/OBL	0	55,988	0	20,785	0	(35,203)

Facilities Maintenance and Construction (-\$35,203, 0 FTE/0 Positions) – NOAA proposes a decrease of \$35,203 for deferred maintenance and construction. NOAA will prioritize the remaining \$20,785 in NOAA Construction (excluding requested funds for Northwest facilities needs) for its highest priority facilities maintenance (both regular and deferred) and recapitalization needs as well as the repayment of the Judgment Fund for the 2017 settlement related to the Southwest Fisheries Science Center in La Jolla, CA (\$4.0 million).

Outyear Costs:						
Direct Obligations		(35,203)	(35,203)	(35,203)	(35,203)	(35,203)
Capitalized		(32,000)	(32,000)	(32,000)	(32,000)	(32,000)
Uncapitalized		(3,203)	(3,203)	(3,203)	(3,203)	(3,203)
Budget Authority		(35,203)	(35,203)	(35,203)	(35,203)	(35,203)
Outlays		(12,321)	(12,321)	(12,321)	(12,321)	(12,321)
FTE		0	0	0	0	0
Positions		0	0	0	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)**

Activity: Facilities Maintenance
Subactivity: Facilities Maintenance

Object Class		2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	Full-time permanent compensation	379	0	0	0	0
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	8	0	0	0	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	Total personnel compensation	388	0	0	0	0
12	Civilian personnel benefits	101	0	0	0	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	34	0	0	0	0
22	Transportation of things	0	0	0	0	0
23	Rent, communications, and utilities	0	0	0	0	0
23.1	Rental payments to GSA	52	0	0	0	0
23.2	Rental Payments to others	0	0	0	0	0
23.3	Communications, utilities and misc charges	0	0	0	0	0
24	Printing and reproduction	0	0	0	0	0
25.1	Advisory and assistance services	734	5,821	5,821	2,821	(3,000)
25.2	Other services from non-Federal sources	13,959	30,521	46,509	15,509	(31,000)
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
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	202	385	385	385	0
31	Equipment	0	3,201	3,201	1,998	(1,203)
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	0	49	49	49	0
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	1	23	23	23	0
44	Refunds	0	0	0	0	0
99	Total obligations	15,471	40,000	55,988	20,785	(35,203)

**Department of Commerce
National Oceanic and Atmospheric Administration
Office of Marine and Aviation Operations
Budget Estimates, Fiscal Year 2021**

Executive Summary

For FY 2021, NOAA requests a total of \$363,787,000 and 952 FTE/ 1,007 positions for the Office of Marine and Aviation Operations (OMAO), including a net decrease of \$18,385,000 and 0 FTE/ 0 positions in program changes.

OMAO manages a variety of specialized ships and aircraft that make up the NOAA Fleet, and play a critical role in the in-situ collection of oceanographic, atmospheric, hydrographic, and fisheries data in support of NOAA's missions. The NOAA Fleet operates throughout the world supporting a wide array of NOAA missions including fisheries research, nautical charting, hurricane reconnaissance and research, snow surveys, and specialized atmospheric and ocean research. In addition, NOAA ships and aircraft provide an emergency response capability. Following major natural and environmental disasters, NOAA ships and aircraft conduct emergency navigation hazard surveys that help ports reopen quickly and obtain aerial images of disaster-torn areas. These surveys are often the only source of data providing critical information for first responders, disaster response, and residents.

NOAA ships range from large oceanographic research vessels capable of exploring the world's deepest oceans to smaller ships responsible for charting the shallow bays and inlets of the United States. NOAA aircraft range from high altitude jets, capable of penetrating hurricanes and tracking ocean winds, to the Twin Otters, well-suited for water resource management data collection and marine mammal surveys where slower airspeeds and low altitudes are essential.

OMAO is charged with the safe and efficient operation and maintenance of this NOAA fleet; develops annual Fleet Allocation Plans; conducts lifecycle maintenance; and provides centralized fleet management including: standard procedures, safety inspections, and medical services in partnership with the U.S. Public Health Service Commissioned Corps. OMAO also provides centralized coordination, support and guidance for unmanned marine and aircraft systems across NOAA, and administers the NOAA-wide Diving and Small Boat Programs. OMAO is committed to maintaining a safe field environment through the coordination of training and certification of officers, crew members, and scientists in at-sea and airborne safety procedures.

OMAO staff includes civilians along with the NOAA Commissioned Officer Corps (NOAA Corps), which is one of the Nation's eight uniformed services. There are 324 authorized NOAA Corps officers, including flag officers. The NOAA Corps has the skills to plan, prepare, and execute the acquisition of environmental and scientific data on land, at sea, and in the air. It supports all NOAA's Line Offices, NOAA Headquarters, and the Department, and commands the NOAA fleet.

In an effort to better align OMAO's budget structure with its intended purpose and improve budget clarity, NOAA is proposing to realign OMAO's activities within the Operations, Research, and Facilities (ORF) account to include a new activity titled "NOAA Corps". Currently, OMAO has three ORF activities that predominately focus on three Mission Programs: Marine Operations and

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Maintenance, Aviation Operations and Aircraft Services, and Unmanned Systems Operations. Embedded within these three activities is a critical fourth Mission Program for OMAO, NOAA Corps, for which funding is not explicitly visible in the current budget structure. To increase clarity and programmatic transparency, OMAO is proposing to restructure its ORF activities to include a separate NOAA Corps activity that would include most of the pay and benefits, accession, relocation, training, and military Human Resources (HR) support and policy functions that are unique to operating a uniformed service. The new activity covers the cost of 16 civilian employees who work in the NOAA Corps Personnel Center, and the equivalent of 257 NOAA Corps officers who work across all of NOAA. Other NOAA Line Offices will continue to be responsible for funding the remaining costs equivalent to 63 NOAA Corps officers. NOAA will continue to evaluate the alignment of the NOAA Corps budget structure in the future to ensure programmatic transparency. Furthermore, the new activity will not include funds appropriated in the mandatory NOAA Corps Commissioned Officers Retirement funds, and the Medicare Eligible Retiree Health Care Fund discretionary account, which will continue to be managed separately.

In addition to increasing clarity and programmatic transparency of OMAO's forth Mission Program, creating the NOAA Corps activity will also make it easier to determine and exhibit adjustments to base for the NOAA Corps salaries and benefits, as OMAO will be able to align the changes in Titles 10, 37 and 38, which provide the legal basis for the roles, missions and organization of the armed forces, directly to a NOAA Corps activity instead of applying changes to parts of the Marine Operations and Maintenance activity or the Aviation Operations and Aircraft Services activity. Separating NOAA Corps funding from the Marine and Aviation Operations funding also improves visibility and improves the transparency of these important NOAA programs.

In addition, in an effort to better align OMAO's budget structure with its intended purpose and improve budget clarity, NOAA is proposing to realign OMAO's programs, projects, and activities (PPAs) within the Procurement, Acquisition and Construction (PAC) account under one activity that covers both vessels and aircraft.

Currently, the budget includes funding only for vessel related activities in the Fleet Capital Improvement and Technology Infusion PPA because aircraft funding for these large-scale maintenance activities is not required annually. In years where aircraft funds are required for this activity, some of the funds in this PPA would support the aircraft sub-PPA. This flexibility is important to allow NOAA to meet its aircraft maintenance needs when they do arise.

However, this PPA's location in the current budget structure creates a misconception that these funds are exclusively for vessel activities. The proposed new budget structure would increase transparency, and more clearly align the budget with NOAA's plans under this PPA in the future. OMAO will ensure that the integrity of aircraft and vessel maintenance funds under the Platform Capital Improvements and Tech Infusion is upheld consistent with applicable legislation and will not reallocate resources or reorganize activities except as authorized by Congress.

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With this proposed realignment, OMAO's budget has one PAC activity with three PPAs:

- Marine and Aviation Capital Investments
- Platform Capital Improvements and Tech Infusion
- Vessel Recapitalization Aircraft Recapitalization

Significant Adjustments:

Inflationary Adjustments

NOAA's FY 2021 Base includes an increase of \$8,091,000 and 0 FTE/ 0 positions to account for the full funding requirement for certain inflationary adjustments to current programs for OMAO activities. This includes the 2020 pay raise of 3.1 percent, estimated 2021 civilian pay raise of 1.0 percent and 2021 military pay raise of 3.0 percent, as well as inflationary increases for labor and non-labor activities, including benefits, and rent charges from the General Services Administration (GSA).

Technical Adjustments

NOAA requests the following transfers for a net change of \$0 and 0 FTE/ 0 positions to the agency:

From Office	Subactivity	To Office	Subactivity	Amount
OMAO	Marine Operations and Maintenance (ORF)	OMAO	*NOAA Corps (ORF)	\$34,326,000/ 223 FTE/ 223 positions
OMAO	Aviation Operations and Aircraft Services (ORF)	OMAO	*NOAA Corps (ORF)	\$8,423,000/ 47 FTE/ 47 positions
OMAO	Unmanned Systems Operations (ORF)	OMAO	*NOAA Corps (ORF)	\$399,000/ 2 FTE/ 2 positions

* NOAA Corps is a new proposed activity under ORF.

NOAA requests to transfer \$34,326,000 and 223 FTE/ 223 positions from Marine Operations and Maintenance, \$8,423,000 and 47 FTE/ 47 positions from Aviation Operations and Aircraft Services, and \$399,000 and 2 FTE/ 2 positions from Unmanned Systems Operations, for a total of \$43,148,000 and 272 FTE/ 272 positions in the new NOAA Corps activity. These transfers will allow for the consolidation of OMAO funds supporting the 16 civilian positions working in the NOAA Corps Personnel Center, as well as most of the pay, benefits, relocation, accession, training, separations, Tricare payments, military HR support and policy functions that are unique to operating a uniformed service across all of NOAA's Line Offices. This realignment will allow NOAA Corps officers working across OMAO activities to be fully funded out of a single budget line, providing increased visibility and transparency into the financial

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support needed to operate this unique cross-NOAA uniformed service. NOAA Line Offices will continue to partially fund NOAA Corps officers serving in their Offices, and their contributions will continue to be reflected in their respective budgets.

With this adjustment, NOAA will be able to align the changes in U.S. Code Titles 10, 37, and 38 directly to this new budget line instead of applying changes, as it has done in the past, to parts of the Marine Operations and Maintenance, and Aviation Operations and Aircraft Services activities, which primarily serve other Mission Programs. This new budget line will not include funds appropriated in the mandatory NOAA Corps Commissioned Officers Retirement funds, and the Medicare Eligible Retiree Health Care Fund discretionary Account.

Narrative Information:

NOAA requests a total net decrease of \$18,385,000 and 0 FTE/ 0 positions in program changes for OMAO. Following this section are base justification materials by activity and program change narratives for each subactivity that represent program changes of \$250,000 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-7 and -11). Please contact NOAA if details for any of these changes are required.

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Marine Operations and Maintenance
Marine Operations and Maintenance (ORF) - Transfer to NOAA Corps (ORF)

Object Class	2020 Enacted	2021 Transfer	2021 Base*
Full-time permanent compensation	58,000	(25,758)	35,444
Other than full-time permanent	0	0	0
Other personnel compensation	11,700	0	11,700
Special personnel services payments	620	0	620
Total personnel compensation	70,320	(25,758)	47,764
Civilian /NOAA Corps personnel benefits	18,000	(2,766)	16,249
Benefits for former personnel	130	(117)	13
Travel and transportation of persons	4,045	(517)	3,528
Transportation of things	1,581	(1,132)	453
Rent, communications, and utilities	0	0	0
Rental payments to GSA	0	0	0
Rental Payments to others	7,080	0	7,080
Communications, utilities and misc charges	794	0	794
Printing and reproduction	70	(6)	70
Advisory and assistance services	0	0	0
Other services from non-Federal sources	72,300	(2,272)	70,928
Other goods and services from Federal sources	1,730	(1,730)	0
Operation and maintenance of facilities	0	0	0
Research and development contracts	0	0	0
Medical care	0	0	0
Operation and maintenance of equipment	0	0	0
Subsistence and support of persons	0	0	0
Supplies and materials	16,450	(27)	17,721
Equipment	1,500	(1)	1,499
Lands and structures	0	0	0
Investments and loans	0	0	0
Grants, subsidies and contributions	0	0	0
Insurance claims and indemnities	0	0	0
Interest and dividends	0	0	0
Refunds	0	0	0
Total obligations	194,000	(34,326)	166,099

*The 2021 Base column reflects the full 2021 base for the subactivity, including calculated ATBs and any additional transfers.

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Aviation Operations and Aircraft Services
Subactivity: Aviation Operations and Aircraft Services (ORF) - Transfer to NOAA Corps (ORF)

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base*</u>
11.1 Full-time permanent compensation	11,785	(6,489)	5,483
11.3 Other than full-time permanent	45	0	45
11.5 Other personnel compensation	552	0	558
11.8 Special personnel services payments	414	0	418
11.9 Total personnel compensation	12,796	(6,489)	6,504
12 Civilian /NOAA Corps personnel benefits	2,489	(236)	2,333
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	1,605	(8)	1,596
22 Transportation of things	192	0	192
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	2,546	0	3,146
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	0	0	0
25.1 Advisory and assistance services	0	0	0
25.2 Other services from non-Federal sources	7,327	(1,500)	5,827
25.3 Other goods and services from Federal sources	2,779	(190)	2,589
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	7,398	0	7,661
31 Equipment	618	0	618
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	37,750	(8,423)	30,466

*The 2021 Base column reflects the full 2021 base for the subactivity, including calculated ATBs and any additional transfers.

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Unmanned Systems Operations
Subactivity: Unmanned Systems Operations (ORF) - Transfer to NOAA Corps (ORF)

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base*</u>
11.1 Full-time permanent compensation	931	(221)	1,178
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	0	0	0
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	931	(221)	1,178
12 Civilian /NOAA Corps personnel benefits	250	(178)	439
13 Benefits for former personnel	0	0	0
21 Travel and transportation of persons	555	0	555
22 Transportation of things	0	0	0
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	400	0	400
23.3 Communications, utilities and misc charges	41	0	41
24 Printing and reproduction	0	0	0
25.1 Advisory and assistance services	0	0	0
25.2 Other services from non-Federal sources	5,248	0	4,945
25.3 Other goods and services from Federal sources	250	0	250
25.4 Operation and maintenance of facilities	5	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	335	0	335
31 Equipment	650	0	650
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	4,000	0	4,000
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	12,665	(399)	12,793

*The 2021 Base column reflects the full 2021 base for the subactivity, including calculated ATBs and any additional transfers.

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TRANSFER CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: NOAA Corps

Subactivity: NOAA Corps (ORF) - Transfer from Marine Operations and Maintenance (ORF), Aviation Operations and Aircraft Services (ORF) and Unmanned Systems (ORF)

<u>Object Class</u>	<u>2020 Enacted</u>	<u>2021 Transfer</u>	<u>2021 Base</u>
11.1 Full-time permanent compensation	0	32,467	32,467
11.3 Other than full-time permanent	0	0	0
11.5 Other personnel compensation	0	0	0
11.8 Special personnel services payments	0	0	0
11.9 Total personnel compensation	0	32,467	32,467
12 Civilian/NOAA Corps personnel benefits	0	3,180	3,180
13 Benefits for former personnel	0	117	117
21 Travel and transportation of persons	0	525	525
22 Transportation of things	0	1,132	1,132
23 Rent, communications, and utilities	0	0	0
23.1 Rental payments to GSA	0	0	0
23.2 Rental Payments to others	0	0	0
23.3 Communications, utilities and misc charges	0	0	0
24 Printing and reproduction	0	6	6
25.1 Advisory and assistance services	0	0	0
25.2 Other services from non-Federal sources	0	3,772	3,772
25.3 Other goods and services from Federal sources	0	1,920	1,920
25.4 Operation and maintenance of facilities	0	0	0
25.5 Research and development contracts	0	0	0
25.6 Medical care	0	0	0
25.7 Operation and maintenance of equipment	0	0	0
25.8 Subsistence and support of persons	0	0	0
26 Supplies and materials	0	27	27
31 Equipment	0	1	1
32 Lands and structures	0	0	0
33 Investments and loans	0	0	0
41 Grants, subsidies and contributions	0	0	0
42 Insurance claims and indemnities	0	0	0
43 Interest and dividends	0	0	0
44 Refunds	0	0	0
99 Total obligations	0	43,148	43,148

*The 2021 Base column reflects the full 2021 base for the subactivity, including calculated ATBs and any additional transfers.

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		2019		2020		2021		2021		Increase/Decrease	
		Actual		Enacted		Base		Estimate		from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
OFFICE OF MARINE AND AVIATION OPERATIONS (OMAO)											
Marine Operations and Maintenance	Pos/BA	811	188,798	853	194,000	630	166,099	630	163,339	0	(2,760)
	FTE/OBL	797	190,331	805	194,000	582	166,099	582	163,339	0	(2,760)
Aviation Operations and Aircraft Services	Pos/BA	118	35,362	120	37,750	73	30,466	73	28,204	0	(2,262)
	FTE/OBL	115	34,980	117	37,750	70	30,466	70	28,204	0	(2,262)
Unmanned Systems Operations	Pos/BA	0	0	10	12,665	8	12,793	8	5,230	0	(7,563)
	FTE/OBL	0	0	6	12,665	4	12,793	4	5,230	0	(7,563)
NOAA Corps	Pos/BA	0	0	0	0	272	43,148	272	41,648	0	(1,500)
	FTE/OBL	0	0	0	0	272	43,148	272	41,648	0	(1,500)
TOTAL OMAO - ORF	Pos/BA	929	224,160	983	244,415	983	252,506	983	238,421	0	(14,085)
	FTE/OBL	912	225,311	928	244,415	928	252,506	928	238,421	0	(14,085)
Marine and Aviation Capital Investments	Pos/BA	26	99,235	24	98,000	24	98,000	24	93,700	0	(4,300)
	FTE/OBL	26	215,826	24	98,000	24	98,000	24	93,700	0	(4,300)
TOTAL OMAO - PAC	Pos/BA	26	99,235	24	98,000	24	98,000	24	93,700	0	(4,300)
	FTE/OBL	26	215,826	24	98,000	24	98,000	24	93,700	0	(4,300)
Medicare Eligible Retiree Health Care Fund	Pos/BA	0	1,449	0	1,497	0	1,591	0	1,591	0	0
	FTE/OBL	0	1,449	0	1,497	0	1,591	0	1,591	0	0
NOAA Corps Commissioned Officers Retirement	Pos/BA	0	30,102	0	30,075	0	30,075	0	30,075	0	0
	FTE/OBL	0	28,926	0	30,075	0	30,075	0	30,075	0	0
TOTAL OMAO	Pos/BA	955	354,946	1,007	373,987	1,007	382,172	1,007	363,787	0	(18,385)
	FTE/OBL	938	471,512	952	373,987	952	382,172	952	363,787	0	(18,385)

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Activity: Marine Operations and Maintenance

Goal Statement

Support present and future NOAA data collection requirements, maximize the service life of the NOAA Fleet through maintenance and repair; support NOAA's prioritized ship requirements through execution of the annual Fleet Allocation Plan (FAP), increase utilization of the NOAA fleet, and maintain safe and efficient operations through required and developmental training.

Base Program

Marine Operations and Maintenance supports centralized management for NOAA's research and survey vessels, which operate throughout the world supporting multiple missions including fisheries research, nautical charting and ocean research. Given the diverse portfolio of NOAA Line Office Program requirements and responsibilities, a single vessel type cannot meet all of NOAA's mission requirements. Thus, NOAA ships range from large oceanographic research vessels capable of exploring the world's deepest oceans, to smaller ships responsible for charting the shallow bays and inlets of the United States.

Marine Operations are based in Newport, Oregon, and manage OMAO's three Marine Centers located in Norfolk, Virginia, Newport, Oregon, and Honolulu, Hawaii; additional port offices; as well as marine operation activities in Headquarters, including the Small Boat program and the Dive Center program.

Statement of Operating Objectives

Schedule and Milestones:

FY 2021 - FY 2025:

- Integrate Fleet Maintenance Plan based on Material Condition Assessments for each vessel and developed through close collaboration with American Bureau of Shipping
- Ensure Operational Readiness Training for all ship personnel is completed (show training requirements on the NOAA FAP)
- Execute 90 percent of approved Days at Sea (DAS) in the FAP, less any DAS lost for weather or removed from the schedule at the request of NOAA Line Office Programs
- Perform program funded and reimbursable DAS as scheduled in the FAP

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Deliverables:

FY 2021:

- Provide approximately 2,759 DAS, to include mission and non-mission base funded, program funded and reimbursable funded days to all NOAA Line Offices (a 78 percent utilization rate)
- Survey 1,136 Square Nautical Miles in support of NOS hydrographic survey activities
- More detailed deliverables are determined on a project-by-project basis as documented in the FAP

FY 2022 - FY 2025:

- Meet annual ship schedules and milestones as outlined in the FAP

Explanation and Justification

<u>Comparison by subactivity</u>		2019		2020		2021	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Marine Operations and Maintenance	Pos/BA	811	188,798	853	194,000	630	166,099
	FTE/OBL	797	190,331	805	194,000	582	166,099
Total Marine Operations and Maintenance	Pos/BA	811	188,798	853	194,000	630	166,099
	FTE/OBL	797	190,331	805	194,000	582	166,099

The Marine Operations and Maintenance activity allows OMAO to provide ships that meet required capabilities, geographic location and timing to meet prioritized at-sea NOAA requirements. These requirements are defined through NOAA’s Fleet Council, with input from across NOAA, to balance ship schedules, and included in the FAP. The FAP details the objective and duration of individual NOAA projects, outlines the annual schedule and milestones to be achieved as agreed to and signed by the NOAA Fleet Council, and identifies OMAO scheduled repair and maintenance periods on specific NOAA ships.

<https://www.omaο.noaa.gov/learn/marine-operations/project-planning>.

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Activities funded under Marine Operations and Maintenance include the repair and maintenance of NOAA ships necessary to meet the rigorous demands of NOAA's scientific and regulatory missions. Regular maintenance, including proper preventive maintenance, is scheduled to ensure readiness prior to and during the field season. Funds also support unscheduled maintenance costs, which can be attributed to the aging of NOAA's fleet and a history of not conducting an optimal level of preventative maintenance. These unscheduled costs include: new maintenance requirements discovered while completing scheduled operational maintenance; scheduled repairs requiring more extensive work than planned initially; costs in excess of the standard 20 percent estimated cost overrun; and urgent responses to machinery or equipment casualties.

NOAA vessels must adhere to safety and emissions requirements and regulations established by a variety of organizations. The American Bureau of Shipping certifies ships as seaworthy. OMAO uses their rules to design its maintenance program and conduct Ship Structure and Machinery Evaluations on the NOAA Fleet. Under the Clean Air Act, the Environmental Protection Agency issues regulations governing airborne emissions that affect ship engine and exhaust components. The U.S. Coast Guard issues regulations on all discharges from ships to ensure marine environments are protected from harmful discharges.

In FY 2021, OMAO will provide approximately 2,759 DAS to support NOAA's highest-priority requirements. These include OMAO base funded days, and additional DAS, which may be funded by other NOAA Line Office programs as determined during the year of budget execution, based on the availability of vessels and funds. NOAA estimates base funded DAS annually based on a variety of factors including maintenance, staffing, training, outfitting, fuel, and other costs necessary to support ship operations. Program funded DAS are established through Service Level Agreements with NOAA Line Office programs as well as reimbursable agreements with other agencies.

In addition to vessel management, Marine Operations and Maintenance supports the following activities:

NOAA Dive Program: The NOAA Dive Center provides diver certification, technical advice, and a standardized equipment program. The NOAA Dive Center, in cooperation with the NOAA Diving Control and Safety Board, issues safe diving standards and practices, according to the Standards of Training, Certification and Watch keeping for Seafarers and the International Maritime Organization conventions. NOAA maintains approximately 369 divers who perform over 14,000 dives annually in support of NOAA's mission. Fleet divers help maintain NOAA's ships with tasks such as cleaning propellers and sea strainers, surveying hulls for damage, and installing transducers. NOAA divers' work also includes installation of observing systems such as tide gauges. Scientists trained as divers study and describe the habitats and species that NOAA is mandated to protect and manage. These activities enable NOAA to meet requirements and mandates, enhance customer service and operational safety, and facilitate self-sufficiency at sea.

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NOAA Small Boat Program (SBP): The SBP is designed to reduce risk, promote standardization, and enhance the safety of NOAA's small-boat operations. It enforces the policy of the safety program and ensures compliance through onsite inspections, risk assessments and marine incident investigations. NOAA maintains over 400 small boats, which are operated and funded within the Line Offices. The SBP provides technical and marine engineering assistance to Line Office field units as needed and to the NOAA Small Boat Safety Board to ensure compliance with the NOAA Small Boat Standards and Procedures Manual requirements.

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(Dollar amounts in thousands)**

The following table outlines the diversity of the NOAA Fleet and primary mission areas of each vessel:

Ship	Length	Class	Primary Mission	Homeport	Year Launched
<i>Rainier</i>	231 ft.	Ocean	2	Newport, OR	1967
<i>Fairweather</i>	231 ft.	Ocean	2	Ketchikan, AK	1967
<i>Oregon II</i>	170 ft.	Regional	1	Pascagoula, MS	1967
<i>Oscar Elton Sette</i>	224 ft.	Ocean	3	Honolulu, HI	1987
<i>Okeanos Explorer</i>	224 ft.	Ocean	1, 2	Newport, RI	1988
<i>Gordon Gunter</i>	224 ft.	Ocean	1	Pascagoula, MS	1989
<i>Nancy Foster</i>	187 ft.	Ocean	1	Charleston, SC	1990
<i>Thomas Jefferson</i>	208 ft.	Ocean	2	Norfolk, VA	1991
<i>Ronald H. Brown</i>	274 ft.	Global	3	Charleston, SC	1996
<i>Oscar Dyson</i>	209 ft.	Ocean	1	Kodiak, AK	2003
<i>Henry B. Bigelow</i>	209 ft.	Ocean	1	Newport, RI	2005
<i>Pisces</i>	209 ft.	Ocean	1	Pascagoula, MS	2007
<i>Bell M. Shimada</i>	209 ft.	Ocean	1	Newport, OR	2008
<i>Ferdinand R. Hassler</i>	124 ft.	Regional	2	New Castle, NH	2009
<i>Reuben Lasker</i>	209 ft.	Ocean	1	San Diego, CA	2012

<p>Mission 1: Assessment and Management of Living Marine Resources</p> <p>Mission 2: Charting and Mapping</p> <p>Mission 3: Oceanographic Monitoring, Research, and Modeling</p>

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JUSTIFICATION OF PROGRAM AND PERFORMANCE
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PROGRAM CHANGES FOR 2021:

OMAO requests a decrease of \$2,760 and 0 FTE/ 0 positions in FY 2021 program changes to the Marine Operations and Maintenance activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-7).

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PROGRAM DECREASE FOR 2021
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		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Marine Operations	Pos./BA	630	166,099	630	163,339	0	(2,760)
and Maintenance	FTE/OBL	582	166,099	582	163,339	0	(2,760)

Reduce DAS performed (-\$2,760, 0 FTE/0 Positions) – NOAA proposes a decrease in funding which will reduce the number of days at sea (DAS) OMAO can provide to support NOAA’s highest-priority requirements. The reduction of DAS could impact missions, such as fisheries research, nautical charting and ocean research. NOAA will work to find efficiencies to minimize the impacts of this reduction.

Deliverables:

- Provide approximately 2,684 DAS, to include mission and non-mission base funded, program funded and reimbursable funded days to all NOAA Line Offices

Performance Measures	2021	2022	2023	2024	2025
Days at Sea Performed					
With Decrease	2,684	2,684	2,684	2,684	2,684
Without Decrease	2,759	2,759	2,759	2,759	2,759
Outyear Costs:					
Direct Obligations	(2,760)	(2,760)	(2,760)	(2,760)	(2,760)
Capitalized	0	0	0	0	0
Uncapitalized	(2,760)	(2,760)	(2,760)	(2,760)	(2,760)

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PROGRAM DECREASE FOR 2021
 (Dollar amounts in thousands)

Budget Authority	(2,760)	(2,760)	(2,760)	(2,760)	(2,760)
Outlays	(1,711)	(1,711)	(1,711)	(1,711)	(1,711)
FTE	(0)	(0)	(0)	(0)	(0)
Positions	(0)	(0)	(0)	(0)	(0)

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National Oceanic and Atmospheric Administration
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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Marine Operations and Maintenance

Subactivity: Marine Operations and Maintenance

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11 Personnel compensation					
11.1 Full-time permanent	\$58,000	\$58,000	\$35,444	\$35,444	0
11.3 Other than full-time permanent	66	0	0	0	0
11.5 Other personnel compensation	11,700	11,700	11,700	11,700	0
11.8 Special personnel services payments	624	620	620	620	0
11.9 Total personnel compensation	70,390	70,320	47,764	47,764	0
12 Civilian personnel benefits	17,781	18,000	16,249	16,249	0
13 Benefits for former personnel	126	130	13	13	0
21 Travel and transportation of persons	4,045	4,045	3,528	3,400	(128)
22 Transportation of things	1,583	1,581	453	440	(13)
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental Payments to others	7,000	7,080	7,080	7,080	0
23.3 Communications, utilities and misc charges	794	794	794	794	0
24 Printing and reproduction	20	70	70	70	0
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	72,032	72,300	70,928	69,500	(1,428)
25.3 Other goods and services from Federal	1,730	1,730	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
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	14,165	16,450	17,721	17,000	(721)
31 Equipment	665	1,500	1,499	1,029	(470)
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	\$190,331	\$194,000	\$166,099	\$163,339	(2,760)

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JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Aviation Operations and Aircraft Services

Goal Statement

Provide centralized aircraft systems management and coordination of all airborne activity, support NOAA's prioritized airborne requirements through execution of the Aircraft Allocation Plan (AAP), and safely modify, maintain, and operate NOAA aircraft.

Base Program

NOAA's Aviation Operations and Aircraft Services provide scientists with airborne platforms equipped with comprehensive data collection systems that are capable of assessing severe weather, coastal and marine resources, and the dynamics of complex ecosystems. Among their many missions, NOAA's diverse and versatile aircraft fly into hurricanes to help predict their track and intensity. They also collect snow water equivalent measurements used by the NWS species data critical to managing commercial and recreational fish stocks and air chemistry data critical for public health. NOAA aircraft are capable of carrying specialized sensors for coastal mapping and shallow-water bathymetric data collection, providing essential data to nautical charting and safe navigation.

Statement of Operating Objectives

Schedule and Milestones:

FY 2021 – FY 2025:

- Perform base funded, program funded and reimbursable Flight Hours as scheduled in the AAP

Deliverables:

FY 2021:

- Provide approximately 4,899 Flight Hours¹ to include an estimated 3060 mission and non-mission base funded hours and 1,839 program and reimbursable funded hours to all NOAA Line Offices
- Detailed deliverables are determined on a project-by-project basis as documented in flight instructions

¹ Flight hour estimates assume hours are distributed between heavy and light aircraft as they were in FY 2019. Heavy aircraft cost more than light aircraft to fly so changes in that distribution can cause significant variations in NOAA estimates.

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(Dollar amounts in thousands)

FY 2022 – FY 2025:

- Meet annual aircraft schedules and milestones as outlined on the AAP

Explanation and Justification

Comparison by subactivity		2019 Actual		2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Aviation Operations and Aircraft Services	Pos/BA	118	34,980	73	37,750	73	30,466
	FTE/OBL	115	34,980	70	37,750	70	30,466
Total Aviation Operations and Aircraft Services	Pos/BA	118	34,980	73	37,750	73	30,466
	FTE/OBL	115	34,980	70	37,750	70	30,466

OMAO’s Aircraft Operations Center (AOC), located at the Lakeland Linder Regional Airport in Lakeland, Florida, operates NOAA’s Aircraft Fleet in support of NOAA’s mission to understand and predict changes in climate, weather, oceans and coasts, and to assist in conserving and managing coastal and marine ecosystems and resources. 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 safely meet NOAA’s scientific and operational mission requirements by assisting with coastal mapping, flood prediction, hurricane prediction modeling, marine mammal population assessments, coastal erosion surveys, oil spill investigations and air quality studies.

AOC flight crews operate in some of the world's most demanding flight regimes, including flying into the eye of a hurricane and at low altitudes over mountainous terrain and open ocean areas. Each aircraft requires a minimum number of qualified NOAA Corps pilots to conduct operations safely and efficiently. OMAO continues efforts to recruit and retain pilots to reduce excessive administrative burdens and time away from base. Currently, pilots are in high demand across the country, and OMAO must compete with industry, military, and other government organizations to attract and retain pilots. OMAO also ensures that contracted aviation operations are conducted safely by providing technical support, services, and equipment to NOAA Line Office programs.

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(Dollar amounts in thousands)

AOC will also prepare for its growing fleet, ensuring space and staff are available to accommodate new aircraft. The NOAA Aircraft Plan that was transmitted to Congress in October 2019 calls for four aircraft: two to replace current aging aircraft, and two to meet demand from NOAA programs. Already, a new King Air is scheduled for delivery in late FY 2020, and NOAA has awarded a contract for a G550 high altitude jet. AOC will take on costs for the new King Air once it has been calibrated. This process takes approximately one year in order to test the aircraft in a variety of snow conditions. Once calibration is complete, the King Air will replace the existing Turbo Commander. Investments to accommodate the growing fleet will reduce funds available to provide flight hours for NOAA's scientific missions.

In FY 2021, AOC will provide approximately 4,899 flight hours in support of NOAA scientific airborne requirements. Demands for time aboard NOAA aircraft are prioritized by the NOAA Fleet Council and outlined in the AAP. These include base funded days and additional flight hours, which may also be funded by programs during the year of budget execution, based on funding and aircraft availability. NOAA's aircraft also perform non mission hours including training, calibration, and maintenance flights. These hours ensure AOC can safely and accurately collect data in support of NOAA's scientific missions. Program funded flight hours can support any NOAA mission approved by the Fleet Council, including hurricane surveillance and reconnaissance, and are established through Service Level Agreements with NOAA programs, and reimbursable agreements with other agencies. The AAP details the objective and duration of individual NOAA projects and identifies OMAO scheduled repair and maintenance periods on specific NOAA aircraft.

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JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)**

While NOAA's aircraft are versatile and can conduct a variety of missions, the following table outlines the diversity of the NOAA aircraft and primary mission areas of each one:

Aircraft	Type	Max Gross Weight (lbs.)	Primary Mission	Aircraft Age (years)
<i>N42RF</i>	WP-3D	135,000	3	44
<i>N43RF</i>	WP-3D	135,000	3	44
<i>N49RF</i>	G-IV-SP	74,600	3	25
<i>N57RF</i>	DHC-6-300 Twin Otter	12,500	1, 3	38
<i>N56RF</i>	DHC-6-300 Twin Otter	12,500	1, 3	37
<i>N48RF</i>	DHC-6-300 Twin Otter	12,500	1, 3	38
<i>N46RF</i>	DHC-6-300 Twin Otter	12,500	1, 3	34
<i>N68RF</i>	King Air 350ER	16,500	2	10
<i>N45RF</i>	Jet Prop Commander	11,250	3	35
<i>N67RF</i>	King Air 350ER	16,500	2	NEW

Mission 1: Assessment and Management of Living Marine Resources
 Mission 2: Charting and Surveying
 Mission 3: Weather Forecasting, Research, and Modeling

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JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

PROGRAM CHANGES FOR 2021:

OMAO requests a decrease of \$2,262 and 0 FTE/ 0 positions in FY 2021 program changes to the Aviation Operations and Aircraft Services activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-7).

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Operations, Research, and Facilities
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Aviation Operations	Pos./BA	73	30,466	73	29,704	0	(762)
and Aircraft Services	FTE/OBL	70	30,466	70	29,704	0	(762)

Reduce Aircraft Operations (-\$762, 0 FTE/0 Positions) – NOAA proposes a decrease to aircraft operations. To accommodate increased operational costs, OMAO will reduce aircraft operations by approximately 552 flight hours.² This equates to an 18 percent reduction in base funded flight hours, which support NOAA’s scientific missions. OMAO will continue to support airborne scientific requirements within available resources as determined by the NOAA Fleet Council. Based on Fleet Council decisions, other Line Offices may reprioritize their own resources to support program funded flight hours or reduce the scale and scope of their airborne operations.

Performance Measures	2021	2022	2023	2024	2025
Flight Hours					
With Decrease	4,347	4,347	4,347	4,347	4,347
Without Decrease	4,899	4,899	4,899	4,899	4,899

² Flight hour estimates assume hours are distributed between heavy and light aircraft as they were in FY 2019. Heavy aircraft cost more than light aircraft to fly so changes in that distribution can cause significant variations in NOAA estimates.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Aviation Operations and Aircraft Services
Subactivity: Aviation Operations and Aircraft Services

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	11,442	11,785	5,483	5,483	0
11.3 Other than full-time permanent	44	45	45	45	0
11.5 Other personnel compensation	536	552	558	558	0
11.8 Special personnel services payments	402	414	418	418	0
11.9 Total personnel compensation	12,423	12,796	6,504	6,504	0
12 Civilian personnel benefits	2,417	2,489	2,333	2,333	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	1,605	1,605	1,596	1,596	0
22 Transportation of things	192	192	192	192	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental Payments to others	2,546	2,546	3,146	3,146	0
23.3 Communications, utilities and misc charges	0	0	0	0	0
24 Printing and reproduction	1	0	0	0	0
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	7,327	7,327	5,827	5,827	0
25.3 Other goods and services from Federal	1,279	2,779	2,589	2,589	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	6,568	7,398	7,661	6,899	(762)
31 Equipment	618	618	618	618	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	4	0	0	0	0
44 Refunds	0	0	0	0	0
99 Total obligations	34,980	37,750	30,466	29,704	(762)

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Aviation Operations	Pos./BA	73	30,466	73	28,966	0	(1,500)
and Aircraft Services	FTE/OBL	70	30,466	70	28,966	0	(1,500)

Eliminate Atmospheric Rivers Flight Hours (-\$1,500, 0 FTE/0 Positions) – NOAA proposes a decrease to reduce additional funds provided in Congressionally directed FY 2020 appropriations to monitor atmospheric rivers through flight hours on the G-IV and dropsonde sensors to collect data to better understand atmospheric rivers. FY 2020 funds will also support additional flight hours in FY 2021.

Performance Measures	2021	2022	2023	2024	2025
Flight Hours – Atmospheric Rivers					
With Decrease	78	0	0	0	0
Without Decrease	195	119	119	119	119

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Aviation Operations and Aircraft Services

Subactivity: Aviation Operations and Aircraft Services

Object Class		2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1	Full-time permanent compensation	11,442	11,785	5,483	5,483	0
11.3	Other than full-time permanent	44	45	45	45	0
11.5	Other personnel compensation	536	552	558	558	0
11.8	Special personnel services payments	402	414	418	418	0
11.9	Total personnel compensation	12,423	12,796	6,504	6,504	0
12	Civilian personnel benefits	2,417	2,489	2,333	2,333	0
13	Benefits for former personnel	0	0	0	0	0
21	Travel and transportation of persons	1,605	1,605	1,596	1,596	0
22	Transportation of things	192	192	192	192	0
23	Rent, communications, and utilities	0	0	0	0	0
23.1	Rental payments to GSA	0	0	0	0	0
23.2	Rental Payments to others	2,546	2,546	3,146	3,146	0
23.3	Communications, utilities and misc charges	0	0	0	0	0
24	Printing and reproduction	1	0	0	0	0
25.1	Advisory and assistance services	0	0	0	0	0
25.2	Other services from non-Federal sources	7,327	7,327	5,827	5,827	0
25.3	Other goods and services from Federal	1,279	2,779	2,589	2,589	0
25.4	Operation and maintenance of facilities	0	0	0	0	0
25.5	Research and development contracts	0	0	0	0	0
25.6	Medical care	0	0	0	0	0
25.7	Operation and maintenance of equipment	0	0	0	0	0
25.8	Subsistence and support of persons	0	0	0	0	0
26	Supplies and materials	6,568	7,398	7,661	6,161	(1,500)
31	Equipment	618	618	618	618	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	4	0	0	0	0
44	Refunds	0	0	0	0	0
99	Total obligations	34,980	37,750	30,466	28,966	(1,500)

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JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Unmanned Systems Operations

Goal Statement

Provide centralized coordination, support and guidance for unmanned marine and aircraft systems across NOAA, evaluate emerging Unmanned Systems (UxS) technologies, and determine where opportunities exist to more cost-effectively carry out NOAA mission-critical activities.

Base Program

The UxS Operations activity provides centralized UxS management and standardization of safety, training, inspections, and operational reviews and is responsible for the strategic planning of UxS acquisition within NOAA, consistent with NOAA's priorities and data needs. UxS technology encompasses a wide range of vehicle types, from very small platforms such as unmanned aerial drones, to large multi-million dollar underwater platforms designed to operate in remote locations for extended periods of time. UxS include Unmanned Aircraft Systems (UAS), Unmanned Marine Systems (UMS) surface and undersea vehicles, and Remote Operated Vehicles (ROVs). The technology continues to evolve rapidly and is invaluable in supporting NOAA mission requirements such as hydrographic and habitat mapping, fishery stock assessment, and oceanographic and atmospheric observations that support weather forecasting and extreme weather events. UxS operational support will be provided in field locations and is headquartered in Silver Spring, MD.

Statement of Operating Objectives

Schedule and Milestones:

FY 2021 – FY 2025:

- Continue to centralize all NOAA UxS operations within OMAO
- Develop data quality and management guidelines to ensure the timely processing and availability of UxS data to NOAA Line Offices and the public
- Provide operational support to all field locations including Newport, OR, Newport, RI, Gulfport, MS and Lakeland, FL
- Establish collaborative partnerships with other Federal agencies, academia, and industry
- Ensure program standardization for UxS deployed from NOAA ships and from shore

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(Dollar amounts in thousands)

- Plan UxS acquisitions within NOAA
- Provide UAS operational approvals, airworthiness inspections, standardization of training, and coordination of airspace approvals to support NOAA Line Office requirements
- Ensure that safety and compliance with aviation regulations and policy is maintained for NOAA's UAS
- Provide UAS pilot/operator support to NOAA Line Offices
- Provide acquisition expertise and guidance to include oversight of the purchase and/or lease of UxS
- Transition NOAA programs and labs that have extensive experience in UMS and ROV research and development, to a systematic operation within OMAO

Deliverables:

FY 2021:

- Establish the OMAO UMS Operations Center in Gulfport, MS
- Hire UxS staff to work in key OMAO satellite operations centers such as Newport, OR and Newport, RI
- Conduct a minimum of six UAS and six UMS assessments focused on the ability of the platforms to meet NOAA scientific mission requirements

FY 2022 – FY 2025:

- Increase UAS and UMS assessments focused on the ability of platforms to meet NOAA's scientific and operational mission requirements
- Provide acquisition expertise and guidance, to include oversight of the purchase and/or lease of proven UxS

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JUSTIFICATION OF PROGRAM AND PERFORMANCE**
(Dollar amounts in thousands)

Explanation and Justification

Comparison by subactivity		2019		2020		2021	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Unmanned Systems Operations	Pos/BA	0	0	10	12,665	8	12,793
	FTE/OBL	0	0	6	12,665	4	12,793
Total Unmanned Systems Operations	Pos/BA	0	0	10	12,665	8	12,793
	FTE/OBL	0	0	6	12,665	4	12,793

The UxS program provides centralized management and standardization of safety, training, inspections, and operational reviews for UxS technologies. It is responsible for the strategic planning of UxS acquisition within NOAA, consistent with NOAA’s priorities and data needs. UxS technologies increase NOAA’s ability to collect data in remote and extreme environments where it is currently almost impossible to collect. In the past year, programs across NOAA have used UxS to collect wildfire data at night when it is too dangerous for manned operations, improve air quality models, more efficiently survey the Chesapeake Bay, and discover a 19th century shipwreck. Data from UxS are particularly important because the absence of reliable data can lead to regulations that are more conservative than necessary. NOAA also continues to support pilot projects that enable the informed evaluations and decisions to transition to standard and systematic operations when appropriate.

The UxS program will continue to leverage collaborative partnerships with Federal agencies, academic institutions, and industries. This program is essential to ensure NOAA’s compliance with governance requirements, while safely and efficiently supporting current and emerging NOAA mission requirements.

PROGRAM CHANGES FOR 2021:

OMAO requests a net decrease of \$7,563 and 0 FTE/ 0 positions in FY 2021 program changes to the Unmanned Systems Operations activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-7).

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		<u>Personnel Amount</u>		<u>Personnel Amount</u>		<u>Personnel</u>	<u>Amount</u>
Unmanned Systems	Pos./BA	8	12,793	8	5,230	0	(7,563)
Operations	FTE/OBL	4	12,793	4	5,230	0	(7,563)

Unmanned Systems (-\$7,563, 0 FTE/0 Positions) – NOAA proposes a decrease to the Unmanned Systems (UxS) Operations Program. This reduction will decrease UxS research and the acquisition of data from unmanned maritime systems, while continuing to increase the application and use of unmanned aircraft and marine systems in every area of NOAA. Unmanned aircraft systems (UAS) are already used operationally for missions across NOAA.³ NOAA’s Unmanned Marine System (UMS) Symposium found that use of unmanned surface vehicles is growing across NOAA’s mission areas, and they are ripe for transition into operations.⁴

In FY 2021, NOAA will therefore prioritize activities that help operationalize unmanned technologies, including through NOAA’s request for increased PAC funding in OMAO’s Platform Capital Improvements and Technology activity for the acquisition of UxS deployment infrastructure, systems and platforms (OMAO-48). Other NOAA programs may continue to independently explore the use of UxS to meet their missions. However, the UxS Operations Program will provide the effective and adaptive organizational structure to increase efficiency and promote the economical operation of UxS across NOAA.

Schedule and Milestones

FY 2021 – FY 2025:

- Continue to centralize all NOAA UxS operations within OMAO
- Develop data quality and management guidelines to ensure the timely processing and availability of UxS data to NOAA Line Offices and the public
- Provide operational support to all field locations including Newport, OR, Newport, RI, Gulfport, MS and Lakeland, FL
- Establish collaborative partnerships with other Federal agencies, academia, and industry
- Ensure program standardization for UxS deployed from NOAA ships and from shore

³ NOAA 2016. Proceedings of the NOAA UAS Symposium, October 2016.

⁴ NOAA Fleet Council 2018. Proceedings of the NOAA Unmanned Marine Systems Symposium, November 2018

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

- Plan UxS acquisitions within NOAA
- Provide UAS operational approvals, airworthiness inspections, standardization of training, and coordination of airspace approvals to support NOAA Line Office requirements
- Ensure that safety and compliance with aviation regulations and policy is maintained for NOAA’s UAS
- Provide UAS pilot/operator support to NOAA Line Offices
- Provide acquisition expertise and guidance to include oversight of the purchase and/or lease of UxS
- Transition NOAA programs and labs that have extensive experience in UMS and ROV research and development, to a systematic operation within OMAO

Deliverables:

FY 2021:

- Establish the OMAO UMS Operations Center in Gulfport, MS
- Hire UxS staff to work in key OMAO satellite operations centers such as Newport, OR and Newport, RI
- Conduct a minimum of six UAS and six UMS assessments focused on the ability of the platforms to meet NOAA scientific mission requirements

FY 2022 – FY 2025:

- Increase UAS and UMS assessments focused on the ability of platforms to meet NOAA’s scientific and operational mission requirements
- Provide acquisition expertise and guidance, to include oversight of the purchase and/or lease of proven UxS

Performance Measures

	2021	2022	2023	2024	2025
Number of UAS projects which advance technology readiness for operations by at least one technology readiness level					
With Decrease	0	0	0	0	0
Without Decrease	2	2	2	2	2

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(Dollar amounts in thousands)**

Number of near-surface observations (measurements per day or per degree latitude/longitude collected and/or processed) of ocean currents, heat content, and water mass properties maintained or improved to improve estimates of meridional mass and heat transport and inform extreme weather and ecosystem outlooks

With Decrease	0	0	0	0	0
Without Decrease	600,000	600,000	600,000	600,000	600,000

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Unmanned Systems Operations

Subactivity: Unmanned Systems Operations

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	0	931	1,178	1,178	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	931	1,163	1,178	0
12 Civilian personnel benefits	0	250	439	439	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	555	555	555	0
22 Transportation of things	0	0	0	0	0
23 Rent, communications, and utilities	0	0	0	0	0
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental Payments to others	0	400	400	400	0
23.3 Communications, utilities and misc charges	0	41	41	41	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	5,248	4,945	1,397	(3,548)
25.3 Other goods and services from Federal sources	0	250	250	250	0
25.4 Operation and maintenance of facilities	0	5	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	0	335	335	320	(15)
31 Equipment	0	650	650	650	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	4,000	4,000	0	(4,000)
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	12,665	12,771	5,230	(7,563)

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Operations, Research, and Facilities
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: NOAA Corps

Goal Statement

Provide centralized human resources support for all active duty NOAA Commissioned Officer Corps (NOAA Corps) Officers that operate NOAA ships, fly aircraft, manage research projects, conduct diving operations, and serve in NOAA staff positions to fulfill NOAA's mission requirements. Provide the commensurate pay and benefits, accession, relocation, training, and military Human Resources (HR) support and policy functions that are unique to operating a uniformed service.

Base Program

The NOAA Corps, is one of the Nation's seven uniformed services. The NOAA Corps is a highly specialized workforce component that have the skills to plan, prepare, and execute the acquisition of environmental and scientific data on land, at sea, and in the air. NOAA Corps officers command NOAA's fleet of ship and aircraft and support all NOAA's Line Offices, NOAA Headquarters, and the Department. This activity supports the actual cost of the NOAA Corps Mission Program's support functions, including most of the pay and benefits, as well as accession, relocation, training, promotions, separations, Tricare payments, and HR support for NOAA Corps Officers working across all NOAA Line Office programs.

Statement of Operating Objectives

Schedule and Milestones:

FY 2021 - FY 2025:

- Recruit NOAA Corps Officers for two Basic Officer Training Classes consisting of up to 20 candidates in each class
- Coordinate assignment changes and permanent change of station moves for NOAA Corps officers across all of NOAA
- Track and administer the medical requirements of active duty officers
- Conduct workforce planning to ensure the authorized strength is maintained at peak operating levels

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(Dollar amounts in thousands)

Deliverables:

FY 2021 – FY 2025:

- Transparent NOAA Corps Mission Program that is externally recognizable and operationally meaningful
- Additional NOAA Corps officers recruited to serve across all NOAA Line Offices
- NOAA Corps assignment changes are executed and officers are in place across all NOAA Line Offices to meet NOAA’s mission requirements
- Medical readiness of active duty officers is maintained

Explanation and Justification

Comparison by subactivity		2019		2020		2021	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
NOAA Corps	Pos/BA	0	0	0	0	272	43,148
	FTE/OBL	0	0	0	0	272	43,148
Total NOAA Corps	Pos/BA	0	0	0	0	272	43,148
	FTE/OBL	0	0	0	0	272	43,148

* NOAA Corps is a new activity proposed in FY 2021. In FY 2020, NOAA Corps funds were embedded within the Marine Operations and Maintenance, Aviation Operations and Aircraft Services, and Unmanned Systems Operations activities. Funding for NOAA Corps Officer salaries will continue to be supplemented by the Line Offices within which the NOAA Corps Officers serve.

The NOAA Corps is one of OMAO’s critical Mission Programs. It strives to integrate leadership, experience, and technology to optimize NOAA’s mission of science, service and stewardship at home and around the world. NOAA Corps officers are NOAA’s operational leaders and are an integral part of NOAA’s workforce. They operate and manage NOAA’s fleet of ships and aircraft and serve in positions of leadership and command in NOAA, the Department of Commerce, and essential positions in other agencies as well as in the military during times of war or national emergency.

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Centrally managed within OMAO's Commissioned Personnel Center in Silver Spring, MD., the NOAA Corps provides a unique and valuable capability to the Nation, and NOAA Corps officers provide a responsiveness and flexibility inherent in a commissioned personnel system. NOAA Corps officers serve throughout the agency's Line and Staff Offices to support nearly all of NOAA's programs and missions. The combination of commissioned service and scientific expertise makes the NOAA Corps uniquely capable of leading some of NOAA's most important initiatives. The NOAA Corps provides a cadre of professionals trained in engineering, earth sciences, oceanography, meteorology, fisheries science, and other related disciplines. More information on the NOAA Corps can be found at <https://www.omaο.noaa.gov/learn/noaa-corps/about>.

While the NOAA Corps serves across all of NOAA, it is primarily funded out of OMAO. Funding in this activity supports most of the pay and benefits, accession, relocation, training and military HR support and policy functions unique to operating a uniformed service. This activity provides enhanced programmatic transparency for Congress while increasing the visibility of OMAO's budget. Supplemental funding for active NOAA Corps officers' salaries and benefits comes from the NOAA Line Offices within which the officers are serving. Funds for retired NOAA Corps officers are appropriated in the mandatory NOAA Corps Commissioned Officers Retirement funds (see OMAO-55), and the Medicare Eligible Retiree Health Care Fund discretionary account (see OMAO-61).

PROGRAM CHANGES FOR 2021:

OMAO requests a net decrease of \$1,500 and 0 FTE/ 0 positions in FY 2021 program changes to the NOAA Corps activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-7).

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PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
NOAA Corps	Pos./BA	272	43,148	272	41,648	0	(1,500)
	FTE/OBL	272	43,148	272	41,648	0	(1,500)

Reduce Pilot Training and Recruitment (-\$1,500, 0 FTE/0 Positions) –NOAA proposes to decrease additional funds provided in FY 2020 appropriations to further efforts to recruit and train NOAA Corps pilots. In FY 2021, NOAA will continue to prioritize recruitment and training efforts within available resources.

The magnitude of this reduction is not sufficient to affect the performance targets. OMAO will evaluate the best approach to streamlining key activities to achieve the desired efficiencies.

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Operations, Research, and Facilities
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: NOAA Corps
Subactivity: NOAA Corps

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11.1 Full-time permanent compensation	\$0	\$0	\$32,467	\$32,467	\$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	32,467	32,467	0
12 Civilian personnel benefits	0	0	3,180	3,180	0
13 Benefits for former personnel	0	0	117	117	0
21 Travel and transportation of persons	0	0	525	525	0
22 Transportation of things	0	0	1,132	1,132	0
23 Rent, communications, and utilities	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 Communications, utilities and misc charges	0	0	0	0	0
24 Printing and reproduction	0	0	6	6	0
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	0	0	3,772	3,772	0
25.3 Other goods and services from Federal	0	0	1,920	420	-1,500
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	0	0	27	27	0
31 Equipment	0	0	1	1	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	\$43,148	\$41,648	(\$1,500)

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Procurement, Acquisition, and Construction
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Marine and Aviation Capital Investments

Goal Statement

Acquire effective and efficient aircraft and ship platforms to support NOAA's prioritized airborne and at-sea data requirements, maintain NOAA's current fleet at a higher state of readiness, and advance coastal and worldwide ocean survey and data collection through investment in new vessel construction.

Base Program

The Marine and Aviation Capital Investments activity includes three major Programs:

- Platform Capital Improvements and Technology Infusion, including Unmanned Systems (UxS) Acquisitions,
- Vessel Recapitalization, and
- Aircraft Recapitalization.

Each program plays a specific part in ensuring the continued health of NOAA's vessel and aircraft fleet to ensure the continued support of NOAA's mission requirements.

Statement of Operating Objectives

Platform Capital Improvements and Technology Infusion

Schedule and Milestones:

FY 2021 – FY 2025:

- Perform phased overhauls, upgrades, and replacements of ship's systems through infrastructure improvement plans
- Develop long-term ship maintenance plans
- Execute long-term maintenance plans to achieve the operational service life of all NOAA vessels

Deliverables:

FY 2021 – FY 2025:

- Improve the reliability of the fleet and reduce lost DAS from unscheduled maintenance
- Ensure the continued capability of the NOAA Fleet

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(Dollar amounts in thousands)

- Attain the planned operational service life of all vessels

See Program Change for outyear funding table.

Vessel Recapitalization

Schedule and Milestones:

FY 2021:

- Complete detail design for the first Class A vessel (AGOR variant)
- Production Readiness Review (PRR) authorization to begin construction of first Class A vessel
- Begin procurement efforts and initiate detail design and construction competition for Class B vessel
- Continue requirements analysis and conceptual/feasibility studies for Class C Vessel

FY 2022 – FY 2025:

- Begin construction of second Class A vessel
- Award detail design and construction contract for Class B vessel
- Develop Class C vessel characteristics and technical specifications
- Accept delivery of first Class A vessel
- Begin detail design and construction of first Class B vessel
- Initiate procurement process for Class C vessel
- Accept delivery of second Class A vessel
- Award second Class B vessel
- Award detail design and construction contract for Class C vessel

Deliverables:

FY 2021 – FY 2025:

- Delivery of NOAA Class A vessels adapted for NOAA's at-sea data collection (FY 2024 and FY 2025)

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Out-year Funding Estimates (\$ in Thousands):

Vessel Recapitalization	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	0	0	0	0	0	TBD	TBD
Total Request	375,050	75,000	75,000	75,000	75,000	75,000	TBD	TBD

Explanation and Justification

Comparison by subactivity		2019 Actual		2020 Enacted		2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Platform Capital	Pos/BA	11	24,312	11	23,000	11	23,000
Improvements & Tech	FTE/OBL	11	29,894	11	23,000	11	23,000
Vessel Recapitalization	Pos/BA	13	74,923	13	75,000	13	75,000
	FTE/OBL	13	132,480	13	75,000	13	75,000
Aircraft Recapitalization	Pos/BA	2	0	0	0	0	0
	FTE/OBL	2	53,452	0	0	0	0
Total Marine and Aviation	Pos/BA	26	99,235	24	98,000	24	98,000
Capital Investments	FTE/OBL	26	215,826	24	98,000	24	98,000

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PLATFORM CAPITAL IMPROVEMENTS AND TECHNOLOGY INFUSION

The Platform Capital Improvements and Technology Infusion Program allows NOAA to plan and perform cyclic depot-level capital investments across the fleet, designed to maintain and extend the service life of NOAA's vessel and aircraft fleet. It ensures that the required upgrades to aircraft and ship-board systems and mission equipment comply with safety requirements and the needs of the programs. Aircraft and ships receive regular upgrades and replacements of mission support equipment and technology infusions such as data processing and storage capacity, multi-beam sonars and sensors. The program will also support the future acquisition of unmanned air and marine systems, and unmanned launch and recovery systems.

OMAO monitors the material condition of aircraft through periodic Service Life Assessments (SLAs) and Service Life Extension Programs. The SLA documents completed for all aircraft in FY 2016 by a third-party vendor provide key data on maintenance costs and trends; sustainability costs; reliability metrics and issues; all of which guide future capital investment decision making. In addition, OMAO uses manufacturer provided Service Life Extension costs such as re-winging, major overhauls and upgrades to help determine economic feasibility, cost benefit and reliability data. These data are critical to maximizing future maintenance investments and capital investments.

For vessels, OMAO monitors their material condition through Ship Structure and Machinery Evaluation (SSME). The SSMEs document the results of inspections and identify future work requirements to guide capital investment decision making. Additionally, OMAO uses manufacturer-provided information for new ships to develop maintenance profiles. To address regular capital improvements for NOAA ships, progressive lifecycle maintenance ensures the service life of vessels by proactively overhauling, upgrading, or replacing shipboard systems before they fail. Repairs completed through progressive lifecycle maintenance improve the material condition of the ships, provide sustained critical technology refresh, and ensure NOAA ships remain capable of collecting environmental data to support NOAA's mission to provide accurate and reliable products services critical for national security, public safety, and economic security.

The chart below lists the types of capital investments that vary from year-to-year based on the results of SSMEs that assess the material condition of the ships and determine priority repairs.

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Crew Space Refurbishment	Science/ Mission Space Refurbishment	Shipboard Systems	Underwater Body	Mission Systems Refresh
Refrigeration systems HVAC refurbishment Renovation of habitability spaces	Renovation of laboratory spaces Modifications to allow for emerging technologies	Propulsion & generation systems overhaul Re-piping Fire suppression upgrades Machinery monitoring upgrades Environmental equipment replace	Blast hull Refurbish props/shafts Refurbish valves/ piping	Multi-beam sonars and sensors Ship-board electronic data processing and storage UAS Launch/ Recovery System Small boats and launches Cranes, winches, davits

VESSEL RECAPITALIZATION

Acquisition of new ships is the best way for NOAA to reliably and consistently sustain its at-sea data collection capability. NOAA’s ships need to be multi-mission adaptable and provide the infrastructure and capabilities necessary to meet mission requirements now and in the future. The vessel recapitalization program includes vessel acquisition, including instrumentation specific to NOAA missions. The program supports the oversight of these activities, which include a rigorous analysis of mission requirements, detailed design and construction, and alternative options to meet prioritized requirements. Fleet recapitalization provides a clear path forward, leading to platform capability requirements, preliminary costs and timelines.

In October 2016, NOAA released the Fleet Plan that assesses NOAA’s current and future (through FY 2028) at-sea observational infrastructure needs for carrying out its mission of protecting lives, livelihoods, and valuable natural resources for the American public. It identifies an integrated approach consisting of best management practices and long-term recapitalization levers to extend and sustain capabilities. The plan includes the critical long-term strategy of designing and constructing up to eight new ships specifically designed to meet NOAA core capability requirements based on mission and activities.

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To better inform the Fleet Plan, NOAA contracted the American Bureau of Shipping to perform the SLAs on thirteen ships, including twelve of the oldest ships in the fleet. SLAs provided current condition assessments by evaluating hull structure, and ship board systems based on four methodologies: survey assessment to include survey and machinery findings; fatigue analysis to include the full ship global finite element models and vessel service history; strength assessment; and machinery assessments to include propulsion equipment and auxiliary equipment. The resulting level of data is unprecedented for the NOAA Fleet and provides for detailed long-term maintenance planning. The SLA data and dates, in conjunction with the new vessel construction, and maintenance plans will be used to adjust planned end of service dates for the NOAA ships. Based on this information, NOAA is currently investigating options to best maintain fleet capacity.

In contrast to the wide variety of vessel types that currently comprise the NOAA Fleet, NOAA intends to reduce the number of ship classes in the future, focusing each class on a core mission with secondary missions that make the best use of the vessel's capabilities. OMAO continues to develop Force Architecture assessment processes to better define vessel characteristics at a high level and the overarching fleet mix. NOAA also intends to standardize core equipment as much as possible, and incorporate the latest technologies across the Fleet. Up to date technology and standardization are critical for NOAA to sustain optimal crewing and efficient operations and maintenance.

The new ship acquisition process consists of four phases: requirements analysis, concept design, preliminary design, and detailed design and construction. These phases are immediately followed by warranty and fleet introduction activities before the ship is ready for full operation. Efforts will be made throughout the process to leverage design aspects of previous ship classes and to create standardization across the Fleet to meet multiple core mission requirements.

Progress on NOAA's Fleet Plan has helped put NOAA on a steady path toward a more reliable fleet that supports NOAA's science needs. Since FY 2016, appropriations have primarily supported the design and construction of the first two NOAA Auxiliary General Purpose Oceanographic Research Variant (NAV) vessels. Through an Interagency Agreement with the Navy for the assisted acquisition of the NAV vessels. NOAA fully funded the design and construction of two ships in this first class of vessels. Navy awarded preliminary design contracts to three shipyards in FY 2019, and the down selection for detail design and construction begins in FY 2020.

In FY 2021, NOAA will begin procurement efforts and initiate a detail design and construction competition for Class B vessels and will also continue requirements analysis for Class C vessels. NOAA has already developed early acquisition documentation for Class B and continues to work through the Department of Commerce's milestone review process consistent with departmental acquisition policies. Combined with OMAO's FY 2020 appropriation, FY 2021 resources will fully fund the acquisition of NOAA's first Class B

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vessel. Class B vessels will be capable of conducting charting and surveying as its primary missions, helping NOAA ensure safe navigation.

Note: OAMO is in the process of decommissioning NOAA ship Hi'ialakai. The decommissioning is anticipated to be completed third quarter, FY 2020. NOAA is fulfilling those mission requirements previously performed by the Hi'ialakai with a combination of NOAA vessels.

AIRCRAFT RECAPITALIZATION

NOAA published an aircraft recapitalization plan in October 2019. The 10-year plan outlines the need for people and aircraft to support NOAA's prioritized airborne requirements now and into the future. NOAA's aircraft are vital in collecting observational data in support of hurricane, water supply and weather forecasting, nautical charting, and fisheries management. Like NOAA's Fleet Plan, this plan sets the course for NOAA's future in aircraft observations.

NOAA is already well on its way towards meeting requirements laid out in the Aircraft Plan. FY 2018 appropriations allowed NOAA to begin acquisition for the first two aircraft in NOAA's Aircraft Plan—one King Air 350 and one Gulfstream 550 (G550) high altitude jet. NOAA awarded contracts for the King Air including modifications and the base G550 in FY 2019. NOAA plans to award the contract for G550 modifications in FY 2020. NOAA expects the King Air will be ready for delivery in the summer of 2020, with the G550 following in future years. However, before inducting these new aircraft into NOAA's fleet, NOAA still needs to complete significant work in FY 2021 and beyond. These requirements include testing the aircraft, installing remaining equipment, and calibrating systems to ensure the aircraft meet NOAA's standards and provide consistent data for scientific missions.

The King Air will replace the existing Turbo Commander aircraft and eliminate the current single point of failure for high-resolution mapping, water resource requirements, and remote population surveys. The G550 will conduct hurricane surveillance, which provides data that directly improves track forecasts by as much as 15 percent.⁵ This hurricane surveillance mission is currently performed by the G-IV. Due to its age, the current G-IV reliability index is only 70 percent and this is forecast to decline to 55 percent reliability by 2024.⁶

⁵ Aberson, S.D. 10 Years of Hurricane Synoptic Surveillance (1997-2006). Monthly Weather Review. May 2010, Vol. 138, No. 5.

⁶ NOAA AOC Aircraft Fleet Plan Service Life Analysis, Gulfstream IV-SP Replacement Aircraft (Report AOC-FP-A4). August 3, 2016. Conklin & de Decker Associates, Inc.

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PROGRAM CHANGES FOR 2021:

OMAO requests a net decrease of \$4,300 and 0 FTE/ 0 positions in FY 2021 programs changes to the Marine and Aviation Capital Investments activity. Following this section are program change narratives for this activity that represent program changes of \$250 or greater and/or are new starts or terminations. Complete program changes by subactivity can be found in the NOAA Control Table (p. Control Table-11).

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PROGRAM INCREASE FOR 2021**
(Dollar amounts in thousands)

		2021 Base		2021 Estimate		Increase from 2021 Base	
		<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>	<u>Personnel</u>	<u>Amount</u>
Platform Capital							
Improvements and	Pos./BA	11	23,000	11	25,000	0	2,000
Technology	FTE/OBL	11	23,000	11	25,000	0	2,000

Unmanned Systems Acquisitions (+\$2,000, 0 FTE/ 0 Positions) – This request will support the acquisition and maintenance of unmanned systems (UxS), ensuring consistency in the way that NOAA’s fleet of ships and aircraft, and UxS are standardized, centrally maintained, and mission ready. Centralized UxS acquisition will allow NOAA to leverage the UxS technologies needed to efficiently execute NOAA mission requirements, and provide the required IT infrastructure and cyber security resources. It will help NOAA avoid duplication of equipment, training and certification and provide the infrastructure needed for the safe deployment of UxS from NOAA ships and aircraft, coordinated and implemented through the UxS Operations Program.

The majority of this request will be used to acquire ship and shore-based deployment infrastructure and UxS systems and platforms. NOAA’s Unmanned Marine System (UMS) Symposium found that use of unmanned surface vehicles is growing across NOAA’s mission areas, and they are ripe for transition into operations.⁷ Other potential UxS platform acquisitions could include buoyancy gliders, hybrid quadrotor unmanned aircraft (UAS) that can be launch from a ship for a variety of NOAA missions, and UAS used during fires to measure and observe fire extent and perimeter.

NOAA is currently establishing a requirements-based process to prioritize UxS operational application and use, consistent with the NOAA UxS Strategy.⁸ All acquisitions will be based on input from the UxS Executive Oversight Board, which has representatives from all NOAA Line Offices, reports to the NOAA Fleet Council,⁹ and coordinates with NOAA Observing Systems Committee and NOAA Research Council, ensuring interests from across NOAA are represented acquisition decisions. Such decisions will consider UxS research and assessments, whether the platform meets diverse mission sets, and how acquisition aligns with plans to transition

⁷ NOAA Fleet Council 2018. Proceedings of the NOAA Unmanned Marine Systems Symposium, November 2018.

https://www.omao.noaa.gov/sites/default/files/documents/20190429_UMS%20Symposium%20Report.pdf.

⁸ National Oceanic and Atmospheric Administration. Draft NOAA Unmanned Systems Strategy, November 2019. <https://nrc.noaa.gov/LinkClick.aspx?fileticket=TEL-Y7ipZzs%3d&tabid=73&portalid=0>.

⁹ NOAA Fleet Council 2016. UxS Executive Oversight Board Terms of Reference, April 2016. <https://www.omao.noaa.gov/find/media/documents/noaa-fleet-council-termsreference>.

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PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)

technology from research to operations¹⁰. Similar to other OMAO assets, availability of UxS platforms, once acquired, will be coordinated through the NOAA Fleet Council.

Approximately \$200 will support the development and enforcement of UxS cyber security and the design and implementation of operational IT infrastructure requirements.

This request supports implementation of PL-115-394, Commercial Engagement through Ocean Technology Act of 2018 (CENOTE), requiring NOAA to coordinate the Administration's research, assessment, and acquisition of unmanned maritime systems, and to consider the use of unmanned maritime systems in cooperative activities of the Administration. It further supports the Presidential Memorandum on "Ocean Mapping of the United States Exclusive Economic Zone and the Shoreline and Nearshore of Alaska" by providing platforms to augment ship-based mapping capabilities.

Schedule and Milestones:

FY 2021:

- Begin centralization of UxS acquisitions and establish NOAA's first corporate pool of UxS assets
- Design and develop a dedicated UxS cyber security system to support IT infrastructure and data management system

FY 2022 – FY 2025:

- Continue acquisition of UAS and UMS platforms based on emergent technology in support of NOAA scientific and operational mission requirements

Deliverables:

FY 2021:

- Schedule up to 350 DAS for data collection on commercially available UMS in support of NOAA missions
- Acquire two new UAS and one UMS in support of NOAA's scientific and regulatory missions

FY 2022 – FY 2025:

- Acquire two new UAS and one UMS annually in support of NOAA's scientific and regulatory missions

¹⁰ NOAA 2016. NOAA Administrative Order 216-105B: Policy on Research and Development Transitions.
https://www.corporateservices.noaa.gov/ames/administrative_orders/chapter_216/216-105B.html.

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PROGRAM INCREASE FOR 2021
(Dollar amounts in thousands)**

Performance Measures	2021	2022	2023	2024	2025
Acquisition of new UxS Platforms					
With Increase	3	6	9	12	15
Without Increase	0	0	0	0	0
Outyear Costs:					
Direct Obligations	2,000	2,000	2,000	2,000	2,000
Capitalized	1,775	1,775	1,775	1,775	1,775
Uncapitalized	225	225	225	225	225
Budget Authority	2,000	2,000	2,000	2,000	2,000
Outlays	700	700	700	700	700
FTE	0	0	0	0	0
Positions	0	0	0	0	0

Out-year Funding Estimates (\$ in Thousands):

Platform Capital Improvements and Technology Infusion	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2021 Base	N/A	2,000	2,000	2,000	2,000	2,000	TBD	TBD
Total Request	106,357	25,000	25,000	25,000	25,000	25,000	TBD	TBD

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PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Marine and Aviation Capital Investments
Subactivity: Platform Capital Improvements & Tech Infusion

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase from 2021 Base
11.1 Full-time permanent compensation	770	777	777	777	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	85	86	86	86	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	855	864	864	864	0
12 Civilian personnel benefits	215	217	217	217	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	22	22	22	22	0
23 Rent, communications, and utilities	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	225	225
23.3 Communications, utilities and misc charges	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	24,557	17,659	17,659	17,659	0
25.3 Other goods and services from Federal sources	871	871	871	871	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	0	0	0	0	0
25.6 Medical care	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons	0	0	0	0	0
26 Supplies and materials	1,898	1,898	1,898	1,898	0
31 Equipment	1,470	1,470	1,470	3,245	1,775
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	7	0	0	0	0
44 Refunds	0	0	0	0	0
99 Total obligations	29,894	23,000	23,000	25,000	2,000

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

		2021 Base		2021 Estimate		Decrease from 2021 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Platform Capital Improvement and Tech Infusion	Pos./BA	11	23,000	11	16,700	0	(6,300)
	FTE/OBL	11	23,000	11	16,700	0	(6,300)

Decrease in Progressive Lifecycle Maintenance (-\$6,300, 0 FTE/0 Positions) – NOAA proposes a decrease in funds for capital repairs to NOAA’s ship fleet through funding for the Progressive Lifecycle Maintenance program.

With progressive lifecycle maintenance funds provided in FY 2018 and FY 2019, deferred maintenance was reduced by over \$15 million. With funds provided in FY 2020, deferred maintenance is expected to continue to decline. Repairs completed through progressive lifecycle maintenance provide sustained critical technology refresh, and ensure NOAA ships remain capable of collecting data to support NOAA’s mission to provide accurate and reliable products services critical for national security, public safety, and economic security. In FY 2021, NOAA will work to find efficiencies wherever possible to minimize the impacts of this reduction.

Deliverables:

- Extended service life of the Fleet by stabilizing the material condition of the ships through timely performance of maintenance and capital repair, upgrade and replacements.
- Enhanced long term observation capabilities and infrastructure that directly inform understanding of weather variability and ecosystem processes

Performance Measures	2021	2022	2023	2024	2025
Lost Days at Sea due to maintenance					
With Decrease	370	370	370	370	370
Without Decrease	370	355	355	355	355

**Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM DECREASE FOR 2021
(Dollar amounts in thousands)**

Outyear Costs:

Direct Obligations	(6,300)	(6,300)	(6,300)	(6,300)	(6,300)
Capitalized	(5,630)	(5,630)	(5,630)	(5,630)	(5,630)
Uncapitalized	(670)	(670)	(670)	(670)	(670)
 Budget Authority	(6,300)	(6,300)	(6,300)	(6,300)	(6,300)
Outlays	(2,687)	(2,687)	(2,687)	(2,687)	(2,687)
FTE	(0)	(0)	(0)	(0)	(0)
Positions	(0)	(0)	(0)	(0)	(0)

Out-year Funding Estimates (\$ in Thousands):

Platform Capital Improvements and Technology Infusion	2020 & Prior	2021	2022	2023	2024	2025	CTC	Total
Change from 2020 Base		(6,300)	(6,300)	(6,300)	(6,300)	(6,300)	N/A	N/A
Total Request	106,357	16,700	16,700	16,700	16,700	16,700	TBD	TBD

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Direct Obligations amounts in thousands)

Activity: Marine and Aviation Capital Investments
Subactivity: Platform Capital Improvements & Tech Infusion

Object Class	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Decrease from 2021 Base
11 Personnel compensation					
11.1 Full-time permanent	\$770	\$770	\$770	\$300	(\$470)
11.3 Other than full-time permanent	\$0	\$0	\$0	\$0	\$0
11.5 Other personnel compensation	\$85	\$85	\$85	\$0	(\$85)
11.8 Special personnel services payments	\$0	\$0	\$0	\$0	\$0
11.9 Total personnel compensation	\$855	\$855	\$855	\$300	(\$555)
12 Civilian personnel benefits	\$215	\$215	\$215	\$100	(\$115)
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 Communications, utilities and misc charges	\$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	\$25,444	\$20,000	\$20,000	\$14,670	(\$5,330)
25.3 Other goods and services from Federal	\$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
25.6 Medical care	\$0	\$0	\$0	\$0	\$0
25.7 Operation and maintenance of equipment	\$0	\$0	\$0	\$0	\$0
25.8 Subsistence and support of persons	\$0	\$0	\$0	\$0	\$0
26 Supplies and materials	\$1,910	\$930	\$930	\$930	\$0
31 Equipment	\$1,470	\$1,000	\$1,000	\$700	(\$300)
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	\$29,894	\$23,000	\$23,000	\$16,700	(\$6,300)

**Department of Commerce
National Oceanic and Atmospheric Administration
NOAA Corps Retirement Pay (Mandatory)
SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
Enacted , 2020	0	0	30,075	30,075
plus: 2021 Adjustments to Base	0	0	0	0
2021 Base	0	0	30,075	30,075
Plus: 2021 Program Changes	0	0	0	0
2021 Estimate	0	0	30,075	30,075

		2019		2020		2021		2021		Increase/Decrease from 2021 Base	
		Actual		Enacted		Base		Estimate		Personnel Amount	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
NOAA Corps	POS/BA	0	30,102	0	30,075	0	30,075	0	30,075	0	0
Retirement Pay	FTE/OBL	0	28,926	0	30,075	0	30,075	0	30,075	0	0
Total: NOAA Corps	POS/BA	0	30,102	0	30,075	0	30,075	0	30,075	0	0
Retirement Pay	FTE/OBL	0	28,926	0	30,075	0	30,075	0	30,075	0	0

**Department of Commerce
National Oceanic and Atmospheric Administration
NOAA Corps Retirement Pay (Mandatory)
SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

	2019		2020		2021		2021		Increase/ Decrease from 2021 Base	
	Actual		Enacted		Base		Estimate		FTE	Amount
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount		
Direct Discretionary	0	28,926	0	30,075	0	30,075	0	30,075	0	0
Total Obligations	0	28,926	0	30,075	0	30,075	0	30,075	0	0
Adjustments to Obligations:	0	(1,176)	0	0	0	0	0	0	0	0
Total Budget Authority	0	28,926	0	30,075	0	30,075	0	30,075	0	0
Financing from Transfers and Other:	0	0	0	0	0	0	0	0	0	0
Net Appropriation	0	30,102	0	30,075	0	30,075	0	30,075	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
NOAA Corps Retirement Pay (Mandatory)
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: NOAA Corps Retirement Pay (Mandatory)

Goal Statement

Provide payment of benefits to retired NOAA Commissioned Officer Corps (NOAA Corps) officers and their families.

Base Program

In FY 2019, there were 403 retired NOAA Corps officers receiving retired pay benefits, and 31 spouses or 34 dependents of deceased retired officers, who are still eligible to receive benefits.

Statement of Operating Objectives

Schedule and Milestones:

- Transfer funds to the U.S. Coast Guard (USCG)
- Administer Healthcare funds for non-Medicare-eligible retirees, dependents, and annuitants

Deliverables:

- Benefits for retired NOAA Corps officers and their families

Explanation and Justification

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 USCG, which handles the payments each year as adjusted pursuant to the National Defense Authorization Act (NDAA). Healthcare funds for non-Medicare-eligible retirees, dependents, and annuitants are administered by OMAO.

This line includes funding for the modernized retirement system, which includes matching Thrift Savings Plan (TSP) contributions, continuation pay, and retirement itself. Public Law 114-92, the NDAA for FY 2016—provides the Secretary the authority to provide TSP contributions for members of the uniformed services effective January 1, 2018. Public Law 114-92, as amended by P.L. 114-

Department of Commerce
National Oceanic and Atmospheric Administration
NOAA Corps Retirement Pay (Mandatory)
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

328, the NDAA for FY 2017—modifies section 356 of title 37 and the use of continuation pay for full TSP members. Members must have “completed not less than [eight] and not more than [twelve] years of service” and “[enter] into an agreement of not less than [three] additional years of obligated service.” Continuation pay applies across the board to all military members who are in the modernized retirement system and is intended to help ensure retention after a member has the ability to acquire significant retirement benefits.

Legal authority for retirement of NOAA Corps officers is contained in 33 USCA 3044. Retired officers of the NOAA Corps receive retirement benefits that are administered by USCG, in accordance with a Memorandum of Agreement between the USCG and NOAA, with funds certified by the Commissioned Personnel Center within OMAO.

Department of Commerce
National Oceanic and Atmospheric Administration
NOAA Corps Retirement Pay (Mandatory)
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
Object Class					
13 Benefits for Former Personnel	25,726	26,875	26,875	26,875	0
25.3 Other goods and services from Federal sources	3,200	3,200	3,200	3,200	0
Total Obligations	28,926	30,075	30,075	30,075	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	1,176	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	30,102	30,075	30,075	30,075	0
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

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**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
Enacted, 2020	0	0	1,497	1,497
Plus: 2021 Adjustments to Base	0	0	94	94
2021 Base	0	0	1,591	1,591
Plus: 2021 Program Changes	0	0	0	0
2021 Estimate	0	0	1,591	1,591

		2019		2020		2021		2021		Increase/ Decrease from 2021 Base	
		Actual		Enacted		Base		Estimate		Personnel Amount	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Medicare Eligible Retiree	Pos/BA	0	1,449	0	1,497	0	1,591	0	1,591	0	0
Health Fund Contribution	FTE/OBL	0	1,449	0	1,497	0	1,591	0	1,591	0	0
Total: Medicare Eligible	Pos/BA	0	1,449	0	1,497	0	1,591	0	1,591	0	0
Retiree Health Fund	FTE/OBL	0	1,449	0	1,497	0	1,591	0	1,591	0	0
Contribution											

**Department of Commerce
National Oceanic and Atmospheric Administration
Medicare Eligible Retiree Health Fund Contribution – NOAA Corps
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)**

	2019		2020		2021		2021		Increase/Decrease	
	Actual		Enacted		Base		Estimate		from 2021 Base	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	1,449	0	1,497	0	1,591	0	1,591	0	0
Total Obligations	0	1,449	0	1,497	0	1,591	0	1,591	0	0
Adjustments to Obligations:										
Unobligated balance	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	0	1,449	0	1,497	0	1,591	0	1,591	0	0
Financing from Transfers and Other:										
Net Appropriation	0	1,449	0	1,497	0	1,591	0	1,591	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Medicare Eligible Retiree Health Fund Contribution – NOAA Corps
JUSTIFICATION OF PROGRAM AND PERFORMANCE
(Dollar amounts in thousands)

Activity: Medicare-Eligible Retiree Healthcare Fund Contribution - NOAA Corps

Goal Statement

This account is NOAA's contribution to a health care accrual fund for NOAA Commissioned Officer Corps (NOAA Corps) officers. The accrual fund pays for the future health care benefits for current officers once they retire and become Medicare-eligible, as well as for their dependents and annuitants.

Base Program

For FY 2021, payments to the accrual fund are estimated at \$1,591.

Statement of Operating Objectives

Schedule and Milestones: (On-going)

- Contribute to healthcare accrual fund
- Provide healthcare benefits to eligible retired NOAA Corps officers and their dependents and annuitants

Deliverables:

- Healthcare benefits of present, active-duty NOAA offices and their dependents and annuitants

Explanation and Justification

The FY 2003 NDAA 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.

Department of Commerce
National Oceanic and Atmospheric Administration
NOAA Corps Retirement Pay (Mandatory)
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

	2019 Actual	2020 Enacted	2021 Base	2021 Estimate	Increase/Decrease from 2021 Base
Object Class					
25.3 Other goods and services from Federal sources	1,449	1,497	1,591	1,591	0
Total Obligations	1,449	1,497	1,591	1,591	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
Offsetting collections, Mandatory	0	0	0	0	0
Less: Previously Unavail. Unoblig. Bal.	0	0	0	0	0
Total Budget Authority	1,449	1,497	1,591	1,591	0
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

**Department of Commerce
National Oceanic and Atmospheric Administration
JUSTIFICATION OF PROPOSED LANGUAGE CHANGES**

1. FY 2021 NOAA Cost Recovery Language

SEC. 108. *To carry out the responsibilities of the National Oceanic and Atmospheric Administration (NOAA), the Administrator of NOAA is authorized to: (1) enter into grants and cooperative agreements with; (2) use on a non-reimbursable basis land, services, equipment, personnel, and facilities provided by; and (3) receive and expend funds made available on a consensual basis from: a Federal agency, State or subdivision thereof, local government, tribal government, territory, or possession or any subdivisions thereof, foreign government, international or intergovernmental organization, public or private organization, or individual; Provided, That funds received ~~for permitting and related regulatory activities~~ pursuant to this section shall be deposited accordingly under the heading "National Oceanic and Atmospheric Administration—Operations, Research, and Facilities" and "National Oceanic and Atmospheric Administration—Procurement, Acquisition, and Construction" and shall remain available until ~~September 30, 2021~~ expended, for such purposes: Provided further, That all funds within this section and their corresponding uses are subject to section 505 of this Act.*

Justification

Since enacted in the Consolidated and Further Continuing Appropriations Act, 2015 (P.L. 113-235), NOAA has utilized subsection 3 of this general provision to mitigate against damages and increased costs due to construction near NOAA property. For example, in 2016 NOAA supported additional inspection and maintenance services for the Sterling, VA Weather Forecast Office, ancillary buildings, and HVAC with funds from the Virginia Department of Transportation for impacts caused by the construction of State Route 606. In 2018, NOAA reached agreement with the Washington Department of Transportation in support of adverse impacts to the Northwest Fisheries Science Center, Montlake Laboratory during the next two phases of highway construction.

NOAA proposes clarifying edits and expansion of this authority to include additional entities such as foreign government, international or intergovernmental organization, public or private organization, or individual. This will allow for additional flexibility to authorize agreements and funding arrangements for the placement of scientific equipment on bridges and piers, educational kiosks in public places, use of piers, vessels, storage, freezer space, and warehouses for mission needs, and use of universities' and public organizations' laboratory and other space to increase collaboration.

This language will also clarify NOAA's ability to receive and expend funds from, and to engage in agreements with, external entities to carry out its responsibilities. These activities include, but are not limited to, scientific data collection and research that informs NOAA's decisions and utilization of land and facilities to support NOAA's research and operational activities. Statutes include, but are not limited to, the Endangered Species Act, Marine Mammal Protection Act, Magnuson-Stevens Fishery Conservation and Management Act, National Marine Sanctuaries Act, Oil Pollution Act, Tsunami Warning and Education Act, and Weather Service Organic Act. Examples are agreements and funding arrangements to: perform research on stock assessment and ecosystem processes for conservation and management purposes; perform oceanographic surveys to determine baseline for Oil Pollution Act

**Department of Commerce
National Oceanic and Atmospheric Administration
JUSTIFICATION OF PROPOSED LANGUAGE CHANGES**

purposes; perform research and development on oil spill response; and perform research on endangered species for purposes of ESA consultation, or on marine mammals for MMPA Incidental Harassment Authorizations, to inform permitting of infrastructure projects, oil and gas drilling or other regulated activities.

**Department of Commerce
National Oceanic and Atmospheric Administration
APPROPRIATION LANGUAGE AND CODE CITATIONS**

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

5 USC 5348	15 USC 1514	16 USC 4701 et seq.	33 USC 3001 et seq.	
5 USC 4703	15 USC 1517	16 USC 5001 et seq.	33 USC 3044 et seq.	
7 USC 1622	15 USC 1537-40	31 USC 1105	33 USC 3045	
10 USC 1072	16 USC 661 et seq.	33 USC 706 et seq.	33 USC 3046	
10 USC 1111-1115	16 USC 757a et seq.	33 USC 883 a-i et seq.	33 USC 4001	
10 USC 2311	16 USC 1361	33 USC 891 et seq.	33 USC 3402	
12 USC 1715m	16 USC 1431 et seq.	33 USC 893 a-b,	33 USC 3501	
15 USC 313	16 USC 1447a et seq.	as amended	33 USC 3603	
15 USC 313a	16 USC 1451 et seq.	33 USC 1121-1131	33 USC 3703	
15 USC 313b	16 USC 1456a	33 USC 1251	42 USC 8902-05	
15 USC 313nt	16 USC 1456-1	33 USC 1321	42 USC 9601 et seq.	
15 USC 325	16 USC 1531 et seq.	33 USC 1441-44	43 USC 1347e	
15 USC 330b	16 USC 1801 et seq.	33 USC 2706	44 USC 1307	
15 USC 330e	16 USC 3645	33 USC 2712	49 USC 44720	
15 USC 1511 b-e	16 USC 4101 et seq.	33 USC 2801 et seq.		

Government Organization 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
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
APPROPRIATION LANGUAGE AND CODE CITATIONS**

10 USC 1116 Determinations of Contributions to the Fund

“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
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 313d – National Integrated Drought Information System (NIDIS) Program

“The Under Secretary, through the National Weather Service and other appropriate weather and climate programs in the National Oceanic and Atmospheric Administration, shall establish a National Integrated Drought Information System to better inform and provide for more timely decisionmaking to reduce drought related impacts and costs.”

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
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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

“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.”

- (a) “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.”

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,

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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,...
- (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

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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 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 1538 – Notice of reprogramming

(a) In general

The Secretary of Commerce shall provide notice to the Committee on Commerce, Science, and Transportation and Committee on Appropriations of the Senate and to the Committee on Merchant Marine and Fisheries, Committee on Science, Space, and Technology, and Committee on Appropriations of the House of Representatives, not less than 15 days before reprogramming funds available for a program, project, or activity of the National Oceanic and Atmospheric Administration in an amount greater than the lesser of \$250,000 or 5 percent of the total funding of such program, project, or activity if the reprogramming-

- (1) augments an existing program, project, or activity;
- (2) reduces by 5 percent or more (A) the funding for an existing program, project, or activity or (B) the numbers of personnel therefor as approved by Congress; or
- (3) results from any general savings from a reduction in personnel which would result in a change in an existing program, project, or activity.

(b) Notice of reorganization

The Secretary of Commerce shall provide notice to the Committees on Merchant Marine and Fisheries, Science, Space, and Technology, and Appropriations of the House of Representatives, and the Committees on Commerce, Science, and Transportation and Appropriations of the Senate not later than 15 days before any major reorganization of any program, project, or activity of the National Oceanic and Atmospheric Administration.

15 USC 1539 – Financial Assistance

(a) Processing of applications

Within 12 months after October 29, 1992, the Secretary of Commerce shall develop and, after notice and opportunity for public comment, promulgate regulations or guidelines to ensure that a completed application for a grant, contract, or other financial

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assistance under a nondiscretionary assistance program shall be processed and approved or disapproved within 75 days after submission of the application to the responsible program office of the National Oceanic and Atmospheric Administration.

(b) Notification of applicant

Not later than 14 days after the date on which the Secretary of Commerce receives an application for a contract, grant, or other financial assistance provided under a nondiscretionary assistance program administered by the National Oceanic and Atmospheric Administration, the Secretary shall indicate in writing to the applicant whether or not the application is complete and, if not complete, shall specify the additional material that the applicant must provide to complete the application.

(c) Exemption

In the case of a program for which the recipient of a grant, contract, or other financial assistance is specified by statute to be, or has customarily been, a State or an interstate fishery commission, such financial assistance may be provided by the Secretary to that recipient on a sole-source basis, notwithstanding any other provision of law.

(d) “Nondiscretionary assistance program” defined

In this section, the term “nondiscretionary assistance program” means any program for providing financial assistance—

- (1)** under which the amount of funding for, and the intended recipient of, the financial assistance is specified by Congress; or
- (2)** the recipients of which have customarily been a State or an interstate fishery commission.

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.”

15 USC 8511-8521 – United States Weather Research and Forecasting Improvement

In conducting research, the Under Secretary shall prioritize improving weather data, modeling, computing, forecasting, and warnings for the protection of life and property and for the enhancement of the national economy.

Conservation

16 USC 46a - Marine Fisheries Program Authorization Act

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.

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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 -

- (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;

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- (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.

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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”

16 USC 1456-1 – Coastal and Estuarine Land Conservation Program

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.

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,”.

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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” (3) to promote and encourage research in preparation for the implementation of the use of ecosystems and interspecies approaches to the conservation and management of interjurisdictional fishery resources throughout their range.”

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

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.”

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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

“...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...”

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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 expand 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.”

“(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 893 et 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

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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.

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

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]

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“...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 2712 – Use of Oil Spill Liability Trust Fund

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.”

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.”

33 USC 3001 et seq.- NOAA Corps Officers

There shall be in the National Oceanic and Atmospheric Administration a commissioned officer corps.

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

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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

(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 ½ 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."

10 USC 1409 - Retired pay multiplier

"(4) Modernized retirement system.- (A) Reduced multiplier for full tsp members .-Notwithstanding paragraphs (1), (2), and (3), in the case of a member who first becomes a member of the uniformed services on or after January 1, 2018, or a member who makes the election described in subparagraph (B) (referred to as a "full TSP member")- (i) paragraph (1)(A) shall be applied by substituting "2" for "2½"; (ii) clause (i) of paragraph (3)(B) shall be applied by substituting "60 percent" for "75 percent"; and (iii) clause (ii)(I) of such paragraph shall be applied by substituting "2" for "2½". (B) Election to participate in modernized retirement system .-Pursuant to subparagraph (C), a member of a uniformed service serving on December 31, 2017, who has served in the uniformed services for fewer than 12 years as of December 31, 2017, may elect, in exchange for the reduced multipliers described in subparagraph (A) for purposes of calculating the retired pay of the member, to receive Thrift Savings Plan contributions pursuant to section 8440e(e) of title 5. (C) Election period.- (i) In general .-Except as provided in clauses (ii) and (iii), a member of a uniformed service described in subparagraph (B) may make the election authorized by that subparagraph only during the period that begins on January 1, 2018, and ends on December 31, 2018. (ii) Hardship extension .-The Secretary concerned may extend the election period described in clause (i) for a member who experiences a hardship as determined by the Secretary concerned. (iii) Effect of break in service .-A member of a uniformed service who returns to service after a break

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in service that occurs during the election period specified in clause (i) shall make the election described in subparagraph (B) within 30 days after the date of the reentry into service of the member.”

33 USC 3046 - Retired Grade and Retired Pay

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.

33 USC 4001 - Harmful Algal Bloom and Hypoxia Research and Control Amendments Act of 2017

The President, through the Committee on Environment and Natural Resources of the National Science and Technology Council, shall establish an Inter-Agency Task Force on Harmful Algal Blooms and Hypoxia. The Task Force shall consist of a representative from—the Department of Commerce (who shall serve as Chairman of the Task Force) among others.

33 USC 3402 – Coordinated National Ocean Exploration Program

The Administrator of the National Oceanic and Atmospheric Administration shall, in consultation with the National Science Foundation and other appropriate Federal agencies, establish a coordinated national ocean exploration program within the National Oceanic and Atmospheric Administration that promotes collaboration with other Federal ocean and undersea research and exploration programs. To the extent appropriate, the Administrator shall seek to facilitate coordination of data and information management systems, outreach and education programs to improve public understanding of ocean and coastal resources, and development and transfer of technologies to facilitate ocean and undersea research and exploration.

33 USC 3501 – Ocean and Coastal Mapping Integration

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.

33 USC 3603 – Integrated Coastal and Ocean Observing System

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

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to ensure timely and sustained dissemination and availability of such data. Requires an advisory committee. Authorizes appropriations.

33 USC 3703 – Federal Ocean Acidification Research and Monitoring

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.

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

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...."

**Department of Commerce
National Oceanic and Atmospheric Administration
APPROPRIATION LANGUAGE AND CODE CITATIONS**

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.

Department of Commerce
National Oceanic and Atmospheric Administration
ADVISORY AND ASSISTANCE SERVICES
(Dollar Amounts in Thousands)

	<u>2019</u> <u>Actual</u>	<u>2020</u> <u>Enacted</u>	<u>2021</u> <u>Estimate</u>
Management and Professional Support Services	\$275,059	\$221,211	\$213,881
Studies, Analysis and Evaluations	\$112,846	\$90,754	\$87,757
Engineering and Technical Services	\$317,379	\$255,245	\$246,788
Total	\$705,284	\$567,210	\$548,416

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.

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Department of Commerce
National Oceanic and Atmospheric Administration
PERIODICAL, PAMPHLETS, AND AUDIOVISUAL PRODUCTS
(Dollar Amounts in Thousands)

	2019 <u>Actual</u>	2020 <u>Enacted</u>	2021 <u>Estimate</u>
Periodicals	\$2,103	\$1,211	\$1,906
Pamphlets	\$1,515	\$87	\$1,373
Audiovisuals	\$719	\$414	\$651
Total	\$4,337	\$4,554	\$3,930

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**Department of Commerce
National Oceanic and Atmospheric Administration
AVERAGE GRADE AND SALARY**

	2019 <u>Actual</u>	2020 <u>Enacted</u>	2021 <u>Estimate</u>
Average executive and SES level pay plans	\$181,751	\$187,565	\$189,441
Average GS/GM grade	13	13	13
Average GS/GM salary	\$101,112	\$104,347	\$105,390
Average Pay Band salary	\$116,572	\$120,301	\$121,504
Average Commissioned Officers salary	\$82,529	\$85,087	\$87,640
Average salary for other positions (FWS/Wage Marine)	\$63,963	\$65,882	\$66,541

Average salaries provided here reflect Federal Civilian and Military pay raises for 2019, 2020 and 2021, respectively.

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**Department of Commerce
National Oceanic and Atmospheric Administration
IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

31 U.S.C. 720, as amended January 3, 2019, requires the head of a federal agency to submit a written statement of the actions taken or planned on Government Accountability Office (GAO) recommendations to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 180 calendar days after the date of the report.

The Good Accounting Obligation in Government Act (GAO-IG Act), passed on January 3, 2019, (P.L. 115-414) requires each agency to include, in its annual budget justification, a report that identifies each public recommendation issued by GAO and the agency's office of the inspector general (OIG) which has remained unimplemented for one year or more from the annual budget justification submission date. In addition, the Act requires a reconciliation between the agency records and the IGs' Semiannual Report to Congress (SAR).

Section 1. Recommendations for which action plans were finalized since the last appropriations request.

Include information on recommendations for which an action plan has been completed since the last budget report. If you have nothing to report, state Nothing to Report."

Report Number	GAO-19-265,
Report Title	Scientific Integrity Policies: Additional Actions Could Strengthen Integrity of Federal Research
Issue Date	4/4/2019
Recommendation Number	7
Recommendation	The NOAA Administrator should develop mechanisms to regularly monitor and evaluate implementation of the agency's scientific integrity policy, including mechanisms to remediate identified deficiencies and make improvements where necessary.
Action(s) Planned	NOAA is developing an online training module that will be available to NOAA and NIST employees through the Commerce eLearning Center. NOAA will report on the number of scientific integrity consultations in addition to the number of allegations each year. This change will be reflected in the annual report.
Action Status (Planned, In-Progress, or Complete)	Complete - Action plan was submitted to GAO and Congress on 11/13/19
Target Completion Date	9/30/20
Recommendation Status (Planned, In-Progress, or Complete)	In-progress

Alternative form if more than one report:

Report Number	Report Title	Issue Date	Recommendation Number	Recommendation	Action(s) Planned	Action Status (Planned, In-Progress, or Complete)	Target Completion Date	Recommendation Status (Planned, In-Progress, or Complete)

**Department of Commerce
National Oceanic and Atmospheric Administration
IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

Section 2. Implementation of GAO public recommendations issued no less than one year ago that are designated by GAO as ‘Open’ or ‘Closed-Unimplemented.’

Open Recommendation(s) the Department has decided not to implement.

Include information on all open recommendations made one year or more ago that the Department / bureau do not plan to implement. GAO recommendations are open until officially closed by GAO.

Report Number	NONE
Report Title	
Issue Date	
Recommendation Number	
Recommendation	
Reason for the Decision not to Implement	

Alternative form if more than one report:

Report Number	Report Title	Issue Date	Recommendation Number	Recommendation	Reason for the Decision Not to Implement

Open Recommendation(s) the Department plans to implement.

Include information on all open recommendations made one year or more ago that the Department / bureau plans to implement. GAO recommendations are open until officially closed by GAO.

Report Number	
Report Title	
Issue Date	
Recommendation Number	
Recommendation	
Target Implementation Date	
Closure Request Pending with GAO (Yes/No)	
Clear Budget Implications (Yes/No)	

**Department of Commerce
National Oceanic and Atmospheric Administration
IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

Alternative form if more than one report:

Report Number	Report Title	Issue Date	Recommendation Number	Recommendation	Target Implementation Date	Closure Request Pending with GAO (Yes/No)	Clear Budget Implications (Yes/No)
GAO-18-536	Highway and Transit Projects: Better Data Needed to Assess Changes in the Duration of Environmental Reviews	7/19/18	2	The Assistant Administrator for Fisheries should direct the National Marine Fisheries Service to develop plans and time frames for improving its new consultation tracking system and develop appropriate internal controls such as electronic safeguards and other data-entry procedures to ensure accurate data on the time taken for consultations.	12/31/8 (original) 3/15/19 (extended)	Yes	Yes
GAO-17-364	National Weather Service: Actions Have Been Taken to Fill Increasing Vacancies, but Opportunities Exist to Improve and Evaluate Hiring	5/24/17	1	To enhance information available to operational unit managers, the Secretary of Commerce should direct the director of NOAA's WFMO to ensure that complete information on hiring requests is routinely communicated to NWS managers throughout the three phases of the hiring process, such as by supporting the development of improved tracking and reporting capabilities in the planned new Commerce-wide data system.	3/29/19 (original) 2/28/20 (extended)	No. NOAA requested closure, however, GAO requested additional information. NOAA is working to provide the information by end of February 2020.	Yes
GAO-17-510	Hydrographic Surveying: NOAA Needs Better Cost Data and a Strategy for Expanding Private Sector	6/15/17	1	The Secretary of Commerce should direct the NOAA Administrator to ensure that NOAA's efforts to improve its cost comparison reports include actions to fully track capital asset depreciation costs and account for ships in port undergoing major maintenance in accordance with its standard operating procedure.	9/30/19 (original) 9/30/20 (extended)	No	Yes

**Department of Commerce
National Oceanic and Atmospheric Administration
IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

	Involvement in Data Collection						
GAO-17-510	Hydrographic Surveying: NOAA Needs Better Cost Data and a Strategy for Expanding Private Sector Involvement in Data Collection	6/15/17	2	The Secretary of Commerce should direct the NOAA Administrator to develop a strategy for expanding NOAA's use of the private sector in its hydrographic survey program, as required by law.	12/31/19 (original) 6/30/20 (extended)	No	Yes
GAO-16-827	Federal Fisheries Management: Additional Actions Could Advance Efforts to Incorporate Climate Information into Management Decisions	9/28/16	2	To help NMFS and the Councils incorporate climate information into the fisheries management process and better manage climate-related risks, the Secretary of Commerce should direct NOAA's Assistant Administrator for Fisheries to take the following two actions: <ul style="list-style-type: none"> • Develop guidance to direct the NMFS regions and Councils on how climate information should be incorporated into different parts of the fisheries management process. • In finalizing the regional action plans for implementing the NOAA Fisheries Climate Science Strategy, (1) incorporate the key attributes associated with successful performance measures in the final performance measures developed for the plans and (2) assess whether agency-wide performance measures may be needed to determine the extent to which the objectives of the Strategy overall are being achieved, and develop such measures, as appropriate, that incorporate the key 	12/31/17 (original) 10/31/18 (extended)	Yes	Yes

**Department of Commerce
National Oceanic and Atmospheric Administration
IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

				attributes of successful performance measures.			
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Recommendations designated by GAO as “Closed-Unimplemented for the past 5 years (2015-2019). Future reports will cover a one-year period.

Report Number	
Report Title	
Issue Date	
Recommendation Number	
Recommendation	
Reason Not Implemented	

Alternative form if more than one report:

Report Number	Report Title	Issue Date	Recommendation Number	Recommendation	Reason Not Implemented
GAO-08-1045	Coastal Zone Management: Measuring Program's Effectiveness Continues to Be a Challenge	9/12/08	4	To enhance NOAA's ability to evaluate the overall progress of the National Coastal Zone Management Program, NOAA should create targets for performance measures already developed that can be used to assess the effectiveness of the national program.	NOAA's National Ocean Service reported completion of this recommendation on 1/27/12. NOAA provided documentation to GAO for consideration of closure, but was not accepted.
GAO-11-800	Climate Monitoring: NOAA Can Improve Management of the U.S. Historical Climatology Network	8/31/11	2	To improve the National Weather Service's (NWS) ability to manage the USHCN in accordance with performance management guidelines and federal internal control standards, as well as to strengthen congressional and public confidence in the data the network provides, the Acting Secretary of Commerce should direct the Administrator of NOAA to develop an NWS agencywide policy, in consultation with the National Climatic Data Center, on the actions weather forecast offices should take to address stations that do not meet siting standards.	NWS issued a revised policy for stations in July 2017. The revisions included new direction to weather forecast offices regarding steps to take to maintain proper stations. However, the revised policy did not clarify under what circumstances stations that do not meet siting standards should be closed, relocated, or maintained in their present condition.
GAO-12-576	Geostationary Weather Satellites: Design Progress Made, but	6/26/12	1	To improve NOAA's ability to execute GOES-R's remaining planned development with appropriate reserves, improve the reliability of its schedules, and address identified program risks, the Secretary of	While the GOES program expanded its reporting of contingency reserve information to NOAA's Program management council by showing detailed contingency calculations, it does not report on contingency reserves broken out for each satellite in the GOES-R series.

**Department of Commerce
National Oceanic and Atmospheric Administration
IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

	Schedule Uncertainty Needs to be Addressed			Commerce should direct the NOAA Administrator to assess and report to the NOAA Program Management Council the reserves needed for completing remaining development for each satellite in the series.	
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**Department of Commerce
National Oceanic and Atmospheric Administration
IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

Section 3. Implementation of OIG public recommendations issued no less than one year for which Final Action has not been Taken or Action Not Recommended has been Taken

Include information on all OIG recommendations that are still officially open. Commerce OIG recommendations are open until closed by the Department OIG Liaison.

Report Number	
Report Title	
Issue Date	
Recommendation Number	
Recommendation	
Target Implementation Date	
Reason No Final Action Taken or Action Not Recommended Taken	
Closure Request Pending (Yes/No)	

Alternative form if more than one report:

Report Number	Report Title	Issue Date	Recommendation Number	Recommendation	Target Implementation Date	Reason no Final Action Taken or Action Not recommended taken	Closure Request Pending (Yes/No)
OIG-17-014-A	NOAA Reviews of Unliquidated Obligations Could Be Improved with Greater Review Frequency and Additional Documentation	2/3/17	1	That the NOAA Administrator instruct the NOAA Chief Financial Officer and the Director of the Acquisition and Grants Office to develop bureau-specific policies and procedures for monitoring obligations that require open ULOs to have proper justification documentation and timely reviews	6/30/17 (original) 4/30/19 (extended)	NOAA's Office of Chief Financial Officer (OCFO) reported completion of this recommendation on 5/1/19, but was not found acceptable by DOC due to insufficient proof of documentation. Follow up for documentation from OCFO is in progress.	No
OIG-17-014-A	NOAA Reviews of Unliquidated Obligations	2/3/17	2	That the NOAA Administrator instruct the NOAA Chief Financial Officer and The Director of the	9/30/17(original) 9/30/20 (extended)	This recommendation was extended from 12/31/19 to 9/30/20 because additional coordination and follow up will be required	No

**Department of Commerce
National Oceanic and Atmospheric Administration
IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

	Could Be Improved with Greater Review Frequency and Additional Documentation			Acquisition and Grants Office to follow up on the obligations specifically identified in this OIG report and take appropriate action.		between the National Weather Service and Acquisition and Grants Office to deobligate 3 remaining items. All indirect costs must first clear and a contract audit must be completed prior to deobligations.	
OIG-17-014-A	NOAA Reviews of Unliquidated Obligations Could Be Improved with Greater Review Frequency and Additional Documentation	2/3/17	3	That the NOAA Administrator instruct the NOAA Chief Financial Officer and the Director of the Acquisition and Grants Office require compliance with Departmental documentation standards on future deobligations by ensuring all deobligation actions have appropriate notifications, confirmations, and certifications on record and are processed in a timely manner.	6/30/17 (original) 4/30/19 (extended)	NOAA's OCFO reported completion of this recommendation on 5/1/19, but was not found acceptable by DOC due to insufficient proof of documentation. Follow up for documentation from OCFO is in progress.	No
OIG-18-011-A	NOAA Office of Marine and Aviation Operations Does Not Fully Utilize the Shipboard Automated Maintenance Management System (SAMMS) to Coordinate Ship Maintenance and Repairs	1/8/18	1	That the Director, OMAO, and the NOAA Corps initiate action to terminate the interagency agreement with MSC and discontinue using SAMMS.	2/28/20	This recommendation is still in progress.	No
OIG-18-011-A	NOAA Office of Marine and Aviation Operations Does Not Fully Utilize the	1/8/18	2	That the Director, OMAO, and the NOAA Corps conduct a comprehensive study to identify a maintenance management system that meets the capabilities	10/30/19 (original) 1/31/21 (extended)	This recommendation was extended from 10/30/19 to 1/31/21 because OMAO is currently pilot testing a new system to validate its accessibility and supportability.	No

**Department of Commerce
National Oceanic and Atmospheric Administration
IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

	Shipboard Automated Maintenance Management System (SAMMS) to Coordinate Ship Maintenance and Repairs			necessary to fulfill NOAA ship fleet maintenance requirements.			
OIG-18-021-A	Polar Follow-On: NOAA Must Maintain Cost Efficiencies and Refine Launch Strategy for JPSS-3 and JPSS-4 Missions	7/9/18	2	That the Assistant Administrator for Satellite and Information Services ensures that the JPSS program completes storage plans and cost analyses for instruments and integrated satellites.	1/31/22	The target implementation date has not yet occurred.	No
OIG-18-021-A	Polar Follow-On: NOAA Must Maintain Cost Efficiencies and Refine Launch Strategy for JPSS-3 and JPSS-4 Missions	7/9/18	3	That the Assistant Administrator for Satellite and Information Services ensures that NESDIS completes policy and plans that will guide polar satellite launch decisions.	12/31/18 (original) 3/31/20 (extended)	NOAA previously requested closure. DOC requested follow-up information and NOAA is working to provide the information. This recommendation is also linked to another recommendation from OIG report OIG-16-026-I.	No
OIG-18-021-A	Polar Follow-On: NOAA Must Maintain Cost Efficiencies and Refine Launch Strategy for JPSS-3 and JPSS-4 Missions	7/9/18	5	That the Assistant Administrator for Satellite and Information Services ensures that NESDIS revises and independently assesses the PWS life-cycle cost estimate.	9/30/19 (original) 3/31/20 (extended)	NESDIS will revise the PFO portion of the polar weather satellites (PWS) life-cycle cost (LCC) estimate and have it independently assessed. The KDP-C for JPSS-3 and 4 will not be held until October 2019. The DOC ICE of JPSS-3 and 4 will not be completed until December 2019. Following its completion, the ICE needs to be reconciled with the JPSS program estimate, and a meeting with DOC Deputy Secretary must be held to approve this new life-cycle cost for the program.	No
OIG-18-021-A	Polar Follow-On: NOAA Must	7/9/18	6	That the Under Secretary of Commerce for Oceans and	12/30/19 (original) 4/30/20 (extended)	NOAA will provide Congress with the estimated LCC for the PFO-portion of the	No

**Department of Commerce
National Oceanic and Atmospheric Administration
IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

	Maintain Cost Efficiencies and Refine Launch Strategy for JPSS-3 and JPSS-4 Missions			Atmosphere ensures that NOAA provides Congress with satellite system estimated costs in accordance with requirements for its major satellite programs specified in annual appropriations laws.		PWS life-cycle in accordance for requirements for major satellite programs. this recommendation is linked to recommendation 5 from OIG-18-021-A.	
OIG-18-021-A	Polar Follow-On: NOAA Must Maintain Cost Efficiencies and Refine Launch Strategy for JPSS-3 and JPSS-4 Missions	7/9/18	7	That the NOAA Deputy Under Secretary for Operations ensures NESDIS defines goals and timelines for the completion of satellite technology insertion efforts—including the Earth Observing Nanosatellite-Microwave (EON-MW)—in order to reduce risk associated with future polar satellite system architectures.	4/30/19 (original) 3/31/20 (extended)	NOAA is working to provide information to OIG – this recommendation is also linked to another recommendation from OIG report OIG-16-026-I.	No
OIG-18-024-A	The Joint Polar Satellite System: Program Must Use Realistic Schedules to Avoid Recurrence of Ground Project Delays and Additional Cost Increases	8/2/18	2	That the Assistant Administrator for Satellite and Information Services ensure that appropriate analyses are conducted to support decisions for omitting or tailoring project lifecycle reviews (e.g., requirements and design reviews).	10/31/18	NOAA requested closure. DOC requested additional information and NOAA provided the information.	Yes
OIG-18-024-A	The Joint Polar Satellite System: Program Must Use Realistic Schedules to Avoid Recurrence of Ground Project Delays and Additional Cost Increases	8/2/18	7	That the NOAA Deputy Under Secretary for Operations and the Assistant Administrator for Satellite and Information Services ensure that the ground system contract's PEP is revised to incorporate best practices for the use of performance factors and to clarify the award fee determination process.	01/31/19 (original) 01/31/20 (extended)	NOAA requested closure. DOC requested additional information which NOAA plans to provide after the end of the next award fee period for the contract. NOAA anticipates providing this information by end of February 2020.	No

**Department of Commerce
National Oceanic and Atmospheric Administration
IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

OIG-18-024-A	The Joint Polar Satellite System: Program Must Use Realistic Schedules to Avoid Recurrence of Ground Project Delays and Additional Cost Increases	8/2/18	8	That the NOAA Deputy Under Secretary for Operations and the Assistant Administrator for Satellite and Information Services ensure that emphasis items (focus areas) provided to the contractor prior to each award period are clear, prioritized, and aligned with performance criteria.	01/31/19 (original) 01/31/20 (extended)	NOAA requested closure. DOC requested additional information which NOAA plans to provide after the end of the next award fee period for the contract. NOAA anticipates providing this information by end of February 2020.	No
OIG-16-043-A	Successful Cyber Attack Highlights Longstanding Deficiencies in NOAA's IT Security Program	8/26/16	8	That NOAA's Chief Information Officer ensure that adequate measures are taken to implement mechanisms for multifactor authentication in a timely manner for all applicable users and applications.	09/30/18 (original) 01/31/20 (extended)	NOAA previously requested closure. DOC requested additional information which NOAA plans to provide at the end of February 2020.	No
OIG-16-026-I	The Joint Polar Satellite System: Further Planning and Executive Decisions Are Needed to Establish a Long-term, Robust Program	4/26/16	8	That the NOAA Deputy Under Secretary for Operations incorporate NOAA's robust architecture criteria in to formal NOAA policy.	3/30/18 (original) 3/31/20 (extended)	NOAA previously requested closure and DOC requested additional information. NOAA is working to provide the information by end of March 2020.	No
OIG-16-026-I	The Joint Polar Satellite System: Further Planning and Executive Decisions Are Needed to Establish a	4/26/16	9	That the NOAA Deputy Under Secretary for Operations include new satellite technology insertion as part of NOAA's strategic and tactical plans.	3/30/18 (original) 3/31/20 (extended)	NOAA previously requested closure and DOC requested additional information. NOAA is working to provide the information by end of March 2020.	No

**Department of Commerce
National Oceanic and Atmospheric Administration
IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

	Long-term, Robust Program						
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Section 4. Discrepancies between this report and the semiannual reports submitted by the Commerce Office of Inspector General or reports submitted by the GAO

Report Number	
Report Title	
Issue Date	
Recommendation Number	
Recommendation	
Discrepancy	
Reason for Discrepancy	

Alternative form if more than one report:

Report Number	Report Title	Issue Date	Recommendation Number	Recommendation	Discrepancy	Reason for Discrepancy

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

FY 2021 Annual Performance Plan
FY 2019 Annual Performance Report

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Overview of Bureau Accomplishments

S.O. 1.1: Expansion of Office of Space Commerce - The Office's staffing expanded via cross-bureau assignments and contractor hires, especially to support DOC's future role in providing space situational awareness to commercial operators. The Department continued to promote legislative proposals to increase the Office's budget and elevate the Office organizationally.

S.O. 1.1: Participation in National Space Council - The Office of Space Commerce supported the Secretary's/Deputy Secretary's participation in three meetings of the National Space Council in FY 2019. The Office coordinated implementation of DOC-related decisions and DOC participation in White House deliberations on space issues.

S.O. 1.1: Supporting Space Companies - The Office of Space Commerce engaged in continuous dialogue with U.S. space companies to understand and support their business needs. The Office organized a series of public events focusing on key elements needed to grow the U.S. space economy, including financial investment, risk mitigation, safety and sustainability, and support from DOC. The Office promoted U.S. industry interests while leading delegations to the United Nations Committee on the Peaceful Uses of Outer Space, U.S.-Thai civil space dialogue, and U.S.-EU working group on GNSS market access.

S.O. 1.1: Development of DOC Space Situational Awareness Capabilities - Developed a roadmap for the Department's future role in providing Space Situational Awareness (SSA) to commercial operators, demonstrated SSA data dissemination/fusion concepts through a cloud-based data management platform, collected information on commercial SSA capabilities and future regulatory requirements, promoted international norms for space safety, and established a continuous DOC presence in DOD's existing SSA operations center.

S.O. 1.1: Regulatory Reform - NOAA issued a proposed rulemaking on commercial remote sensing and hosted industry meetings to discuss it. The Office of Space Commerce helped develop the Secretary's report to the President on space spectrum needs. The Office also influenced ongoing rulemakings by Commerce and State on space export controls, and regulatory decisions by the Federal Communications Commission (FCC) to waive licensing requirements for Galileo satellite receivers and to re-scope an orbital debris rulemaking.

S.O. 1.1: Promoting Weather Innovation - In September 2018, NOAA issued three contract awards as part of Round 2 of the Commercial Weather Data Pilot (CWDP).

SO 2.1: OceanReports - OceanReports analyzes U.S. ocean "neighborhoods" for the best sites for aquaculture and other industry use, integrating

information from 100 data sources. By providing one-stop, fast, open access to data and spatial reports, OceanReports will save public dollars, cut industry costs, reduce permitting timelines, and help ocean and coastal users and resource managers better manage U.S. ocean space. OceanReports was developed through a partnership between NOAA, the Bureau of Ocean Energy Management, and the Department of Energy.

SO 2.1: Environmental Review for First Offshore Aquaculture Project Completed - NOAA collaborated with the U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers to complete the environmental review for the first pilot aquaculture project in federal waters of the Gulf of Mexico. The Vellella Epsilon project proposes to culture albacore jack in a single cage about 45 miles southwest of Sarasota, paving the way for future commercial-scale operations to help meet U.S. seafood demand.

SO 2.1: Tool to Increase Aquaculture Production – The development of a new GIS-based tool called Massachusetts Shellfish Aquaculture Siting Tool (MA-ShellFAST) can help aquaculture industry grow by identifying and aiding in permitting of shellfish farms in Massachusetts coastal waters. It assists growers in understanding the regulatory requirements, potential conflicts, and biophysical characteristics of a given site before applying for approval for that site.

SO 2.3: U.S. Fish Stocks Continue Positive Trend- The annual Report to Congress on the Status of U.S. Fisheries for 2018 presented another stock rebuilt, making 45 stocks since 2000. The overfishing list dropped to 28 stocks, near the all-time low. Ninety-one percent of the stocks managed are not subject to overfishing and 82 percent are not overfished.

SO 2.3: New Fishing Opportunities Emerge from Resurgence of West Coast Groundfish - NOAA issued new biennial harvest regulations that allow increased fishing opportunity. Most groundfish stock catch limits increased, historically productive fishing grounds reopened, and quota management procedures were simplified. Streamlined regulations allow vessel operators increased flexibility in how they can use and configure gear to increase access to target stocks and efficiency of fishing practices, while still limiting bycatch to meet conservation objectives.

SO 2.3: NOAA and the Gulf of Mexico Fishery Management Council Increase Red Snapper Management Flexibility - NOAA and the Gulf of Mexico Fishery Management Council delegated red snapper fishery management to the five Gulf States. State managers now have the authority to set the annual season, bag limit, and size limit for state and federal waters off their respective states. This innovative management approach is a collaborative effort among state and federal governments, the Gulf Council, and fishing constituents, and it is likely to help increase fishing opportunities and boost economic benefits for the Gulf's most iconic fishery.

SO 2.3: Improved Service To Fishing Industry Through Advances In Technology – NOAA's eastern regions have implemented online systems that allow or will soon allow vessel permit holders, operators, and dealers to access information and submit permit forms online. In some cases, applications received through the online system process 70% faster compared to paper applications. One system also allows scallop fishermen to lease quota to or from fellow scallop fishermen online instantaneously, rather than requiring submission of a paper form that can take up to 15 days to review and process, while another allows permit transfers from one vessel to another to begin processing within 24 hours of receipt compared to

the previous timeline of days to weeks. These systems have improved the customer experience for fishermen allowing them to get back on the water sooner, while improving the quality of our data and realizing significant cost and environmental savings.

SO 2.3: Incidental Harassment Authorizations Ensure Continued Oil and Gas Exploration - NOAA finalized Incidental Harassment Authorizations for multiple oil and gas companies for seismic survey exploration in the Atlantic Ocean. It is the policy of the U.S. to be a global energy leader, and these comprehensive authorizations ensure companies can explore our nation's hydrocarbon reserves while reducing the impact of seismic surveys activities on marine mammals.

SO 2.3: NOAA Successfully Reintroduces Salmon to the San Joaquin River – Endangered spring Chinook salmon successfully returned and spawned for the first time in 65 years following a multi-agency effort to restore salmonid habitat within the San Joaquin River, CA. Their return confirms that the juvenile salmon we began releasing in 2014 survived their outmigration, grew in the ocean to adulthood, and migrated all the way home.

SO 3.3: Reducing Flood Impacts - The National Weather Service achieved the Agency Priority Goal to improve emergency decision support services by demonstrating a new flood inundation mapping capability serving 25 million people (approximately 8% of the continental U.S. population) residing in flood-vulnerable freshwater basins. The Weather Service also delivered an enhanced excessive rainfall outlook product that extends the lead time of high-risk predictions from two days to three days.

SO 3.3: Next Generation Storm QuickLook Capability – The NOAA Storm QuickLook product is an interactive map-based web tool that provides customers with up to the minute water level observations during tropical storms. The tool builds awareness and provides decision support for storm events.

SO 3.3: Implementation of the first Next Generation Global Prediction System - The new weather model, called Finite-Volume Cube-Sphere dynamical core (FV3), was selected for the Next Generation Global Prediction System and used as central core of the Unified Forecast System. Delivering better, more timely forecasts to serve the growing needs of our forecasters and the weather enterprise.

SO 3.3: Earth Prediction Innovation Center -- Made a significant investment in Community-based Earth System Modeling through the Unified Forecast System (UFS). In addition to making investments, three accomplishments were releasing an RFI, successfully running FV3 in the cloud, making model code available on GitHub.

SO 3.3: Upgraded Atmospheric Transport & Dispersion Model - Improved Hybrid Single Particle Lagrangian Integrated Trajectory Model's (HYSPLIT) forecasting capabilities due to upgrades of meteorological data being used by the NOAA operational weather model. The upgraded model determines how, when, and where potentially harmful materials are atmospherically transported, dispersed, and deposited.

S.O. 3.3: Operationalization of Geostationary and Polar Orbiting Satellites - In February 2019, NOAA-20 (formerly known as JPSS-1) became fully operational as NOAA's primary afternoon polar satellite, and GOES-17 (formerly known as GOES-S) became fully operational as GOES-West.

SO 3.3: Private Sector Partnership on Satellite Launch - NOAA, in joint collaboration with Taiwan, National Science Foundation, NASA, USAF, and the University Corporation for Atmospheric Research (UCAR), supported the successful launch of COSMIC-2 on board the SpaceX Falcon Heavy launch vehicle in June 2019.

SO 3.3: Air Quality Forecast – Developed a forecast that helps beachgoers in Pinellas County, FL know the daily severity of airborne red tide toxins at area beaches during red tide events. The long-term goal is to expand the forecast to more beaches in Florida.

SO 3.3: Fleet Modernization - In early 2019, awarded the Preliminary/Contract Design for a General Purpose Oceanographic Ship to three competing shipyards. This is a major move forward to recapitalize the NOAA fleet. In FY 2020, one contractor will be selected for the ship Detailed Design and Construction.

SO 3.3: Aircraft Data-Gathering NOAA awarded contracts to two U.S.-based airframe manufacturers for the purchase of new aircraft that will enhance the agency's environmental data-gathering capabilities. A contract was awarded for the purchase of a new Gulfstream G550 which will be modified for use in supporting tropical cyclone forecasts, atmospheric research, and other NOAA missions. NOAA awarded another contract for a new twin-engine Textron Beechcraft King Air 350 CER turboprop aircraft. The aircraft will be outfitted with remote sensing equipment that will measure the water content of snow and soil. NOAA will use the data for flood, river level and water supply forecasts. The aircraft can also be configured to support other NOAA missions, including coastal mapping and disaster response.

Planned Actions for FY 2021

S.O. 1.1: Expansion of Office of Space Commerce - Expand the Office of Space Commerce staff through new hires, contractors, and staff assignments from other bureaus and agencies.

S.O. 1.1: Regulatory Reform - Publish and implement streamlined regulations affecting space export controls and satellite remote sensing. Develop new proposals for authorizing space activities not currently overseen by federal regulatory agencies.

S.O. 1.1: Development of DOC Space Situational Awareness Capabilities - Work with DOD for seamless transfer of responsibility to Commerce regarding provision of space situational awareness data and services to the public. Establish open architecture data repository in partnership with commercial providers to promote new capabilities and markets for SSA data and services.

SO 2.1: Implementation of National Aquaculture Science and Regulatory Plans - NOAA and the White House OSTP interagency Subcommittee on Aquaculture will continue implementation of the National Aquaculture Act of 1980 by completing and implementing the National Strategic Plan for Federal Aquaculture Research (2020-2024) and the Strategic Plan to Improve Aquaculture Regulatory Efficiency. These plans seek to document Federal science and technology opportunities and priorities for aquaculture and to provide interagency science and technology coordination that improves regulatory efficiency, research and technology development and economic growth.

SO 2.1: Improve Marine Aquaculture Fish Larvae Survival - Marine finfish are difficult to culture due to poor growth and low survival rates during early life stages, both of which are attributed to poor nutrition and difficulties in nutrient delivery. Improved nutrient delivery methods developed in this project using California halibut, California yellowtail, and southern flounder will have wide application in successful larval rearing of many other marine fish species that are important in food production.

SO 2.1: Aquaculture Demonstration, Training and Permitting - To increase steelhead trout and blue mussel production in New England commercial scale offshore aquaculture, the project will increase U.S. seafood production through aquaculture training and deployment of the AquaFort (AF) system at a permitted site offshore. The two-year program will recruit fishermen and farmers from Maine, New Hampshire and Massachusetts to participate in workshops and daily operations of farming steelhead trout and blue mussels.

SO 2.3: Better Data on Commercially Valuable Species - With additional days-at-sea, charter vessels will collect critical data for commercially valuable species in areas beyond traditional trawl survey boundaries. This will reduce uncertainty in survey data that can result in reductions to catch limits, with significant economic effect.

SO 2.3: Pacific Salmon Treaty Implementation - Continue sampling and monitoring programs integral to assessing PST implementation and tracking status of salmon stocks that contribute to stock composition of catches managed under the new agreement in both Canada and the United States. Support coded-wire tagging of stocks in order to track stock composition of catches managed under the agreement, and assess harvest impacts to stocks of concern.

SO 2.3: Seafood Import Monitoring - Monitor fisheries import trade activities with a goal of 80% compliance with trade agreements and policies.

SO 2.3: Reduce fish bycatch and mortality in commercial fisheries – Bycatch mortality is currently 12%. NOAA will address post-release mortality in recreational fisheries, and support their reductions through communication networks and mapping tools.

SO 2.3: Improved Data through Emerging Technology - Augment capacity, quality, or accuracy of surveys by using emerging technologies to collect valuable information (e.g., unmanned systems, remote sensors). Add 20% more vessels using electronic logbooks for reporting. Add 20% more vessels using electronic monitoring. More and better data are the keys to improved fisheries assessments and forecasts, which allow increased fishing opportunities at reduced risk of overfishing. Emerging technologies can be an effective way to improve data with greater cost efficiency.

SO 2.3: Improved Fishery Information Management - Develop guidance and infrastructure requirements for an integrated data sharing system to collect and manage fishery information internally and with partners.

SO 2.3: New and Revised Recovery Plans - Complete one final recovery plan and publish two revised and two draft recovery plans. Continue implementing all plans to improve the status of Endangered Species Act (ESA) listed species.

SO 2.3: Timely Reviews and Consultations - Timely consultations and authorizations for all Federal agencies' proposed actions, per the ESA Section 7, will be provided.

SO 3.3: Additional Support for Flood Prone Areas - The National Weather Service has proposed an Agency Priority Goal (APG) for FY20-21 to mitigate flood impacts that will continue progress on the FY18-19 APG. The goal is to reduce the impact of extreme weather on life and property by expanding the demonstration of a new flood inundation mapping capability to additional flood prone regions in order to enhance decision tools for emergency managers.

SO 3.3: Extended Warning Time for Tornadoes - NOAA will establish a Tornado Warning Improvement and Extension Program (TWIEP) to extend tornado warning lead times to at least one hour to reduce the loss of life and economic losses from tornadoes.

SO 3.3: Accelerated Improvement to NOAA's Weather Forecast – Operational improvements to NOAA's weather forecasts are generated by the transition of scientific and technological advances into NWS operations. Joint Technology Transfer Initiative supports the demonstration stage of the transition and provides active management of the transition process, prior to deployment into operations.

SO 3.3: NOAA's National Mesonet Program (NMP) – The Program will use data sets within the current program, and procure non-federal data, to improve NWS forecasts and timely decision support for small-scale, high impact weather events.

SO 3.3 Data-source Agnostic Common Services (DACs) - NOAA will utilize data and observations from a diverse array of partner and commercial systems and take current hardware and software to a cloud-enabled framework to generate products and services.

Analysis of Performance Indicators

Explanation of Trends

National Marine Fisheries Service (NMFS): Over the last several years, NMFS's key indicators have generally plateaued. Attaining improvements in performance has become more challenging because:

- Performance improvements in earlier years mean that further improvement is possible only by solving the most difficult problems, both from a management and an assessment standpoint.
- Assessment resources have been stretched thin by the mandate to set annual catch limits (ACL) for all fish stocks.

- Days-at-sea gathering data have fallen over 25% since 2016 and deferred maintenance in the NOAA Fleet has caused NMFS to lose 1,266 sea days from FY 2014-19 based on the number of sea days planned for each year.
- Assessment challenges due to model instability resulting from a combination of distributions shifts, increased environmental variability, and changes to stock baseline productivity levels have impeded and, in some cases, reversed progress in understanding the status and trends of many stocks.

Addressing these challenges and reversing the trend requires more and better data. Funding for assessments has been mostly flat during this period. The percentage of key stocks with adequate assessments continued its decline in FY 2019.

Office of Space Commerce (OSC): With its staffing supplemented in FY 19, the OSC raised its targets across all performance metrics and successfully achieved them all. With increased attention from leadership and greater certainty about its current and future staffing and resources, the Office has revised its performance indicators to offer a great level of fidelity and meaning about its outputs in service of its stakeholders. Since most indicators are new, no historical trend can be demonstrated, other than the fact that the Office achieved significantly more in FY 19 than ever before.

Office of Marine Aviation Operations (OMAO):

- Aircraft Acquisition Milestones (new measure to APPR): The Aircraft Recapitalization Program is currently funded for two aircraft acquisitions, a King Air 350 and a Gulfstream 550. Each aircraft has a customized schedule, including major milestones. The FY 2019 milestones/targets have been met.
- Ship Acquisition Milestones: NOAA is funded for the acquisition of a General-Purpose Oceanographic Ship under the Fleet Recapitalization Program. The acquisition has its own schedule with major milestones. A positive trend is evident in FY18 -19 where the major acquisition milestones/targets were met.
- Ship Days-At-Sea (DAS - Base funded): With an aging fleet, the base funded DAS trend shows a fairly constant execution rate around 84-85%. This result reflects ships nearing their end of service life and the occurrence of unscheduled repairs. NOAA has increased emphasis on multi-year maintenance actions and technology updates to keep the fleet capable of delivering service within resources received.

National Weather Service (NWS): The FY 2019 (as well as FY14-FY18) target for national storm-based lead time of tornadoes has not been met as many low-end intensity tornadoes (EF0-1) have limited predictability due to small size, weak intensity, and short duration. Otherwise, all NWS FY 2019 recurring performance indicators have been met or exceeded.

National Ocean Service (NOS):

- One 2019 target for sanctuaries was not met: volunteer hours. The government shutdown resulted in the cancellation of a number of previously planned engagement events, and delayed planning of subsequent events during the year.
- The target for hydrographic surveying was significantly exceeded due to projects in offshore waters during the year – in deeper waters, the same survey effort can collect data over a larger area.

Explanation of Targets for FY 20 and FY 21

Many of our targets are based on requested funding which has been at same level as recent prior years, therefore targets anticipate incremental improvement achieved through organizational learning.

- NMFS targets for FY20 mostly aspire to maintain current performance levels in the face of growing costs and other challenges. FY 2020 targets will not be greatly affected by FY20 funding levels as there is a 1-3 year delay between resource allocation and performance improvement due to the nature of fisheries and protected species management, and results-based performance measures. FY20 will of course affect results in FY 21 through FY 23.
- Ship Days at Sea (DAS):
 - The Fleet Allocation Plan is approved by the NOAA Fleet Council based on numerous considerations such as customer scientific requirements, priorities, funding and available ships to perform specific missions. If anticipated funding is not appropriated or assets become unavailable, the Fleet Council will approve a revised Fleet Allocation Plan.
 - While the older ships require increased maintenance, the targets in FY20 and FY21 assume that once the FY 2019 Appropriations increases for maintenance are used to address deferred and preventive maintenance, NOAA vessels will be more mission ready, and therefore, able to execute DAS at a higher level. The DAS target also assumes that the number of DAS lost due to unscheduled maintenance will be reduced, increasing the utilization rate of the entire NOAA ship fleet.

OSC:

- Number of space policy related decision processes, rulemakings, statements, or other governmental activities influenced/led by Commerce: For FY 20, the value is unchanged, but for FY 21, the target value increases on the assumption that the Office of Space Commerce will have a larger staff to participate in more policy related activities, including international engagements.
- Number of external stakeholders engaged on space commerce policy issues: The Space Commerce APG Impact Statement targets reaching 100 stakeholders per quarter (i.e., 400) in FY 20 and 200 per quarter (i.e., 800) in FY 21. However, the FY 21 target is now adjusted to 600 to mitigate potential double-counting of audience members at industry events.
- Number of external stakeholder requests for support fulfilled: As stated in the Space Commerce APG Impact Statement, the target is to fulfill 10 major requests per quarter (i.e., 40) in FY 20 and to double that in FY 21 when the Office has greater staffing and resources.
- Milestones achieved in expanding capabilities (including staff) and transitioning space situational awareness (SSA) functions to DOC: Space Policy Directive-3 requires the Department's new SSA function to achieve full operating capability by 2024. The completion targets for FY 20-21 reflect the progress expected towards that goal.
- Number of workshops, reports, and other tools produced to facilitate growth and advancement of the U.S. commercial space industry: The Office increased its output on this metric in FY 19 and expects to sustain that level of activity in FY 20. With increased staffing and resources, the Office expects to achieve more in FY 21.

Evolution of the Performance Indicators

NMFS: Fish Stock Sustainability Index (FSSI) Update: For FY 2020, the stocks that comprise FSSI have been revised to better reflect management priorities over the next five years. Forty-four stocks were removed while 20 were added for a total of 175 stocks in the revised index. This is similar to the update that was made five years ago. Scores for FY 2020 and beyond will be based on a denominator of 700 points (4 x 175). The revisions will result in a slight score increase. FY 2019 actuals will be provided for both the existing and revised indices to show the conversion factor.

NMFS: Changes to Adequate Assessments: From FY 2020 forward, the percentage of adequate assessments will be based on the new set of stocks in the FSSI. FY 2019 actuals will be provided for both the existing and revised indices to show the conversion factor.

NMFS: Number of projects advanced that improve the efficiency and predictability of the federal permitting process – NMFS is revising the performance measure, “Reduction in time to review, consult or approve aquaculture permits” to “Number of projects advanced that improve the efficiency and predictability of the federal permitting process” because the aquaculture permitting process is a multi-agency effort where at most NOAA has partial permitting authority. Because other agencies have primary permitting authority, NOAA does not have control over time to permit to enable use of this performance measure.

OMAO: NOAA ships will use Total Funded DAS in FY 2020 instead of Base Funded DAS. The total ship DAS will be used for targets and actuals. Total DAS will include OMAO base funded DAS, program funded DAS, and reimbursable funded DAS. This approach enables NOAA to expand its performance planning and tracking to encompass the full scope of asset management.

OMAO: The ship DAS performance indicator is reviewed throughout the fiscal year by NOAA leadership, and includes the quarterly NOAA Level AOP updates, as well as the Mid-Year and End-of-Year Performance Reviews. The under-lying performance drivers are discussed for improvement opportunities.

OMAO: An internal NOAA ship DAS planning and reporting data base assists leadership in asset management and performance analysis. Historical records are maintained for trending and evidence of needed changes.

OSC: Revised two of its performance indicators in order to make them more specific and meaningful. The former indicator “Number of engagements with the commercial space industry or within major space policy decision processes” is now split into two:

1. “Number of space policy related decision processes, rulemakings, statements, or other governmental activities influenced/led by Commerce.” This revised metric focuses on governmental activities. For FY 19, the indicator value is the same as what it would be under the original wording.
2. “Number of external stakeholders engaged on space commerce policy issues.” This new metric focuses on industry engagements. Instead of counting the number of industry events (e.g., roundtables and conferences), the metric counts the total number of individuals engaged at such events and in individual meetings/communications. This metric was originally introduced in the FY 20-21 Space Commerce Agency Priority Goal (APG) Impact Statement.

In addition to the number of stakeholders engaged, the Office will now count the number of times it fulfills requests for support from those stakeholders. This metric, also introduced in the APG Impact Statement, applies only to major requests requiring application of labor hours or other resources towards the investigation, coordination, and resolution of policy/regulatory issues or achievement of activities that promote the interests of U.S. space companies.

The former indicator on “Staff hired and trained to facilitate transition” is revised to track “Milestones achieved in expanding capabilities (including staff) and transitioning space situational awareness (SSA) functions to DOC.” Rather than counting staff growth, which should not continue indefinitely, the new indicator tracks the percentage of progress made toward achieving full operating capability. The milestones account for developments beyond hiring, such as the establishment of an open architecture data repository for SSA information sharing with industry.

Performance Data Validation and Verification

NOAA has robust institutional performance management processes to track progress on each strategic objective. All NOAA Line Offices (LO) and Staff Offices (SO) develop Annual Operating Plans (AOPs) with performance measures and milestones that demonstrate progress on the DOC Strategic Plan Objectives. These NOAA AOPs set ambitious goals (i.e., measures and milestones with associated targets) to demonstrate clear progress in achieving programmatic and organizational priorities, including implementation of the DOC Strategic Plan.

NOAA conducts an Annual Performance Review to evaluate key performance indicators to ensure we can demonstrate compelling progress in support of strategic priorities. Based on the Annual Performance Review results, NOAA develops an Annual Action Plan to develop new measures and to improve the utility of monitoring and increasing results of existing measures.

NOAA LO and SO’s also:

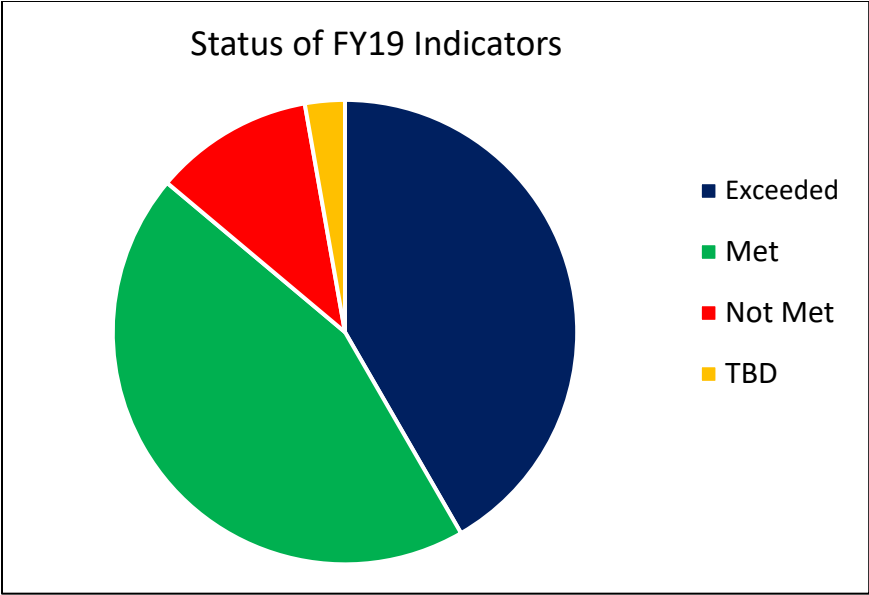
- Ensure consistency and reliability of data used to measure progress by developing supporting documentation, or business rules, to record the process for setting targets and taking measurements for all reported measures.
- Track performance indicators and brief senior management on their progress each quarter.
- Routinely check data linked to the performance indicators for quality controlled for accuracy and reliability.
- The NMFS scientific enterprise ensures a sound scientific basis for NMFS’s resource conservation and management decisions. We collect data and coordinate information and research to ensure science-based management and stewardship. We carry out at-sea resource surveys, stock assessments, fisheries observer programs, cooperative research, and socioeconomic research and data collection. All NMFS science products and programs are subject to independent peer review. There are many challenges involved in collecting and analyzing data on fish stocks and other marine species and their habitats that can result in both uncertainty and knowledge gaps, but management decisions and performance reporting are based on the best scientific information available.
- The NWS shares the data with NWS personnel, specific users via a Performance Management Web Portal, and the public.
- NWS Performance indicators are used to accelerate service improvement and set ambitious, yet achievable, goals to challenge the workforce and find new and creative ways to raise their level of performance to meet the more difficult targets. Not to mention, tracking performance reveals areas of

service deficiency and potential areas of new technology or training investment. They are tracked and briefed to senior management of the NWS each quarter.

- NOAA Monthly Status Reviews ensure major satellite program acquisitions and projects stay within designed cost, schedule, and performance goals.
- Milestones (aircraft and ships): The aircraft and ship acquisitions are mission critical programs designated by NOAA and DOC for special in-depth management reviews where evidence of progress is provided against planned targets. Incomplete evidence may hold the program from moving to the next phase, and gaps in data require correction to the satisfaction of the oversight bodies.
- Ship DAS: The planned Fleet Allocation Plan is approved for the entire fiscal year by the NOAA Fleet Council. That action creates a DAS baseline for NOAA to manage. Periodic Fleet Council meetings review and approve major allocation plan changes, as required. The DAS executed from the Fleet Allocation Plan are also submitted for OMAO's NOAA Annual Operating Plan (AOP) quarterly updates which are reviewed by NOAA executives to assess achievements.

The Office of Space Commerce tracks the achievement of its performance indicators on a quarterly basis through the NOAA Annual Operating Plan process. The Office is actively collaborating with the Bureau of Economic Analysis and the Patent and Trademark Office to develop new metrics for measuring and tracking trends in the U.S. space economy. Once developed, these metrics will be analyzed for linkages back to Strategic Objective 1.1.

Summary of Performance Indicators



Strategic Objective	Indicator	FY 2019 Target	FY 2019 Actual	Status
1.1	Number of workshops, reports, and other tools produced to facilitate growth and advancement of the U.S. commercial space industry	4	4	Met
2.1	Annual economic and societal benefits from Sea Grant activities as measured by jobs created/retained (development, demonstration, or application)	10,000	7,600	Not Met
2.1	Number of fishermen, seafood processors and aquaculture industry personnel who modify their practices using knowledge gained in fisheries sustainability and seafood safety	15,000	23,000	Exceeded
2.1	Number of projects advanced that improve the efficiency and predictability of the federal permitting process	NA	16	NA

2.1	Annual number of aquaculture research projects completed that address key production challenges	NA	57	NA
2.1	Annual economic and societal benefits from Sea Grant activities as measured by businesses created/retained and economic benefits (\$M dollars) (reported by each individual Sea Grant College)	2,000	1,600	Not Met
		\$400M	\$523	Exceeded
2.2	Average number of days to complete informal ESA Section 7 consultations	50	40	Exceeded
2.3	Percent of top 175 U.S. seaports with access to Physical Oceanographic Real-Time Systems (PORTS®) data (cumulative)	43%	43%	Met
2.3	Fish Stock Sustainability Index (FSSI) (cumulative)-FSSI 2 / *FSSI 3	760.5 (605.5/796)	758.5 (604/796)	Not Met
		NA	*775.5 (543/700)	NA
2.3	Percent of stocks for which catch is below the specified Annual Catch Limit (ACL) (cumulative)	84%	88.3%	Exceeded
2.3	Percentage of FSSI 2.0 stocks with adequate population assessments and forecasts (cumulative)	56.8% (113/199)	56.8% (113/199)	Met
	New version of metric: Percentage of FSSI 3.0 stocks with adequate population assessments and forecasts (cumulative)	NA	65.7% (115/175)	NA
2.3	Percentage of protected species stocks with adequate population assessments and forecasts (cumulative)	25.3% (109/430)	22.3% (96/430)	Not Met
2.3	Number of protected species designated as threatened, endangered or depleted with stable or increasing population levels (cumulative)	30 (out of 93)	30 (out of 94)	Met
2.3	Percentage of actions ongoing or completed to recover endangered and threatened species (cumulative)	2,330/4,674 49.9%	2,358/4,623 51%	Exceeded
2.3	Number of open environmental reviews that exceed regulatory or statutory deadlines	50	74	Not Met
2.3	Percent of Seafood Import Monitoring Program (SIMP) import records that are compliant	NA	64%	NA
2.3	Number of youth participating in hands-on learning in national marine sanctuaries	52,000	68,895	Exceeded
2.3	Number of volunteer hours supporting science, education, and public engagement programs to raise awareness and meet science needs of national marine sanctuaries	133,000	117,746	Not Met

3.3	Annual number of peer-reviewed publications related to environmental understanding and prediction	3,387	3,171	Met
3.3	Number of NOAA datasets made openly available via partners' cloud platforms to the public, America's Weather Enterprise and other environmental information stakeholders (cumulative)	60	74	Exceeded
3.3	U.S. Temperature forecasts skill	26	35	Exceeded
3.3	Key milestones completed on time for satellites and ship deployments	SAT: 2 SHIPS: 1	SAT: 2 SHIPS: 1	Met
3.3	Base funded Days-At-Sea for NOAA ships <i>* Revised FY19 Fleet Allocation Plan (FAP) after the government shutdown.</i>	2,124*	1719	Not Met
3.3	Percentage of data processed and delivered to operational users (NWS and other NOAA line offices, US military and operational partners) from NOAA-managed satellites.	98.5%	99.4%	Exceeded
3.3	Severe weather warnings tornadoes - Storm based <i>lead time (Minutes)</i>	13	10	Met
3.3	Severe weather warnings tornadoes - Storm based <i>accuracy (%)</i>	72	64	Not Met
3.3	Severe weather warnings tornadoes - Storm based <i>false alarm ratio (%)</i>	71	70	Met
3.3	Severe weather warnings for flash floods - Lead time (minutes)	65	65	Met
3.3	Severe weather warnings for flash floods - Accuracy (%)	76	77	Exceeded
3.3	Hurricane forecast track error (48 hour) <i>(by CY)</i>	62	TBD	TBD
3.3	Hurricane forecast intensity error (48 hour) <i>(by CY)</i>	12	TBD	TBD
3.3	Accuracy (%) (threat score) of Day 1 precipitation forecasts	33	37	Exceeded
3.3	Winter storm warnings - <i>Lead time (hours)</i>	20	21	Exceeded
3.3	Winter storm warnings - <i>Accuracy (%)</i>	90	82	Met
3.3	Marine wind - Percentage of accurate forecasts (%) Marine wave heights	79	82	Exceeded
3.3	Marine wind - Percentage of accurate forecasts Percentage of accurate forecasts (%)	82	85	Exceeded
3.3	Aviation ceiling/visibility forecast <i>accuracy %</i> Instrument Flight Rules (IFR)	65	64	Met
3.3	Aviation ceiling/visibility forecast <i>false alarm ratio (%)</i> Instrument Flight Rules (IFR)	38	33	Exceeded
3.3	Geomagnetic storm forecast accuracy (%)	57	62	Exceeded
3.3	Number of communities that utilize Digital Coast	5,000	6,840	Exceeded
3.3	Percentage of U.S. coastal states and territories demonstrating annual improvement in resilience capacity to weather and climate hazards	77%	77%	Met

3.3	Percent of all coastal communities susceptible to harmful algal blooms verifying use of accurate HAB forecasts	23%	23%	Met
3.3	Hydrographic data acquired to support safe and efficient maritime commerce and for community resilience to storms and other coastal hazards (in square nautical miles)	2,279	8,745	Exceeded
3.3	Percent of U.S. and territories surveyed to improve vertical reference system for modernized height/elevation data (cumulative)	79%	79%	Met
3.3	Annual number of OAR R&D products transitioned to a new stage(s) (development, demonstration, or application)	65	65	Met
3.3	Reduction in gap between high-performance computing deployed and what is needed to meet modeling requirements	17PF (6.25%)	17.8 PF	Exceeded
3.3	Percentage of ingested environmental data safely archived to ensure consistent long-term stewardship and usability of the data (per National Archives and Records Administration (NARA) standards)	98%	98%	Met
3.3	Annual number of NOAA partnerships with the private sector (# of Cooperative Research and Development Agreements executed)	8	14	Exceeded
3.3	Subseasonal temperature skill score	35	40	Exceeded
3.3	Global Ensemble Forecast System (GEFS) length of forecast considered accurate	9.5	9.8	Exceeded
3.3	Customer Satisfaction Index (CSI)	80	86	Exceeded
3.3	Annual number of ocean acidification observations collected by the National Ocean Acidification Observing Network	7,817	7,211	Met
3.3	Annual number of ocean acidification observations transmitted to NOAA	70%	71%	Exceeded
3.3	Percent of deepwater ocean (>200m) U.S. Exclusive Economic Zone (EEZ) mapped (cumulative)	53%	51%	Met
3.3	Annual number of sites characterized in the U.S. Exclusive Economic Zone (EEZ)	100	135	Exceeded
3.3	Number of forecast and mission improvements, based on The Weather Research and Forecasting Innovation Act of 2017, to weather applications at operational U.S. weather services and in the U.S. weather commercial sector	15	12	Not Met
3.3	Other: Number of StormReady Communities (cumulative)	NA	3,191	NA
3.3	Other: Number of TsunamiReady Communities (cumulative)	NA	216	NA

1.1	Retired After FY19: Number of engagements with the commercial space industry or within major space policy decision processes	16	16	Met
1.1	Retired After FY19: Staff hired and trained to facilitate transition	4	4	Met
2.3	Retired After FY19: Number of natural resource environments managed by the Office of National Marine Sanctuaries in which water, habitat, and living resource quality is stable or improving	10	9	Met
1.1	NEW: Number of space policy related decision processes, rulemakings, statements, or other governmental activities influenced/led by Commerce	16	16	Met
1.1	NEW: Milestones achieved in expanding capabilities (including staff) and transitioning SSA functions to DOC	10%	10%	Met
1.1	NEW: Number of external stakeholders engaged on space commerce policy issues	NA	NA	NA
1.1	NEW: Number of external stakeholder requests for support fulfilled	NA	NA	NA
2.3	NEW: Sanctuary and Monument reporting areas that can adequately assess resource condition	82%	82%	Met
2.3	NEW: Sanctuary and Monument natural resources (water, habitat and biota) being maintained or improved	47%	47%	Met
2.3	NEW: Sanctuary and Monument reporting areas providing resource services at an acceptable level	71%	71%	Met
3.3	NEW: Key milestones completed on time for aircraft acquisitions	2	2	Met
3.3	NEW: Global Forecast System (GFS) 500 hPA Anomaly Correlation: Length of Forecast Considered Accurate	8.4	8.4	Met
3.3	NEW: Percent Extended Range Climate Prediction Center Outlooks Exceeding Threshold - <i>All Temperature/Precipitation Outlooks</i>	78	78	Met
3.3	NEW: Percent Extended Range Climate Prediction Center Outlooks Exceeding Threshold - <i>All Temperature Outlooks</i>	80	81	Exceeded
3.3	NEW: Percent Extended Range Climate Prediction Center Outlooks Exceeding Threshold - <i>All Precipitation Outlooks</i>	75	75	Met
3.3	NEW: Percent Long Range Climate Prediction Center Outlooks Exceeding Threshold- <i>All Temperature/Precipitation Outlooks</i>	48	50	Exceeded
3.3	NEW: Percent Long Range Climate Prediction Center Outlooks Exceeding Threshold- <i>All Temperature Outlooks</i>	60	64	Exceeded

3.3	NEW: Percent Long Range Climate Prediction Center Outlooks Exceeding Threshold- <i>All Precipitation Outlooks</i>	36	36	Met
3.3	NEW: Percent Extended and Long Range Climate Prediction Center Outlooks Exceeding Threshold- <i>All Temperature/Precipitation Outlooks</i>	75	76	Exceeded
3.3	NEW: Percent Extended and Long Range Climate Prediction Center Outlooks Exceeding Threshold- <i>All Temperature Outlooks</i>	80	80	Met
3.3	NEW: Percent Extended and Long Range Climate Prediction Center Outlooks Exceeding Threshold- <i>All Precipitation Outlooks</i>	70	73	Exceeded
3.3	NEW: Number of new partner observing system data sources included in operational product and service generation.	NA	NA	NA

Current Recurring Indicators

Strategic Goal	Accelerate American Leadership							
Objective #	1.1 Expand Commercial Space Activities							
Indicator	Number of workshops, reports, and other tools produced to facilitate growth and advancement of the U.S. commercial space industry							
Program Activity Name	NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE							
Type	Customer Service							
Description	This indicator tracks the Office of Space Commerce’s production or implementation of new business instruments that support the needs of the U.S. commercial space industry. These include government/industry workshops, online tools, markets studies, and reports.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target		N/A	1	1	1	4	4	6
Actual		N/A	1	1	1	4		
Status			Met	Met	Met	Met		

Strategic Goal	Enhance Job Creation							
Objective #	2.1 Increase Aquaculture Production							
Indicator	Annual economic and societal benefits from Sea Grant activities as measured by jobs created/retained (reported by each individual Sea Grant College)							
Program Activity Name	OCEANIC AND ATMOSPHERIC RESEARCH							
Type	Customer Service							
Description	This measure highlights change in jobs that communities or businesses generate or save due to Sea Grant assistance (i.e., providing information to help communities, industries or businesses expand, make better decisions or avoid mistakes). Sea Grant provides the information and training that informs business decisions, and in some Hurricane forecast track error cases firms create or sustain jobs as a result. A job created is a new position created and filled as a result of Sea Grant activities. An existing position that is filled with a Sea Grant-trained applicant should not be reported in this measure. A job sustained is an existing, filled position that is sustained as a direct result of Sea Grant activities. A job cannot be reported as both created and sustained in the same year.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	9,600	9,600	9,600	20,770	10,000	10,000	0	0
Actual	17,500	10,700	20,770	7,100	11,764	7,600		
Status	Exceeded	Exceeded	Exceeded	Not Met	Exceeded	Not Met		

Strategic Goal	Enhance Job Creation							
Objective #	2.1 Increase Aquaculture Production							
Indicator	Number of fishermen, seafood processors and aquaculture industry personnel who modify their practices using knowledge gained in fisheries sustainability and seafood safety.							
Program Activity Name	OCEANIC AND ATMOSPHERIC RESEARCH							
Type	Output							
Description	<p>This measure tracks Sea Grant’s success in assisting industry personnel with the adoption of responsible harvesting and processing techniques that improve social, economic, and ecological sustainability. Industry personnel include recreational, commercial (wild and cultured), and subsistence fishery participants, processors, and retailers. Practices include techniques, technologies and best management practices adopted. Fisheries sustainability and seafood safety refers to any combination of the ability of the ecosystem to remain diverse and productive; the social, cultural, and economic resilience of the fishing community; personal or crew safety; and quality and safety of the seafood product.</p>							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						15,000	15,000	0
Actual	53,000	62,200	40,243	19,900	17,796	23,000		
Status						Exceeded		

Strategic Goal	Enhance Job Creation							
Objective #	2.1 Increase Aquaculture Production							
Indicator	Number of projects advanced that improve the efficiency and predictability of the federal permitting process							
Program Activity Name	NATIONAL MARINE FISHERIES SERVICE							
Type	Output							
Description	This measure captures a range of efforts by NOAA's Aquaculture Program that together will lead to a more efficient federal permitting process. These efforts include: working with federal partners under the White House/OSTP's Subcommittee on Aquaculture to coordinate and streamline inter-agency permitting, working with industry partners to establish and manage offshore aquaculture pilot projects, conducting spatial analysis and developing siting tools, developing engineering solutions, efforts to assess and reduce risk (e.g., entanglement) from aquaculture operations, conducting programmatic environmental reviews to reduce burden on individual applicants, and drafting/revising guidance to permit applicants to improve application quality. We will also continue to support, as requested, any Congressional initiative to develop aquaculture legislation.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						NA	21	33
Actual						16		
Status						NA		

Strategic Goal	Enhance Job Creation							
Objective #	2.1 Increase Aquaculture Production							
Indicator	Annual number of aquaculture research projects completed that address key production challenges							
Program Activity Name	NATIONAL MARINE FISHERIES SERVICE							
Type	Output							
Description	NOAA and NMFS support research to advance commercial-scale marine aquaculture production. This is done through commercial scale demonstration facilities in collaboration with—and co-funded by— industry and coastal seafood communities to facilitate the commercial viability of marine aquaculture production. Additionally, NOAA will use aquaculture research to remove production bottlenecks for shellfish and finfish related to siting, disease, genetics and genomics, hatchery seed stock, and feed availability. Performance is measured by calculating the number of either unique or completed stages in ongoing projects which directly advance marine aquaculture production.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target							57	73
Actual						57		
Status						NA		

Strategic Goal	Enhance Job Creation							
Objective #	2.1 Increase Aquaculture Production							
Indicator	Annual economic and societal benefits from Sea Grant activities as measured by businesses created/retained and economic benefits (\$M dollars) (reported by each individual Sea Grant College)							
Program Activity Name	OCEANIC AND ATMOSPHERIC RESEARCH							
Type	Customer Service							
Description	This measure highlights change in jobs that communities or businesses generate or save due to Sea Grant assistance (i.e., providing information to help communities, industries or businesses expand, make better decisions or avoid mistakes). Sea Grant provides the information and training that informs business decisions, and in some cases firms create or sustain jobs as a result. A job created is a new position created and filled as a result of Sea Grant activities. An existing position that is filled with a Sea Grant-trained applicant should not be reported in this measure. A job sustained is an existing filled position that is sustained as a direct result of Sea Grant activities. A job cannot be reported as both created and sustained in the same year.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY2020	FY2021
Target						2,000 \$400M	0 0	0 0
Actual	6,500 \$450M	2,220 \$450M	2,903 \$575M	1,300 \$475M	2,450 \$536M	1,600 \$523M		
Status						Not Met		
						Exceeded		

Strategic Goal	Enhance Job Creation							
Objective #	2.2 Reduce and Streamline Regulations							
Indicator	Average number of days to complete informal ESA Section 7 consultations							
Program Activity Name	NATIONAL MARINE FISHERIES SERVICE							
Type	Output							
Description	This measure shows the average number of days to complete an informal ESA Section 7 consultation. Federal agencies must consult with NOAA when any project or action might affect an ESA-listed marine species or a critical habitat. The process begins as informal consultation, but if it is determined that the action is likely to adversely affect a listed species and/or its critical habitat, the consultation must be formal. A large majority of consultations are handled informally.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						50	50	50
Actual	122*	122*	122*	53	45	40		
Status						Exceeded		

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Percent of top 175 U.S. seaports with access to Physical Oceanographic Real-Time Systems (PORTS®) data (cumulative)							
Program Activity Name	NATIONAL OCEAN SERVICE							
Type	Outcome							
Description	Seaports with access to real-time PORTS® data move vessels and their cargo more safely and efficiently, and this measure tracks the number of top U.S. seaports that have access to PORTS® data. To create a list of the Nation's top 175 seaports, NOS selected the top 152 ports by international tonnage, accounting for more than 99.9% of all direct imports and exports by tonnage in 2016. NOS added to this list 23 seaports that are critical to coastal military installations, the Nation's energy supply, or commercial marine fisheries landings.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target		35%	35%	35%	38%	43%	44%	44%
Actual		35%	35%	37%	38%	43%		
Status		Met	Met	Exceeded	Met	Met		

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Fish Stock Sustainability Index (FSSI) (cumulative)							
Program Activity Name	NATIONAL MARINE FISHERIES SERVICE							
Type	Outcome							
Description	The Fish Stock Sustainability Index (FSSI) is comprised of 175 stocks (down from 199 for FY 2020—see explanation of revisions in the Evaluation of Performance Indicators section) selected for their economic, ecological, and social importance, that represent 83% of total catch. Each stock is given a score between 0 and 4 (0=status unknown; 4=meets all sustainable fishing criteria). The index (scored on a 1,000 point scale) increases when NMFS determines that a stock is either no longer subject to overfishing, no longer overfished, or its biomass has rebuilt or increased to at least 80 percent of target. NOTE: FSSI 2 is based on the existing set of stocks, and FSSI 3 is based on the revised set of stocks.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target (FSSI 2)	756 (602/796)	749 (596.5/796)	758 (603.5/796)	754 (600.5/796)	763 (607.5/796)	760.5 (605.5/796)		
Actual (FSSI 2)	746 (594/796)	761.5 (606.5/79 6)	754 (600.5/79 6)	756.5 (602.5/79 6)	757.5 (603/796)	758.5 (604/796)		
Target (FSSI 3)						NA	777 (544/700)	788.5 (552/700)
Actual (FSSI 3)						775.5 (543/700)		
Status	Met	Exceeded	Not Met	Met	Not Met	Not Met		

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Percent of stocks for which catch is below the specified Annual Catch Limit (ACL) (cumulative)							
Program Activity Name	NATIONAL MARINE FISHERIES SERVICE							
Type	Intermediate Outcome							
Description	<p>This measure tracks the percentage of fish stocks that are below their annual catch limit (ACL) in a given year. In 2007, Congress enacted a requirement to use ACLs to end and prevent overfishing. The use of ACLs has been successful in ending and preventing overfishing, as stock assessments have shown the number of stocks subject to overfishing continuing to decline. Performance is measured by comparing the final annual catch estimate to the ACL for each stock that has an ACL. If the final annual catch estimate for the stock is less than the ACL, NOAA will report that the stock did not exceed its ACL. For more information: http://www.nmfs.noaa.gov/sfa/management/acls_ams/index.html</p>							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY2021
Target		79.5%	81%	82%	83%	84%	89.7%	90.7%
Actual	91%	89.7%	90.7%	91.9%	90.2%	88.3%		
Status		Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Percentage of FSSI stocks with adequate population assessments and forecasts (cumulative)							
Program Activity Name	NATIONAL MARINE FISHERIES SERVICE							
Type	Output							
Description	This measure tracks the percentage of FSSI fish stocks for which adequate assessments are available. Assessments are vital to determine the scientific basis for supporting and evaluating the impact of fishery management actions. To be deemed adequate, 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. Since the important fish stocks tracked by this measure are the same as those in the Fish Stock Sustainability Index (FSSI), the mix of stocks is changing for FY 2020so targets for FY2020 and FY2021 are not comparable to previous years' actuals.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	64.8% (129/199)	67.3% (134/199)	61.3% (122/199)	63.8% (127/199)	64.8% (129/199)	56.8% (113/199)		
Actual	63.3% (126/199)	64.3% (128/199)	62.3% (124/199)	63.3% (126/199)	57.8% (115/199)	56.8% (113/199)		
Target							69.1% (121/175)	70.3% (123/175)
Actual					66.3% (116/175)	65.7% (115/175)		
Status	Not Met	Not Met	Exceeded	Met	Not Met	Met		

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Percentage of protected species stocks with adequate population assessments and forecasts (cumulative)							
Program Activity Name	NATIONAL MARINE FISHERIES SERVICE							
Type	Output							
Description	This measure tracks the percentage of protected species stocks for which adequate assessments are available. Assessments are vital to determine the scientific basis for supporting and evaluating the impact of management actions. To be deemed adequate, assessments must be based on recent quantitative or qualitative analysis sufficient to determine current stock status based on a variety of data category levels (e.g., life history, threats, stock structure, assessment quality, assessment frequency, and abundance), and conservation status. Stock status projections are highly dependent on survey frequencies, assessment timeframes, and fiscal constraints. This measure covers the protected species stocks covered by the Marine Mammal Protection Act (MMPA) or listed under the Endangered Species Act (ESA). The number of such stocks continues to increase as new species are listed and as new stocks of listed species and marine mammals are identified— the latter typically indicates increased knowledge about population stock structure. Denominators are shown for reference.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	18.9% (78/412)	21.6% (89/412)	20.7% (89/429)	19.9% (85/428)	21.7% (93/429)	25.3% (109/430)	26.7% (115/430)	28.8% (124/430)
Actual	15.0% (62/412)	18.7% (77/412)	19.2% (82/428)	19.3% (83/429)	20.2% (87/430)	22.3% (96/430)		
Status	Not Met	Not Met	Not Met	Met	Not Met	Not Met		

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Number of protected species designated as threatened, endangered or depleted with stable or increasing population levels (cumulative)							
Program Activity Name	NATIONAL MARINE FISHERIES SERVICE							
Type	Outcome							
Description	This measure tracks progress toward the recovery of endangered, threatened, or depleted protected species under NMFS' jurisdiction. Recovery of threatened, endangered, or depleted species can take decades. It may not be possible to recover or de-list a species in the near term, but progress can be made to stabilize or increase the species population. For some species, this means trying to stop steep population declines, while for others it means trying to increase their numbers.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	28 (out of 84)	34 (out of 74)	31 (out of 90)	30 (out of 90)	30 (out of 92)	30 (out of 93)	30 (out of 95)	30 (of 95)
Actual	37 (out of 84)	31 (out of 73)	31 (out of 89)	30 (out of 90)	30 (out of 90)	30 (out of 94)		
Status	Exceeded	Met	Met	Met	Met	Met		

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Percentage of actions ongoing or completed to recover endangered and threatened species (cumulative)							
Program Activity Name	NATIONAL MARINE FISHERIES SERVICE							
Type	Output							
Description	This measure tracks the progress of ongoing or completed recovery actions included in NMFS approved recovery plans for species listed as threatened or endangered under the Endangered Species Act (ESA). Recovery plans include a list of actions necessary to de-list the species. These include actions that may be completed in a year or that may take many years to complete or are ongoing. Recovery of a species may take decades. Completed recovery actions shows incremental progress.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	1,979/4,457 44.4%	2,070/4,482 46.2%	2,229/4,542 49.1%	2,213/4,545 48.7%	2,241/4, 653 48.2%	2,330/4,674 49.9%	2,385/4,802 49.7%	2,412/4,802 50.2%
Actual	2,013/4,457 45.2%	2,157/4,482 48.1%	2,233/4,542 49.2%	2,183/4,545 48.0%	2,234/4,613 48.4%	2,358/4,623 51.0%		
Status	Exceeded	Exceeded	Met	Not Met	Met	Exceeded		

Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Number of open environmental reviews that exceed regulatory or statutory deadlines							
Program Activity Name	NATIONAL MARINE FISHERIES SERVICE							
Type	Output							
Description	This measure shows the number of open environmental reviews (ESA Section 7 formal consultation, MMPA incidental harassment authorization, EFH consultation) that exceed regulatory, statutory, or otherwise agreed-upon deadlines. Under the ESA and MSA, Federal agencies must consult with NOAA when any project or action might affect an ESA-listed marine species or a critical habitat. Under the MMPA, NMFS issues incidental harassment authorizations, which allow for the otherwise prohibited incidental “take” of marine mammals resulting from lawful activities (such as military readiness training, seismic surveys, or coastal construction).							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						50	60	60
Actual						74		
Status						Not Met		

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Percent of Seafood Import Monitoring Program (SIMP) import records that are compliant							
Program Activity Name	NATIONAL MARINE FISHERIES SERVICE							
Type	Output							
Description	SIMP audits select a random sample of consignments to a target statistical validity. Each consignment is audited for completeness and verified accuracy of documentation. Once this evaluation is complete, any concern with the consignment is forwarded to the Office of Law Enforcement for further investigation. This measure shows the percentage of audited consignments with documentation that is sufficiently complete and verified accurate to not warrant further investigation.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target							80%	90%
Actual						64%		
Status						NA		

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Number of youth participating in hands-on learning in national marine sanctuaries							
Program Activity Name	NATIONAL OCEAN SERVICE							
Type	Output							
Description	Each site within the National Marine Sanctuary System conducts education through formal education, informal education, and outreach for education. K-12 student participation is tracked in both formal and informal education programs by counting the number of students participating in these programs. Data is collected yearly from each site and summarized system wide. Using these methods we can track the number of K-12 students, including those from underserved communities, engaged in formal or informal education and stewardship programs.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						52,000	50,000	50,000
Actual	32,839	39,613	56,385	95,863	42,259	68,895		
Status						Exceeded		

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Number of volunteer hours supporting science, education, and public engagement programs to raise awareness and meet science needs of national marine sanctuaries							
Program Activity Name	NATIONAL OCEAN SERVICE							
Type	Output							
Description	Volunteers are a critical part of national marine sanctuaries and help support science, education, and conservation priorities. Volunteers assist in many projects, such as citizen science, monitoring, education support, and marine debris cleanups. Volunteer hours can also be assigned a value through the widely used nonprofit organization, Independent Sector, which provides a yearly estimate of what a volunteer hour is worth. Using this number, each year ONMS calculates how much in-kind support our volunteers provide.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						133,000	125,000	125,000
Actual	140,370	149,795	137,088	130,280	127,983	117,746		
Status						Not Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Annual number of peer-reviewed publications related to environmental understanding and prediction							
Program Activity Name	OCEANIC AND ATMOSPHERIC RESEARCH							
Type	Output							
Description	The annual number of peer reviewed publications is an indicator of productivity and relevance and is tracked using online resources. Peer review is one of the important procedures used to ensure that the quality of published information meets the standards of the scientific and technical community.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY2021
Target	1,200	1,500	1,500	1,700	1,700	3,387	2,370	2,370
Actual	1,759	1,860	1,697	1,678	1,794	3,171		
Status	Exceeded	Exceeded	Exceeded	Met	Exceeded	Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Number of NOAA datasets made openly available via partners' cloud platforms to the public, America's Weather Enterprise and other environmental information stakeholders (cumulative)							
Program Activity Name	MISSION SUPPORT							
Type	Output							
Description	The measure is the cumulative number of instances of NOAA datasets made openly available via partners' cloud platforms through collaborations with selected industry partners. In this developmental phase, NOAA does not determine which datasets or how many datasets to make available on partner's cloud platforms, but the partners do so with NOAA experts' support. Future measures are highly dependent upon the partners' investments, including whether or not the project continues past Q2 FY 2019.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2020
Target					15	60	100	150
Actual			3	6	40	74		
Status					Exceeded	Exceeded		

Strategic Goal	Strengthen US Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	U.S. Temperature forecasts skill							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	Seasonal outlooks are used by sectors of the U.S. economy, such as energy, agriculture, transportation, etc. as one factor in resource decision making. Seasonal outlooks are reported as the probability of temperature being above normal, near normal, below normal or, where no definite seasonal guidance can be provided, equal chances.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY2019	FY2020	FY 2021
Target	23	24	25	26	26	26	26	27
Actual	26	25	24	34	43	35		
Status	Exceeded	Exceeded	Met	Exceeded	Exceeded	Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Key milestones completed on time for satellites and ship deployments							
Program Activity Name	NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE & OFFICE OF MARINE AND AVIATION OPERATIONS							
Description	Key activities for the development and launch of weather satellites and fleet modernization and products are identified and tracked using a project management system.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target (# of Milestones)	SAT: 7 SHIPS: 0	SAT: 2 SHIPS: 0	SAT: 3 SHIPS: 0	SAT: 2 SHIPS: 0	SAT: 2 SHIPS: 2	SAT: 2 SHIPS: 1	SAT: 2 SHIPS: 2	SAT:2 SHIPS: 0
Actual (# of Milestones)	SAT: 7 SHIPS: 0	SAT: 2 SHIPS: 0	SAT: 3 SHIPS: 0	SAT: 2 SHIPS: 0	SAT: 2 SHIPS:2	SAT:2 SHIPS:1		
Status	Met	Met	Met	Met	Met	Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Base funded Days-At-Sea for NOAA ships							
Program Activity Name	OFFICE OF MARINE AND AVIATION OPERATIONS							
Type	Output							
Description	Days-At-Sea (DAS) is the unit used to annually plan mission time aboard NOAA ships. Approximately 100 survey and research missions are planned and executed each year. A DAS is a day in which the ship is underway, under its own power, for greater than one hour, conducting mission operations, training, sea trials, or calibration. Also included are days in which hydrographic ships are not underway but are conducting operations aboard one or more ship-based launches. *In March 2019, the NOAA Fleet Council approved a revised FY19 Fleet Allocation Plan (FAP) after the government shutdown. This indicator currently measures only Base Funded DAS. Base funded DAS include both mission and non-mission days. Non mission days can include training, transit and calibration of scientific equipment. Beginning in FY20, the Total ship DAS will be used for targets and actuals. Total DAS will include OMAO base funded DAS, program funded DAS, and reimbursable funded DAS.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target (base funded)	2,702	2,980	2,802	2,985	2,783	2,124*		
Actual (base funded)	2,159	2,498	2,414	2,554	2,352	1,719		
Status	Not Met	Not Met	Not Met	Not Met	Not Met	Not Met		
Total DAS Target (Beginning FY20)							2,759	2,670
Total DAS Actual (Beginning FY20)								
Status (Total DAS)								
Status								

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce extreme weather impacts							
Indicator	Percentage of data processed and delivered to operational users (NWS and other NOAA line offices, US military and operational partners) from NOAA-managed satellites.							
Program Activity Name	NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE							
Description	Ensures that NOAA provides real time (or near real time) availability of critical satellite data and products without gaps.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%
Actual	99.7%	99.35%	99.3%	99.49%	99.45%	99.4%		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Severe weather warnings tornadoes - Storm based lead time (Minutes), accuracy (%), and false alarm ratio (%)							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	Tornado Warnings are issued to enable the public to get out of harm's way and mitigate preventable loss. NWS forecasters issue approximately 2,900 Tornado Warnings per year, primarily between the Rockies and Appalachian Mountains. Tornado Warning statistics are based on a comparison of warnings issued and weather spotter observations of tornadoes and/or storm damage surveys from Weather Forecast Offices in the United States.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Lead Time (min)								
Target	13	13	13	13	13	13	13	13
Actual	9	8	9	9	8	10		
Status	Not Met	Not Met	Not Met	Not Met	Not Met	Not Met		
Accuracy (%)								
Target	72	72	72	72	72	72	72	72
Actual	60	58	61	58	57	64		
Status	Not Met	Not Met	Not Met	Not Met	Not Met	Not Met		
False Alarm Ratio (%)								
Target	72	72	71	71	71	71	71	71
Actual	70	70	69	72	69	70		
Status	Met	Met	Met	Met	Met	Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Severe weather warnings for flash floods - Lead time (minutes) and accuracy (%)							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	For each reported flash flood event, the flash flood warning lead-time is the difference in minutes between the issuance of a flash flood warning and the onset of a geographically corresponding flash flood event. Both flash flood warning lead-time and accuracy metrics are cumulative over the fiscal year and, when reported prior to the end of the year, represent the year-to-date performance.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Lead time (min)								
Target	60	61	61	63	63	65	65	65
Actual	54	64	72	73	62	65		
Status	Met	Exceeded	Exceeded	Exceeded	Met	Met		
Accuracy (%)								
Target	74	76	76	76	76	76	76	76
Actual	77	79	80	77	78	77		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Hurricane forecast track error (48 hour)							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	The public, private sectors, emergency managers, and government institutions at all levels in this country and abroad use NOAA tropical cyclone forecasts to make decisions regarding the protection of life and property. This goal measures the difference between the projected and actual location of the center of tropical cyclones in nautical miles (nm) for the Atlantic Basin, averaged over all the 48- hour forecasts occurring during the calendar year (CY). * Data for a given CY are not available until April of the following CY.							
	CY 2014	CY 2015	CY 2016	CY 2017	CY 2018	CY 2019	CY 2020	CY2021
Target	81	77	71	68	65	62	59	57
Actual	65	77	61	56	60	*TBD		
Status	Exceeded	Met	Exceeded	Exceeded	Exceeded	*TBD		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Hurricane forecast intensity error (48 hour)							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	<p>The public, private sectors, emergency managers, and government institutions at all levels in this country and abroad use NOAA tropical cyclone forecasts to make decisions regarding the protection of life and property. This measure represents the difference between the projected intensity of these storms and the actual intensity in knots (kt) for Atlantic Basin tropical cyclones (i.e., tropical depressions, tropical storms, and hurricanes).</p> <p>* Data for a given CY (calendar year) are not available until April of the following CY.</p>							
	CY 2014	CY 2015	CY 2016	CY 2017	CY 2018	CY 2019	CY 2020	CY2021
Target	12	12	12	12	12	12	12	11
Actual	10	11	10	13	10	*TBD		
Status	Exceeded	Exceeded	Exceeded	Met	Exceeded	*TBD		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Accuracy (%) (threat score) of Day 1 precipitation forecasts							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	Precipitation forecasts and other foundational general weather guidance developed by NOAA's Weather Prediction Center (WPC) are used extensively by the weather enterprise. This performance measure tracks the ability of the weather forecasters of WPC to predict accurately the occurrence of one inch or more of precipitation (rain or the water equivalent of melted snow or ice pellets) twenty- four hours in advance across the contiguous U.S.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
1Target	32	32	32	33	33	33	34	34
Actual	33	33	36	34	36	37		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Winter storm warnings - Lead time (hours) and accuracy (%)							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	A winter storm warning provides NOAA customers and partners advanced notice of a hazardous winter weather event that endangers life or property, or provides an impediment to commerce. Winter storm warnings are issued for winter weather phenomena like blizzards, ice storms, heavy sleet, and heavy snow. This performance indicator measures the accuracy and advance warning lead time of winter storm events.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY2021
Lead Time (hours)								
Target	20	20	20	20	20	20	20	20
Actual	22	21	21	22	18	21		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Met	Exceeded		
Accuracy (%)								
Target	90	90	90	90	90	90	90	90
Actual	89	85	85	87	80	82		
Status	Met	Met	Met	Met	Not Met	Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Marine wind - Percentage of accurate forecasts (%) Marine wave heights - Percentage of accurate forecasts (%)							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	These Day 1 performance indicators measure the accuracy of wind speed and wave height forecasts, which are important for marine commerce. These measures represent the percentage of accurate forecasts. For observed wind speeds under 20 knots (wave heights under 10 feet), an accurate forecast has an error under 5 knots (2 feet). Higher accuracy thresholds are used for higher observed wind speeds & wave heights, e.g., the accuracy threshold for wind speed is less than 10 knots whenever the observed wind speed exceeds 33 knots.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY2021
Wind (%)								
Target	74	75	78	78	79	79	80	80
Actual	78	80	80	81	82	82		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		
Wave Height (%)								
Target	76	76	81	81	82	82	83	83
Actual	84	84	85	84	85	85		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Aviation ceiling/visibility forecast accuracy & false alarm ratio (%) Instrument Flight Rules (IFR)							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	Visibility and cloud ceiling forecasts are critical for aircraft safety and efficient operations. When visibility or cloud ceilings are low, pilots rely on instruments to navigate instead of visual reconnaissance. The Federal Aviation Administration establishes Instrument Flight Rule (IFR) thresholds—visibility less than three statute miles and/or cloud ceilings at, or below, 1000 feet—for safety.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Accuracy (%)								
Target	65	65	65	65	65	65	65	65
Actual	62	65	63	63	63	64		
Status	Met	Met	Met	Met	Met	Met		
False Alarm Ratio (%)								
Target	38	38	38	38	38	38	38	38
Actual	36	34	38	37	35	33		
Status	Exceeded	Exceeded	Met	Exceeded	Exceeded	Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Geomagnetic storm forecast accuracy (%)							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	This performance measure tracks the ability of forecasters at NOAA's Space Weather Prediction (SWPC) to accurately predict geomagnetic storms, which potentially disrupt power systems, spacecraft operations, and navigation systems. The NOAA geomagnetic storm scale (G-scale) ranges from the G1 or minor level where weak power grid fluctuations can occur to the G5 or extreme level.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	51	53	53	40	56	57	58	59
Actual	40	57	68	65	60	62		
Status	Not Met	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Number of communities that utilize Digital Coast							
Program Activity Name	NATIONAL OCEAN SERVICE							
Type	Output							
Description	Digital Coast is a web-based platform that provides geospatial data, tools, and training to coastal communities. This measure, obtained via web statistics, provides a locational context that broadly assesses where users are coming from. Given that the Digital Coast effort is national in scope, yet local in its approach to providing geospatial information to address coastal issues, such as coastal resilience, this measure provides valuable information used to direct outreach efforts and support content development. The number of communities using Digital Coast is based on Census-designated places within coastal states, including all Census-defined cities, towns, townships, boroughs, and incorporated municipalities.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	4,750	5,375	5,500	5,500	5,500	5,000	5,000	5,000
Actual	5,249	6,330	5,043	7,040	6,903	6,678		
Status	Exceeded	Exceeded	Met	Exceeded	Exceeded	Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Percentage of U.S. coastal states and territories demonstrating annual improvement in resilience capacity to weather and climate hazards							
Program Activity Name	NATIONAL OCEAN SERVICE							
Type	Outcome							
Description	This measure tracks a range of contributions to address coastal community risk, vulnerability, and resilience to coastal hazards. It does this by using an index that incorporates a range of NOAA- sponsored activities, including training and technical assistance that communities have engaged in to mitigate their susceptibility to coastal hazards. This measure illuminates how NOAA is improving integration of its coastal programs and the Nation's capacity for end to end preparedness, response, recovery and resilience to hazards.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	46%	51%	60%	66%	71%	77%	77%	77%
Actual	54%	60%	74%	69%	74%	77%		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Percent of all coastal communities susceptible to harmful algal blooms verifying use of accurate HAB forecasts							
Program Activity Name	NATIONAL OCEAN SERVICE							
Type	Outcome							
Description	<p>This measure tracks the communities (currently using operational forecasts) within a coastal region vulnerable to harmful algal blooms (HAB) and the utility and accuracy of HAB forecasts. Utility and accuracy are verified through customer feedback responses before and after a forecast HAB event. This measure informs on-going NOAA efforts to characterize causes of HABs impacts to humans and coastal ecosystems, develop products that detect and forecast HAB species and toxins, and collaborate with stakeholders to develop HAB mitigation strategies. NCCOS, CO-OPS, and partners are developing operational forecasts to meet the needs of all vulnerable communities throughout the coastal U.S.</p>							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	18%	18%	18%	23%	23%	23%	23%	23%
Actual	18%	18%	18%	23%	23%	23%		
Status	Met	Met	Met	Met	Met	Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Hydrographic data acquired to support safe and efficient maritime commerce and for community resilience to storms and other coastal hazards (in square nautical miles)							
Program Activity Name	NATIONAL OCEAN SERVICE							
Type	Output							
Description	NOAA conducts hydrographic surveys in U.S. waters to determine bathymetry; this includes the detection, location, and identification of wrecks and obstructions with side scan and multibeam sonar technology. NOAA uses the data to produce nautical charts and other products to ensure safe and efficient navigation. Targets for this measure are set by a formula, calculated from available contract funds and expected days at sea. Actual area collected each year will vary depending on the location and characteristics (depth, bottom complexity) of the areas surveyed.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	2,671	2,556	2,509	2,287	2,279	2,279	2,279	2,319
Actual	2,207	3,135	3,296	2,480	3,403	8,745		
Status	Not Met	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Percent of U.S. and territories surveyed to improve vertical reference system for modernized height/elevation data (cumulative)							
Program Activity Name	NATIONAL OCEAN SERVICE							
Type	Outcome							
Description	This measure tracks progress of NOAA's National Geodetic Survey toward completing gravity observations for the Redefinition of the American Vertical Datum (GRAV-D) initiative and implementation of a new National Vertical Datum. The measure indicates the percentage of the U.S. for which NOAA has airborne gravity data necessary to support the new National Vertical Datum. This improved vertical reference system is critical for all observing systems and activities requiring accurate heights. For example, this system is important for helping determine where water flows in order to make accurate inundation models and assessments.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	36%	45%	53%	62%	70%	79%	87%	96%
Actual	36%	45%	55%	64%	72%	79%		
Status	Met	Met	Exceeded	Exceeded	Exceeded	Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Annual number of OAR R&D products transitioned to a new stage(s) (development, demonstration, or application).							
Program Activity Name	OCEANIC AND ATMOSPHERIC RESEARCH							
Type	Output							
Description	The measure captures the count of significant and discrete OAR research and development products that have transitioned to development, demonstration, or an application. Products include transitions occurring within OAR and applying group(s) outside of OAR. This includes research, development, and demonstration performed and supported by OAR as well as utilization of OAR R&D products by external parties.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	NA	65	65	65	65	65	125	75
Actual	66	72	65	65	66	65		
Status		Exceeded	Met	Met	Exceeded	Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Reduction in gap between high-performance computing deployed and what is needed to meet modeling requirements							
Program Activity Name	MISSION SUPPORT							
Type	Output							
Description	The indicator shows the overall growth, in petaflops (PF), of the operational and research and development High Performance Computing capability. Our current enterprise supplies 16PF to support modeling requirements across NOAA. Growth in capacity will lessen the gap in current modeling requirement and provide additional capability to the modeling community within NOAA.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target				13PF	16PF (23%)	17PF (6.25%)	18PF (5.8%)	20PF (10.0%)
Actual				13PF	16.4	17.8		
Status					Exceeded	Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Percentage of ingested environmental data safely archived to ensure consistent long-term stewardship and usability of the data (per National Archives and Records Administration (NARA) standards)							
Program Activity Name	NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE							
Type	Intermediate Outcome							
Description	Ensures that NOAA safely archives critical data and information according to NARA standards.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target	98%	98%	98%	98%	98%	98%	98%	98%
Actual	99%	100%	98%	98%	98%	98%		
Status	Exceeded	Exceeded	Met	Met	Met	Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Annual number of NOAA partnerships with the private sector (# of Cooperative Research and Development Agreements executed)							
Program Activity Name	OCEANIC AND ATMOSPHERIC RESEARCH							
Type	Output							
Description	A Cooperative Research and Development Agreement (CRADA) is a written agreement between a private company and NOAA to work together on a project. A CRADA allows NOAA and non-Federal partners to optimize their resources, share technical expertise in a protected environment, share intellectual property emerging from the effort, and speed the commercialization of NOAA developed technology. The CRADA, which is not an acquisition or procurement vehicle, is designed to be a relatively easy mechanism to implement, requiring less time and effort to initiate than previous methods for working with non-government organizations.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						8	16	9
Actual	5	14	5	14	16	14		
Status						Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Subseasonal temperature skill score							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	Temperature outlooks are used by sectors of the U.S. economy, such as energy, agriculture, transportation, etc. as one factor in resource decision making. Temperature outlooks are reported as the probability of temperature being above normal or below normal or, where no definite guidance can be provided, equal chances. This is the cumulative skill calculated for regions where predictions are made.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						35	36	36
Actual					36	40		
Status						Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Global Ensemble Forecast System (GEFS) length of forecast considered accurate							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	The measure is a proxy for the useful forecast lead time of the GEFS beyond the current forecasts skill (9.5 days) and is computed over the range of forecast days. Extending lead time in prediction of future weather events allows people to make informed choices and enables protection of life, property, and enhancement of the National economy. The 500 hPA Anomaly Correlation will be used.							
	CY 2014	CY 2015	CY 2016	CY 2017	CY 2018	CY 2019	CY 2020	CY 2021
Target						9.5	10.0	10.25
Actual					10	9.8		
Status						Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Customer Satisfaction Index (CSI)							
Program Activity Name	NATIONAL WEATHER SERVICE							
Description	<p>Weather information users are surveyed continuously by means of a web-based, pop-up survey on NWS web pages throughout the Nation. A sample size of approximately 6,000 responses is collected quarterly for a maximum of 24,000 annual responses.</p> <p>The Customer Satisfaction Index (CSI) score is calculated as a weighted average of three survey questions that measure different facets of satisfaction with NWS services. American Customer Satisfaction Index (ACSI) researchers use proprietary software technology to estimate the weighting. The three questions include the overall satisfaction of NWS services, expectations of service, and a comparison to an ideal organization. Indexes are reported on a 0 to 100 scale.</p> <p>The ACSI was started in the United States in 1994 by researchers at the University of Michigan, in conjunction with the American Society for Quality in Milwaukee, Wisconsin, and CFI Group in Ann Arbor, Michigan. The Index was developed to provide information on satisfaction with the quality of products and services available to consumers. The survey data serve as inputs to an econometric model that benchmarks customer satisfaction with more than 300 companies in 43 industries and 10 economic sectors, as well as various services of federal and local government agencies.</p>							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						80	80	80
Actual	84	80	82	82	85	86		
Status						Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Annual number of ocean acidification observations collected by the National Ocean Acidification Observing Network							
Program Activity Name	OCEANIC AND ATMOSPHERIC RESEARCH							
Type	Efficiency							
Description	The National Ocean Acidification Observing Network (NOA-ON) is comprised of a suite of sensor assets. Each sensor tracks the daily cycle of ocean carbonate chemistry, which allows us to characterize Ocean Acidification in accordance with the Federal Ocean Acidification Research and Monitoring (FOARAM) Act. This network provides the capacity to track long-term changes in ocean chemistry and to alert stakeholders and industry partners about corrosive events impacting the Nation's blue economy.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						7,817	7,300	7,300
Actual	7,266	7,452	7,044	6,747	6,930	7,211		
Status						Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Annual number of ocean acidification observations transmitted to NOAA							
Program Activity Name	OCEANIC AND ATMOSPHERIC RESEARCH							
Type	Input							
Description	This indicator reflects the number of National Ocean Acidification - Observing Network (NOA-ON) observations that are successfully transmitted to NOAA. This occurs when a NOA-ON sensor asset successfully transmits a minimum of 8 observations within a 24 hour day. Ideally, the number of transmitted observations should equal 100% of observations collected.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						70%	70%	70%
Actual	78%	77%	69%	82%	63%	71%		
Status						Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Percent of deepwater ocean (>200m) U.S. Exclusive Economic Zone (EEZ) mapped (cumulative)							
Program Activity Name	OCEANIC AND ATMOSPHERIC RESEARCH							
Type	Output							
Description	This measure tracks the cumulative percent of the U.S. Exclusive Economic Zone deeper than 200m that is mapped to Seabed 2030 resolution standards (100m2).							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						53%	51%	53%
Actual	40%	43%	47%	50%	51%	51%		
Status						Met		

Strategic Goal #	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Annual number of sites characterized in the U.S. Exclusive Economic Zone (EEZ)							
Program Activity Name	OCEANIC AND ATMOSPHERIC RESEARCH							
Type	Output							
Description	This measure tracks the annual number of sites whose oceanographic, archaeological, or cultural resource properties have been characterized to enable efficient, sustainable use of the nation's undersea resources. Characterizations are performed by ROV dive with video and/or photographic analysis and physical, biological, geological, or chemical sampling; by photogrammetric survey and environmental sample collection by autonomous underwater vehicles (AUVs); or through similar advanced technological techniques.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						100	100	100
Actual	104	149	157	196	101	135		
Status						Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Number of forecast and mission improvements, based on The Weather Research and Forecasting Innovation Act of 2017, to weather applications at operational U.S. weather services and in the U.S. weather commercial sector.							
Program Activity Name	OCEANIC AND ATMOSPHERIC RESEARCH							
Type	Process							
Description	The measure captures the count of significant and discrete NOAA research and development products that have transitioned to application at operational U.S. weather services and in the U.S. weather commercial sector. In addition, these weather products support NOAA contributions to the Weather Research and Forecasting Innovation Act of 2017.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						15	5	3
Actual					15	12		
Status						Not Met		

PROPOSED NEW INDICATORS

Strategic Goal	Accelerate American Leadership							
Objective #	1.1 Expand Commercial Space Activities							
Indicator	Number of space policy related decision processes, rulemakings, statements, or other governmental activities influenced/led by Commerce							
Program Activity Name	NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE							
Type	Outcome							
Description	This indicator measures the extent to which the Office of Space Commerce helps the Department of Commerce influence space policy decisions processes at the agency, national, and international levels. It replaces an output-based indicator (“Number of engagements...”) with one that better tracks the amount of positive outcomes affected for the U.S. commercial space industry due to concerted efforts by the Office of Space Commerce. For FY 2019, this metric matches the value of the former indicator that it replaces.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						16	16	20
Actual						16		
Status						Met		

Strategic Goal	Accelerate American Leadership							
Objective #	1.1 Expand Commercial Space Activities							
Indicator	Milestones achieved in expanding capabilities (including staff) and transitioning SSA functions to DOC							
Program Activity Name	NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE							
Type	Intermediate Outcome							
Description	The new indicator tracks the percentage of progress made toward achieving full operating capability of the Commerce Department's SSA function. The milestones account for multiple developments including expansion of human resources, establishment of Commerce personnel at the Defense Department's existing SSA operations center, development of data standards and an open architecture data repository for SSA information sharing with industry, demonstration and testing of DOD data dissemination and fusion, and declaration of operational capability. Space Policy Directive-3 requires the Department's new SSA function to achieve full operating capability by 2024.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						10%	25%	50%
Actual						10%		
Status						Met		

Strategic Goal	Accelerate American Leadership							
Objective #	1.1 Expand Commercial Space Activities							
Indicator	Number of external stakeholders engaged on space commerce policy issues							
Program Activity Name	NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE							
Type	Customer Service							
Description	This metric quantifies the extent to which the Office of Space Commerce engages with the U.S. commercial space industry and other external stakeholders to understand their issues, stay abreast of market developments, communicate government positions, etc. This metric replaces a previous indicator (“Number of engagements...”). Rather than count events held with industry (e.g., roundtables and conferences), this metric tracks the Office’s achievement of constituent outreach in terms of individual members of the commercial space industry who participate in such events or otherwise interact with the Office.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						NA	400	600
Actual								
Status								

Strategic Goal	Accelerate American Leadership							
Objective #	1.1 Expand Commercial Space Activities							
Indicator	Number of external stakeholder requests for support fulfilled							
Program Activity Name	NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE							
Type	Customer Service							
Description	This metric measures the level of customer service provided by the Office of Space Commerce to the U.S. commercial space industry and other external stakeholders in response to specific requests for support. This metric applies only to major requests requiring application of labor hours or other resources towards the investigation, coordination, and resolution of policy/regulatory issues or achievement of activities that promote the interests of U.S. space companies.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						NA	40	80
Actual								
Status							NEW	

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Sanctuary and Monument reporting areas that can adequately assess resource condition							
Program Activity Name	NATIONAL OCEAN SERVICE							
Type	Output							
Description	Each site within the National Marine Sanctuary System conducts or facilitates characterization, monitoring, and research to protect the resources in the system. A series of questions are posed to all sanctuaries as a starting point for the creation of periodic condition reports that rate the status and trends of key resources, processes, and resource services provided. One way to determine how comprehensively we are conducting monitoring in a sanctuary, or gathering information for use in the condition reports, is to quantify the proportion of relevant questions and ecosystem services for which experts are able to provide ratings. The higher the proportion, the more adequate the monitoring program.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						82%	82%	82%
Actual					82%	82%		
Status						Met		

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Sanctuary and Monument natural resources (water, habitat and biota) being maintained or improved							
Program Activity Name	NATIONAL OCEAN SERVICE							
Type	Output							
Description	One of the central purposes for designating marine sanctuaries is to protect nationally significant resources. This requires, at the very least, maintaining them in their current condition, while recognizing the inevitability of effects from natural events and processes. This performance measure assesses whether key sanctuary ecosystem resources are being maintained or improved, by measuring the proportion of relevant resource questions for which the trends are either unchanged or improving. Both are acceptable, while declining conditions are not. The measure is limited to natural resources in this case, as it assesses the achievement of goals related to ecosystem protection and not those related to maritime heritage resources.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						47%	47%	47%
Actual					47%	47%		
Status						Met		

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Sanctuary and Monument reporting areas providing resource services at an acceptable level							
Program Activity Name	NATIONAL OCEAN SERVICE							
Type	Output							
Description	An important purpose of national marine sanctuaries is to ensure that the significant resources they protect provide benefits to the public. This performance measure is intended to track the extent to which marine sanctuaries benefit the public through the provision of “resource services”. Resource services include commonly defined “ecosystem services” as well as the services provided by archaeological resources. The measure uses status ratings from sanctuary condition reports to quantify the proportion of services rated as either “Good” or “Good/Fair,” both of which are considered acceptable levels of service potential.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						71%	71%	71%
Actual					71%	71%		
Status						Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Key milestones completed on time for aircraft acquisitions							
Program Activity Name	OFFICE of MARINE and AVIATION OPERATIONS							
Type	Output							
Description	Each new aircraft under the Aircraft Recapitalization Plan has key milestones in its acquisition program schedule. NOAA is in the process of acquiring a King Air and Gulfstream 550 aircrafts. Progress in meeting the milestones is given by the indicator which tracks number of milestones met versus number of milestones planned in the fiscal year.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						2	2	1
Actual						2		
Status						Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Global Forecast System (GFS) 500 hPA Anomaly Correlation: Length of Forecast Considered Accurate							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	The measure is a proxy for the useful forecast lead time of the GFS beyond the current forecasts skill and is computed as a three-year moving average over the range of forecast days into the future. It is defined as the day (including fractional day) that the value drops below 0.6 in the deterministic GFS forecast. Dropping below 0.6 indicates the point at which a forecast loses useful skill. Extending lead time in prediction of future weather events allows people to make informed choices and enables protection of life, property, and enhancement of the National economy. Target is measured in days.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						8.4	9.0	9.5
Actual						8.4		
Status						Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Percent Extended Range Climate Prediction Center Outlooks Exceeding Threshold							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	Metric calculated as the percent of Climate Prediction Center extended range temperature and precipitation outlooks (outlooks out to 14 days) exceeding Heidke Skill Score (HSS) of 10 (10% better than a climatological forecast). To better track results, three individual metrics are tracked – 1) All forecasts combined, 2) Temperature only, and 3) Precipitation only.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
All Temperature/Precipitation Outlooks								
Target						78	78	79
Actual						78		
Status						Met		
All Temperature Outlooks								
Target						80	81	82
Actual						81		
Status						Exceeded		
All Precipitation Outlooks								
Target						75	75	76
Actual						75		
Status						Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Percent Long Range Climate Prediction Center Outlooks Exceeding Threshold							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	Metric calculated as the percent of Climate Prediction Center long range temperature and precipitation outlooks (monthly and seasonal outlooks) exceeding Heidke Skill Score (HSS) of 10 (10% better than a climatological forecast). Due to the scarcity of long range outlooks (six per month), scores are smoothed over a three year period. To better track results, three individual metrics are tracked – 1) All forecasts combined, 2) Temperature only, and 3) Precipitation only.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	2019	FY 2020	FY 2021
All Temperature/Precipitation Outlooks								
Target						48	48	48
Actual						50		
Status						Exceeded		
All Temperature Outlooks								
Target						60	60	60
Actual						64		
Status						Exceeded		
All Precipitation Outlooks								
Target						36	36	36
Actual						36		
Status						Met		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Percent Extended and Long Range Climate Prediction Center Outlooks Exceeding Threshold							
Program Activity Name	NATIONAL WEATHER SERVICE							
Type	Output							
Description	Metric calculated as the percent of Climate Prediction Center extended (outlooks out to 14 days) and long range (monthly and seasonal outlooks) temperature and precipitation outlooks exceeding Heidke Skill Score (HSS) of 10 (10% better than a climatological forecast). Due to the scarcity of long range outlooks (six per month), scores are smoothed over a three year period. To better track results, three individual metrics are tracked – 1) All forecasts combined, 2) Temperature only, and 3) Precipitation only.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
All Temperature/Precipitation Outlooks								
Target						75	75	76
Actual						76		
Status						Exceeded		
All Temperature Outlooks								
Target						80	80	81
Actual						80		
Status						Met		
All Precipitation Outlooks								
Target						70	70	71
Actual						73		
Status						Exceeded		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Number of new partner observing system data sources included in operational product and service generation.							
Program Activity Name	NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE							
Type	Intermediate Outcome							
Description	Utilization of new observing systems to provide NESDIS products and services and may include utilization of multiple sensors on each observing system.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target						NA	NA	2
Actual								
Status								NEW

OTHER INDICATORS

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Number of StormReady Communities (cumulative)							
Program Activity Name	NATIONAL WEATHER SERVICE							
Description	<p>Americans live in the most severe weather-prone country on Earth. StormReady Communities support a Weather- Ready Nation by preparing for the occurrence of high impact environmental events. On an annual basis NWS targets 100 new StormReady Communities pending funding availability. StormReady supports NWS’ disaster risk reduction strategy and is offered to provide guidance and incentive to officials who want to improve their hazardous weather and flood operations. A long-term goal for the program is to make every county or county-equivalent in the United States StormReady. The 2010 U.S. Census identifies 3,234 county or county-equivalents in the United States. We are 44 percent of the way there with 1,419 county or county- equivalents currently recognized as StormReady. A StormReady Community is defined as a local government* entity or facility** that has the authority and ability to adopt the StormReady recognition guidelines for the residents and visitors within its jurisdiction.</p> <p>*The term “local government” means –</p> <p>(A) A county, parish, borough, municipality, city, town, township, local public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government;</p> <p>(B) An Indian tribe or authorized tribal organization, or Alaska Native village or organization; and a rural community, unincorporated town or village, or other public entity, which has the ability to achieve StormReady recognition.</p> <p>**The term “facility” for a StormReady community exclusively means - universities, military installations, state/national parks, power plants/utilities, transportation centers (e.g., airports), theme parks/entertainment complex, and large event venues (e.g. stadiums).</p>							
Target	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Actual (cumulative)	2,242	2,409	2,597	2,750	3,060	3,191		

Strategic Goal	Strengthen U.S. Economic and National Security							
Objective #	3.3 Reduce Extreme Weather Impacts							
Indicator	Number of TsunamiReady Communities (cumulative)							
Program Activity Name	NATIONAL WEATHER SERVICE							
Description	<p>Americans live in the most severe weather-prone country on Earth. TsunamiReady Communities support a Weather-Ready Nation by preparing for the occurrence of high impact environmental events. On an annual basis NWS targets 50 new and renewed TsunamiReady communities pending funding availability.</p> <p>A TsunamiReady County or Community or Tribe is defined as a coastal local government entity* that has the authority and ability to adopt the TsunamiReady recognition guidelines for the residents and visitors within its jurisdiction.</p> <p>*The term “local government” here means –</p> <ul style="list-style-type: none"> (A) a county, parish (LA), borough (AK), or municipality (PR) (B) an incorporated municipality, city, town, or township (C) an Indian tribe or authorized tribal organization, or Alaska Native village or organization (D) a military installation 							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Actual (cumulative)	177	189	199	203	210	216		

NON-RECURRING INDICATORS (not reported after FY 2019)

Strategic Goal	Accelerate American Leadership							
Objective #	1.1 Expand Commercial Space Activities							
Indicator	Number of engagements with the commercial space industry or within major space policy decision processes							
Program Activity Name	NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE							
Type	Output							
Description	This measure quantifies the Office of Space Commerce’s activity in terms of interactions with external and interagency stakeholders – for example, participating in major government/industry workshops or representing the Department at White House decision meetings on space policy. This measure is being retired and replaced by three new indicators: one focusing on interagency processes; and two focusing on external stakeholders.							
	FY 2014							
Target	N/A	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Actual	N/A	10	10	10	10	16	DISC	DISC
Status		10	10	10	10	16		
		Met	Met	Met	Met	Met		

Strategic Goal	Accelerate American Leadership							
Objective #	1.1 Expand Commercial Space Activities							
Indicator	Staff hired and trained to facilitate transition							
Program Activity Name	NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE							
Type	Intermediate Outcome							
Description	This metric counts staff growth to facilitate the transition of Space Situational Awareness (SSA) functions to DOC. The indicator is being replaced with the following indicator “Milestones achieved...” which incorporates staffing as an element.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target		N/A	N/A	N/A	N/A	4	DISC	DISC
Actual		N/A	N/A	N/A	N/A	4		
Status						Met		

Strategic Goal	Enhance Job Creation							
Objective #	2.3 Strengthen Domestic Commerce and the U.S. Industrial Base							
Indicator	Number of natural resource environments managed by the Office of National Marine Sanctuaries in which water, habitat, and living resource quality is stable or improving							
Program Activity Name	NATIONAL OCEAN SERVICE							
Type	Outcome							
Description	Each natural resource protection site within the National Marine Sanctuary System periodically assesses the condition of those natural resources. The Office of National Marine Sanctuaries (ONMS) works with independent experts to identify and document resource trends in Condition Reports produced during the management plan review cycle. This measure reports the number of environments, defined for each site in its respective Condition Report (e.g., nearshore, offshore, entire site), rated as having “stable” or “improving” water, habitat, and living resource quality in their most current evaluation. An environment is considered to be maintaining or improving water, habitat and living resource quality if trends for no more than 20% of Condition Report questions have been rated as declining.							
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Target				9	9	10	DISC	DISC
Actual		9	9	9	9	9		
Status				Met	Met	Met		

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