



MEMORANDUM

TO: Ocean Protection Council

FROM: Sarah Flores, Project Manager

DATE: March 27, 2013

RE: Update of the State of California Sea-Level Rise Guidance Document

ATTACHMENTS: State of California Sea-Level Rise Guidance Document

BACKGROUND

In October 2010, the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT) finalized the [*State of California Sea-Level Rise Interim Guidance Document*](#)¹ (*Interim Guidance Document*), which provided guidance for incorporating sea-level rise (SLR) projections into planning and decision making for projects in California. On March 11, 2011, the Ocean Protection Council adopted a Resolution stating that state agencies should follow the *Interim Guidance Document* as well as future guidance documents developed by the CO-CAT. The *Interim Guidance Document* has now been updated: please see the attached *State of California Sea-Level Rise Guidance Document*.

The *Interim Guidance Document* was developed in response to Governor Schwarzenegger's Executive Order S-13-08, issued on November 14, 2008, which directed state agencies to plan for sea-level rise and other climate change impacts. That executive order also requested the National Academy of Sciences (NAS) to issue a report on sea-level rise to advise California on planning efforts. The *Interim Guidance Document* was considered interim because it was expected that the document would be updated when the NAS report was completed.

The final report from the National Academy of Sciences, [*Sea-Level Rise for the Coasts of California, Oregon, and Washington*](#)², was released in June 2012. The *State of California Sea-Level Rise Guidance Document (SLR Guidance, Attachment 1)* has now been updated to include the best current science, as summarized in the NAS report. The purpose of the *SLR Guidance*

¹ Sea-Level Rise Interim Guidance Document (2010).
http://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20110311/12.SLR_Resolution/SLR-Guidance-Document.pdf

² Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future (2012).
http://www.nap.edu/catalog.php?record_id=13389

remains the same, to help state agencies incorporate future sea-level rise impacts into planning decisions. Specifically, this *SLR Guidance* provides information and recommendations to enhance consistency across agencies in their development of approaches to sea-level rise. Because of their differing mandates and decision-making processes, state agencies will interpret and use this document in a flexible manner, taking into consideration risk tolerances, timeframes, economic considerations, adaptive capacities, legal requirements and other relevant factors. Although the estimates of future sea-level rise provided in this document are intended to enhance consistency across California state agencies, the document is not intended to prescribe that all state agencies use specific or identical estimates of sea-level rise as part of their assessments or decisions.

The underlying premise of the *SLR Guidance* is that sea-level rise potentially will cause many harmful economic, ecological, physical and social impacts and that incorporating sea-level rise into agency decisions can help mitigate some of these potential impacts. For example, sea-level rise will threaten water supplies, coastal development, and infrastructure, but early integration of projected sea-level rise into project designs will lessen these potential impacts.

DEVELOPMENT OF ORIGINAL GUIDANCE

The Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT), led by the Ocean Protection Council, worked collaboratively to develop the *Interim Guidance Document* prior to the release of the NAS report. The *Interim Guidance Document* was developed based on the best available science at the time. CO-CAT includes staff from the state entities listed below. Staff from these state entities worked collaboratively from July through October 2010 to develop the first version of this document, the *Interim Guidance Document*, and reached agreement on the document's recommendations.

Because the science related to sea-level rise is continuously advancing, the state's guidance on sea-level rise will be revised periodically to reflect the latest scientific understanding of how the climate is changing and how this change may affect sea-level rise. Staff from CO-CAT agencies developed the revised *SLR Guidance* as well.

- Business, Transportation and Housing Agency,
- Coastal Commission,
- Department of Fish and Game,
- Department of Parks and Recreation,
- Department of Public Health,
- Department of Toxic Substances Control,
- Department of Transportation,
- Department of Water Resources,
- Environmental Protection Agency,
- Governor's Office of Planning and Research,
- Natural Resources Agency,
- Ocean Protection Council,

- Ocean Science Trust,
- San Francisco Bay Conservation and Development Commission,
- State Coastal Conservancy,
- State Lands Commission, and
- State Water Resources Control Board.

2013 UPDATE OF DOCUMENT

The *Interim Sea-Level Rise Guidance Document* explicitly called for a revision when the NAS report was complete and the *SLR Guidance* has now been revised to include information from the NAS report.

The NAS report was released in June 2012. CO-CAT members received copies of the report and attended the Symposium on Sea-Level Rise in California in October of that year, coordinated by staff to the West Coast Governors Alliance. At the Symposium, CO-CAT members heard from Dr. Gary Griggs, a scientist for the NAS report, on the main findings and had an opportunity to ask clarifying questions. From November of 2012 through March of 2013 CO-CAT members reconvened to discuss the update of this document and reviewed the draft revisions. CO-CAT members came to consensus over retaining the recommendations stated in the *Interim Guidance Document* (2010); updating the *SLR Guidance* per the new set of numeric ranges of SLR presented in the 2012 NAS report; and incorporating additional recommendations as detailed below.

CO-CAT members worked with the California Ocean Science Trust (whose Executive Director is the OPC's Science Advisor) to ensure that the update to this document accurately incorporated the scientific findings in the 2012 NAS report. The Sea Level Rise Task Force of the OPC's Science Advisory Team responded to questions posed by CO-CAT (attached as Appendix 2) and their responses informed the policy recommendations below. The following members of the OPC's Science Advisory Team participated in the process:

- Dr. Dan Cayan, Research Meteorologist, University of California, San Diego, Scripps Institution of Oceanography and U. S. Geological Survey,
- Dr. Gary Griggs, Director of the University of California, Santa Cruz Institute of Marine Science, and
- Dr. Sam Johnson, Research Geologist, U.S. Geological Survey, Pacific Science Center.

The updated *SLR Guidance* incorporates new information presented in the NAS Report. The major additions to the document are summarized below.

- Updates the ranges of sea-level rise predicted for the years 2030, 2050 and 2100. The NAS Report sea-level rise projections are similar to the projections for 2030 and 2050 presented in the *Interim Guidance Document* (2010), but have a wider range. For 2100, the NAS projections are lower than those in the *Interim Guidance Document* (2010), due to differences in modeling approaches and consideration of regional impacts.

- Acknowledges different rates of sea-level rise for regions north and south of Cape Mendocino. The NAS Report highlights that tectonic activity north of Cape Mendocino occurs by the collision of tectonic plates in the Cascadia Subduction Zone, causing vertical land motion and lower rates of sea-level rise. South of Cape Mendocino, tectonic activity occurs along the San Andreas Fault Zone, where the plates are sliding past one another. Because of the different tectonic contexts of the two regions, separate sea-level rise ranges are presented for north and south of Cape Mendocino.
- Considers predicted tectonic activity and the significant risk posed to the region north of Cape Mendocino from a large earthquake (magnitude greater than 8) along the Cascadia Subduction Zone, as advised in the NAS Report. Although the purpose of the document is to provide guidance on SLR impacts from climate change, not tectonic hazards, it is important to communicate the role that tectonic activity can have on changing relative sea level.
- Strengthens language on impacts of storms and other extreme events. As before, planners and managers are directed to consider storms and other extreme events; however, there is greater emphasis in this version of the document towards consideration of their associated hazards. Per the findings in the NAS Rreport, the SLR Guidance stresses that most of the damage along the coast in the near term is expected to be caused by storms, in particular, the confluence of large waves, storm surges, and high astronomical tides during a strong El Niño.

Apart from the changes outlined in the four bullets, the policy recommendations in the *SLR Guidance* are the same as those developed in 2010.