
From: Garwin Yip - NOAA Federal <garwin.yip@noaa.gov>
Sent: Tuesday, April 9, 2019 8:27 AM
To: Cathy Marcinkevage - NOAA Federal
Cc: Howard Brown
Subject: Re: Climate Change

Some quick edits, attached.

-Garwin-

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On Mon, Apr 8, 2019 at 11:28 PM Cathy Marcinkevage - NOAA Federal <cathy.marcinkevage@noaa.gov> wrote:

Very drafty climate change text/my notes -- or, what we're going to do b/c what they used is terribly outdated. Now we need to actually "do" the "qualitative analysis".

I'll get this into something more polished and get in front of Maria, but happy to hear thoughts earlier.

Air temperature increase in the biological assessment in 2025 is 0.7 to 1.4 degrees C temperature in BA; in fourth California assessment in 2020 to 2059 is 1.9 degrees C. Sea level rise in the biological assessment for 2025 is 15cm with the range of 12 to 18 cm and in 2045 is 45 cm. Sea level rise in the BA at 2030 is 1 to 15 cm, 2050 is 10- 38 cm, and in 2100 is 72 to 240 cm.

It is beyond nmfs expertise, scope, and resources to develop model simulations that reflect these more updated climate projections. This would require modifications to the base meteorological and hydrologic modeling that is the first if not one of the very early steps in the chain of models used to provide analytical tools to support the modeling. See AA figure of models used and flow of data.

Temperature. The updated projection has temperature at more than 30% greater increase than what is characterized in the shorter-term 2025; this is nearly a full degree greater for the longer-term at 2100. Therefore in-river summer water temperature increases (these are already bad) and this will increase the pressure on fall months (which are already challenging) as cold water pool depletes over summer. This would also affect cold water pool and reservoir temperatures because of earlier snow melting, or more warming or earlier warming of water in the reservoir, increased use of cold water pool management to keep downstream temperatures in a suitable range. NMFS cannot quantify the effect of this on species, but will assume that the provided modeling represents a best-case scenario and therefore will use that as an analysis of best-case while layering on qualitative evaluations of increased climate effects to the species based on the updated assessments.

Sea Level Rise. The fourth assessment has an increased salinity and tidal forcing which will reduce the effects of riverine flow. The difference in the assessment is especially apparent in the long-term 2100 scenario because of higher sea level rise then. No large-scale tidal restoration is included in the proposed action as designed to address this. It is conceivable to expect increased restrictions on operations due to higher frequency of water quality excursions due to increased saltwater intrusion. There is also anticipated to be less seaward flow in highly tidal areas and also tidally influenced areas like the south delta. Therefore what was analyzed in the modeling of the biological assessment has been viewed by NMFS as the best case and consistent with the 4 CA Assessment for 2030, but is considered as an absolute best case for late 2000s when the assessment projects much greater increases than those captured in the modeling of 2030 in the BA.