

**CALIFORNIA COASTAL COMMISSION**

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# W6b

October 28, 2016

**TO:** Coastal Commission and Interested Parties

**FROM:** John Ainsworth, Acting Executive Director  
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Sea Level Rise Team

**SUBJECT:** Briefing and updates on implementation of the Adopted Sea Level Rise Policy Guidance. **DISCUSSION ITEM ONLY.**

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## I. Summary

On August 12, 2015, the California Coastal Commission unanimously adopted its *Sea Level Rise Policy Guidance: Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits*. The document provides recommendations for local governments, applicants, and others for how to address sea level rise in Local Coastal Programs (LCPs) and Coastal Development Permits (CDPs). It also provides a background of the best available science on sea level rise, and describes the importance of avoiding hazards and protecting coastal habitats and other coastal resources as sea level rises.

The adoption of the Sea Level Rise Policy Guidance completed *Action Item 3.1.1* in the Coastal Commission's [2013-2018 Strategic Plan](#). It represented the culmination of a multi-year effort to develop guidance for how to address sea level rise within the context of the Coastal Act, and included significant coordination with other state agencies, local governments, environmental organizations, the public, and other interested parties. Throughout the development of the document, and at the time of its adoption, it was noted that the document was not the end of the process, but rather a part of the Commission's ongoing efforts to more fully address sea level rise.

In the time since the adoption of the Guidance, Commission staff has continued to actively engage with local governments and other stakeholders to implement the Guidance. This implementation has occurred through three main avenues: coordination of the LCP Local Assistance Grant Program, outreach and training events, and ongoing coordination with various agencies and stakeholder groups. Commission staff is also working on several ongoing federally funded grant projects related to sea level rise and continues to identify data gaps, information

needs, and next steps as sea level rise adaptation planning work continues to evolve. This ongoing work partially fulfills a number of strategic plan objectives, including **Objective 3.1** (*Develop LCP Permitting and Guidance*), **Objective 3.2** (*Assess Coastal Resource Vulnerabilities*), **Objective 4.1** (*Pursue LCP Certification*), **Objective 4.2** (*Update LCPs*), and **Objective 4.4** (*Improve Local Government Communication*).

This briefing memo provides updates on the work Commission staff have been doing to implement the Sea Level Rise Policy Guidance. It provides information on work completed through the LCP Local Assistance Grant Program as well as ongoing outreach, training, and coordination efforts. It also identifies several lessons learned, information gaps, and important next steps that Commission staff will continue to address. Strategic Plan objectives and actions related to ongoing work are noted where applicable.

For more information on sea level rise and to download the Sea Level Rise Policy Guidance document, visit: <https://www.coastal.ca.gov/climate/slr/>

For more information on the Strategic Plan, visit: <https://www.coastal.ca.gov/strategicplan/spindex.html>

For more information on the LCP Local Assistance Grant Program, visit: <https://www.coastal.ca.gov/lcp/grants/>

## II. LCP Grant Program

*Coordination of the LCP Grant program partially fulfills Strategic Plan Goals:*

- **3.1.2** – *Develop coastal hazards LCP and permitting guidance*
- **3.1.4** – *Provide public information on adaptation planning*
- **3.2.1** – *Conduct (and/or participate in) an assessment of urban/rural areas*
- **3.2.6** – *Implement grant program w/ SCC/OPC to support LCP updates*
- **Numerous objectives/actions for Goal 4: Strengthen the LCP Planning Program**

The Coastal Commission has awarded three rounds of its LCP Local Assistance Grant Program. This includes the awarding of approximately \$4.5 million to 29 different local jurisdictions for a range of activities including completion of sea level rise vulnerability assessments, adaptation reports, technical studies, and LUP and IP amendments, updates or new certifications (*see Attachment A for a table of LCP Local Assistance Grant Program awards*). There is currently about \$500,000 reserved for a 4<sup>th</sup> round of grants. Commission staff anticipates releasing the call for proposals for this round in 2017.

To date, Commission staff has received and reviewed 16 different sea level rise vulnerability assessments (*Trinidad, Arcata, Marin, San Francisco, Half Moon Bay, City of Monterey, Pacific Grove, Morro Bay, Santa Barbara County, Goleta, City of Santa Barbara, Oxnard, Hermosa, San Diego County, Carlsbad, Del Mar*), 2 standalone adaptation reports (*Marin, Del Mar*), and LCP work from 13 different jurisdictions (*Humboldt, Arcata, Marin, San Francisco, Half Moon Bay, Pacific Grove, Goleta, City of Santa Barbara, Hermosa, Newport Beach, San Clemente,*

*San Diego County, Solana Beach*)<sup>1</sup>. Of those 13 jurisdictions that have completed some LCP work, Newport Beach completed a new Implementation Plan which was approved with modifications by the Commission in September 2016, and Marin County has completed an LCP update which will be heard by the Commission on November 2, 2016.

The 3<sup>rd</sup> round of grants, awarded in August 2016, is anticipated to add a variety of technical studies and planning work including 7 new sea level rise vulnerability assessments; 10 studies related to assessing coastal habitats, sediment management, lower-cost accommodations, public access, parking, or other coastal resources; 7 sea level rise adaptation plans; and extensive LCP planning work.

A number of other vulnerability assessments and adaptation planning projects funded by the Commission's partner agencies are underway. The Ocean Protection Council, Coastal Conservancy, and other regional or Federal agencies and local governments are working on a variety of climate change adaptation issues. Commission staff engages on these projects to the greatest extent feasible.

Through the LCP Grant program, and in addition to regular coordination meetings and general guidance, Commission staff generally receives drafts of vulnerability assessments, adaptation plans, and other deliverables, and has the opportunity to review them, provide additional input, ask questions about items that need clarification, and make suggestions regarding additional topics that need to be addressed prior to the finalization of the documents. This review is typically coordinated among District Office Staff, the LCP Grants Team, and the Sea Level Rise Team. Such coordination ensures that various topics are addressed in a manner that recognizes both locally-specific contexts and needs, as well as statewide interests and best practices.

Throughout the coordination of the LCP Grant Program, the LCP Grants Team and Sea Level Rise Team have identified a variety of frequently asked questions, best practices, and lessons learned, particularly regarding vulnerability assessments. A number of these topics are summarized below, and build off of the recommendations contained within the Guidance, but with additional information and refinements. Materials that are currently being developed to provide grantees and others with additional information on best practices are noted in the Outreach and Training section of this update. Additional information and resources needs as well as evolving policy challenges that have been identified are noted in the Next Steps section.

- ***Sea Level Rise Projections and Scenarios for Vulnerability Assessments:*** Commission staff commonly receives questions about which sea level rise projections should be analyzed, and particularly if a high projection for the year 2100 should be used. Staff recognizes that scenarios should be selected to complement the planning objectives relevant to the jurisdiction, but continues to recommend, in line with other statewide guidance, that at least one scenario should be the high projection for 2100.

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<sup>1</sup> Note that this includes work from the first two rounds of grants, and summarizes work on early draft documents, revised drafts, and submittals.

- **Storm Scenarios:** Commission staff continues to recommend that assessments consider both storm-and non-storm scenarios. Some vulnerability assessments include storm events (usually a 100-year event) in all of the SLR scenarios selected to be analyzed in the vulnerability assessment. While important to include, the vulnerability assessment should also examine non-storm scenarios in order to provide information on the “everyday” hazard conditions that may occur in the future with SLR. The storm (flooding) and non-storm analyses (inundation) will lead to different adaptation approaches implemented through the LCP.
- **Beach Width and Coastal Squeeze:** Vulnerability assessments should explore the impacts of sea level rise on the sandy beach, along with the associated impacts to coastal resources like access and habitats, rather than exclusively on development or other critical assets. Where development and protective structures are in place, one consequence as sea levels rise is “coastal squeeze” – the incremental loss of recreational beach area and other shoreline habitats in front of hardened shorelines due to the inability of these habitats to naturally migrate. These natural resources are protected by the Coastal Act and usually comprise important components of coastal economies. If possible, the vulnerability assessment should generate information about the timeframes over which beaches could be lost under different management scenarios –e.g., with and without development preventing the landward migration of the beach; or with or without sediment management practices such as beach nourishment.
- **Seawalls:** Impacts from sea level rise should be analyzed with a scenario assuming existing seawalls remain and a scenario assuming they are removed. The “with existing protective devices” scenario should describe the impacts of SLR seaward of the device—for example, what would happen to the sandy beach or other coastal land as sea levels rise. The “without existing protective devices” scenario should describe the impacts that would occur in the area, including landward of device’s location, if relevant. Together, these analyses will support alternatives analysis of management and land use options for both the protective device and the structure or area it is protecting.
- **Fiscal Impacts/Economic Analyses:** It can be useful to include an analysis of the fiscal impacts associated with various sea level rise hazards in the scope of the vulnerability assessment or adaptation plan. This information can be compared to the cost of various adaptation strategies—from engineered solutions to managed retreat—when evaluating alternative adaptation approaches to address sea level rise vulnerabilities. It is also important that the economic analyses account for the benefits of the evaluated adaptation options, such as the benefit that accrues when beaches are allowed to migrate naturally and aren’t subject to the aforementioned ‘squeeze’. The information can be used as a useful communication tool to illustrate the need for proactive adaptation planning to the public, stakeholders, and/or decision makers.
- **Level of detail necessary to support adaptation planning:** Highly detailed vulnerability assessments based on the most technologically advanced modelling, that cover the entire breadth of possible topics related to sea level rise will not be possible or even necessary in all circumstances. The best tools available at the time should be used to assess a range of impacts to coastal resources, as even the most basic assessment will provide valuable information for adaptation planning. In cases where critical concerns arise through a first

screening, it may be possible or necessary to do follow-up focused studies, and the Commission has awarded grants for such work. In all cases, though, it is critical that vulnerability assessments clearly state any information gaps and/or assumptions and qualitatively describe what these mean in terms of identified (or unidentified) vulnerabilities.

- **Adaptation Plans:** To date, two standalone, detailed adaptation reports have been submitted as LCP grant products (*both currently as draft products*). In several other cases, vulnerability assessments have included a broad overview of potential adaptation strategies. In general, having a separate adaptation planning stage in between the vulnerability assessment and LCP policy development stages is a useful approach as it allows for a broader discussion of preferred adaptation approaches with stakeholders, without the need to identify specific policy language early on in the process.

### III. Outreach and Training

*Ongoing outreach and training partially fulfills Strategic Plan Goals:*

- **3.1.2** – *Develop coastal hazards LCP and permitting guidance*
- **3.1.4** – *Provide public information on adaptation planning*
- **4.4.5** – *Increase LCP Training/Coordination for local governments*

Since the adoption of the Sea Level Rise Policy Guidance in August 2015, Commission staff have participated in 31 different outreach and training events. This includes 20 different events for external audiences and 11 for Commission staff. Preparation for and participation in these events is supported by the Commission’s 2015 NOAA Coastal Zone Management Act Section 309 funding, and the individual events are typically summarized in the Executive Director reports discussed at each Commission hearing.

#### ***External Outreach and Training***

External events have included a variety of presentations at local or regional climate change and sea level rise adaptation planning events (*e.g., workshops hosted by AdaptLA and the San Diego Regional Climate Collaborative*) and environmental and legal conferences/symposia (*e.g., UC Davis Environmental Law Symposium, California State Association of Counties Legislative Conference, Ocean Climate Summit, Continuing Legal Education Conference on California Coastal Law*) as well as training events with other state agencies (*e.g., Caltrans, BCDC, Coastal Conservancy*) and practitioners’ organizations (*American Planning Association, American Council of Engineering Companies*).

Audiences for these events have included a mix of federal and state agency staff, elected officials, local government planners, those working in the field – including lawyers, engineers, researchers, and staffs of various environmental non-profits – students, and members of the public. Between coordination of the LCP Grant Program and other outreach and training events, the Sea Level Rise Team has presented on the Guidance and/or discussed issues related to sea level rise adaptation planning throughout the state over the past year, including in several non-coastal counties as well as webinars available to interested parties across the state and country.

Over time, and depending on the event and audience in question, outreach presentations have evolved to reflect the level of awareness and understanding of the Sea Level Rise Policy Guidance itself, as well as the stage(s) at which various local governments and other stakeholders are in the adaptation planning process. For example, early presentations focused on the recommendations, information, and resources described in specific chapters within the Guidance, then shifted to highlight sea level rise science and mapping and modelling tools that can be used to support sea level rise vulnerability assessments.

More recently, presentations have started to focus on individual adaptation strategies that have been used by the Coastal Commission and local governments to address coastal hazards, including recent examples associated with LCP policy language and CDP terms and conditions, as well as more innovative strategies that are being discussed, developed, and implemented in California and around the country. Commission staff anticipates continuing to update their outreach strategy as more grantees and others in California continue to update their LCPs and/or implement specific projects to address sea level rise so as to ensure that audiences receive the most up to date and pertinent information possible.

In addition to outreach events, Commission staff have updated the agency's [public website](#) to include information from the Guidance and other resources on sea level rise that could support public understanding and participation in Commission efforts on adaptation planning. The website now includes summarized information on sea level rise science, news, tools and resources, and relevant Coastal Act policies. The website will continue to be updated in future as Commission staff continues its efforts to implement and expand upon the Guidance.

### ***Internal Coordination and Training***

The Commission's Sea Level Rise Team has also spent significant time on training events and other internal coordination with Commission staff to ensure that district, energy and ocean resources, technical, and legal staff are aware of and understand the information and recommendations contained within the Sea Level Rise Guidance, as well as evolving information on sea level rise science, useful tools and resources, and best practices and innovative methods to address sea level rise impacts.

Following the August 2015 adoption of the Guidance, internal training began with a staff workshop held in December 2015. This workshop included brief presentations on topics from the Guidance related to vulnerability assessments and adaptation planning, and included significant time devoted to encouraging staff members to ask questions and to discuss anticipated adaptation planning challenges, including through targeted breakout sessions.

Following the staff training workshop, the Sea Level Rise Team met with each District office as well as the Energy and Ocean Resources Unit on an individual basis. Each of the meetings included training on locally relevant sea level rise mapping and modelling tools (*e.g. the Humboldt Bay Sea Level Rise Inundation Mapping work, Our Coast Our Future, the Nature Conservancy's sea level rise mapping tool for Monterey Bay and Ventura County, CoSMoS 3.0*), as well as a discussion of locally-relevant sea level rise vulnerabilities and related topics of concern. These meetings also helped the Sea Level Rise Team get a better understanding of the needs of both district staff and local governments throughout the state.

Throughout both the external and internal outreach and training events, the Sea Level Rise Team identified several topics that could benefit from additional guidance. Resources that the Sea Level Rise Team has completed or is working to develop to provide additional information for Commission Staff and other interested parties are summarized below.

- ***Special Conditions Compendium:*** Leveraging Section 309 Enhancement Grant funding, Commission staff has been working to update and expand a compendium for use by Commission staff of special conditions adopted by the Commission in various cases or that could be used to address certain fact sets. As part of this effort, the Sea Level Rise Team is working to ensure that conditions related to coastal hazards and development in hazardous areas adequately address sea level rise issues.
- ***Memo on how to perform a vulnerability assessment:*** The Sea Level Rise Team is working to develop a memo that summarizes key points in Chapter 5 of the Guidance (*Addressing SLR in LCPs*) and shares some of the practical lessons that staff have learned through their recent work with local governments on sea level rise vulnerability assessments. The goal is to provide a concise summary of recommendations and lessons learned to help expedite or improve future work by ensuring that assessments are scoped and performed in such a way that effectively supports sea level rise adaptation planning, alternatives analysis, and LCP policy development.
- ***Memo on information needs to address sea level rise and coastal hazards in CDP applications:*** The Sea Level Rise Team is working to develop a memo that is intended to provide coastal analysts with information and example language that can be used in a filing letter or related coordination with applicants when asking for an analysis of coastal hazards and sea level rise. The memo is generally similar to the information coastal analysts have requested in the past to be included in a geotechnical study that analyzes potential impacts from coastal hazards, but includes additional detail on how to incorporate sea level rise into those analyses. It thus builds off of past procedural memos and guidance, such as the *Beach Erosion and Response (BEAR) Guidance Document* (1999), and incorporates information and recommendations from Chapter 6 (*Addressing SLR in CDPs*) of Sea Level Rise Policy Guidance.
- ***Comparison of available Sea Level Rise Mapping and Modelling Tools:*** Building off of work completed by NOAA and other partners, the Sea Level Rise Team is planning to prepare a brief memo that provides information on the various available sea level rise mapping and modelling tools. This memo is intended to include information on where various tools are applicable, what coastal processes are captured by the tool, what assumptions are made, and recommendations of what tools or combinations of tools should be used to address various topics.

## IV. Coordination

### *Ongoing coordination partially fulfills Strategic Plan Goals:*

- *3.1.2 – Develop coastal hazards LCP and permitting guidance*
- *3.1.4 – Provide public information on adaptation planning*
- *3.1.5 – Participate in Climate Action Team*
- *3.1.6 – Coordinate with NRA/OPR/CalOES re: Hazard Mitigation Plans*
- *3.2.2 – Work with partners to assess transportation infrastructure*

In addition to specific outreach and training events, the Commission’s Sea Level Rise Team continues to be engaged in ongoing coordination with a variety of regional, state, and federal partners. Such coordination ensures that the Sea Level Rise Team is able to stay up to date on evolving sea level rise science, tools, adaptation approaches, and issues of local, regional, and/or statewide concern. It also ensures that the broad range of stakeholders involved in sea level rise adaptation planning understand the Coastal Commission’s role and approach to adaptation planning and encourages stakeholders to begin addressing the complex challenges associated with sea level rise in a more holistic, integrated, and proactive manner. Several important ongoing coordination efforts in which Commission staff are involved are highlighted below.

- ***Core Coastal Commission work on LCPs and CDPs:*** One of the most critical ways that Commission staff implements the Sea Level Rise Guidance is through staff’s everyday core regulatory and LCP planning work. Staff continues to apply the most up-to-date and relevant science and best practices on sea level rise adaptation planning to the analytical process for determining a project or LCP’s consistency with the Coastal Act. This includes review of CDP applications by Commission staff as well as coordination on the development of new or updated LCP policies. Staff further implements the Guidance at the local level through the post-certification monitoring process by providing recommendations to local governments on how to apply the principles of the Guidance in their analysis of local projects to determine consistency with the LCP.

This review and coordination process often includes recommendations regarding relevant sea level rise scenarios, information on how to analyze potential impacts to a site or region from sea level rise, alternative measures to minimize risks from hazards and to maximize the protection of coastal resources, and recommendations for how to implement different adaptation approaches.

Recent Commission approvals of CDPs and LCPs (including new certifications as well as updates) that address sea level rise and coastal hazards have included a variety of adaptation approaches. For example, Commission staff have addressed sea level rise concerns through policy language and/or recommended conditions of approval related to redevelopment definitions, monitoring of impacts, setback calculations, waiving rights to future shoreline development, and triggers for implementing future adaptation strategies. Staff will continue to coordinate with local governments, project applicants, and other relevant stakeholders to enhance the implementation of these and other adaptation approaches.



- **Caltrans and Coastal Commission Integrated Planning Team:** Caltrans and Coastal Commission staff have worked over the past couple of years as part of an Integrated Planning Team to address a variety of topics related to transportation planning in the Coastal Zone. One of the most critical topics is addressing sea level rise. Recent coordination work broadly includes identification of strategies for working together to better align ongoing Federal, State, regional, and local SLR vulnerability assessments and to improve integration of land use and transportation plans for dealing with the expected SLR (and other climate change) challenges.

Coordination has also resulted in recommendations for near term efforts to screen Caltrans projects that are under development for potential impacts from sea level rise and recommendations for how, in the longer term, Caltrans can build on the results of ongoing vulnerability assessments and existing guidance and planning processes to develop more robust frameworks for addressing sea level rise in project and system planning.

- **FEMA Coastal Resilience Collaboration:** Over the course of the last year, Commission staff, along with partners from the Coastal Conservancy, NOAA, USC Sea Grant, and USGS, have been working with FEMA Region 9 to develop workshops designed to engage local government staff and other relevant stakeholders in a discussion about community resilience to hazards and climate change. Planned multi-agency resilience workshops are intended to bring together federal and state agency partners along with local planners, emergency managers, floodplain managers, and others from local governments to discuss hazards and vulnerabilities in local communities and to learn about tools, guidance documents, and grant programs to support resilience planning (including the Commission's Sea Level Rise Policy Guidance and LCP Grant Program).

A primary goal for the Sea Level Rise Team is to identify and describe similarities among the goals, planning processes, and outcomes of LCPs and Local Hazard Mitigation Plans and to identify opportunities for enhancing alignment between these related plans with the goal of leveraging resources to better support proactive sea level rise adaptation planning and implementation of adaptation strategies and/or projects.

- **Regional Collaboratives for Climate Adaptation:** Commission staff from both the Sea Level Rise Team and District Offices continue to participate and coordinate with various Regional Collaboratives for Climate Adaptation (e.g., *San Diego Regional Climate Collaborative*, *LA Regional Collaborative for Climate Action and Sustainability*, and the newly formed *Central Coast Climate Collaborative*). These regional collaboratives generally serve as convening bodies to bring together staffs from various local, state, and federal agencies, elected officials, researchers, practitioners, members of the public and others to coordinate climate resiliency efforts in a cross-jurisdictional manner. As identified above, Commission staff have also presented at numerous meetings hosted by these Collaboratives.
- **State Agency and CO-CAT Coordination:** Commission staff continues to coordinate as applicable with other state agencies including the California Natural Resources Agency, the Governor's Office of Planning and Research, the Ocean Protection Council, the State Coastal Conservancy, and the State Lands Commission, as well as the Coasts and Oceans group of the Climate Action Team (CO-CAT) on relevant efforts related to sea level rise

planning. Example efforts that staff has and will continue to coordinate on include: tracking and implementation of *Safeguarding California*; efforts related to various Senate and Assembly bills (e.g., AB 2516, AB 691, SB 246, SB 379); OPC and SCC Grant Programs; anticipated future updates to OPC’s State Sea-Level Rise Guidance; and the 4<sup>th</sup> California Climate Change Assessment.

## V. Next Steps

As explained in the sections above, staff will continue to develop online guidance and tools to assist local governments with the preparation of sea level rise vulnerability assessments and adaptation planning, including developing sample policy/ordinance language related to sea level rise adaptation.

In addition to continuing the ongoing coordination of the LCP Grant Program, and other outreach, training, and coordination efforts, the Commission has several ongoing grant-funded projects related to sea level rise adaptation planning. Staff has also identified a number of next steps and policy challenges that it intends to engage on in the future. These specific work efforts and policy challenges are summarized below.

### *Federally Funded Grant Projects*

- ***Coastal Impact Assistance Program (CIAP)***: The Sea Level Rise Team has spent a significant portion of the last year working on a Climate CIAP project to synthesize vulnerability information from discussions with District Staff and Local Governments, as well as completed vulnerability assessments, and to use the information to help prioritize future Commission efforts in addressing SLR hazards with a specific focus on coastal resources most at risk. [This project will partially fulfill **Strategic Plan Action 3.2.1 – Conduct assessment of urban/rural areas**]
- ***NOAA Project of Special Merit – “Managing the Coastal Squeeze – Resilience Planning for Shoreline Residential Development”***: Staff continues to work on a project to conduct a statewide assessment of physical shoreline conditions and potential hazards for residential areas along the coast. This characterization will provide the framework for policy guidance for local governments planning for future residential development and sea level rise while assuring the maximum protection and enhancement of the coastal resource values that lie between shoreline residential areas and the sea. Working collaboratively with local governments, staff will use policy and legal analysis to develop the policy guidance and model ordinance language based on the type of development, type of physical shoreline conditions, and geographic context. This project will be completed by September 2017. [This project will partially fulfill **Strategic Plan Action 3.1.2 – Develop coastal hazards LCP and permitting guidance; and Action 3.1.4 – Provide public information on adaptation planning**]
- ***Section 309 Enhancement Grant – “Management Options to Protect Public Trust Resources”***: Commission staff will be beginning work on a multi-year effort that will examine ways to improve interagency coordination between the Coastal Commission, the State Lands Commission (SLC) and potentially other relevant state agencies on issues related to the public trust. The goal of this effort is to develop an adaptive framework for

communication and work going forward that will facilitate collaboration between the agencies in achieving protection of public trust land resources in light of accelerating sea level rise and the ambulatory nature of the public trust boundary. *[This project will partially fulfill Strategic Plan Action 3.1.7 – Coordinate with SLC re: SLR and the Public Trust ]*

### ***Environmental Justice***

The Sea Level Rise Team will also work to expand and enhance efforts to address topics related to environmental and social justice. As identified in the Guidance, sea level rise and how the Commission responds to it may result in significant changes in the distribution of environmental benefits, particularly as it relates to public access to the coast and low-cost recreational opportunities. As the Commission works to address environmental justice concerns throughout its broader planning and policy processes, the Sea Level Rise Team will seek opportunities to coordinate on these issues through such actions as continued coordination with local governments, public outreach, and work with the Commission’s Public Education unit.

### ***Evolving Challenges***

As local governments continue to complete vulnerability assessments, adaptation plans, and LCP updates, the Sea Level Rise Team continues to identify priority planning challenges. Some of these challenges are identified below, and the Sea Level Rise Team will work with other Commission staff, local governments, and others in the field to refine approaches, identify best practices, and provide public information on these topics.

For each of these topics, and adaptation planning in general, one of the biggest challenges is addressing the nuances of each issue on a local scale while still leveraging state and nationwide lessons and best practices. Commission staff will continue to address these topics in a way that is consistent with the Coastal Act and certified LCPs, and that reflects local needs and goals.

- ***Coastal squeeze:*** As mentioned above, Commission staff has noted a need for more information in the vulnerability assessment phase on what will happen to beaches as sea levels rise, particularly those beaches that are backed by development. A more detailed analysis of how beach width will change over time will be required to understand how and when existing development patterns will need to change if beaches are to be protected. Related topics that should also be addressed include understanding how and what aspects of beaches dynamics – including physical impacts to the beach as well as public use of the beach – should be monitored to provide the necessary adaptation planning information.
- ***Addressing existing development:*** Another priority topic is how to address existing development that is vulnerable to sea level rise hazards now or will become so in the future. A variety of mechanisms have been used in the past to address development subject to hazards, and understanding how to better use these methods and others to address sea level rise impacts proactively and feasibly will be required.
  - ***Redevelopment:*** Clear policies related to when and how structures should be brought into compliance with new standards if they are updated or renovated will be an essential piece for addressing vulnerable existing development. Recent

Commission approvals of LCPs and CDPs have included strong redevelopment policies that provide a mechanism for ensuring development is brought into conformance with Coastal Act and LCP policy requirements and will continue to work with local governments to develop redevelopment policies that reach this goal while also recognizing local contexts.

- **Downzoning:** In cases where a more neighborhood or regional approach is needed to change development patterns moving forward, strategies such as downzoning and/or designating areas with specific hazards overlays may be necessary. Understanding the appropriate areas for such actions as well as the phasing and timing of different strategies to be achieved through zoning changes, will require continued detailed vulnerability assessments, legal analysis, and significant coordination with local governments and affected citizens.
- **Achieving managed retreat:** In some cases, the only way to protect beaches and coastal resources in the face of sea level rise will be through achieving relocation or removal of structures in hazardous areas. Managed retreat planning will require continued research and legal analysis to identify appropriate removal mechanisms, as well as research to identify funding opportunities to support buy-outs or other retreat options.
- **Infrastructure:** In addition to private development such as homes and businesses in hazardous areas, a significant challenge for local governments and other stakeholders is addressing infrastructure such as roadways and transportation networks, wastewater, and other utilities that are vulnerable to sea level rise impacts. Commission staff will continue to encourage and support integrated planning efforts with Caltrans, utilities companies, and others, and will continue to engage on complex legal questions such as better understanding how long and under what circumstances cities and counties must continue to provide services to known hazardous areas.
- **Triggers for phased approaches:** Given that sea level rise impacts will be increasing over time, it is likely that different adaptation strategies will be implemented at different points throughout the future. Thus, it will be critical to understand how best to trigger the implementation of different strategies so that this can be done in a planned, proactive way rather than in reaction to significant impacts that occur. Identifying triggers based on timing or the amount of acceptable impacts to coastal resources will require continued coordination with local governments as well as research and legal analysis.

**Attachment A: California Coastal Commission Grant Awards (Rounds 1, 2, and 3)\***

	Jurisdiction	Grant Round	Grant Project	Grant Award
<b>North Coast</b>	County of Humboldt	1	<a href="#">Humboldt County LCPs – Areas of Deferred Certification &amp; Interim Use of Coastal Dependent Industrial Land</a>	\$29,000
		2*	<a href="#">Humboldt County Update to the Humboldt Bay Area Plan</a>	\$125,000
	City of Trinidad	2	<a href="#">Local Coastal Program (LCP) Planning and Sea Level Rise Update</a>	\$80,000
	City of Arcata	1	<a href="#">City of Arcata Local Coastal Program Amendment</a>	\$54,000
<b>North Central Coast</b>	County of Marin	1	<a href="#">C-SMART: Collaborating on Sea-level Marin: Adaptation Response Team</a>	\$54,000
	City and County of San Francisco	2*	<a href="#">Local Coastal Program Amendment</a>	\$173,750
	City of Pacifica	3	<a href="#">City of Pacifica LCP Update to Address Sea Level Rise</a>	\$188,000
	City of Half Moon Bay	1	<a href="#">City of Half Moon Bay Local Coastal Program and General Plan Update</a>	\$75,000
		3	<a href="#">City of Half Moon Bay LCP and General Plan Update</a>	\$85,000
<b>Central Coast</b>	City of Monterey	2*	<a href="#">City of Monterey Local Coastal Program</a>	\$235,000
	City of Pacific Grove	1	<a href="#">City of Pacific Grove Local Coastal Program Update</a>	\$130,000
	City of Morro Bay	2	<a href="#">City of Morro Bay Local Coastal Program Update</a>	\$147,000
		3	<a href="#">Plan Morro Bay: LCP Enhancements</a>	\$200,000
<b>South Central Coast</b>	County of Santa Barbara	2*	<a href="#">Santa Barbara County Coastal Resiliency Project: North Coast Coastal Hazard Modeling, Vulnerability Assessment and Local Coastal Program Amendment</a>	\$183,000
	City of Goleta	1	<a href="#">City of Goleta Local Coastal Program</a>	\$125,000
	City of Santa Barbara	1	<a href="#">Local Coastal Program Update</a>	\$123,000
		3	<a href="#">Local Coastal Program Update Completion Project</a>	\$285,892
	City of Carpinteria	3	<a href="#">City of Carpinteria General Plan/Coastal Land Use Plan Update</a>	\$150,000
	County of Ventura	3	<a href="#">Ventura County LCP Amendment – Sea Level Rise</a>	\$225,000
	City of Oxnard	2*	<a href="#">Local Coastal Program (LCP) Planning and Sea Level Rise Update</a>	\$150,000

<b>South Coast</b>	City of Santa Monica	2	<a href="#">City of Santa Monica LCP</a>	\$225,000
		3	<a href="#">Implementation Plan Submittal</a>	\$100,000
	City of Los Angeles	1	<a href="#">Venice Local Coastal Program</a>	\$100,000
		2	<a href="#">City of Los Angeles Venice Local Coastal Program</a>	\$250,000
	City of Hermosa Beach	1	<a href="#">Hermosa Beach: Integrating the LCP</a>	\$100,000
		3	<a href="#">Hermosa Beach: Education, Implementation, and Certification of the LCP</a>	\$135,899
	City of Seal Beach	3	<a href="#">Seal Beach Local Coastal Program</a>	\$200,000
	City of Newport Beach	2	<a href="#">Newport Beach LCP Implementation Plan Certification Phase II</a>	\$67,000
	City of Dana Point	3	<a href="#">City of Dana Point LCP Planning and Sea Level Rise Update</a>	\$135,000
City of San Clemente	1	<a href="#">Local Coastal Program Update</a>	\$90,000	
	3	<a href="#">San Clemente LCP</a>	\$135,000	
<b>San Diego District</b>	County of San Diego	2	<a href="#">County of San Diego Local Coastal Program Update</a>	\$52,000
	City of Oceanside	3	<a href="#">City of Oceanside LCP Update</a>	\$200,000
	City of Carlsbad	2*	<a href="#">Local Coastal Program (LCP) Planning and Sea Level Rise Update</a>	\$228,000
	City of Solana Beach	1	<a href="#">Solana Beach Local Implementation Program and Mitigation Fee Program</a>	\$120,000
	City of Del Mar	2*	<a href="#">Local Coastal Program Amendment to Address Sea Level Rise</a>	\$100,000
		3	<a href="#">City of Del Mar Supplemental Sea Level Rise Analysis</a>	\$211,220
	City of Imperial Beach	3	<a href="#">Imperial Beach LCP Climate Action Plan</a>	\$225,000
<b>Total</b>				<b>\$5,491,761</b>

\* Note: Round 1 CCC grants include funding from the General Fund. The 2<sup>nd</sup> round of grants was jointly funded, solicited, reviewed, and awarded with the Ocean Protection Council, and all grants are managed by CCC staff. Grant awards for the specified Round 2 projects reflect \$1M in CCC funding (from the General Fund) and ~\$1M in OPC funding for that grant round. The 2015 Budget Act directed the State Coastal Conservancy to make \$3M in bond funds available for the LCP Grant Program. The Round 3 grants are funded through these Conservancy Bond Funds. Other funding sources, including Conservancy grants and other OPC grant rounds are not included here.