

Humboldt Bay Sea Level Rise  
Regional Planning Feasibility Study  
LCP-19-01

## Task 2. Research Memo



Overtopped dike in low-lying former tidelands of Humboldt Bay following King tides in 2018. Photo credit to Aldaron Laird.

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The Humboldt Bay Sea Level Rise Regional Planning Feasibility Study is part of California Climate Investments, a statewide program that puts billions of Cap-and-Trade Dollars to work reducing GHG emissions, strengthening the economy, and improving public health and the environment-particularly in disadvantaged communities. The Cap-and-Trade program also creates a financial incentive for industries to invest in clean technologies and develop innovative ways to reduce pollution. California Climate Investments projects include affordable housing, renewable energy, public transportation, zero-emission vehicles, environmental restoration, more sustainable agriculture, recycling, and much more. At least 35 percent of these investments are located within and benefiting residents of disadvantaged communities, low-income communities, and low-income households across California. For more information, visit the California Climate Investments website at: [www.caclimateinvestments.ca.gov](http://www.caclimateinvestments.ca.gov).



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## I. Purpose and Need

The Humboldt Bay region is experiencing the highest rate of relative sea level rise on the West Coast due to tectonic subsidence in combination with rising ocean waters, resulting in increasing incidents of flooding. The behavior of water in the bay region is influenced not by jurisdictional boundaries, but by the geography that creates the six tidally influenced drainage areas (hydrologic units) associated with Humboldt Bay. Water does not recognize jurisdictional boundaries, yet there are critical assets subject to sea level rise impacts that are owned/operated by various public agencies or private property owners that cross local agency jurisdictional boundaries and private property lines, are located in multiple hydrologic units, and are subject to multiple permitting processes. Further complicating regional sea level rise planning is the existence of extensive Coastal Commission retained permit jurisdiction immediately surrounding and extending inland from the bay. Aside from specific project contracts, there are no formal agreements or established regional sea level rise planning efforts in Humboldt County; regional sea level rise planning currently consists of informal coordination among Humboldt Bay stakeholders primarily through various staff-level meetings. These challenging circumstances highlight why sea level rise planning and management around Humboldt Bay may far exceed the capabilities and responsibilities of a single agency, and why sea level rise regional planning is therefore critical to explore and consider for the Humboldt Bay region.

In recognition of these needs and challenges, Humboldt County is preparing a feasibility study to develop options for implementing a Humboldt Bay sea level rise adaptation planning effort to facilitate regional coordination and cooperation in the development and implementation of sea level rise adaptation strategies for the Humboldt Bay region. The goal of this feasibility study is to develop options for Humboldt Bay regional sea level rise adaptation planning that will foster a collaborative regional approach to the identification, funding, and implementation of various sea level rise adaptation strategies (protection, accommodation, and retreat), policies, and measures, with resulting regulatory and financial benefits.

The options presented in this document are not necessarily meant to be used as stand-alone strategies for regional collaboration. It is likely that more than one regulatory framework or funding option will need to be implemented in the immediate short term or over time for long term planning. The information and options in this memo can be used by decision makers for regional collaboration at any time or spatial scale they deem appropriate.

*Task 2. Research* of the feasibility study requires research in the four areas listed below to inform the feasibility study in alignment with project goals and objectives, including evaluating these four areas with respect to how various approaches/frameworks would be able to support the broad categories of sea level rise protection, accommodation, and retreat strategies. The four research topics as contained in LCP-19-01 are:

- 2.1. *Potential regulatory frameworks*
- 2.2. *Cross-jurisdictional coordination*
- 2.3. *Funding frameworks and opportunities*
- 2.4. *Regulatory and feasibility pathways and barriers*

These four research topics are addressed in the sections below. The text included in the text box for each topic describes the research to be completed for that topic as provided in LCP-19-01. A list of sea level rise collaboration examples gathered from the ResilientCA.org Adaptation Clearinghouse Case Studies, the Georgetown Climate Center Adaptation Clearinghouse, and other web locations, is included as Section VI of this memo.

Given the dynamic nature of climate change and sea level rise, this memo will be updated at least every five years to ensure it remains a relevant and useful tool for sea level rise planning in the Humboldt Bay region. Updates to this memo will be particularly important as adaptation tools for addressing sea level rise evolve, and as new funding sources become available while others become obsolete. Public and agency feedback on any element of this memo is welcomed, and will be considered as the memo is updated into the future.

This Research Memo is a technical resource for ongoing regional coordination efforts but is not a decision document and does not represent a commitment by stakeholders to implement the cross-jurisdictional coordination or funding concepts discussed in the document.

## II. Cross-jurisdictional Coordination (Task 2.2.)

*Identify assets and locations that present a need or opportunity for cross-jurisdictional coordination in consideration of hydrologic unit/subunit and jurisdictional boundaries, other geographic features, asset importance or priority, etc.; and how LCP authorities and the Coastal Commission could implement the Coastal Act and their respective LCPs to facilitate cross-jurisdictional coordination.*

### A. Assets, Locations and Entities for Cross-Jurisdictional Coordination

When considering cross-jurisdictional coordination, two key factors are involved – the behavior of water, and land use jurisdiction. The behavior of water in the Humboldt Bay region is generally determined by geographic features that define a drainage area. The simple facts that water does not recognize nor react to jurisdictional boundaries, and jurisdictional boundaries are not coincident with drainage area boundaries, are at the heart of the need for cross-jurisdictional coordination. For the purpose of facilitating regional sea level rise planning, the following six Humboldt Bay hydrologic units (HUs), defined as tidally influenced drainage areas, have been identified:

- Mad River Slough
- Arcata Bay
- Eureka Slough
- Eureka Bay,
- Elk River Slough
- South Bay

Figures 1 through 8 on the following pages show these six hydrologic units; the city boundary of Eureka and Arcata, and the area of unincorporated Humboldt County, within these HUs; and Coastal Commission retained jurisdiction together with Eureka, Arcata, and Humboldt County LCP jurisdictions within each hydrologic unit.

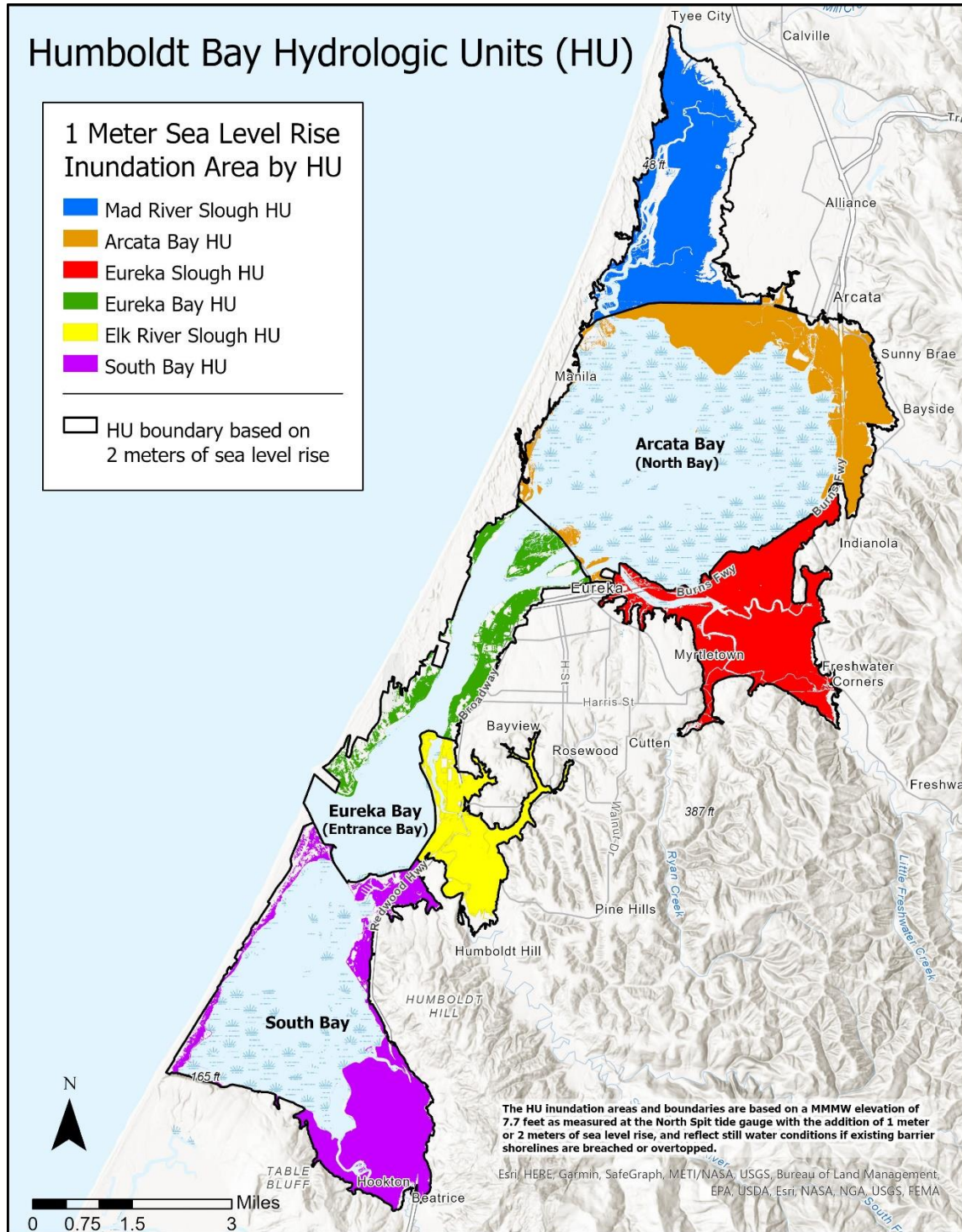


Figure 1. Humboldt Bay’s 6 hydrologic units with inundation areas and boundaries based on a MMMW elevation of 7.7 feet as measured at the North Spit tide gauge with the addition of 1 meter (inundation area) or 2 meters (HU boundary) of sea level rise under still water conditions if existing barrier shorelines are breached or overtopped.

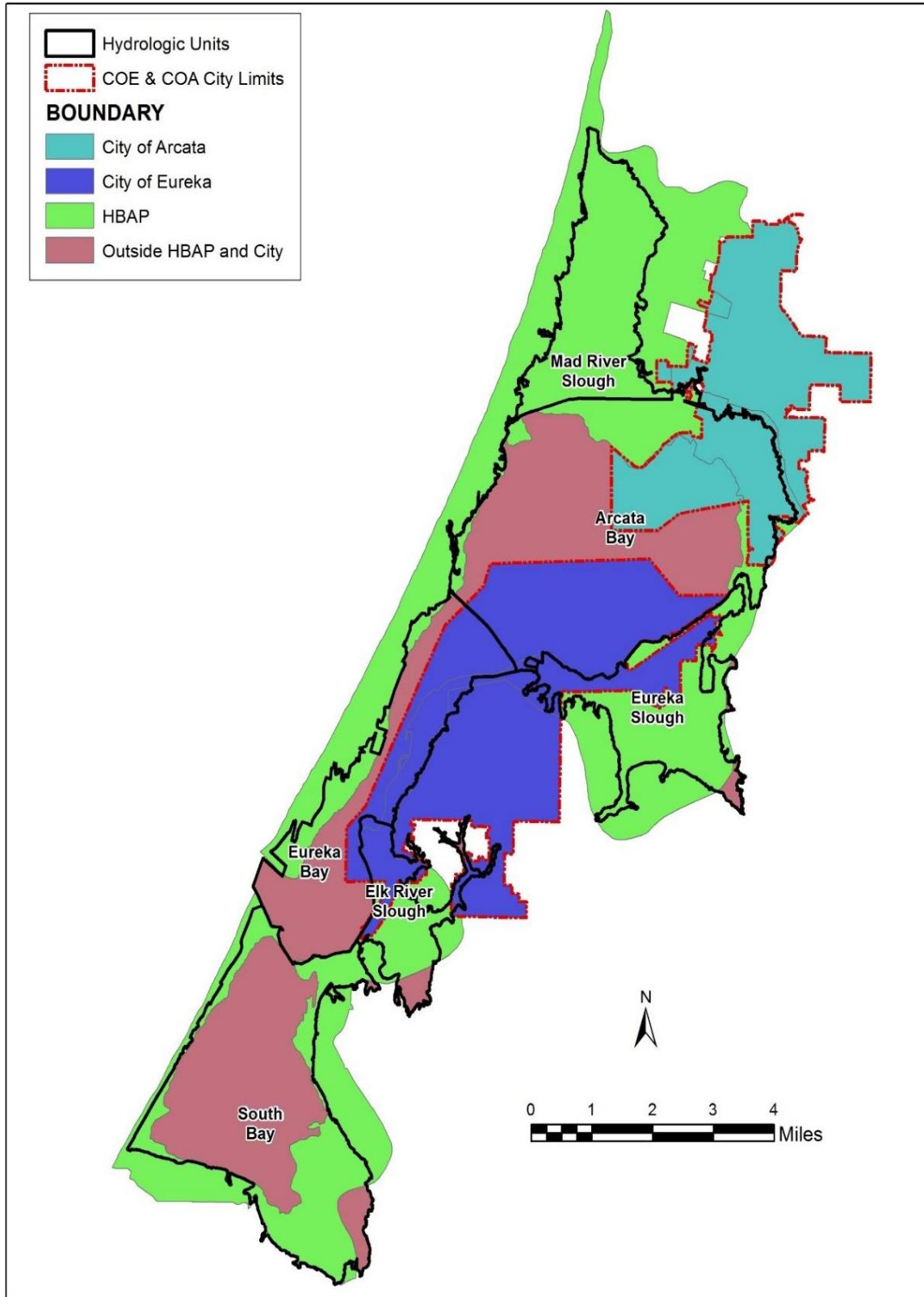


Figure 2. Humboldt Bay's hydrologic units in relation to local coastal program jurisdictions

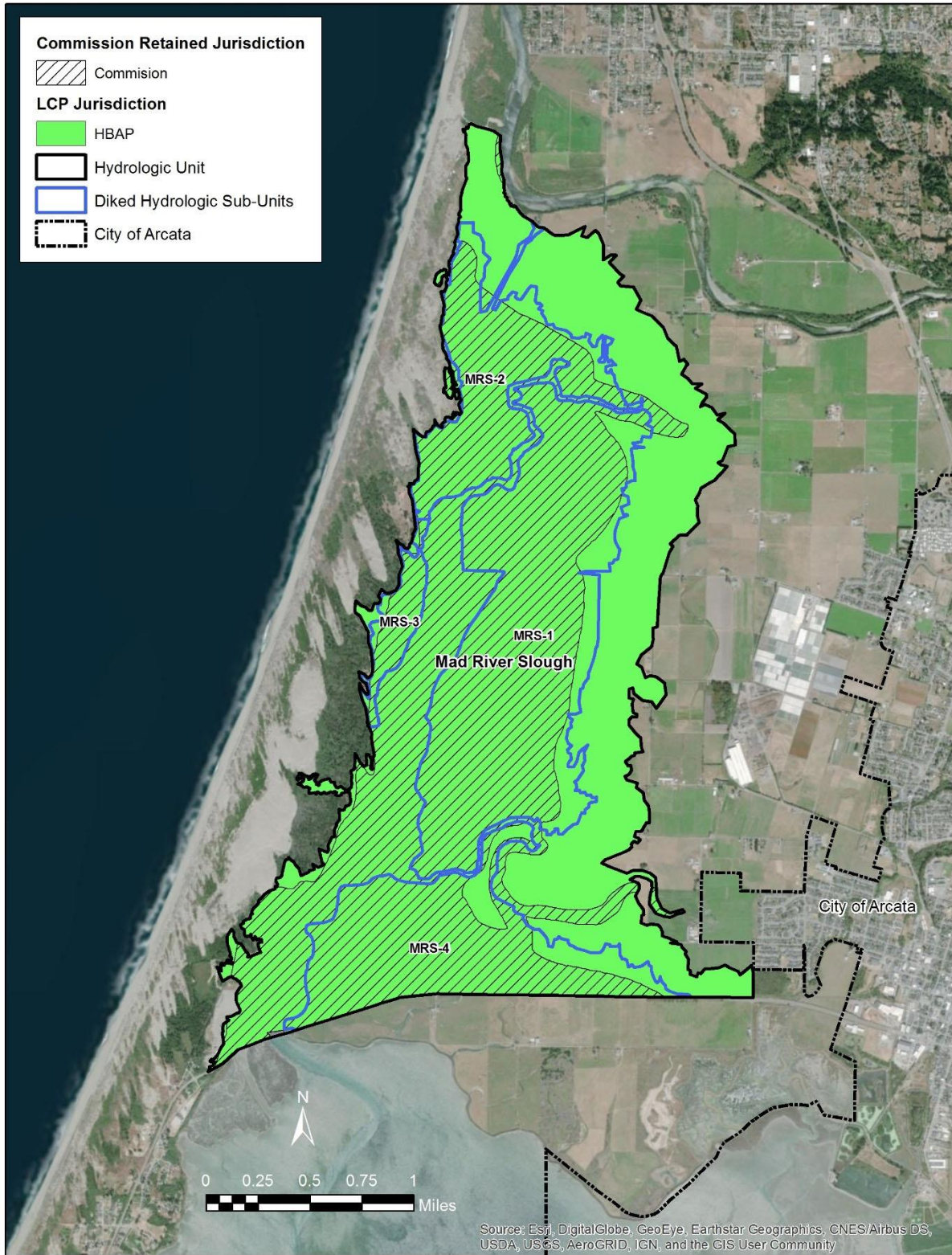


Figure 3. Mad River Slough Hydrologic Unit - Coastal Commission and LCP jurisdictions

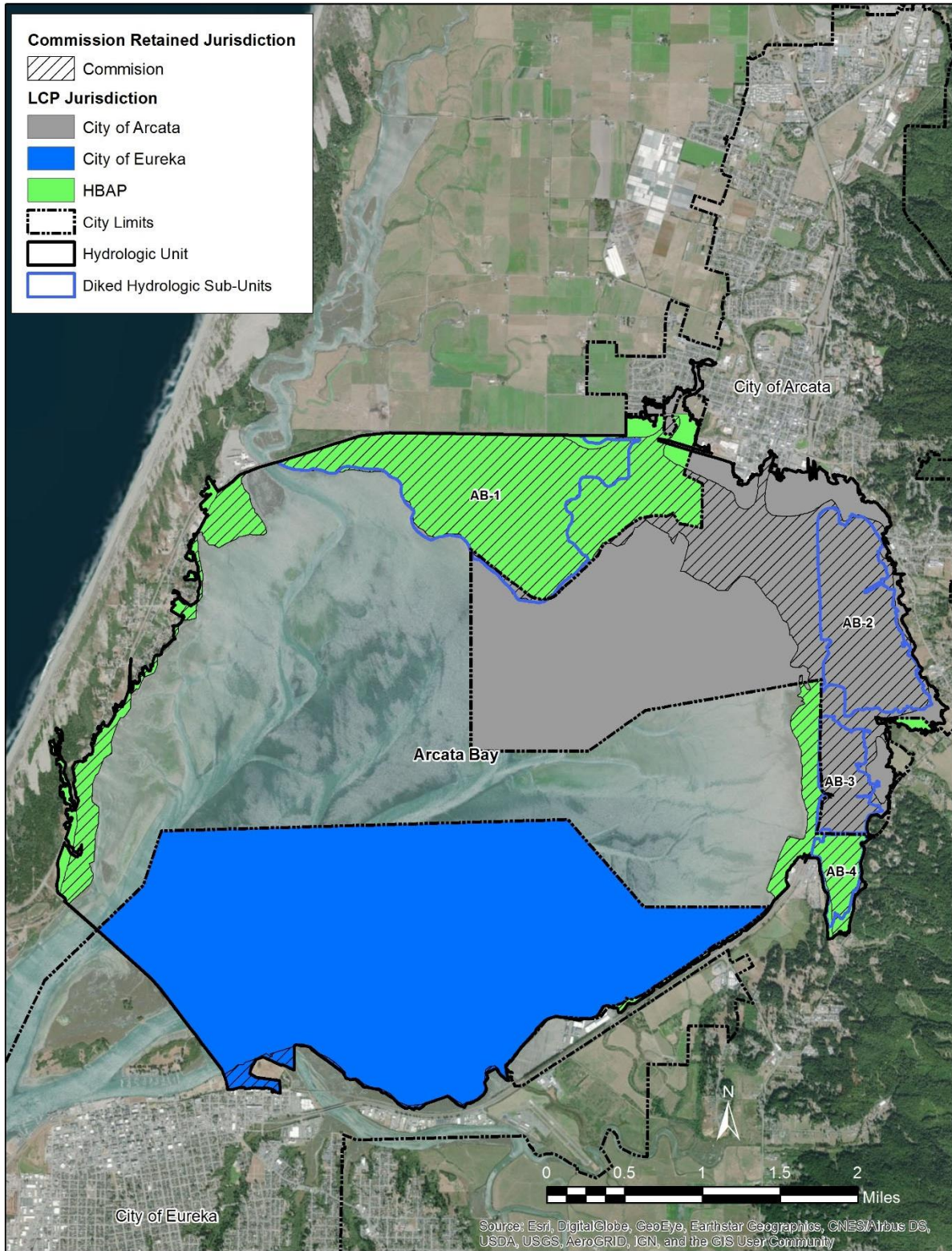


Figure 4. Arcata Bay Hydrologic Unit - Coastal Commission and LCP jurisdictions

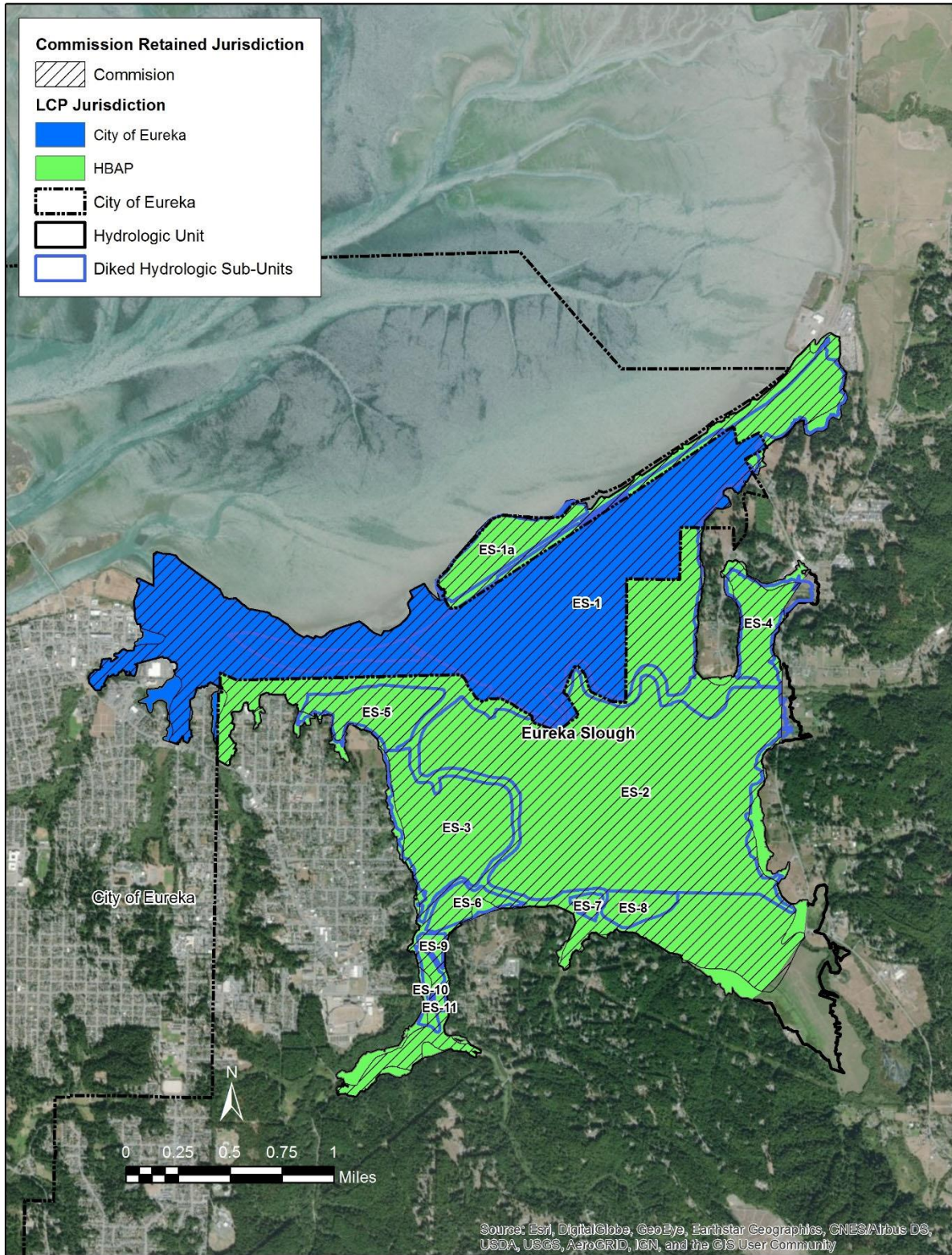


Figure 5. Eureka Slough Hydrologic Unit - Coastal Commission and LCP jurisdictions

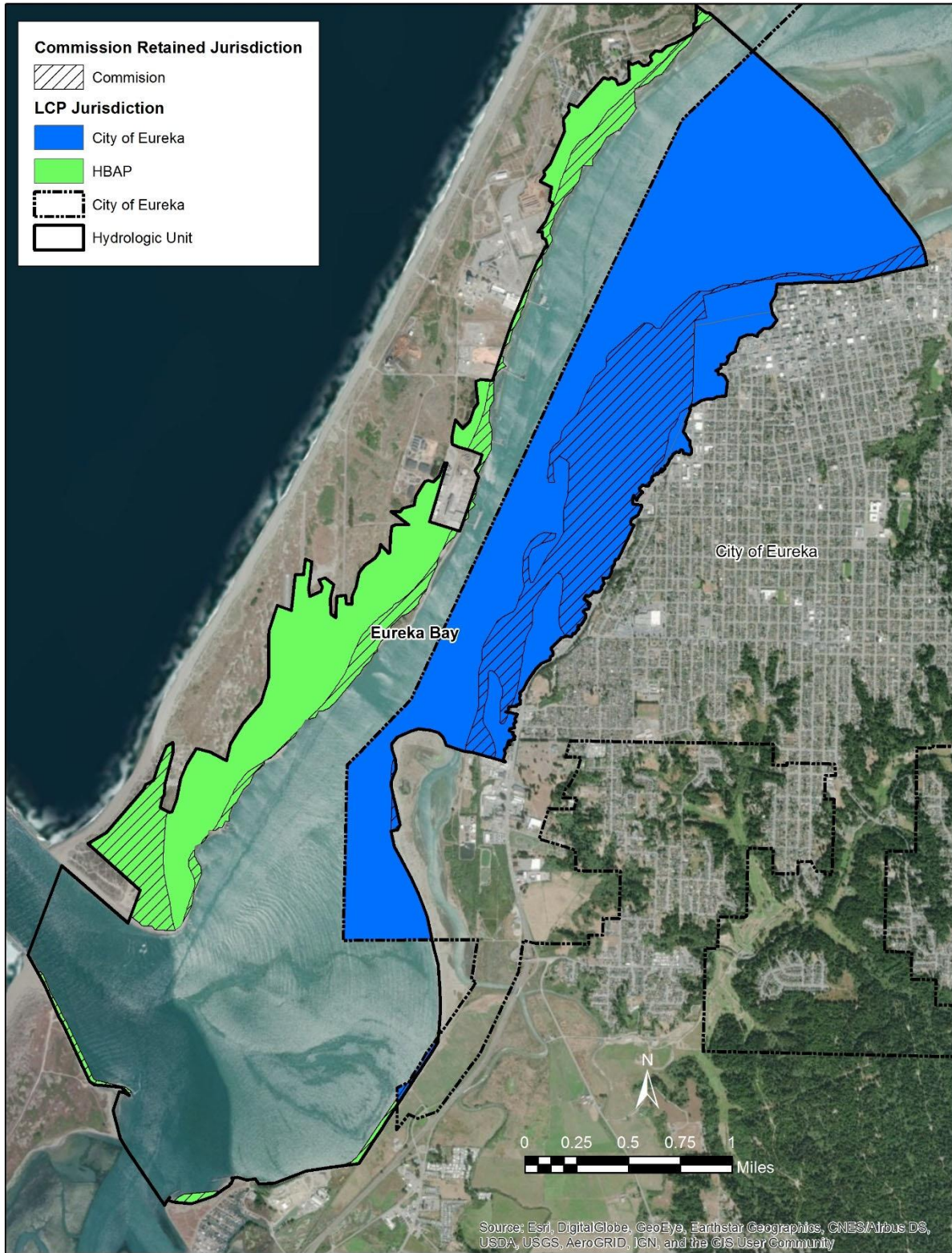


Figure 6. Eureka Bay Hydrologic Unit - Coastal Commission and LCP jurisdictions

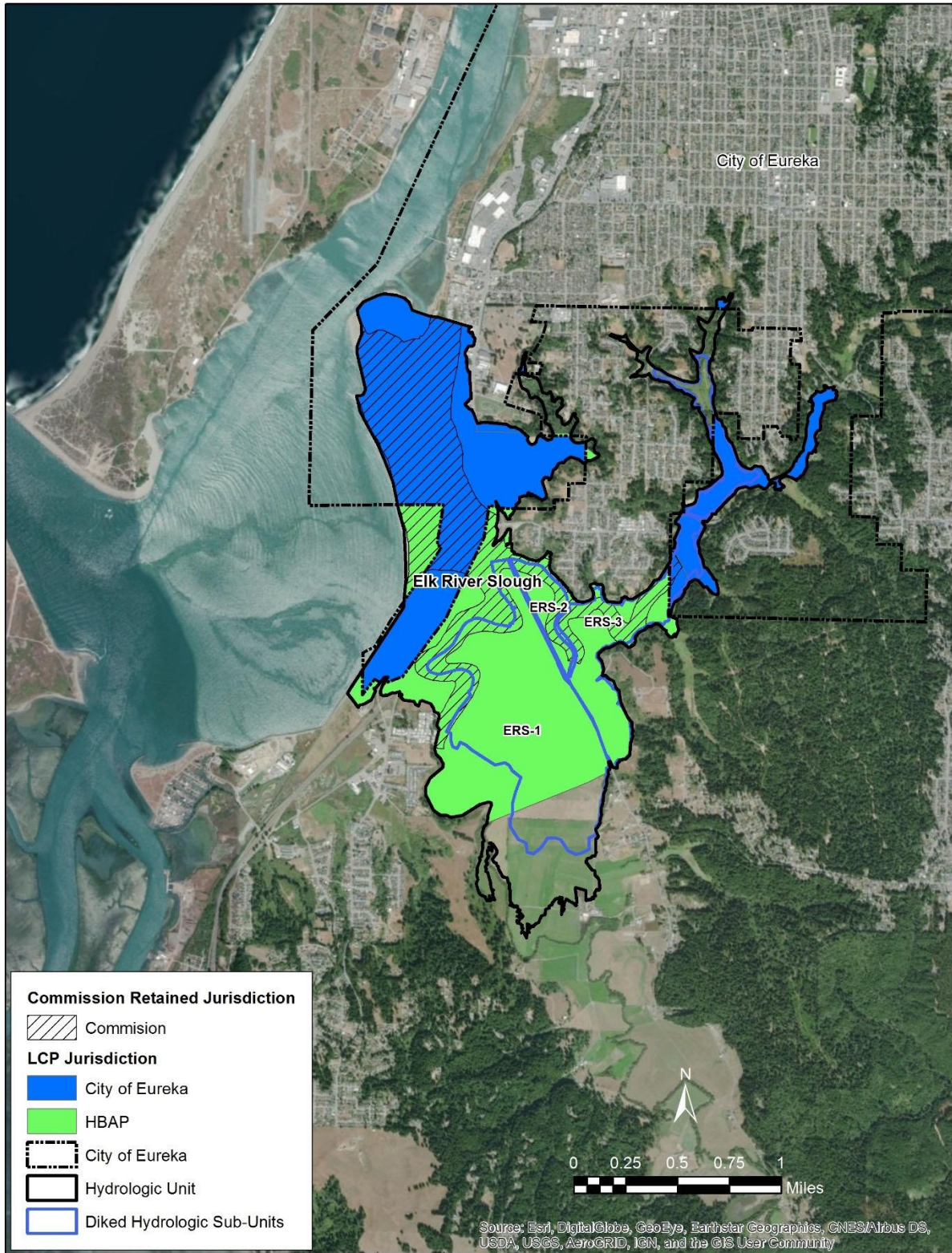


Figure 7. Elk River Slough Hydrologic Unit - Coastal Commission and LCP jurisdictions

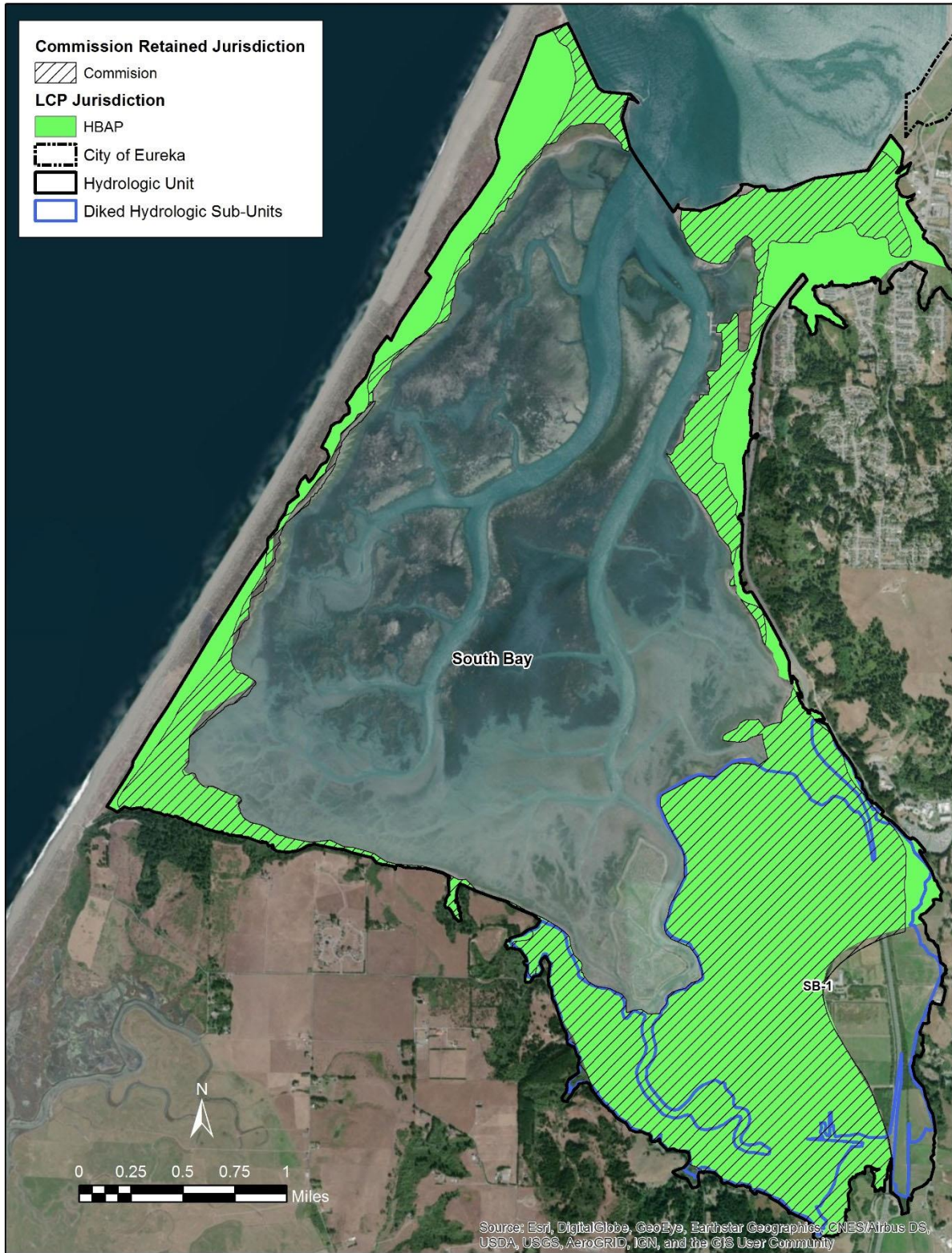


Figure 8. South Bay Hydrologic Unit - Coastal Commission and LCP jurisdictions

There are five agencies with land use jurisdiction within the Humboldt Bay region:

- The cities of Eureka and Arcata within their municipal boundaries, and Humboldt County in the unincorporated area outside these cities, have land use jurisdiction pursuant to their respective general plans, zoning ordinances, and local coastal programs. The authority of these three jurisdictions and the Coastal Commission is discussed under the Local Coastal Program Modifications subsection below in Section III of this memo.
- Within the coastal zone the California Coastal Commission has land use authority pursuant to the Coastal Act either directly in areas of Commission retained jurisdiction, or through local agency local coastal programs certified by the Commission. Their authority overlays, but does not eliminate, local agency land use control provided by California's planning and zoning laws.
- The Humboldt Bay Harbor, Recreation, and Conservation District (HBHRCD or Harbor District) has jurisdiction over all tide, submerged and other lands granted to the district; and over the land and overlying waters, to the limit of tidal action of what is commonly known as Humboldt Bay, including the land and overlying waters of all streams and estuaries tributary thereto to the limit of tidal action, and including all rivers, sloughs, estuaries and areas tributary to Humboldt Bay, subject to tidal action as of the effect date of the statute creating the District (Humboldt Bay Harbor, Recreation, and Conservation District Act, 1970 ch.1283), and those portions of Gunther, Woodley, and Daby Islands bayward of the mean high tide line as provided by Section 5.5 of the District's enabling legislation. This jurisdictional boundary is static in the location where it was created in 1970 (based on 1970's tidal action), yet Humboldt Bay is expanding due to sea level rise. This circumstance will result in the Harbor District's jurisdiction encompassing less of the bay over time, leaving a gap between the Harbor District's jurisdictional boundary and the boundary of the bay. An amendment to the 1970 Harbor District creation document would be required to allow expansion of the District's jurisdictional boundary commensurate with the expanding boundary of Humboldt Bay.

Section 19 of the 1970 statute required preparation of a master plan (now the Humboldt Bay Management Plan) for harbor and port improvement and for the use of all of the tidelands and submerged lands conveyed to the District, and other lands or areas subject to its jurisdiction. This section further states that the provisions in the master plan shall not override or supersede any local existing zoning ordinance which was in effect on November 23, 1970, provided that if any local zoning ordinance is repealed, or expires, or becomes nonoperative for any reason, thereafter the provisions of the master plan shall control as to all lands and waters under the jurisdiction of the district. This is interpreted to mean that the District's jurisdiction overlays but does not eliminate city or county land use jurisdiction that meets these requirements. Additionally, some tidelands were granted to the City of Eureka and others to the City of Arcata, so these cities exercise some original jurisdiction over these tidelands that are covered by the Harbor District's Management Plan.

Based on the number of assets that traverse multiple hydrologic units involving multiple land use jurisdictions, together with the premise of an agency having land use authority as the basis for determining a core group of regional sea level rise adaptation planning entities on Humboldt Bay, the Core Entities or stakeholders would include the five agencies listed above: Humboldt County, City of Eureka, City of Arcata, Harbor District, and the Coastal Commission. Arcata's involvement based on cross-jurisdictional assets described on the following pages would be somewhat limited. However, the 102-mile shoreline of Humboldt Bay could be considered one of the most critical assets/resources exposed to the effects of sea level rise when considering sea level rise adaptation, and since a portion of the shoreline is located in Arcata, managing this asset would

require Arcata's involvement. In addition, cross-jurisdictional transportation assets that provide access to Arcata would require their involvement.

There are other key entities with regulatory, ownership, development, or management responsibility in the Humboldt Bay region that, while not necessarily considered core entities due to lack of land use authority, could be involved in regional sea level rise planning. The County has prepared a Stakeholder Catalogue that provides a comprehensive list of stakeholders and their roles, responsibilities, assets, and concerns relative to sea level rise adaptation planning and management in the Humboldt Bay region. The purpose of the Catalogue is to aid in the selection of which entities could be involved in the regional sea level rise planning process and in what capacity. Besides the Core Entities, some additional key stakeholders could include:

- California Department of Fish and Wildlife –multiple refuges, possible 1600 agreement, take authorization
- North Coast Regional Water Quality Control Board – jurisdiction over waters of the state, including wetlands
- State Lands Commission – jurisdiction over public trust lands
- U.S. Army Corps of Engineers – permitting authority for the bay and associated waterways, shoreline, and wetlands
- U.S. Fish and Wildlife Service – Humboldt Bay National Wildlife Refuge, take authorizations
- National Marine Fisheries Service – take authorizations
- Wiyot Tribe –ancestral and sacred waters and lands

Assets that traverse the greatest number of the six Humboldt Bay hydrologic units (HUs) involving the greatest number of the five Core Entity jurisdictions (CEs) (Eureka, Arcata, Humboldt County, Coastal Commission, and HBHRCD), could be a focus for regional sea level rise adaptation planning on Humboldt Bay:

- Railroad/Bay Trail (6 HUs/5 CEs)
- Agricultural Lands (5 HUs/5 CEs)
- Open Space/ Wildlife Refuges/Reserves (6 HUs/5 CEs)
- Wiyot Cultural Sites (6 HUs/4 CEs)
- Dike Shorelines (5 HUs/4 CEs)
- Caltrans Highway 101 (5 HUs/5 CEs)
- Caltrans Highway 255 (3 HUs/5 CEs)
- Pacific Gas and Electric's Electrical Transmission Lines (6 HUs/5 CEs)

Other critical utility infrastructure (municipal water and wastewater transmission facilities and gas transmission lines) traverse fewer hydrologic units than the assets listed above, but do share similar exposure to sea level rise, as they are protected by diked shorelines. Below is a list of cross-jurisdictional categories with numbers of Core Entity jurisdictions (CEs) and/or hydrologic units that each category traverses.

1. Land use and development jurisdictions that traverse multiple hydrologic units.
  - Humboldt County: Mad River Slough, Arcata Bay, Eureka Slough, Eureka Bay, Elk River Slough, and South Bay (6 HUs)
  - Harbor District: Mad River Slough, Arcata Bay, Eureka Slough, Eureka Bay, Elk River Slough, and South Bay (6 HUs)

- California Coastal Commission: Mad River Slough, Arcata Bay, Eureka Slough, Eureka Bay, Elk River Slough, and South Bay (6 HUs)
  - City of Eureka: Arcata Bay, Eureka Slough, Eureka Bay, and Elk River Slough (4 HUs)
  - City of Arcata: Arcata Bay (1 HU)
2. Hydrologic units that have multiple jurisdictions.
- Arcata Bay: California Coastal Commission, Humboldt County, City of Eureka, City of Arcata, and HBHRCD (5 CEs)
  - Eureka Slough: California Coastal Commission, Humboldt County, City of Eureka, and Harbor District (4 CEs)
  - Eureka Bay: California Coastal Commission, Humboldt County, City of Eureka, and Harbor District (4 CEs)
  - Elk River Slough: California Coastal Commission, Humboldt County, City of Eureka, and Harbor District (4 CEs)
  - Mad River Slough: California Coastal Commission, Humboldt County, Harbor District (3 CEs)
  - South Bay: California Coastal Commission, Humboldt County, and Harbor District (3 CEs)
3. Utility infrastructure that traverses multiple hydrologic units and regulatory jurisdictions.
- Pacific Gas and Electric's electrical transmission lines: Mad River Slough, Arcata Bay, Eureka Slough, Eureka Bay, Elk River Slough, and South Bay (6 HUs); California Coastal Commission, Humboldt County, City of Eureka, City of Arcata, and Harbor District (5 CEs)
  - Pacific Gas and Electric's gas transmission lines: Arcata Bay, Eureka Slough, Eureka Bay, Elk River Slough, and South Bay (5 HUs); California Coastal Commission, Humboldt County, City of Eureka, City of Arcata, and Harbor District (5 CEs)
  - Humboldt Community Services District's municipal water transmission lines: Eureka Slough, Eureka Bay, Elk River Slough, and South Bay (4 HUs). California Coastal Commission, Humboldt County, City of Eureka, and Harbor District (4 CEs)
  - City of Eureka and Humboldt Community Services District's wastewater collection lines: Eureka Slough, Eureka Bay, Elk River Slough, and South Bay (4 HUs); California Coastal Commission, Humboldt County, City of Eureka, and Harbor District (4 CEs)
  - City of Eureka's municipal water transmission lines: Arcata Bay and Eureka Slough (2 HUs). California Coastal Commission, Humboldt County, City of Arcata, and Harbor District (4 CEs)
  - Humboldt Bay Municipal Water District's municipal water transmission lines: Mad River Slough and Eureka Bay (2 HUs); California Coastal Commission, Humboldt County, City of Eureka, and Harbor District (4 CEs)
4. Transportation infrastructure that traverses multiple hydrologic units and regulatory jurisdictions.

- Caltrans Highway 101: Arcata Bay, Eureka Slough, Eureka Bay, Elk River Slough, and South Bay (5 HUs); California Coastal Commission, Humboldt County, City of Eureka, City of Arcata, and Harbor District (5 CEs)
  - Humboldt Bay Trail: Arcata Bay, Eureka Slough, Eureka Bay, and Elk River Slough (4 HUs); California Coastal Commission, Humboldt County, City of Eureka, City of Arcata, Harbor District (5 CEs)
  - Caltrans Highway 255: Mad River Slough, Arcata Bay, and Eureka Bay (3 HUs); California Coastal Commission, Humboldt County, City of Eureka, City of Arcata, and Harbor District (5 CEs)
  - Myrtle Avenue/Old Arcata Road: Arcata Bay and Eureka Slough (2 HUs); California Coastal Commission, Humboldt County, and City of Arcata (3 CEs)
5. Shoreline structures that traverse multiple hydrologic units and regulatory jurisdictions.
- Dikes: Mad River Slough, Arcata Bay, Eureka Slough, Elk River Slough, and South Bay (5 HUs); California Coastal Commission, Humboldt County, City of Eureka, City of Arcata, and Harbor District (5 CEs)
  - Railroad/Bay Trail: Mad River Slough, Arcata Bay, Eureka Slough, Eureka Bay, Elk River Slough, and South Bay (6 HUs); California Coastal Commission, Humboldt County, City of Eureka, City of Arcata, and Harbor District (5 CEs)
6. Land uses that traverse multiple hydrologic units and regulatory jurisdictions.
- Agricultural: Mad River Slough, Arcata Bay, Eureka Slough, Elk River Slough, and South Bay (5 HUs); California Coastal Commission, Humboldt County, City of Eureka, City of Arcata, and Harbor District (5 CEs)
  - Open space, wildlife refuges/reserves: Mad River Slough, Arcata Bay, Eureka Slough, Eureka Bay, Elk River Slough, and South Bay (6 HUs); California Coastal Commission, Humboldt County, City of Eureka, City of Arcata, and Harbor District (5 CEs)
  - Coastal-Dependent Industrial: Eureka Bay, Elk River Slough, and South Bay (3 HUs); California Coastal Commission, Humboldt County, City of Eureka, and Harbor District (4 CEs)
7. Coastal resources that traverse multiple hydrologic units and regulatory jurisdictions.
- Cultural sites: Mad River Slough, Arcata Bay, Eureka Slough, Eureka Bay, Elk River Slough, and South Bay (6 HUs); California Coastal Commission, Humboldt County, City of Eureka, and City of Arcata (4 CEs)
  - Diked former tidelands (agricultural uses, freshwater wetland, and wildlife habitats): Mad River Slough, Arcata Bay, Eureka Slough, Elk River Slough, and South Bay (5 HUs); California Coastal Commission, Humboldt County, City of Eureka, and City of Arcata (4 CEs)
  - Spits, coastal dunes: Mad River Slough, Arcata Bay, Eureka Bay, Elk River Slough (Elk River Spit), and South Bay (5 HUs); California Coastal Commission, Humboldt County, City of Eureka, and Harbor District (4 CEs)
8. Contaminated sites: occur in all six hydrologic units and in all five Core Entity jurisdictions

Regardless of the regulatory framework selected, regional sea level rise adaptation planning on Humboldt Bay could start with a focus on the vulnerability of diked shorelines, which are protecting agricultural/open space lands and critical utility and transportation infrastructure from tidal inundation. Planning to increase diked shoreline resiliency could afford near term protection for these critical assets. Alternatively, regional planning could begin with critical transportation infrastructure such as Highway 101, or critical utility infrastructure such as municipal water transmission lines. In the case of a single LCP authority such as the County undertaking regional sea level rise management on Humboldt Bay as a sole entity, the focus could be on one of the Communities at Risk.

To initiate regional sea level rise adaptation planning, it may be easier to focus on one Humboldt Bay hydrologic unit. The Eureka Slough hydrologic unit was the subject of a recent focused sea level rise vulnerability assessment by Humboldt County. This unit has extensive diked shorelines throughout (14.8 of 25.3 miles of shoreline), forming several sub-units (11). These shorelines protect critically important regional utility (31.5 miles) and transportation (15.1 miles and an airport) infrastructure, agricultural (1,640 ac.) and wildlife refuge (550 ac.) lands, cultural sites (15), and contaminated sites (18). Two of the three LCP authorities (County and Eureka) have jurisdiction in the Eureka Slough unit, as does the Commission, HBHRCD, Caltrans, and California Department of Fish and Wildlife. The Eureka Slough unit could provide a great option for initiation of regional sea level rise adaptation planning on Humboldt Bay on a hydrologic unit basis.

## **B. How LCP Authorities and the Coastal Commission could Implement the Coastal Act and their Respective LCPs to Facilitate Cross-Jurisdictional Coordination**

Humboldt County, City of Eureka, and City of Arcata have LCPs for that portion of the coastal zone within their jurisdiction in the Humboldt Bay region. These LCPs have been certified by the Coastal Commission as being consistent with the policies of Chapter 3 of the Coastal Act. The LCPs are comprised of a Land Use Plan (land use map and policies) which functions as part of the general plan in the coastal zone, and an Implementation Plan comprised of zoning maps and ordinances. The LCPs contain policies and ordinances to govern the conservation and use of coastal resources. Once an LCP has been certified, local government becomes the coastal development permitting authority pursuant to the Coastal Act.

However, this transfer of permit authority does not apply on any tidelands, submerged lands, or public trust lands, even if they are within the boundaries of an LCP, as such lands within an LCP boundary are not certified as part of the LCP. In other words, such lands, regardless of their location relative to LCP boundaries, remain in the permit jurisdiction of the Coastal Commission. On Humboldt Bay, public trust lands, which include diked former tidelands, are the majority of the area (75-90%) vulnerable to 1.0 to 2.0 meters of sea level rise this century.

The LCP authorities on Humboldt Bay have prepared sea level rise vulnerability assessments for the area within their LCPs, including for areas of uncertified public trust lands where the Coastal Commission retains coastal development permit jurisdiction. Vulnerability assessments are an initial step in sea level rise planning. The discussion below in Section III. Potential Regulatory Frameworks addresses LCP modification options and organizational options for cross-jurisdictional coordination that implement both the Coastal Act and local agency LCPs, which could be a next step in sea level rise planning in the Humboldt Bay region.

With sufficient funding, these LCP authorities could prepare regional sea level rise adaptation policies and ordinances to facilitate cross-jurisdictional coordination. These policies and ordinances would need to be amended into each jurisdiction's LCP and certified by the Coastal Commission as compliant with the Coastal Act. These mutually agreed upon regional policies would provide the Commission with valuable guidance when reviewing coastal development proposals within local LCPs on public trust lands. An MOU could memorialize the Commission's intent to use these regional sea level rise polices as guidance when reviewing coastal development proposals in the Humboldt Bay region. These options are discussed in further detail in Section III below.

A tool that currently exists to facilitate cross-jurisdictional permitting where a project is located in both local and Commission retained jurisdiction is the consolidated permit process. A project that straddles jurisdictions of both the Commission and an LCP agency would typically require coastal development permits from both the Commission (regulated by Chapter 3 of the Coastal Act) and from a local government (regulated by their certified LCP). However, Coastal Act Section 30601.3 authorizes the Commission to process a consolidated coastal development permit application when the local government, the applicant, and the Commission all agree to do so. As an alternative to separate coastal development permits subject to different standards of review in multiple jurisdictions, the consolidated coastal development permit is subject to review and approval only by the Commission; the Coastal Act is the regulating mechanism for the entire project, with the LCP providing guidance for review. The consolidated coastal development permit process may simplify the permit review process by eliminating the need to prepare and process coastal development permit applications through both the Commission and one or more local LCP agencies, and by excluding a potential appeal process associated with the local government action on the permit. An MOU between the Commission and local LCP agencies memorializing the Commission's commitment to the local policy direction would be very beneficial to furthering cooperation and conformity managing sea level rise in the Humboldt Bay region when processing consolidated permits.

A PWP, discussed in detail below, is another alternate vehicle for obtaining coastal development approval of complex, multi-pronged, multi-jurisdictional, or phased public works projects. PWPs remain under the authority of the Commission irrespective of coastal development permit jurisdictional boundaries. In contrast to project-by-project approval through the coastal development process, the PWP process allows for faster and more efficient processing of public works projects by eliminating the need to coordinate individual coastal development permits separately through multiple jurisdictions. The PWP process is intended to provide consistency in review, analysis, processing, and implementation under the authority of the Commission. A PWP must be sufficiently detailed regarding the size, kind, intensity, and location of development to allow the Commission to determine its consistency with the policies in Chapter 3 of the Coastal Act or the certified LCP, as applicable. Once the Commission approves a PWP, no coastal development permit for future project implementation is required if the development remains consistent with the PWP. Instead, the permittee provides a notice of impending development to the Commission and other parties. Unfortunately, the Commission has determined that the elimination of coastal development permits for a PWP is applicable only for projects residing in LCP jurisdictions and not in state retained jurisdiction, and thus coastal development permits issued by the Commission for PWP projects would still be required for the majority of the area in the Humboldt Bay region vulnerable to sea level rise this century.

Another mechanism to facilitate cross-jurisdictional coordination between LCP authorities on Humboldt Bay and the Commission is the Public Trust Doctrine (PTD), with is further discussed in Section III.A.2. below. Locally elected bodies, like state agencies such as the Commission,

have an affirmative duty to apply the PTD whenever making land use decisions that affect natural resources of Humboldt Bay or the public's use and enjoyment of the bay and its coastal resources. The LCP authorities on Humboldt Bay (Humboldt County and cities of Eureka and Arcata) regulate land use pursuant to the state's planning and zoning laws, in addition to their LCPs pursuant to the Coastal Act. Together, these local governments and the Commission have a common duty and opportunity to apply the PTD when rendering their discretionary decisions. This could facilitate an MOU between these entities in support of regional sea level rise adaptation planning on Humboldt Bay. The application of the PTD in California has been held back by a lack of understanding of the mandate it imposes on locally elected decision makers.

In 1976, the Legislature granted the Commission authority over coastal development on any tide and submerged lands, which are public trust lands, whether filled or unfilled, lying within the coastal zone. Local land use authorities must now submit that portion of their General Plan and Zoning Ordinances that apply within the California Coastal Zone and impact coastal resources as an LCP, so the Commission can certify that the Program complies with the Coastal Act. It might appear that the Commission has usurped local land use jurisdiction on public trust lands by requiring a CDP from the Commission. Yet, in the Supreme Court case [California Coastal Commission v. Granite Rock \(1987\)](#), the Court held that "land use planning in essence chooses particular uses for the land; environmental regulation, at its core, does not mandate particular uses for the land but requires only that, however the land is used, damage to the environment is kept within prescribed limits." Therefore, local governments still retain the authority to determine the underlying land uses for public trust lands (diked former tide lands and current tidelands), and the Commission is limited to regulating development authorized by local land use regulation in order to prevent or minimize damage to coastal resources.

Local governments must consider the public trust when developing regional plans for sea level rise that affect Humboldt Bay's resources. In the 1983 Mono Lake case [National Audubon Society v. Superior Court](#), the Supreme Court expanded the public trust doctrine in a significant way. It held that the state has an "affirmative duty to take the public trust into account" in making decisions affecting public trust resources. Therefore, by implication, because local governments are subdivisions of the state, they must also consider the public trust in planning whenever feasible (able) to protect the public's trust uses and resources; further, these local governments must exercise continual supervision over these resources. For these reasons, collaboration between the LCP authorities and the Commission is necessary for regional sea level rise planning on Humboldt Bay.

This section provides some general potential approaches to cross-jurisdictional coordination for sea level rise planning on Humboldt Bay through the implementation of the Coastal Act and LCPs. The following section provides detailed options for regional sea level rise planning in the Humboldt Bay region.

### III. Potential Regulatory Frameworks (Task 2.1.)

*Identify various types of regulatory frameworks (e.g., a collaborative formed by a non-binding agreement with no authority, a joint powers authority with varying degrees of authority, etc.) that could be potentially suitable for a Humboldt Bay regional planning effort, including the pros and cons of each.*

This memo explores two overarching regulatory frameworks for regional sea level rise planning and management on Humboldt Bay. One of these frameworks involves modifications to the existing Humboldt Bay region local coastal programs (LCPs) for Arcata, Eureka, and Humboldt County. The other framework involves organizational options such as new or existing entities or cross-jurisdictional agreements. Given the regulatory and political circumstances in the Humboldt Bay region, it is likely that a combination of both frameworks will be required to successfully address sea level rise in the Humboldt Bay region. The options presented under each broad framework are not the only potential options, and may not necessarily be the best or most appropriate option for addressing regional sea level rise planning and adaptation on Humboldt Bay. They are presented as possibilities for consideration, to perhaps spur ideas for other potential options, and to serve as a basis for the community to identify if and how regional sea level rise planning should be conducted.

Under the broad framework of Local Coastal Program Modifications, there are a number of potential modifications for regionally addressing sea level rise. For each modification there is a background discussion describing the modification, followed by a description of how the modification would apply to sea level rise planning, a discussion of the strengths and weaknesses (pros and cons) of the modification in regard to addressing regional sea level rise, and a list of references. The Organizational Options framework follows the same format for each option.

There are intrinsic shared strengths and weaknesses for each LCP modification and organizational option, such as efficiency of planning as a strength, and the need for dedicated time or staff and additional funding as a weakness. These will, for the most part, not be listed for each option in the subsections below.

#### A. Local Coastal Program Modification Options

In accordance with California's planning and zoning laws, local governments regulate land use within their jurisdiction by adopting and implementing a general plan and zoning regulations. While local governments retain their authority to regulate land use within the coastal zone, the Coastal Act provides an additional layer of development regulations that local governments are subject to, the purpose of which is to conserve and protect coastal resources.

In partnership with coastal cities and counties, the California Coastal Commission (Commission) regulates the use of land and water in the coastal zone insofar as those uses impact coastal resources. Implementation of Coastal Act policies is accomplished primarily through Local Coastal Programs (LCPs) prepared by local governments, and submitted to the Commission for review and certification. While each LCP reflects unique characteristics of individual local coastal communities, regional and statewide interests and concerns must also be addressed in conformity with Coastal Act goals and policies.

LCPs are used by local governments to guide development in the coastal zone. They specify appropriate location, type, and scale of new or altered development, consistent with the Coastal Act. An LCP includes a land use plan (LUP) which may be the relevant portion of a local general plan including any maps necessary to administer it, and an implementation plan (IP) which includes zoning ordinances, zoning district maps, and other legal instruments necessary to implement the LUP.

Development activities within the coastal zone, which are broadly defined by the Coastal Act, may not commence until a coastal development permit has been issued by either a local government or by the Commission. After an LCP has been certified by the Commission, the Commission's coastal development permitting authority for certified areas within LCP boundaries is transferred to the local government for most types of development. Local government then applies the requirements of the LCP in its decision-making for proposed development. The Commission retains permit jurisdiction over certain areas within the coastal zone as discussed in the following paragraph, acts on appeals of certain local government coastal development permit decisions, and reviews and certifies new LCPs and any amendments to previously certified LCPs.

While LCPs govern local agency development decisions that impact coastal resources, they provide only guidance for Commission decisions in areas where the Commission retains permanent coastal development permit jurisdiction. These areas of Commission retained jurisdiction include tidelands, submerged lands, and public trust lands. The Commission relies on Chapter 3 of the Coastal Act when making decisions on coastal development permits in these areas. While areas of retained permit jurisdiction are most often located outside LCP boundaries, this is not always the case.

The Humboldt Bay area is unique in that there are significant areas of Commission retained jurisdiction within local agency LCP boundaries. Where there are tidelands, submerged lands, and public trust lands located within the boundaries of an LCP, as is the case around Humboldt Bay, those areas are not certified as part of a certified LCP. This means that permit authority for those areas does not transfer to the local authority but is retained by the Commission. As noted above, the Commission is not subject to a local jurisdiction's LCP policies and regulations in areas of retained jurisdiction, but instead relies on Chapter 3 of the Coastal Act as a basis for permit decisions while using an LCP only as guidance for those areas, despite their inclusion within LCP boundaries.

Public trust lands around Humboldt Bay, which include diked former tidelands, comprise most of the areas (75-90%) vulnerable to 1.0 to 2.0 meters of sea level rise this century. Despite these significant areas of Commission retained permit jurisdiction, the Commission has funded LCP authorities on Humboldt Bay to prepare sea level rise vulnerability assessments for their LCPs, including for uncertified public trust lands within LCP boundaries.

The use of LCPs as a regulatory framework for regional sea level rise planning is a logical and reasonable approach to coordinated planning on Humboldt Bay when considering coordination between Eureka, Arcata, and Humboldt County and their LCPs. However, because the Commission is not subject to the requirements of local agency LCPs for development decisions and issuance of coastal development permits, instead using them only as guidance, coupled with the significant extent of Commission-retained permit jurisdiction around Humboldt Bay, the use of LCPs as a basis for regional sea level rise planning also faces some challenges.

The below subsections describe various ways LCPs could be used as a framework for addressing sea level rise regionally on Humboldt Bay. These options generally involve LCP consistency regarding policies and regulations, and reconfiguration of LCP boundaries and permitting

jurisdictions. Each of these options could be employed alone or in combination with other LCP Modification Options or with the various Organizational Options described in subsection II.B. of this memo.

The options provided in this subsection are certainly not the only options for achieving LCP consistency across jurisdictional boundaries; there are many planning tools that could be utilized to address sea level rise regionally. These options are also not necessarily useful only for addressing sea level rise across jurisdictional boundaries, but could also be useful tools for addressing sea level rise within an individual jurisdiction. The links listed immediately below are references applicable to many of the following subsections. There are additional references listed at the end of each of the following subsections that are particularly germane to that subsection.

### References

Georgetown Climate Center - Executive Summary, Zoning for Sea-Level Rise; A Model Sea-Level Rise Ordinance and Case Study of Implementation Barriers in Maryland  
<https://www.georgetownclimate.org/files/report/Zoning%20for%20Sea-Level%20Rise%20Executive%20Summary%20Final.pdf>

SCROG.org: The Nature Conservancy - Municipal Zoning Options for Adaptation to Sea Level Rise in Connecticut  
[https://scrcog.org/wp-content/uploads/hazard\\_mitigation/background\\_material/TNC\\_CT\\_Municipal\\_Zoning\\_Options-for-SLR.pdf](https://scrcog.org/wp-content/uploads/hazard_mitigation/background_material/TNC_CT_Municipal_Zoning_Options-for-SLR.pdf)

U.S. Climate Resilience Toolkit - Adaptation Tool Kit: Sea-Level Rise and Coastal Land Use webpage  
<https://toolkit.climate.gov/tool/adaptation-tool-kit-sea-level-rise-and-coastal-land-use>

Georgetown Climate Center - Adaptation Tool Kit: Sea-Level Rise and Coastal Land Use  
[https://www.georgetownclimate.org/files/report/Adaptation\\_Tool\\_Kit\\_SLR.pdf](https://www.georgetownclimate.org/files/report/Adaptation_Tool_Kit_SLR.pdf)

OPR - 2017 General Plan Guidelines  
[https://opr.ca.gov/docs/OPR\\_COMPLETE\\_7.31.17.pdf](https://opr.ca.gov/docs/OPR_COMPLETE_7.31.17.pdf)

OPR - General Plan Guidelines, Chapter 9 Implementation  
[https://opr.ca.gov/docs/OPR\\_C9\\_final.pdf](https://opr.ca.gov/docs/OPR_C9_final.pdf)

League of CA Cities: City of San Luis Obispo, Land Use 101, a Field Guide by Christine Dietrick and Jon Ansolabehere  
<https://www.cacities.org/resources-documents/member-engagement/professional-departments/city-attorneys/library/2015/land-use-101-webinar-paper.aspx>

## **1. Consistent Local Coastal Programs**

One approach to the use of LCPs as a regulatory framework for regional sea level rise planning is to achieve consistency regarding sea level rise adaptation among Arcata, Eureka and Humboldt County LCPs through shared land use plan policies and zoning regulations, leaving current LCP boundaries and permitting jurisdictions intact. Shared sea level rise policies and regulations would be focused on areas that could be directly or indirectly involved in cross-jurisdictional sea level rise impacts and adaptation at specified sea level rise elevations, creating a consistent approach to addressing sea level rise across these three jurisdictions.

There are a number of planning tools that could be used to facilitate consistency in addressing sea level rise among Arcata, Eureka and Humboldt County LCP land use policies and zoning regulations. Some of these tools are described below. While some of the tools are specific LCP modifications, others such as modifications to the county's hazard mitigation plan or to local jurisdictions' flood plain ordinances would likely also require LCP modifications to implement those changes. These kinds of tools would need to be used within all LCP jurisdictions to facilitate sea level rise planning and adaptation in a coordinated cross-jurisdictional approach.

#### **a. Shared Sea Level Rise Policies and Ordinances**

##### Background

As described above, LCPs guide development in the coastal zone. LCPs directly guide development in areas of local jurisdiction where development must be consistent with the LCP, and indirectly guide development in areas of retained jurisdiction where the Coastal Commission relies on Chapter 3 of the Coastal Act when authorizing development and uses LCPs only as guidance. Development is broadly defined in Section 30106 of the Coastal Act:

“Development” means, on land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste; grading, removing, dredging, mining, or extraction of any materials; change in the density or intensity of use of land, including, but not limited to, subdivision pursuant to the Subdivision Map Act (commencing with Section 66410 of the Government Code), and any other division of land, including lot splits, except where the land division is brought about in connection with the purchase of such land by a public agency for public recreational use; change in the intensity of use of water, or of access thereto; construction, reconstruction, demolition, or alteration of the size of any structure, including any facility of any private, public, or municipal utility; and the removal or harvesting of major vegetation other than for agricultural purposes, kelp harvesting, and timber operations which are in accordance with a timber harvesting plan submitted pursuant to the provisions of the Z'berg-Nejedly Forest Practice Act of 1973 (commencing with Section 4511).

As used in this section, “structure” includes, but is not limited to, any building, road, pipe, flume, conduit, siphon, aqueduct, telephone line, and electrical power transmission and distribution line.

This extremely broad definition of development means that virtually any sea level rise adaptation project within the boundaries of an LCP, whether undertaken by a private party or public agency, would be considered development and therefore subject to the policies and requirements of the LCP. LCP requirements are provided in the LUP in the form of land use policies and designations, and in the IP in the form of zoning regulations, which together comprise the LCP as previously described.

The Coastal Commission is encouraging local LCP jurisdictions to update their respective LCPs to address the impact of sea level rise. In its quest to meet the challenges of sea level rise, and to assist municipal planners working on updating LCPs to address sea level rise as well as assist coastal development permit applicants, the Coastal Commission has adopted, or is in the process of adopting, several guidance documents. The documents include the [2018 Sea Level Rise Guidance](#), the [Coastal Adaptation Planning Guidance: Residential Development](#) which is

currently in draft form and not yet adopted, the [Critical Infrastructure at Risk: Sea Level Rise Planning Guidance for California's Coastal Zone](#), and the [Public Trust Guiding Principles and Action Plan](#) which is in draft form and not yet adopted. The Commission has also provided millions of dollars in grant funding to support local jurisdictions efforts to assess their sea level rise vulnerabilities and update their LCPs to address sea level rise impacts.

### Applicability for Regional Sea Level Rise Planning

As a necessary predicate to implementing most land use tools to address sea level rise regionally, local governments will need to amend their LCPs to designate areas that are vulnerable to sea level rise impacts and impose special regulations to address those impacts. Special regulations aimed at addressing sea level rise impacts could range from prohibiting new development, limiting expansion or major renovation of existing development, providing construction requirements for new development, prescribing specific adaptation measures, creating zones based upon adaptation goals (protection, accommodation, retreat, or preservation), and so forth.

Eureka, Arcata, and Humboldt County are all in the process of updating their LCPs to address sea level rise impacts. It is likely that both the LUPs and IPs for each jurisdiction will need to be amended to designate areas subject to sea level rise impacts and impose regulations to address these impacts. One of the simplest ways to facilitate a coordinated approach to sea level rise planning across jurisdictional boundaries would be to obtain consistency among all three LCPs regarding what areas will be impacted under various sea level rise elevations, and policies and regulations as to how these areas will be treated to address sea level rise. Consistency could be focused on those cross-jurisdictional areas that would be directly or indirectly impacted by sea level rise. Areas where there would be only localized sea level rise impacts would not necessarily need to be subject to cross-jurisdictional policies and regulations.

The subsections below discuss more specific ways policies and ordinances could be utilized to address sea level rise, and if incorporated into all three local LCPs, could achieve cross-jurisdictional consistency. At a basic level, incorporating consistent sea level rise policies that would apply in focused areas could be a relatively simple place to begin the process of cross-jurisdictional coordination.

### Strengths and Weaknesses

#### Strengths:

- Adopting consistent policies and ordinances without amending other documents such as flood plain ordinances, or creating additional layers of regulation such as overlay zones, etc., could be a relatively simple and basic approach to cross-jurisdictional coordination.
- Although the Coastal Commission is not subject to LCP policies and zoning regulations for development decisions, having consistent LCP policies among local jurisdictions will provide the Commission with consistent guidance when making development decisions.

#### Weaknesses:

- Sea level rise land use regulation uniformity across jurisdictional boundaries, while helping to facilitate a consistent approach to sea level rise adaptation, will not compel cross-jurisdictional coordination, and would be best used in coordination with an organizational approach.
- This approach would require cooperation from the Coastal Commission and all involved LCP agencies on Humboldt Bay in order to amend LCPs to incorporate agreed upon policies.

- Achieving agreement among jurisdiction on the policies and ordinances to be incorporated into land use regulations may prove difficult.
- Consistent LCP policies and regulations will provide only guidance for Coastal Commission development decisions in Commission retained jurisdiction, and will not compel the Commission to implement the regional sea level rise management approach intended by local agency adoption of consistent sea level rise LCP land use policies and zoning regulations.

## **b. Overlay or Combining Zones**

### Background

Generally speaking, overlay and combining zoning works together with principal zoning to provide an additional layer of regulation in areas with special or unique needs or characteristics. These zones are used to achieve outcomes that could not otherwise be achieved by the underlying zoning.

Overlay Zone - As defined by APA, an overlay zone “is a zoning district which is applied over one or more previously established zoning districts, establishing additional or stricter standards and criteria for covered properties in addition to those of the underlying zoning district. Communities often use overlay zones to protect special features such as historic buildings, wetlands, steep slopes, and waterfronts.”

Combining Zone - The Humboldt County zoning regulations generally do not make use of overlay zones, but do utilize combining zones. As defined by the Humboldt County Coastal Zoning Regulations, a combining zone is an additional zoning designation applied to some properties that modifies the regulations for the principal zones with which they are combined when necessary for sound and orderly planning. All uses and development regulations for the principal zone remain applicable, except insofar as they are modified or augmented by the uses and regulations set forth in the combining zone regulations.

### Applicability for Regional Sea Level Rise Planning

Overlay or combining zones could be used to provide sea level rise regulations for specific areas, such as areas that would be directly or indirectly impacted by sea level rise at a specified elevation or areas where adaptation measures would need to be installed, without changing the underlying existing zoning. They can also be used to achieve adaptation goals by, for example, delineating areas where the goal is protection, accommodation, preservation, or retreat, described in more detail below in the excerpt from a 2013 Nature Conservancy memo. Overlay or combining zone regulations can provide land use or building restrictions or additional requirements, and they can also provide incentives.

Overlay or combining zones could be used for a variety of regulations relative to sea level rise impacts and adaptation. They could include requirements such as building setbacks from the shoreline; structure accommodations for flooding such as no living space below a prescribed flood elevation; minimum elevation at which a structure could be placed; prohibitions or limits on building expansion, renovation, or rebuilding of existing structures; preparation of a sea level rise hazard analysis for proposed development; and so forth. They could be designed to minimize the type or amount of development and encourage the migration of development out of the sea level rise impact area. They could include regulations that encourage preservation of certain types of

habitats to attenuate erosion and flooding hazards or allow for only living or nature-based shoreline structures.

Overlay and combining zones could also be used to incentivize or facilitate sea level rise adaptation. A provision for permit streamlining could be included in overlay or combining zones. Permit streamlining could include pre-approved locations for specified shoreline protective measures, permits with strict performance standards that can be issued over the counter, an expedited permit review for certain types of adaptation projects closely coordinated by the local agency, or they could be applied to areas where preliminary data has been collected by the local agency that would reduce the data needed for a sea level rise hazard analysis, or perhaps eliminate the requirement for an analysis.

As suggested in a 2013 memo prepared for The Nature Conservancy entitled *Municipal Zoning Options for Adaption to Sea Level Rise in Connecticut*, overlay (or combining) zoning could be used to identify zones based on sea level rise (SLR) adaptation goals, as explained in the following excerpt:

*Another overlay zoning approach is to identify zones based on SLR adaptation goals. The zones can be delineated by a combination of existing development density, dominant use, public utility services (sewer, water, etc.), elevation contours, and erosion rates. A town could divide the 100-year (or 500-year) floodplain into the following overlays:*

- A Protection Zone for areas with critical infrastructure and dense development that have few options for adaptation. These areas, which may include town centers and historic districts, likely rely on existing hard armoring for flood protection and erosion control. Maintenance of existing hardened flood protection structures may be permitted while other resiliency practices are encouraged, such as employing green infrastructure for stormwater control.*
- An Accommodation Zone for moderately to intensely developed but non-critical areas promotes development that considers future SLR. Downzoning to lower impact uses reduces risk exposure. Building codes are strengthened with setback, elevation, freeboard, and construction requirements; as well as limits on structure height and footprint size. Shoreline armoring is restricted to soft or natural solutions.*
- A Conservation Zone includes areas that either provide the greatest natural protection or have non-critical structures at the greatest risk of extensive damage. The purpose is to gradually move development out of these areas and replace it with natural protection, marsh advancement areas, open space, or public access. This can be achieved by downzoning to low density, water-dependent purposes. Shoreline armoring is restricted to natural solutions. Maximum setbacks aim to move any new development landward. Rebuilding damaged structures is also restricted. Property acquisition and conservation programs are focused on this area. (Note – this zone would represent the general adaptation “retreat” category as provided by the Coastal Commission).*

In order to facilitate regional sea level rise planning and management, overlay or combining zones would need to be created in consideration of sea level rise impacts and adaptation needs based on hydrologic units, and thus would cross jurisdictional LCP boundaries in some instances. The goal would be to have consistent overlay or combining zones and requirements within a

hydrologic unit, which would require consistent zones and requirements within all LCP jurisdictions located in that hydrologic unit.

### Strengths and Weaknesses

#### Strengths:

- Overlay and combining zones provide the ability to create requirements that address specific issues in defined locations, while leaving intact the underlying zoning district.
- This approach allows continued consistency in terms of overall land use, while providing the ability to manage particular needs where those needs exist. In the case of sea level rise, overlay or combining zones could provide restrictions, additional requirements, or incentives to facilitate sea level rise planning and management on a hydrologic unity and ultimately bay-wide basis in recognition of the fact that water does not observe jurisdictional boundaries.
- An overlay or combining zone could facilitate a streamlined permitting process, adding clarity to the adaptation and permitting process and reducing adaptation response time.

#### Weaknesses:

- Sea level rise land use policy and regulation uniformity across jurisdictional boundaries, while helping to facilitate a consistent approach to sea level rise adaptation, will not compel cross-jurisdictional coordination, and would be best used in coordination with an organizational approach.
- This approach would require cooperation from the Coastal Commission and all involved LCP agencies on Humboldt Bay in order to amend LCPs to incorporate agreed upon overlay or combining zones.
- Achieving agreement among all jurisdictions on the overlay or combining zones to be incorporated into land use regulations may prove difficult.

### References

APA - Property Topics and Concepts, Overlay Zones  
<https://www.planning.org/divisions/planningandlaw/propertytopics.htm#Overlay>

OPR - General Plan Guidelines, Chapter 9 Implementation  
[https://opr.ca.gov/docs/OPR\\_C9\\_final.pdf](https://opr.ca.gov/docs/OPR_C9_final.pdf)

## **c. Floating Zones**

### Background

The American Planning Association (APA) describes a floating zone as a zoning district that delineates conditions (rather than use classifications typically found on zoning maps) which must be met before that zoning district can be approved for an existing piece of land. Rather than being placed on the zoning map as traditional zones are, the floating zone is simply written as an amendment in the zoning ordinance. Thus, the zone "floats" until a development application seeking that zoning designation is approved, when the zone is then added to the official zoning map. Floating zones can be used to plan for future land uses that are anticipated or desired in a certain community, but are not confirmed.

The OPR General Plan Guidelines define a floating zone as a district described in the zoning ordinance but not given a specific location on the zoning maps until a property owner or developer applies for it. Planned Unit Development (PUD) zoning is a common example of a floating zone. Floating zones can implement development standards established in the general plan.

Floating zones are helpful for communities where the direction of development and growth is uncertain or for communities that wish to achieve specific goals outlined in a comprehensive plan or other public documents. Critics, however, argue that floating zones undermine the ability of citizens to rely on the predictability of the zoning map.

### Applicability for Regional Sea Level Rise Planning

Generally, it appears that floating zones are used to facilitate a certain type of development. In terms of sea level rise planning, a floating zone could potentially be used in combination with a growth-restricted base zone created to discourage development due to sea level rise impacts. The floating zone would be restricted to that specific growth-restricted base zone, and could allow development that would otherwise not be allowed by the zone if the development meets specific standards that address sea level rise such as location, construction requirements, etc.

Although no example of a restrictive use of a floating zone was found, such a zone could perhaps be utilized as a warning that development in the future for specific areas will be restricted due to sea level rise impacts. The floating zone could float over areas that could be impacted by three feet of sea level rise, and would be implemented by local government (as opposed to the traditional implementation via request by a landowner based on a proposed development) once sea levels reach a specified threshold. Implementation of the floating zone would trigger the need to comply with certain development regulations to avoid sea level rise impacts ranging from adaptation measures such as certain construction requirements (e.g., elevating a structure) to restricting any further development.

### Strengths and Weaknesses

#### Strengths:

- The existence of a floating zone over specific zoning districts or geographic areas could provide notification to current and future property owners regarding anticipated sea level rise impacts and resulting adaptation requirements, and could incentivize movement out of areas vulnerable to sea level rise impacts.
- A floating zone could be used to incentivize movement out of areas vulnerable to sea level rise.

#### Weaknesses:

- As noted above, floating zones can undermine the ability of citizens to rely on the predictability of a zoning map.
- Sea level rise land use regulation uniformity across jurisdictional boundaries, while helping to facilitate a consistent approach to sea level rise adaptation, will not compel cross-jurisdictional coordination, and would be best used in coordination with an organizational approach.
- This approach would require cooperation from the Coastal Commission and all involved LCP agencies on Humboldt Bay in order to amend LCPs to incorporate agreed upon floating zones.

- Achieving agreement among all jurisdictions on floating zones to be incorporated into land use documents may prove difficult.

## References

APA - Property Topics and Concepts, Floating Zones

<https://www.planning.org/divisions/planningandlaw/propertytopics.htm#Floating>

OPR - General Plan Guidelines, Chapter 9 Implementation

[https://opr.ca.gov/docs/OPR\\_C9\\_final.pdf](https://opr.ca.gov/docs/OPR_C9_final.pdf)

Town of Federalsburg, MD Growth Allocation Floating Zone District

<https://ecode360.com/9899137>

ILG - Land Use and Planning, Guide to Local Planning

[https://www.ca-ilg.org/sites/main/files/file-attachments/2010\\_-\\_landuseplanning.pdf](https://www.ca-ilg.org/sites/main/files/file-attachments/2010_-_landuseplanning.pdf)

## **d. Specific Plans**

### Background

The information provided as background for specific plans is taken, for the most part, from “The Planner’s Guide to Specific Plans” prepared in 2001 by the Governor’s Office of Planning and Research. The document is available on the Institute for Local Government website, and is referenced and linked in OPR’s General Plan Guidelines, although the link to the document is not functioning but it is assumed the link is to the 2001 Guide.

Specific plans implement the goals and policies of a general plan, but are not part of the general plan, through detailed development standards and implementation measures for a specific geographic area. They bridge the gap between the goals and policies of a general plan and the zoning regulations that implement the general plan. They combine policy statements with development regulations, with emphasis on concrete standards and development criteria. They address the planning of necessary infrastructure and facilities, as well as land uses and open space, and specify those programs and regulations necessary to finance infrastructure and public works projects. To summarize, specific plans combine a policy document (goals, policies, and programs) with a regulatory document (zoning ordinance), and serve as a standalone planning document, replacing the general plan and zoning ordinance for the specific plan area.

Specific plans can be used to address a single project or a community-wide project. They can encompass areas of various sizes, address single or multiple general plan policy issues, or address issues not contained in a general plan but deemed relevant by a community. OPR’s general plan guidelines note that a specific plan is especially useful for large projects, as well as for sites with environmental and fiscal constraints, two characteristics that may be particularly relevant to areas directly impacted by sea level rise. Specific plans can provide greater flexibility in development regulations, or enforce stricter standards. They can provide various levels of certainty regarding development potential through zoning regulations, design guidelines, or infrastructure design capacity as examples, but conversely, they are subject to change.

Specific plans are regulated by the State of California. The requirements for specific plans are provided in California Government Code Title 7, Division 1, Chapter 3, Sections 65450 – 65457. A specific plan is required to include:

- (1) The distribution, location, and extent of the uses of land, including open space, within the area covered by the plan.
- (2) The proposed distribution, location, and extent and intensity of major components of public and private transportation, sewage, water, drainage, solid waste disposal, energy, and other essential facilities proposed to be located within the area covered by the plan and needed to support the land uses described in the plan.
- (3) Standards and criteria by which development will proceed, and standards for the conservation, development, and utilization of natural resources, where applicable.
- (4) A program of implementation measures including regulations, programs, public works projects, and financing measures necessary to carry out paragraphs (1), (2), and (3).

In addition to these items, a specific plan may address any other subjects which in the judgment of the planning agency are necessary or desirable for implementation of the general plan. Adoption of a Specific Plan, which is a legislative act, may be accomplished by either resolution or ordinance. Adoption of a specific plan is considered a project pursuant to the California Environmental Quality Act.

A specific plan must be consistent with a jurisdiction's general plan, and must include a statement of the relationship of the specific plan to the general plan. In turn, zoning ordinances, subdivisions, public works projects, development agreements, and land projects must be consistent with any applicable Specific Plan. Furthermore, a special district, school district, or joint powers authority may not carry out its capital improvements program if the affected city or county finds the program or any part inconsistent with a specific plan, unless the district or local agency explicitly overrules the city or county's finding.

A specific plan located within an LCP would need to be consistent not only with the general plan, but also with the certified LCP (i.e., with both the land use plan and the coastal zoning regulations) or the LCP would need to be amended to include the specific plan.

Following are three specific plans that have been certified by the Coastal Commission, available at <https://www.coastal.ca.gov/meetings/agenda/#/2021/4>:

- [CCC Agenda Item 16.b., Friday 4-16-21, City of San Diego, Balboa Avenue Station Specific Plan](#)
- [CCC Agenda Item 18.c., Wednesday 12-15-21, City of Laguna Beach, Downtown Specific Plan Update](#)
- [CCC Agenda Item 11a, Thursday 10-8-20, City of Long Beach, Southeast Area Specific Plan](#)

#### Applicability for Regional Sea Level Rise Planning

A specific plan can be crafted to address sea level rise in a manner tailored to a specific geographic area. It could include land uses such as zones for protection, accommodation, and retreat; adaptation measures targeting infrastructure within the plan area; specific shoreline protection projects; areas where a streamlined permitting process for certain adaptation projects is applicable; and so forth.

While a specific plan could be an appropriate sea level rise planning tool within a single jurisdiction, the plan could include areas within multiple LCP jurisdictions. A cross-jurisdictional specific plan would need to be adopted by each jurisdiction and amended into each jurisdiction's LCP.

## Strengths and Weaknesses

### Strengths:

- A specific plan requires opportunities for public involvement, which will help ensure community acceptance of adopted sea level rise policies, regulations, and adaptation projects.
- OPR's general plan guidelines note that a specific plan is especially useful for large projects, as well as for sites with environmental and fiscal constraints, two characteristics that may be particularly relevant to areas directly impacted by sea level rise.
- A specific plan provides a tool to address sea level rise planning and adaptation needs in a manner tailored to a particular area or community, and provide requirements regarding how those needs must be met.
- A specific plan, because of details required including implementation measures, would likely be more successful at compelling cross-jurisdictional coordination than an area or community plan.
- A specific plan is not part of a general plan, and thus does not require a general plan amendment.

### Weaknesses:

- A specific plan involves significant time, cost, and staff resources to prepare and implement.
- Each jurisdiction would need to adopt a region-wide specific plan, which may require amendments to land use regulations to insure consistency within each jurisdiction.
- A specific plan would require an amendment to each of the three LCPs in the Humboldt Bay region.
- A specific plan for a single project may become obsolete if the project is not implemented, which could require revision or repeal of the plan, resulting in additional costs and staff time.
- Sea level rise land use regulation uniformity across jurisdictional boundaries, while helping to facilitate a consistent approach to sea level rise adaptation, will not compel cross-jurisdictional coordination although a specific plan may be more successful than other such approaches, and would be best used in coordination with an organizational approach.
- This approach would require cooperation from the Coastal Commission and all involved LCP agencies on Humboldt Bay in order to amend LCPs to incorporate an agreed upon specific plan
- Achieving agreement among all jurisdictions on a specific plan to be incorporated into land use regulations may prove difficult.

## References

Government Code Title 7, Division 1, Chapter 3, Article 8, Specific Plans

[https://leginfo.legislature.ca.gov/faces/codes\\_displayText.xhtml?lawCode=GOV&division=1.&title=7.&part=&chapter=3.&article=8](https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=GOV&division=1.&title=7.&part=&chapter=3.&article=8)

Institute for Local Government: OPR - The Planner's Guide to Specific Plans

[https://www.ca-ilg.org/sites/main/files/file-attachments/resources\\_specific\\_plans\\_0.pdf?%E2%80%8C1350954879](https://www.ca-ilg.org/sites/main/files/file-attachments/resources_specific_plans_0.pdf?%E2%80%8C1350954879)

#### QK - Types of Plans That Planners Use

<https://www.qkinc.com/uncategorized/types-of-plans-that-planners-use/>

#### Los Angeles City Planning: What is a Specific Plan?

<https://planning.lacity.org/blog/what-specific-plan>

#### Planetizen: What Are Specific Plans?

<https://www.planetizen.com/definition/specific-plans>

#### Sacramento County - Special Planning Areas, Neighborhood Preservation Areas, and Specific Plans

<https://planning.saccounty.net/LandUseRegulationDocuments/Pages/SPAandNPAs.aspx>

#### Government Code - Title 7, Division 1, Chapter 3, Article 8. Specific Plans

[https://leginfo.ca.gov/faces/codes\\_displayText.xhtml?lawCode=GOV&division=1.&title=7.&part=&chapter=3.&article=8](https://leginfo.ca.gov/faces/codes_displayText.xhtml?lawCode=GOV&division=1.&title=7.&part=&chapter=3.&article=8)

### **e. Community Plans and Area Plans**

#### Background

Unlike specific plans, a community plan and area plan are part of the general plan, and focus on a particular region or community within the overall general plan area. They are also not generally as detailed as a specific plan. An area plan might cover a large area with similar characteristics while a community plan usually covers one unincorporated community.

Community and area plans must be internally consistent with the general plan. They present goals, policies, and programs specific to the community or area they cover, but unlike a specific plan, they are not regulatory documents, and do not include zoning regulations or development standards. They do not need to address all of the subjects required to be addressed by a general plan, assuming the general plan already addresses them and assuming the community plan is consistent with the general plan in regard to those subjects.

A resolution is required to adopt an area or community plan as an amendment to the general plan. These plans refine the policies of the general plan as they apply to a smaller geographic area and are implemented by ordinances and other discretionary actions, such as zoning. The area or community plan process also provides a forum for resolving local conflicts. Large cities and counties where there are a variety of distinct communities or regions commonly use these plans.

Area or community plans are conducive to the use of imaginative planning standards that would not otherwise be allowed through the application of standard zoning districts. This flexibility can also be used to protect unique environmental, historic, architectural, and other features that require special consideration. Unlike specific plans, community and area plans have a limited focus - the provision of unique standards through a land use plan and development standards. They do not include financing or timing, and are well-suited to projects that do not have the finances or time required to create a detailed specific plan. A local zoning ordinance would establish the minimum requirements for a community or area plan.

#### Applicability for Regional Sea Level Rise Planning

A community or area plan could provide goals, policies and programs tailored to address sea level rise in a particular community or area, and could provide consistency where the plan crossed

jurisdictional boundaries or had cross-jurisdictional impacts. To facilitate regional planning, the cities and county where the plan was located would need to amend the area or community plan into their respective general plan and LCP. Where a community or area plan was located in only one jurisdiction, the adjacent community may need to adopt policies that support the adjacent plan.

### Strengths and Weaknesses

#### Strengths:

- These plans provide an opportunity for focused sea level rise planning and adaptation tailored specifically to a community or geographic area.
- Preparation of a community or area plan provides a forum for public engagement, and thus a forum for resolving local sea level rise planning and adaptation conflicts.

#### Weaknesses:

- Each jurisdiction would need to adopt a region-wide community plan, which may require amendments to land use regulations to insure consistency within each jurisdiction.
- A community or area plan would require an amendment to each of the three LCPs in the Humboldt Bay region.
- Sea level rise land use regulation uniformity across jurisdictional boundaries, while helping to facilitate a consistent approach to sea level rise adaptation, will not compel cross-jurisdictional coordination, and would be best used in coordination with an organizational approach.
- This approach would require cooperation from the Coastal Commission and all involved LCP agencies on Humboldt Bay in order to amend LCPs to incorporate an agreed upon specific plan
- Achieving agreement among all jurisdictions on a community or area plan to be incorporated into land use regulations may prove difficult.

### References

City of San Rafael - Differences in plans

<https://www.cityofsanrafael.org/question/what-are-the-differences-between-a-specific-plan-precise-plan-master-plan-a-community-plan-and-a-neighborhood-plan-how-do-each-of-these-plans-relate-to-the-citywide-general-plan/#/city/answers/pda-2020/what-are-the-differences-between-a-specific-plan-precise-plan-master-plan-a-community-plan-and-a-neighborhood-plan-how-do-each-of-these-plans-relate-to-the-citywide-general-plan>

QK - Types of Plans That Planners Use

<https://www.qkinc.com/uncategorized/types-of-plans-that-planners-use/>

## **f. Floodplain Regulations**

### Background

Information provided in this subsection is taken directly from the Federal Emergency Management Agency (FEMA) Floodplain Management webpage. FEMA, which is part of the Department of Homeland Security, defines floodplain management as a community-based effort to prevent or

reduce the risk of flooding, resulting in a more resilient community. Floodplain management functions are carried out by local governments, generally through zoning and building codes. While FEMA has minimum floodplain management standards to minimize flood damage for communities participating in the National Flood Insurance Program (NFIP), communities can adopt higher standards that will lead to safer, stronger, more resilient communities.

FEMA Floodplain Management: FEMA follows directives set by the Executive Office for floodplain management activities. FEMA's website lists and summarizes three Executive Orders that are germane to floodplain management:

- Executive Order 11988 – Floodplain Management, 1977: EO 11988 requires federal agencies to avoid to the extent possible the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities" for the following actions:
  - Acquiring, managing, and disposing of federal lands and facilities;
  - Providing federally undertaken, financed or assisted construction and improvements;
  - Conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities.
- Executive Order 11990 – Protection of Wetlands, 1977: The purpose of this EO is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands." To meet these objectives, the Order requires federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The Order applies to:
  - Acquisition, management and disposition of federal lands and facilities construction and improvement projects which are undertaken, financed, or assisted by federal agencies;
  - Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities.
- Executive Order 13690 – Establishing a Federal Flood Risk Management Standard (FFRMS): EO 13690 established the FFRMS. It amended EO 11988, signed in 1977, which directed federal agencies to provide leadership in carrying out federal activities by reducing: 1) Loss of Human Life and Property; and 2) Loss of Natural Floodplain Values. EO 13690 is a resilience standard that requires agencies to not only build higher, but also more resiliently through natural systems, ecosystem processes, and nature-based approaches.

The Federal Flood Risk Management Standard is a flood standard that aims to build a more resilient future. As stated in Section 1 of Executive Order 13690, "It is the policy of the United States to improve the resilience of communities and federal assets against the impacts of flooding. These impacts are anticipated to increase over time due to the effects of climate change and other threats. Losses caused by flooding affect the environment, our economic prosperity, and public health and safety, each of which affects our national security."

The FFRMS was established to encourage federal agencies to consider and manage current and future flood risks in order to build a more resilient nation. The standard was revoked but

then reinstated through Executive Order 14030, Climate-Related Financial Risk, clarifying that the FFRMS as well as the guidelines for floodplain management under Executive Order 11988 should remain in effect. It requires agencies to prepare for and protect federally funded buildings and projects from flood risks. More specifically, it requires agencies to determine specific federal building or project dimensions – that is, how high and how wide and how expansive a building or project should be – in order to manage and mitigate any current or potential flood risks.

The FFRMS gives flexibility and requires agencies to select one of the three approaches for establishing the flood elevation (“how high”) and corresponding flood hazard area (“how wide”) used for project siting, design, and construction:

- o Climate Informed Science Approach (CISA): The elevation and flood hazard area that result from using the best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding based on climate science;
- o Freeboard Value Approach: The elevation and flood hazard area that result from adding an additional 2 feet to the base flood elevation for non-critical actions and by adding an additional 3 feet to the base flood elevation for critical actions; or
- o 500-year Floodplain: The area subject to flooding by the 0.2% -annual-chance flood. This area is also known as the 500-year floodplain.

Community Rating System (CRS): CRS is a voluntary incentive program implemented in 1990 that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the National Flood Insurance Program (NFIP). Any community fully compliant with NFIP floodplain management requirements may apply to join the CRS. In CRS communities, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community’s efforts that address the three goals of the program:

1. Reduce and avoid flood damage to insurable property
2. Strengthen and support the insurance aspects of the National Flood Insurance Program
3. Foster comprehensive floodplain management

The CRS uses a Class rating system to determine flood insurance premium reductions for residents. CRS Classes are rated from 9 to 1. Most communities enter the program at a CRS Class 9 or Class 8 rating, which entitles residents in Special Flood Hazard Areas (SFHAs) to a 5% discount on their flood insurance premiums for a Class 9 or a 10% discount for Class 8. As a community engages in additional mitigation activities, its residents become eligible for increased NFIP policy premium discounts. Each CRS Class improvement produces a 5% greater discount on flood insurance premiums for properties in the SFHA. A community accrues points to improve its CRS Class rating and receive increasingly higher discounts. Points are awarded for engaging in any of 19 creditable activities, organized under four categories:

1. Public Information

- Activity 310 (Elevation Certificates) - Maintaining construction certificates and making them available to the public
- Activity 320 (Map Information Service) - Providing Flood Insurance Rate Maps (FIRMS) and other map information, and publicizing that service.
- Activity 340 (Hazard Disclosure) - Real estate agents’ advising potential purchasers of floodprone property about the flood hazard, and local regulations requiring disclosure of the hazard

- Activity 350 (Flood Protection Information) - Maintaining a community public library and/or website that contains flood-related information
- Activity 360 (Flood Protection Assistance) - Advising property owners and renters about how to protect buildings from flooding and publicizing that service
- Activity 370 (Flood Insurance Promotion) - Assessing flood insurance coverage in the community and implementing a plan to promote flood insurance

## 2. Mapping and Regulations

- Activity 410 (Floodplain Mapping) - Developing regulatory maps for areas not mapped by FEMA or flood mapping based on future conditions, detailed topography, or other standards
- Activity 420 (Open Space Preservation) - Keeping floodprone land free of development
- Activity 430 (Higher Regulatory Standards) - Regulations that exceed the NFIP's minimum criteria for floodplain management
- Activity 440 (Flood Data Maintenance) - Gathering and/or maintaining more accessible, useful, and/or accurate floodplain data for regulation, insurance rating, hazard disclosure, and property appraisals
- Activity 450 (Stormwater Management) - Watershed planning and regulations that prevent future development from increasing flood hazards or diminishing water quality

## 3. Flood Damage Reduction

- Activity 510 (Floodplain Management Planning) - Adoption of flood hazard mitigation and/or natural functions plans using the CRS planning process, and/or conducting repetitive loss area analyses
- Activity 520 (Acquisition and Relocation) - Acquiring insurable buildings and relocating them out of the floodplain, and leaving the property as open space
- Activity 530 (Flood Protection) - Protecting buildings from flood damage by floodproofing, elevation, or minor structural projects
- Activity 540 (Drainage System Maintenance) - Annual inspections of channels and retention basins, and maintenance of the drainage system's flood-carrying and storage capacity

## 4. Warning and Response

- Activity 610 (Flood Warning and Response) - Timely warning of flood threats and coordinating flood response activities.
- Activity 620 (Levees) - Annual levee inspection programs and plans to respond to floods caused by levee failure
- Activity 630 (Dams) - State dam safety programs and plans to respond to flooding caused by dam failure.

FEMA identifies a number of benefits besides lower-cost flood insurance rates a community receives from participating in the CRS, including:

- Citizens and property owners in CRS communities have increased opportunities to learn about risk, evaluate their individual vulnerabilities, and take action to protect themselves, as well as their homes and businesses.
- CRS floodplain management activities provide enhanced public safety, reduced damage to property and public infrastructure, and avoidance of economic disruption and loss.
- Communities can evaluate their flood programs against a nationally recognized benchmark.

- Technical assistance in carrying out some activities is available to community officials at no charge.
- CRS communities have incentives to maintain and improve their flood programs over time.

Local Floodplain Management: Eureka, Arcata, and Humboldt County have floodplain regulations that meet or exceed FEMA standards, incorporated into their municipal codes. Neither the cities nor the county are currently participating in the CRS program.

#### Applicability for Regional Sea Level Rise Planning

Local flood plain regulations could impose restrictions on development in floodplains above NFIP minimum standards. These restrictions could include use restrictions in the 100-year floodplain that would limit permitted uses to those that would help to minimize flood related impacts such as allowing only agricultural or recreational uses, uses that can easily be relocated (i.e., are not associated with permanent infrastructure), very low density residential, and so forth. Local regulations could impose design requirements in the 500-year floodplain that would facilitate sea level rise flooding accommodation, such as elevating structures. Consistency among local jurisdiction floodplain ordinances would be needed to facilitate a regional approach to sea level rise management, and LCPs would potentially need to be amended to implement sea level rise floodplain regulations.

#### Strengths and Weaknesses

##### Strengths:

- Consistency among local jurisdiction floodplain regulations would facilitate a consistent approach to managing sea level rise in the entirety of the floodplain irrespective of jurisdictional boundaries.
- CRS has the potential for lowering countywide flood insurance rates if all three LCP jurisdictions participate in the program.
- If all three LCP jurisdictions participate in the CRS program, it would facilitate a partnership in addressing flood plain issues in a consistent approach, and would result in improved collaboration regarding planning for special flood hazard areas.

##### Weaknesses:

- It may be challenging to obtain agreement among Eureka, Arcata, and the County on floodplain regulations.
- LCP and possibly other land use regulation amendments could be required to implement amended floodplain regulations.
- Participation in the CRS program requires annual recertification, and would likely require additional staff to implement the program

#### References

Georgetown Climate Center - Adaptation Tool Kit: Sea-Level Rise and Coastal Land Use  
[https://www.georgetownclimate.org/files/report/Adaptation\\_Tool\\_Kit\\_SLR.pdf](https://www.georgetownclimate.org/files/report/Adaptation_Tool_Kit_SLR.pdf)

FEMA - Floodplain Management  
<https://www.fema.gov/floodplain-management>

FEMA - About the Community Assistance Program - State Support Services Element (CAP-SSE)  
<https://www.fema.gov/floodplain-management/community-assistance-program/about>

FEMA - National Flood Insurance Program, Community Rating System brochure  
[https://www.fema.gov/sites/default/files/documents/fema\\_community-rating-system\\_local-guide-flood-insurance-2018.pdf](https://www.fema.gov/sites/default/files/documents/fema_community-rating-system_local-guide-flood-insurance-2018.pdf)

FEMA - Floodplain Management, Intergovernmental Collaboration  
<https://www.fema.gov/floodplain-management/intergovernmental>

FEMA - Community Rating System, Fact Sheet, Overview and Participation  
<https://www.fema.gov/fact-sheet/community-rating-system-overview-and-participation>

CFR Title 44, Chapter 1, Subchapter B, Part 60, Subpart A Section 60.3 - Flood plain management criteria for flood-prone areas  
<https://www.ecfr.gov/current/title-44/chapter-1/subchapter-B/part-60/subpart-A/section-60.3>

## **g. Public Works Plans**

### Background

Public works are defined in the Coastal Act as follows:

#### Public Resources Code §30114 Public works

*"Public works" means the following:*

- (a) All production, storage, transmission, and recovery facilities for water, sewerage, telephone, and other similar utilities owned or operated by any public agency or by any utility subject to the jurisdiction of the Public Utilities Commission, except for energy facilities.*
- (b) All public transportation facilities, including streets, roads, highways, public parking lots and structures, ports, harbors, airports, railroads, and mass transit facilities and stations, bridges, trolley wires, and other related facilities. For purposes of this division, neither the Ports of Hueneme, Long Beach, Los Angeles, nor San Diego Unified Port District nor any of the developments within these ports shall be considered public works.*
- (c) All publicly financed recreational facilities, all projects of the State Coastal Conservancy, and any development by a special district.*
- (d) All community college facilities*

To promote greater efficiency for the planning of any public works development projects and as an alternative to project-by-project review, the Coastal Act provides that a public works plan (PWP) may be submitted to the Coastal Commission for review in the same manner prescribed for the review of local coastal programs (California Public Resources Code, §30605). A PWP describes one or more public works projects across one or more local government jurisdictions, and is particularly suited for planning for large scale or multi-part infrastructure projects. PWPs must be certified by the Commission. A PWP in Commission retained jurisdiction must be found consistent with Chapter 3 of the Coastal Act. Where a PWP is located within one or more certified LCPs, the PWP must be found to be consistent with Chapter 3 Coastal Act and the certified LCPs of the jurisdictions affected by the PWP. A PWP submitted for certification must contain sufficient information regarding project(s) kind, size, intensity, location, service area, financing method, and any other information deemed relevant by the Commission so as to determine consistency of the PWP with Chapter 3 of the Coastal Act, and consistency with the certified LCP for any jurisdictions

affected by the PWP. Unless required for a public works project or energy facility development pursuant to Coastal Act §30515, a PWP does not require an LCP amendment. A certified PWP may be amended in the same manner as an LCP.

CCR §13357 provides the procedure for PWP review where the affected area is located within one or more certified LCP(s). This process includes consultations with the affected local governments. Once the Commission certifies a PWP (which must include a finding that the PWP, as approved, is in conformity with the LCP in jurisdictions affected by the PWP), this CCR section specifies that no coastal development permit is required for a PWP project. Instead, before commencing a specific PWP project within an LCP, the public agency must submit a Notice of Impending Development (NOID) to the Commission and must also provide data showing that the project is consistent with the certified PWP. The Commission is then required to determine whether the submitted project is consistent with the PWP. Review by the Commission of a specific project contained in the PWP is limited to imposing conditions to ensure consistency with the PWP.

For a PWP project located in retained jurisdiction, the Commission still requires a Commission-issued CDP which effectively negates the primary benefits of a PWP, namely avoiding project-by-project review and the need for multiple CDPs. While the need for CDPs from multiple local jurisdictions may be avoided for those portions of a PWP located in certified LCP areas, multiple CDPs from the Commission, one for each PWP project undertaken, would still be required. CCR §13358 provides the process for reviewing a CDP submitted to the Commission that is part of a PWP. This section requires that if a project intended to be undertaken pursuant to a PWP is submitted to the Commission for a permit concurrent with the submittal of a PWP, the Commission is required to review them concurrently. The Commission is required to approve the project as an integral component of the PWP if the project meets the requirements of the Coastal Act, and can require conditions to bring the project into conformance with the Coastal Act. However, the section does not specify what circumstances warrant a Commission-issued CDP for a PWP project.

An explanation as to why the Commission requires a CDP for a PWP project in Commission retained jurisdiction has not been found in Commission staff reports or elsewhere. Coastal Act §30605 pertains to PWPs, and to state university or college long-range land use development projects. This section states that PWPs are to be submitted to the Commission for review in the same manner as an LCP as set forth in Coastal Act §30500. Coastal Act Chapter 6 Implementation, §30500 et seq. sets forth procedures for preparation and certification of LCPs, the process required for approval of a PWP. Coastal Act §30519 delegates permit authority for a certified LCP to the local agency, except for development on tidelands, submerged lands, or public trust lands. This could explain why the Commission retains permit jurisdiction within a PWP for public trust lands, etc., just as they retain permit jurisdiction for such lands within a certified LCP (i.e., there are pockets of uncertified area within an LCP).

As noted above, the Commission's approval of a PWP, including a finding of PWP consistency with Chapter 3 of the Coastal Act and with affected LCPs, relieves a local agency from having to obtain CDPs for PWP projects in areas where there is a certified LCP, i.e., avoids the need for CDPs from local agencies. The Commission retains control of any PWP, regardless of permit jurisdiction, through the requirement for submittal of an NOID to the Commission, and the Commission also retains the discretion to condition a PWP project to ensure consistency with the PWP, as may be required. Since a PWP in retained jurisdiction must be found consistent with Chapter 3 of the Coastal Act, which is what is required for a Commission-issued CDP, and since the Commission retains the sole authority to approve a PWP, find a project consistent with an approved PWP, and add conditions to ensure consistency with an approved PWP as needed, it

is not clear why the Commission has determined a Commission-issued CDP is still required. A PWP is required to provide details about projects included in the PWP in a manner sufficient to determine consistency with Chapter 3 of the Coastal Act. It would seem requiring a Commission-issued CDP is redundant and unnecessary, and obviates the benefits of a PWP envisioned by the Coastal Act.

Adding to the confusion and inconsistency regarding the treatment of PWPs in retained jurisdiction, CCR §13359 provides direction for specific project review following certification of a PWP. In CCR §13359(a) the circumstance is addressed where there is a proposed project to be undertaken pursuant to an approved PWP where the project is subject to a CDP prior to the certification of an LCP. This subsection requires submittal of a notice for such project pursuant to Coastal Act §30606, which as described in §30606 is an NOID. This CCR subsection goes on to state that the notice shall be reviewed and deemed filed if it complies with the provisions of CCR §13353 and §13354, which provide the process for submitting a PWP (not a specific project), and for the Executive Director's determination as to whether the information submitted is sufficient to allow the Commission to determine if the proposed project is consistent with the certified PWP. In CCR §13359(b), the process for determining consistency with the certified PWP is described, including the ability to add conditions to bring the project into conformity. Finally, CCR §13359(c) provides that hearing procedures for the Commission's determination of consistency and action on proposed conditions shall be the same as those set forth in CCR §13356, which are hearing procedures for PWP review prior to certification of an LCP. This section requires that a public hearing be set no later than the 60<sup>th</sup> day following the date an application for a PWP was filed, yet CCR §13359(b) requires the Commission to determine a project's consistency with a PWP within 30 working days of filing of such notice. CCR §13359 seems to envision the ability of a local agency to utilize an NOID in Commission retained jurisdiction, yet this section appears to mix the requirements for PWP review with PWP project review.

While PWPs require a great deal of upfront technical analysis, and project and mitigation planning, they can be a good alternative to individual project-by-project coastal development permit reviews. They can also assist in more regional planning for public works projects that would require multiple coastal development permits in multiple jurisdictions, making them effective and efficient tools for implementing sea level rise adaptation projects in an entire corridor, system, or network of critical infrastructure. However, because of the significant extent of Commission retained jurisdiction in the Humboldt Bay area coupled with the Commission's requirement for a PWP project CDP, a PWP may not have significant benefits in the Humboldt Bay area. Because of the potential significant benefit to cross-jurisdictional sea level rise adaptation coordination that could be provided by a PWP, it may be worth pursuing further whether a CDP is truly required or necessary for a certified PWP project in Commission retained jurisdiction.

#### Applicability for Regional Sea Level Rise Planning

Because a PWP can cross jurisdictional boundaries and requires agreement from all impacted jurisdictions, it has the potential to be an excellent tool for implementation of sea level rise adaptation projects. In addition, a PWP can include multiple projects that will be implemented over a period of time, allowing for phased sea level rise implementation. A PWP could be developed to address a particular asset, such as the diked shoreline along the bay, or it could be focused on multiple assets in a particular area such as a hydrologic unit.

## Strengths and Weaknesses

### Strengths:

- PWP's promote development efficiency for public works projects by avoiding project-by-review and multiple CDPs within areas covered by a certified LCP, thereby streamlining project implementation.
- Projects included in a PWP do not need to be constructed all at once; therefore, a PWP can support a phased approach to sea level rise adaptation implementation.
- Project funding may be more readily easily obtained since a PWP demonstrates cross-jurisdictional commitment to PWP projects.
- A PWP may help obtain funding, given that a PWP demonstrates acceptance of the PWP projects by all involved LCP agencies, and coastal development permitting for multiple projects can be demonstrated.

### Weaknesses:

- A significant amount of technical work is required to develop a PWP that would be considered approvable by the Coastal Commission.
- A PWP must be consistent with all impacted LCPs, which could require LCP amendments and consistency across impacted LCPs.
- Easements would need to be acquired as part of PWP preparation in order for private assets such as dikes on private property to be considered a public facility.
- The Coastal Commission requires coastal development permits for PWP projects in areas of Commission retained jurisdiction, eliminating the primary benefits of a PWP which are development efficiency and the avoidance of multiple coastal development permits. To make a change to eliminate this requirement, unless it is simply a policy as opposed to a Coastal Act requirement, would require a Coastal Act amendment.
- If the life of a PWP were to span a significant amount of time, more than one sea level rise scenario would need to be addressed in project design.

## References

Dudek - Achieving Coastal Permitting Approvals Through Development of a Public Works Plan  
[https://dudek.com/achieving-coastal-permitting-approvals-through-development-of-a-public-works-plan/#:~:text=Public%20Works%20Plans%20\(PWPs\)%20are,or%20phased%20public%E2%80%8C9%20works%20projects](https://dudek.com/achieving-coastal-permitting-approvals-through-development-of-a-public-works-plan/#:~:text=Public%20Works%20Plans%20(PWPs)%20are,or%20phased%20public%E2%80%8C9%20works%20projects)

Westlaw - CCR Title 14, Division 5.5, Chapter 7, Subchapter 2. Public Works Plans  
[https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I26BD1420D48811DEBC02831C6D6C108E&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I26BD1420D48811DEBC02831C6D6C108E&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))

California Coastal Act  
<https://www.coastal.ca.gov/laws/>

## **h. Local Hazard Mitigation Plan**

### Background

As defined in the Humboldt County Operational Area Hazard Mitigation Plan 2019 (HMP) Hazard mitigation is defined as any action taken to reduce or alleviate the loss of life, personal injury, and property damage that can result from a disaster. It involves long-term and short-term actions implemented before, during and after disasters. Hazard mitigation activities include planning efforts, policy changes, programs, studies, improvement projects, and other steps to reduce the impacts of hazards.

FEMA's mitigation planning process is used by state, tribal, and local leaders to understand risks from natural hazards and develop long-term strategies that will reduce the impacts of future events on people, property, and the environment. Humboldt County and a partnership of local governments within the Humboldt County operational area - defined as the unincorporated county, incorporated cities, and special purpose districts, planning partners authorized to govern, develop, or regulate - have developed a hazard mitigation plan to reduce risks from natural disasters in the operational area. The plan is entitled Humboldt County Operational Area Hazard Mitigation Plan 2019 and includes Volume 1: Area-Wide Elements (components that apply to all partners and the broader Operational Area), and Volume 2: Planning Partner Annexes (all components that are jurisdiction-specific). The HMP planning partners most relevant to the Humboldt Bay region include Humboldt County, the cities of Arcata and Eureka, the Humboldt Bay Harbor, Recreation and Conservation District, Humboldt Community Services District, Manila Community Services District, and the Humboldt Bay Municipal Water District.

As provided in the HMP, federal disaster funding used to be focused on relief and recovery after disasters occurred. The Disaster Mitigation Act (DMA), passed in 2000, shifted the federal emphasis toward planning for disasters before they occur. The DMA requires state and local governments to develop hazard mitigation plans as a condition for federal disaster grant assistance. Regulations developed to fulfill the DMA's requirements are included in Title 44 of the Code of Federal Regulations (44 CFR).

The HMP states that the responsibility for hazard mitigation lies with many, including private property owners, commercial interests, and local, state, and federal governments. The DMA encourages cooperation among state and local authorities in pre-disaster planning. The enhanced planning network called for by the DMA helps local governments to articulate accurate needs for mitigation, resulting in faster allocation of funding and more cost-effective risk reduction projects. The HMP also notes that the DMA promotes sustainability in hazard mitigation. To be sustainable, hazard mitigation needs to incorporate sound management of natural resources and address hazards and mitigation in the largest possible social and economic context.

The HMP specifically addresses sea level rise as one of several primary impacts of climate change, and identifies flooding as the primary impact on Humboldt Bay. It notes that sea level rise will cause currently dry areas to be permanently or chronically inundated, will impact an even larger area due to increased inundation from extreme tide events and storm surge, and will increase coastal erosion and saltwater intrusion into freshwater systems. Unlike many other impacts resulting from climate change, the HMP notes that sea level rise will have a defined extent and location, which allows for a more-detailed risk assessment to be conducted for this climate change impact. Although the extent and timing of sea level rise is still uncertain, assessing potential areas at risk provides information appropriate for planning purposes.

The HMP contains a brief general assessment of sea level rise impacts on population, property, critical facilities and roads, the environment, the economy, and future development. It identifies a number of issues associated with climate change, one of which is that permanent and temporary inundation resulting from sea level rise has the potential to impact portions of the population and assets in the HMP planning area, which is the same as the operational area.

The guiding principle for the HMP is: *Through partnerships and careful planning, identify and reduce the vulnerability to hazards in order to protect the health, safety, quality of life, environment, and economy of the communities within the Humboldt Operational Area.* The goals of the HMP are to protect health and safety, property, the economy, quality of life, and the environment, and to promote partnerships in planning. There are 12 objectives provided to meet the HMP goals, all of which would support a regional approach to addressing sea level rise on Humboldt Bay. Table 19-4 of the HMP provides alternatives to mitigate flooding hazards, the primary impact from sea level rise identified in the HMP. Many of the proposed alternatives are relevant to addressing sea level rise, including an alternative specific to sea level rise which proposes development of an adaptive management plan to address the long-term impacts of sea level rise. It is important to keep in mind the HMP applies throughout the county and involves stakeholders germane to regional sea level rise planning; thus, the guiding principle, goals and objectives that are relevant to addressing sea level rise in the HMP operational area, which includes the Humboldt Bay region, are already in place.

#### Applicability for Regional Sea Level Rise Planning

Sea level rise is an identified area of future planning and growth in the HMP. The HMP provides useful information on sea level rise as well as other hazards that could be impacted by or have an impact on sea level rise. It can be used to support and provide linkages with efforts to facilitate a future Humboldt Bay sea level rise adaptation plan.

#### Strengths and Weaknesses

##### Strengths:

- The HMP provides a regional framework for information.
- The planning process and organizational structure could be helpful in informing a regional sea level rise planning process.

##### Weaknesses:

- The HMP addresses a broad range of hazards, and is not focused on just sea level rise.
- The HMP is non-compulsory, and would require additional actions to facilitate regional sea level rise.
- LCP and other land use regulation amendments may be necessary to implement the HMP.

#### References

Humboldt County Emergency Plans  
<https://humboldt.gov/3011/County-Emergency-Plans>

Humboldt County Operational Area Hazard Mitigation Plan 2019 - Volume 1  
[https://humboldt.gov/DocumentCenter/View/82770/HumboldtCountyHMP\\_Vol1\\_Final\\_2020-01-28](https://humboldt.gov/DocumentCenter/View/82770/HumboldtCountyHMP_Vol1_Final_2020-01-28)

Humboldt County Operational Area Hazard Mitigation Plan 2019 - Volume 2  
[https://humboldt.gov/DocumentCenter/View/82771/HumboldtCountyHMP\\_Vol2\\_Final\\_2020-01-17](https://humboldt.gov/DocumentCenter/View/82771/HumboldtCountyHMP_Vol2_Final_2020-01-17)

FEMA - Guide to Expanding Mitigation, Making the Connection to the Coast  
[https://www.fema.gov/sites/default/files/documents/fema\\_mitigation-guide\\_coast.pdf](https://www.fema.gov/sites/default/files/documents/fema_mitigation-guide_coast.pdf)

## **2. Commission Retained Permit Jurisdiction Transferred to Local Agencies**

### Background

The Humboldt Bay region is unique in regard to the considerable amount of Commission retained permit jurisdiction located within local agency LCP boundaries. While tidelands, submerged lands, and public trust lands are contained within the boundaries of Eureka, Arcata and Humboldt County LCPs, these areas are not certified as part of any of the three LCPs, and thus remain under the permitting authority of the Commission pursuant to Coastal Act Section 30519 (b). This is, for the most part, not the circumstance for other coastal jurisdictions in the state, where LCP boundaries generally coincide with the boundary between local and Commission retained jurisdiction. The circumstance of the Commission's unusually extensive area of retained jurisdiction within certified LCP boundaries on Humboldt Bay, coupled with the fact that the Commission is not obligated to comply with local agencies' LCPs but instead uses them only for guidance when issuing CDPs, adds a significant layer of difficulty for regional sea level rise planning.

Transferring all Commission retained permit jurisdiction to Eureka, Arcata, and Humboldt County within their respective LCP boundaries would facilitate more streamlined, consistent, and simplified cross-jurisdictional coordination for sea level rise planning and adaptation. This option would require certification of all tidelands, submerged lands, and public trust lands within local agency LCP boundaries, leaving no Commission retained permit jurisdiction within local LCPs. However, the Commission would retain direct authority over the LCPs, as well as authority over local agency decisions made pursuant to those LCPs, through permit appeals and direct authority over LCPs pursuant to the Coastal Act. Therefore, this option would not strip the Commission of their ultimate authority over lands subject to the public trust. This option would, however, require an amendment to the Coastal Act, posing a significant hurdle to its implementation.

A primary consideration for this option is whether local agencies are required to act within the terms of the public trust doctrine, just as the Coastal Commission is required to do. Public Resources Code (PRC) §6009 provides that California received title to the tidelands, submerged lands and beds of navigable lakes and rivers within its borders, to be held subject to the public trust for statewide public purposes. The state's power and right to control, regulate, and utilize its tidelands and submerged lands when acting within the terms of the public trust is absolute. As subdivisions of the state, local agencies are also charged with protecting public trust resources and must consider impacts to those resources in their decisions.

As discussed in a Western City publication, Legal Notes, in an article dated 2-1-2019 entitled *California's Public Trust Doctrine Draws Attention in the Courts* by Christian Marsh located here: <https://www.westerncity.com/article/californias-public-trust-doctrine-draws-attention-courts>, the ruling in the 2018 court case *Environmental Law Foundation v. State Water Resources Control Board (ELF)*, extends the public trust to a county's administration of groundwater hydrologically connected to downstream waterways. The article states: ... *the court disregarded the county's argument that public trust duties of the Legislature cannot be imposed without express delegation. According to the court: A county is a legal subdivision of the state and references to the "state" may include counties. ... Although the state as sovereign is primarily responsible for*

*administration of the trust, the county, as a subdivision of the state, shares responsibility for administering the public trust and “may not approve of destructive activities without giving due regard to the preservation of those resources.”*

In addition to a local agency having public trust responsibilities by extension as a subdivision of the state, Public Resources Code §6009 assigns public trust duties to local entities granted public trust lands. PRC §6009 states that public trust lands granted to local entities remain subject to the public trust and oversight authority of the State Lands Commission, and that grantees of public trust lands are required to manage the state’s tidelands and submerged lands consistent with the terms and obligations of their grants and the public trust, without subjugation of statewide interests, concerns, or benefits to the inclination of local or municipal affairs, initiatives, or excises. Arcata and Eureka were granted public trust lands within their jurisdictions, providing yet another layer of public trust responsibility beyond the fact that these agencies are a legal subdivision of the state. Public trust lands in the County’s Humboldt Bay region jurisdiction were transferred to the Harbor District, so this circumstance would not apply to County.

Finally, the Coastal Commission’s [\*Draft Public Trust Guiding Principles & Action Plan \(June 2022\)\*](#) states the following: *The Coastal Act is an exercise of the Legislature’s public trust authority and responsibility and, as such, aligns with and implements aspects of the public trust doctrine, including through its emphasis on public access, ocean-related recreation, and coastal dependent uses like ports and fishing. Among other public access provisions, the Coastal Act recognizes the public’s constitutional right of access to tidelands and other navigable waters pursuant to Section 4 of Article X of the California Constitution. Since local coastal programs developed by coastal cities and counties must be consistent with the Coastal Act, they align with public trust doctrine principles in the same manner as the Coastal Act.* The last sentence in this excerpt clearly states the Commission’s acknowledgement that LCPs are aligned with public trust doctrine principles in the same manner as the Coastal Act is aligned with those principles, meaning that implementation of LCPs by local agencies requires these agencies to act within the terms of the public trust doctrine in the same manner as the Coastal Commission.

The transfer of Commission retained permit authority on public trust lands within LCP boundaries to local agencies on Humboldt Bay would not diminish the protections these lands are afforded by the public trust doctrine. Local agencies would be required to act in a manner consistent with the terms of the public trust doctrine, just as the Coastal Commission is required to do. In addition, this option would provide the added benefit of having all development within the boundaries of local agency LCPs permitted by those local agencies and therefore required to be consistent with local agency LCPs, thereby streamlining and adding consistency to the process of managing sea level rise on Humboldt Bay. This option could also be beneficial to the PWP process. However, it is also acknowledged that a Coastal Act amendment would be required, making this option challenging and unlikely.

#### Applicability for Regional Sea Level Rise Planning

Although this change is not specific to regional sea level rise planning, it will help bring consistency to the process. Eliminating Commission retained jurisdiction will leave the process of managing and adapting to sea level rise subject to the three local LCPs, rather than reliance on Chapter 3 of the Coastal Act with LCPs used only as guidance. However, to fully achieve the benefits of this option for sea level rise, the LCPs for Eureka, Arcata and the County would need to contain consistent policies that will guide sea level rise planning and adaptation in the Humboldt Bay region, options that are discussed in previous sections of this memo.

## Strengths and Weaknesses

### Strengths:

- Eliminating Commission retained jurisdiction within LCP boundaries would help facilitate a consistent approach to sea level rise planning and adaptation that was based on land use and zoning regulations that comprise local certified LCPs, and are thus specially designed to address the unique circumstances of the Humboldt Bay region.
- This would eliminate the Coastal Commission making local decisions based on Coastal Act Chapter 3, and using LCPs certified as consistent with the Coastal Act only as guidance which could result in decisions that are in conflict with one or more LCPs.

### Weaknesses:

- This approach would require an amendment to the Coastal Act. Initial feedback from Commission staff indicate this approach would not be favored by the Commission because it would open the door to future Coastal Act amendments.
- LCPs amendments to all local LCPs would be required to accommodate this change, requiring agreement from each of the three political bodies.

## References

SM&W LLP - The Public Trust - What Local Decisionmakers Should Know

<https://www.smwlaw.com/2021/06/18/the-public-trust-what-local-decisionmakers-should-know/>

Western City - California's Public Trust Doctrine Draws Attention in the Courts by Christian Marsh

<https://www.westerncity.com/article/californias-public-trust-doctrine-draws-attention-courts>

Draft Public Trust Guiding Principles & Action Plan (June 2022)

<https://documents.coastal.ca.gov/reports/2022/6/Th6e/Th6e-6-22-exhibits.pdf>

## **3. Humboldt Bay Local Coastal Program**

### Background

Cross-jurisdictional sea level rise management coordination could be facilitated by creating a new LCP encompassing Humboldt Bay and extending outward to a specified boundary, for example, to a boundary defined by the area that could be inundated by three feet of sea level rise assuming no shoreline protection is in place. The new LCP could be focused only on sea level rise, and would overlay existing LCPs that would remain in effect for other types of development. Another approach could be for the area of the new LCP to be extracted from the three existing LCPs in the Humboldt Bay region (Eureka, Arcata, and Humboldt County LCPs) and have full regulatory authority rather than just focused sea level rise authority, leaving the remaining portions of the three LCPs intact. With either option, the new LCP would require the creation of a new oversight entity with representation from all three local LCP agencies at a minimum. If either of these options were coupled with the option of transferring Commission retained jurisdiction to local agencies, sea level rise management consistency would be further enhanced.

This option would require an amendment to the Coastal Act. Coastal Act §30500 requires that each local government lying, in whole or in part, within the coastal zone shall prepare a local coastal program for that portion of the coastal zone within its jurisdiction. Coastal Act §30109

defines local government as any chartered or general law city, chartered or general law county, or any city and county. Thus, a joint powers authority, as an example of a local authority that could oversee a Humboldt Bay LCP, would not be allowed to prepare an LCP without a Coastal Act amendment.

### Applicability for Regional Sea Level Rise Planning

The purpose of an LCP for the Humboldt Bay region would be to facilitate LCP consistency in regard to sea level rise. In either option for creating a Humboldt Bay LCP, sea level rise policies and regulations would be consistent across jurisdictional boundaries because they would be contained within one LCP, as opposed to the current situation of three different LCPs and three different local agencies with three different approaches to managing sea level rise.

### Strengths and Weaknesses

#### Strengths:

- The approach would result in one agency and one LCP either strictly for managing sea level or with broader focus, with consistent sea level rise policies and regulations in the Humboldt Bay region.
- This option would require a regional authority that would provide a comprehensive approach for sea level rise planning and adaptation.
- A Humboldt Bay LCP could potentially provide a single point of contact for sea level rise permitting, depending on which option is selected.

#### Weaknesses:

- A Coastal Act amendment would be required.
- A Humboldt Bay LCP is a complicated option not only due to the need for a Coastal Act amendment, but also due to redistribution of CDP authority. The option to convey full regulatory authority to a new LCP would be particularly difficult since the redistribution of regulatory authority would go beyond just sea level rise management. A Humboldt Bay LCP would require agreement among local agencies to relinquish their land use authority to an entity that would be the regulatory authority for the LCP.

## **B. Organizational Options**

Another approach to cross-jurisdictional management of sea level rise in the Humboldt Bay region involves organizational options. This approach could include options such as the creation of a new entity, utilization of an existing entity, or one or more cross-jurisdictional agreements such as a memorandum of understanding, for regional management of sea level rise. Currently there is no cross-jurisdictional organization or agreement created for the purpose of regional sea level rise management anywhere in the county. Some organization options to accomplish Humboldt Bay regional sea level rise management are discussed below.

## 1. Regional Planning Collaborative

### Background

The [Alliance of Regional Collaboratives for Climate Adaptation](#), provides the following definition for a regional adaptation collaborative, which would be an appropriate type of collaborative for Humboldt Bay regional sea level rise collaboration: *A regional adaptation collaborative, as defined by those in ARCCA, is a group of diverse public, private, and/or nonprofit entities representing a region and committed to preparing that region for the emerging impacts of climate change, such as rising sea level, extreme storm events, wildfires, heat waves, and droughts. Regional adaptation collaboratives have emerged as a response to the need of stakeholders to work more effectively across jurisdictional boundaries on climate change impacts where no one existing entity is set up to address all of the impacts that a region faces.*

As provided in a paper prepared by the University of Montana Public Policy Research Institute dated 4/15/2008 entitled, [Working Across Boundaries: Principles of Regional Collaboration](#), a growing number of land use issues transcend political and jurisdictional boundaries. Certainly, sea level rise falls into this category since water does not recognize such boundaries. As this paper notes, these types of issues are “most effectively addressed at a regional scale, somewhere between local, state, and national levels. ....Whether formal or ad hoc, regional initiatives involve people with diverse interests and viewpoints in collaborative forums – public spaces that would not otherwise exist to solve common problems.” This paper goes on to list several principles that should be adapted for each unique situation, with descriptions of each, to help people think and act regionally. Following is the simple list (i.e., sans description) of these principles:

- Focus on a Compelling Purpose or Interest (Catalyst)
- Organize around Collaborative Leaders (Leadership)
- Mobilize and Engage the Right People (Representation)
- Define the Region to Match Peoples Interest (Regional Fit)
- Assemble the Necessary Resources (Capacity)
- Jointly Determine Where You Want to Go and How You Want to Get There (Strategy of Action)
- Move from Vision to Action (Implementation)
- Learn as You Go and Adapt as Needed (Evaluation)
- Sustain a Regional Initiative (Governance)

It may be helpful to look at a few existing collaboratives that are either climate-focused or local.

### *Alliance of Regional Collaboratives for Climate Adaptation*

The [Alliance of Regional Collaboratives for Climate Adaptation](#) (ARCCA), which is a “network of leading regional collaboratives and allies from across California that work together to advance adaptation statewide and increase local capacity to build community resilience”, defines a regional adaptation collaborative as “a group of diverse public, private, and/or nonprofit entities representing a region and committed to preparing that region for the emerging impacts of climate change, such as rising sea level, extreme storm events, wildfires, heat waves, and droughts. Regional adaptation collaboratives have emerged as a response to the need of stakeholders to work more effectively across jurisdictional boundaries on climate change impacts where no one existing entity is set up to address all of the impacts that a region faces.” ARCCA aims to create a robust network of organizations and professionals working to advance climate change adaptation in California through sharing information and best practices, coordinating activities, and leveraging limited resources to conduct joint projects. ARCCA has produced a [Regional](#)

*Adaptation Collaborative Toolkit*”to provide others with a framework for forming a regional adaptation network; guidance for structuring a regional collaborative; and insights into effective governance mechanisms for engaging local, regional, state, and national stakeholders in adoption of new collaborative relationships.”

### *Integrated Regional Water Management*

Integrated Regional Water Management (IRWM) was established in 2002 when the [Regional Water Management Planning Act \(SB 1672\)](#) was passed by the state legislature. As described on their website, IRWM “is a collaborative effort to identify and implement water management solutions on a regional scale that increase regional self-reliance, reduce conflict, and manage water to concurrently achieve social, environmental, and economic objectives. This approach delivers higher value for investments by considering all interests, providing multiple benefits, and working across jurisdictional boundaries. Examples of multiple benefits include improved water quality, better flood management, restored and enhanced ecosystems, and more reliable surface and groundwater supplies.”

The publication [Stakeholder Perspectives – Recommendations for Sustaining and Strengthening IRWM, March 2017](#), states the following about IRWM: “Integrated regional water management (IRWM) is the application of integrated water management principles at the regional level. IRWM brings local agencies and other stakeholders, with a range of water-related roles and interests, together to address water management needs collaboratively within self-identified regions accepted by the State. The practice of IRWM is rooted in the principle of regional control, recognizing that local and regional water managers and other stakeholders, working together in a collaborative, open, and transparent manner, are best suited and best positioned to manage water resources in their regions. Issues including limited groundwater and surface water supplies, drought, flooding, climate change, water quality, environmental degradation, aging infrastructure, economic constraints, recreation, and cultural considerations are addressed through coordinated and integrated actions.”

Since the establishment of IRWM, various bond acts approved by California voters have provided over \$1.5 billion in state funding to support and advance integrated, multi-benefit regional projects. Cities, counties, water districts, community/environmental groups, tribes, and others across the state have worked collaboratively to organize and establish 48 regional water management groups (RWMGs), covering over 87% of the state's area and 99% of its population. Humboldt County is part of Region 21. Over the years, numerous IRWM planning grants have helped RWMGs develop, adopt and update IRWM plans to identify strategies and projects to address the unique needs and conditions of their regions.

### *North Coast Resource Partnership*

The North Coast Resource Partnership (NCRP) is a collaboration among Northern California tribes, counties, and diverse stakeholders covering a region of 19,000 square miles. As provided in the NCRP 2021 Handbook, the NCRP, started in 2005, is an innovative, stakeholder-driven collaboration among tribes, local government, watershed groups, and interested partners focused on healthy watersheds, safe and healthy communities, and economic vitality for the North Coast Region. The NCRP engages in various planning tasks, including the development of the North Coast Integrated Regional Water Management Plan (NCIRWMP). According to the NCIRWMP, the overarching themes that have guided development, implementation, and evaluation of the NCIRWMP are beneficial uses of water, salmonid enhancement, energy independence, climate adaptation/mitigation, economic vitality, local autonomy, intraregional cooperation, and adaptive management.

The NCRP region includes all or part of seven North Coast counties (Del Norte, Siskiyou, Modoc, Humboldt, Trinity, Mendocino, and Sonoma) and the homelands of North Coast tribes. Leadership, governance, policy, and decision making is provided by the NCRP Leadership Council. The Leadership Council consists of two representatives (and their alternates) appointed by each county's Board of Supervisors and three Tribal Representatives (and their alternates) appointed by North Coast tribes. Scientific and technical review is provided by the Technical Peer Review Committee (TPRC) which is comprised of two technical experts (and their alternates) appointed by each county's Board of Supervisors and three Tribal Representatives.

All of the NCRP Leadership Council and their member agencies are required to be signatories to the Memorandum of Mutual Understandings (MoMU) and in accordance with the IRWM Program, are required to formally adopt the NCRP Plan. As stated in the NCIRWMP, the NCRP adheres to the NCIRWMP MoMU, signed by over 100 agencies, special districts, tribal organizations, non-governmental organizations, watershed groups, and other stakeholders. The MoMU signifies support by each of these entities for the NCIRWM Plan and process.

Goal 5 as listed in the NCRP Handbook is *Climate Adaptation and Energy Independence*, and Objective 11 under Goal 5 is: *Address climate change effects, impacts, and vulnerabilities, including droughts, fires, floods, and sea level rise (emphasis added). Develop adaptation strategies for local regional sectors to improve air and water quality and promote public health and safety.* NCRP has numerous documents posted on their Resource page, including a [Climate Mitigation Report for the North Coast Region of California, April 2018](#) which mentions sea level rise as a threat to various assets. Another posted document is the [North Coast Regional Climate Adaptation Report, January 2018](#), which discusses sea level rise and coastal flooding as a climate change vulnerability, and also has a section on planned retreat from sea level rise with various options to facilitate retreat.

#### Applicability for Regional Sea Level Rise Planning

Regional collaboratives can help bring together relevant stakeholders and provide services like technical assistance and best practices for outreach and coordination. A regional collaborative could be a useful tool in addressing Humboldt Bay regional sea level rise by bringing a variety of the many sea level rise stakeholders (identified in the Humboldt Bay Sea Level Rise Regional Planning Feasibility Study Stakeholder Catalogue) together for the purpose of providing and sharing relevant information with each other, with decision makers, and with the public regarding Humboldt Bay sea level rise. There could be more than one collaborative, each with a different focus. The collaborative could be comprised of a variety of agencies, organizations, and individuals, or could be focused on representing a single group such as public agencies or nonprofit organizations. The collaborative could broadly focus on sea level rise planning and adaptation issues, or it could focus on one or more geographic areas or specific planning or adaptation issues. A new collaborative could be formed, or perhaps there is an existing collaborative that could be modified to include sea level rise management on Humboldt Bay.

One possible approach to regional sea level rise management could be a coastal jurisdiction collaborative comprised of staff from each of the Core Entities (County, Eureka, Arcata, Harbor District and Coastal Commission). Such a collaborative would provide a forum where coastal jurisdictions could discuss coordination of policies, implementation of adaptation strategies and other sea level rise related issues, and provide guidance and recommendations to their respective legislative bodies that would represent a regional approach to addressing sea level rise on Humboldt Bay. The collaborative would be formed by a non-binding agreement and would have no authority to act on any substantive recommendations they make; that authority would remain

with the legislative bodies of the member jurisdictions. Such a collaborative could also be expanded beyond just local government coastal jurisdictions to include other stakeholders. A Humboldt Bay regional sea level rise collaborative could coexist with other options provided herein.

### Strengths and Weaknesses

#### Strengths:

- A collaborative, because it does not have regulatory authority and is non-binding, would be easier to form than some other organization options.
- A collaborative could easily coexist with other regulatory and organization options, and provide a forum for information exchange and consensus building.

#### Weaknesses:

- A collaborative would not have regulatory authority and is non-binding, and would need to be combined with one or more regulatory and organization options to fully facilitate regional sea level rise planning.

### References

Alliance of Regional Collaboratives for Climate Adaptation (ARCCA) website  
<https://arccacalifornia.org/>

ARCCA Regional Adaptation Collaborative Toolkit  
<https://arccacalifornia.org/toolkit/>

University of Montana: Working Across Boundaries: Principles of Regional Collaboration  
[https://portal.ct.gov/-/media/OPM/IGP/ORG/ACIR/ACIR-Library/Montana\\_Working\\_Across\\_Boundaries.pdf](https://portal.ct.gov/-/media/OPM/IGP/ORG/ACIR/ACIR-Library/Montana_Working_Across_Boundaries.pdf)

CA Dept. of Water Resources: Integrated Regional Water Management  
<https://water.ca.gov/programs/integrated-regional-water-management>

Stakeholder Perspectives – Recommendations for Sustaining and Strengthening IRWM, March 2017  
[https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Integrated-Regional-Water-Management/Files/stakeholder\\_perspectives\\_IRWM\\_Recommendations\\_a\\_y19.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Integrated-Regional-Water-Management/Files/stakeholder_perspectives_IRWM_Recommendations_a_y19.pdf)

North Coast Integrated Regional Water Management Plan, Phase III August 2014  
[https://northcoastresourcepartnership.org/site/assets/uploads/2018/04/NCIRWMP\\_PhaseIII\\_Aug14\\_final\\_w\\_appendix.pdf](https://northcoastresourcepartnership.org/site/assets/uploads/2018/04/NCIRWMP_PhaseIII_Aug14_final_w_appendix.pdf)

North Coast Resource Partnership website  
<https://northcoastresourcepartnership.org/partnership/>

North Coast Resource Partnership: Policies and Procedures Handbook 2021  
[https://northcoastresourcepartnership.org/site/assets/uploads/2021/05/NCRP\\_Handbook\\_2021.pdf](https://northcoastresourcepartnership.org/site/assets/uploads/2021/05/NCRP_Handbook_2021.pdf)

North Coast Resource Partnership - Resources  
<https://northcoastresourcepartnership.org/resources/>

Climate Mitigation Report for the North Coast Region of California, April 2018  
[https://northcoastresourcepartnership.org/site/assets/uploads/2018/06/NCRP\\_Report\\_MitigationPlan\\_v1.pdf](https://northcoastresourcepartnership.org/site/assets/uploads/2018/06/NCRP_Report_MitigationPlan_v1.pdf)

North Coast Regional Climate Adaptation Report, January 2018  
[https://northcoastresourcepartnership.org/site/assets/uploads/2018/06/NCRP\\_Report\\_AdaptionPlan\\_v2.pdf](https://northcoastresourcepartnership.org/site/assets/uploads/2018/06/NCRP_Report_AdaptionPlan_v2.pdf)

Association of California Water Agencies – Integrated Regional Water Management Policy Principles 2019  
<https://www.acwa.com/resources/integrated-regional-water-management-policy-principles/>

## **2. Joint Powers Authority, Agency, or Agreement**

### Background

The information from this subsection is, for the most part, taken from a publication by the California legislature entitled *Governments Working Together – A Citizen’s Guide to Joint Powers Agreements, August 2007*.

A Joint Powers Authority (JPA) is a cooperative arrangement among existing agencies. Joint powers are exercised when the public officials of two or more agencies agree to create another legal entity or establish a joint approach to work on a common problem, fund a project, or act as a representative body for a specific activity. The Joint Exercise of Powers Act, as codified in [California Government Code §6500 et seq.](#), governs JPAs. Under this act, JPAs are restricted to use by public agencies only. Agencies that can exercise joint powers include federal agencies, state departments, counties, cities, special districts, school districts, redevelopment agencies, and even other joint powers organizations.

The JPA acronym can mean different things – joint powers agreement, joint powers agency, and joint powers authority. The Joint Exercise of Powers Act authorizes two kinds of JPA arrangements: two or more public agencies can contract to jointly exercise common powers via a joint powers agreement, and two or more public agencies can contract to form a separate entity, a joint powers agency or authority.

A joint powers agreement is a formal, legal agreement between two or more public agencies that share a common power and want to jointly implement programs, build facilities, or deliver services. Officials from those public agencies (member agencies) formally approve a cooperative arrangement. With a joint powers agreement, a member agency agrees to be responsible for delivering a service on behalf of the other member agencies. These agreements are very flexible, and can apply to almost any situation that benefits from public agency cooperation.

The alternative way to exercise joint powers is to create a new organization that is completely separate from the member agencies, either a joint powers agency or joint powers authority. A joint powers agency or joint powers authority is a new, separate government organization created by the member agencies, but is legally independent from them. This new entity has the ability to enter into contracts, hold property, and sue or be sued. Like a joint powers agreement (in which one agency administers the terms of the agreement), a joint powers agency or authority shares powers common to the member agencies, and those powers are outlined in a joint powers agreement. This agreement provides the size, structure, and membership of the JPA’s governing

board and documents the JPA's powers and functions. Such agreements usually protect member agencies from a JPA's debts or other liabilities.

The following are some examples of existing JPA's in Humboldt County:

Humboldt County Office of Education, North Coast Schools, Insurance Group: comprised of Del Norte and Humboldt County school districts to provide property, liability, and workers' compensation coverage for member districts.

<https://hcoe.org/jpa/>

Humboldt County Office of Education, North Coast Schools, Medical Insurance Group: comprised of Humboldt, Del Norte, and Mendocino County school districts for the purpose of self-funding employee medical, dental, and vision benefits.

<https://hcoe.org/jpa/>

Humboldt Bay Fire (HBF): HBF was founded in 2011 through a Joint Powers Authority consolidating the Humboldt No. 1 Fire Protection District and City of Eureka Fire Department. Located on Humboldt Bay, HBF serves the City of Eureka and Greater Eureka area.

<https://www.hbfire.org/>

Humboldt County Association of Governments: a Joint Powers Agency composed of seven incorporated cities (Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Rio Dell, Trinidad), and the County of Humboldt. It is the designated Regional Transportation Planning Agency (RTPA) as well as the Service Authority for Freeway Emergencies (SAFE). The agency is largely responsible for programming state highway, local street and road improvements, public transportation resources, and the roadside call box program. HCAOG also bears responsibility for preparing and implementing the Regional Transportation Plan (RTP).

<https://www.hcaog.net/>

Eureka Fire Department Regional Hazardous Material Response Team (HMRT): The HMRT was established in 1993 to provide for response to emergencies involving hazardous materials. The HMRT is funded primarily through a Joint Powers Agreement (JPA) between Humboldt County, Del Norte County, City of Eureka, City of Crescent City, City of Arcata, City of Blue Lake, City of Ferndale, City of Rio Dell, and City of Trinidad. The JPA establishes the Humboldt/Del Norte Hazardous Material Response Authority (HMRA). The HMRA Board consists of elected officials of each member agency. Humboldt County Department of Environmental Health (DEH) provides staff functions for the HMRA. DEH is the regulatory authority relative to hazardous materials and supports the HMRT at emergency incidents.

[https://www.ci.eureka.ca.gov/depts/humboldt\\_bay\\_fire/operations/hmrt.asp#:~:text=The%20JPA%20establishes%20the%20Humboldt,staff%20functions%20for%20the%20HMRA.](https://www.ci.eureka.ca.gov/depts/humboldt_bay_fire/operations/hmrt.asp#:~:text=The%20JPA%20establishes%20the%20Humboldt,staff%20functions%20for%20the%20HMRA.)

Humboldt Transit Authority (HTA): HTA was established in 1975 as a joint powers authority (JPA) signed by Humboldt County and the cities of Arcata, Eureka, Fortuna, Rio Dell and Trinidad. HTA is funded primarily through fares and Transportation Development Act (TDA) funds from the JPA members. HTA is headquartered in the county seat of Eureka and is governed by a seven-member Board of Directors comprised of one representative each from the five incorporated cities and two representatives from the County of Humboldt. HTA operates and maintains the Redwood Transit System (RTS), the Willow Creek Transit Service, and the Southern Humboldt Transit Systems.

<https://hta.org/about-hta/>

Humboldt Waste Management Authority (HWMA): HWMA was established by a Joint Powers Agreement comprised of the County of Humboldt and the cities of Arcata, Blue Lake, Eureka, Ferndale and Rio Dell in 1999. The Authority is governed by a six-member Board of Directors who regularly meet and provide direction to the Authority's Executive Director. HWMA manages the collection, removal, and disposal of solid waste as well as the recycling of materials on behalf of its member agencies. In addition to handling waste management, HWMA assumed responsibility for the closure, remediation, and ongoing monitoring of the Cummings Road Landfill.

<http://www.hwma.net/>

Redwood Coast Energy Authority (RCEA): The Redwood Coast Energy Authority is a local government Joint Powers Agency whose members include the County of Humboldt; the Cities of Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Rio Dell, and Trinidad; and the Humboldt Bay Municipal Water District. The purpose of RCEA is to develop and implement sustainable energy initiatives that reduce energy demand, increase energy efficiency, and advance the use of clean, efficient and renewable resources available in the region for the benefit of the Member agencies and their constituents.

<https://redwoodenergy.org/about-rcea/>

#### Applicability for Regional Sea Level Rise Planning

A JPA could be an organizational structure utilized to create a cross-jurisdictional entity for managing sea level rise in the Humboldt Bay region that is more formal and powerful than a collaborative. A JPA could be formed by the Core Entities (Eureka, Arcata, Humboldt County, the Harbor District, and potentially although unlikely, the Coastal Commission) agreeing to exercise joint powers to facilitate cooperative regional management of sea level rise in the Humboldt Bay region. The Coastal Commission could perhaps participate in a JPA as a member of a committee such as a policy advisory committee, rather than a voting JPA member. Even without the Coastal Commission, a JPA comprised of the other four Core Entities would facilitate local coordination of sea level rise management. Local Commission staff have expressed that the Commission would be unwilling to enter into any agreement or arrangement that committed the Commission to a specific course of action. This circumstance is one that will make regional management of sea level rise, even with local agency cooperation, a challenge given the significant extent of Commission retained jurisdiction in the Humboldt Bay region.

The powers assigned to the JPA could be focused, such as a JPA that undertook only construction of sea level rise adaptation projects, or a JPA formed for the purpose of obtaining funding for sea level rise adaptation projects. A JPA could also have a broader purpose, such as making all land use decisions associated with sea level rise planning and adaptation within the Humboldt Bay region. This would require LCP agencies to amend their respective LCPs accordingly. A JPA could be utilized in conjunction with other regulatory options described herein, such as a Public Works Plan. There are many options regarding the purpose of a JPA and its membership when considering cross-jurisdictional sea level rise management.

It is unlikely that the Coastal Commission would be a member of the JPA. It is unclear how their membership might work considering that the Commission has sole coastal development permit jurisdiction over the significant area of public trust lands around the bay, and they currently do not have the discretion to relinquish their permitting authority. Also, they are not a planning agency, nor an agency that would undertake an adaptation construction project. The agencies that would comprise the membership of a Humboldt Bay sea level rise management JPA would ultimately

depend on the purpose and powers of the JPA as well as the ability or willingness of an agency to become a member.

It is unclear whether the Coastal Act would allow powers assigned to local agencies via their LCPs to be assigned to a JPA. If a JPA were to be created as a separate entity with the goal of transferring to the JPA the LCP regulatory jurisdiction currently assigned to local agencies, this arrangement would likely be contrary to the Coastal Act and require an amendment, just as the creation of a Humboldt Bay LCP would. If the JPA was strictly a funding and construction agency, it would seem that a Coastal Act conflict would be unlikely.

### Strengths and Weaknesses

#### Strengths:

- A joint powers agreement or authority would compel cooperation among members, likely including the County, Eureka, Arcata, and the Harbor District; the Coastal Commission depending on the nature of the JPA; and potentially other public agencies.
- There is flexibility as to what authority would be conveyed in a joint powers agreement or authority.

#### Weaknesses:

- Achieving agreement on a JPA among members may be difficult due to politics and a local agency anticipated desire to retain full regulatory control within its jurisdiction.
- It is unlikely that the Coastal Commission will enter into any agreement or authority that commits the Commission to any course of action.
- Creating a JPA as a separate entity could require an amendment to the Coastal Act, depending on the regulatory powers assigned to the JPA.

### References

#### Joint Exercise of Powers Act

[https://leginfo.legislature.ca.gov/faces/codes\\_displayexpandedbranch.xhtml?tocCode=GOV&division=7.&title=1.&part=&chapter=5.&article=](https://leginfo.legislature.ca.gov/faces/codes_displayexpandedbranch.xhtml?tocCode=GOV&division=7.&title=1.&part=&chapter=5.&article=)

CA State Legislature, Senate Local Government Committee: Governments Working Together - A Citizen's Guide to Joint Powers Agreements, 2007

<https://sgf.senate.ca.gov/sites/sgf.senate.ca.gov/files/GWTFinalversion2.pdf>

BBK Law: The Ins and Outs of Joint Powers Authorities in California by Paula C.P. de Sousa Mills  
<https://www.bbklaw.com/news-events/insights/2016/authored-articles/01/the-ins-and-outs-of-joint-powers-authorities-in-ca>

Northcoast Environmental Center: Local Joint Powers Authorities: A Review, Ali Ong Lee, 2020

<https://www.yournec.org/local-joint-powers-authorities-a-review/>

### 3. Special Districts

#### Background

Special Districts (SDs) are defined in the Section 56036 of the California Government Code (CGC) Title 5, Division 3 [Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000](#) (CGC 65000-57550) as follows:

*56036. (a) "District" or "special district" are synonymous and mean an agency of the state, formed pursuant to general law or special act, for the local performance of governmental or proprietary functions within limited boundaries and in areas outside district boundaries when authorized by the commission pursuant to Section 56133.*

*(b) "District" or "special district" includes a county service area, but excludes all of the following:*

- (1) The state.*
- (2) A county.*
- (3) A city.*
- (4) A school district or a community college district.*
- (5) An assessment district or special assessment district.*
- (6) An improvement district.*
- (7) A community facilities district formed pursuant to the Mello-Roos Community Facilities Act of 1982 (Chapter 2.5 (commencing with Section 53311) of Part 1 of Division 2 of Title 5).*
- (8) A permanent road division formed pursuant to Article 3 (commencing with Section 1160) of Chapter 4 of Division 2 of the Streets and Highways Code.*
- (9) An air pollution control district or an air quality maintenance district.*
- (10) A zone of any special district.*

[CGC Title 2, Division 4 Fiscal Affairs, Part 1.5, Chapter 3 Special Districts, Section 16271\(d\)](#), defines a special district as follows:

*d) "Special district" means any agency of the state for the local performance of governmental or proprietary functions within limited boundaries. "Special district" includes a county service area, a maintenance district or area, an improvement district or improvement zone, or any other zone or area formed for the purpose of designating an area within which a property tax rate will be levied to pay for a service or improvement benefitting that area.*

*County free libraries established pursuant to Chapter 2 (commencing with Section 27151) of Division 20 of the Education Code; areas receiving county fire protection services pursuant to Section 25643 of the Government Code; and county road districts established pursuant to Chapter 7 (commencing with Section 1550) of Division 2 of the Streets and Highways Code, shall be considered "special districts" for all purposes of this chapter.*

*"Special district" does not include a city, a county, a school district or a community college district. "Special district" does not include any agency which is not authorized to levy a property tax rate, except the Bay Area Pollution Control District.*

These definitions differ slightly in terms of what constitutes a special district. For example, the Cortese-Knox-Hertzberg definition excludes improvement districts, which are included as a special district in the Fiscal Affairs definition.

The background information on special districts provided in this subsection draws heavily from the Senate Local Government Committee 2010 Fourth Edition publication *What's So Special About Special Districts?* and from the CSDA/CALAFCO 2016 publication *Special District Formation Guide*.

*What's So Special About Special Districts?* defines a special district as “a separate local government that delivers a limited number of public services to a geographically limited area.” It notes that “celebrated as the best example of democracy, cursed as the worst form of fragmented government, and generally misunderstood even by the experts, special districts are California’s unique contribution to local government”, and further notes that focused service is what makes special districts so special. This publication also lists four distinguishing characteristics of special districts: they are a form of government; have governing boards; provide services and facilities; and have defined boundaries.

Special districts provide focused services that can be highly diverse. Most special districts serve a single purpose, but others can deliver a number of services. They can serve a single neighborhood, or they can serve a large region. While most special districts operate within a single city or county, they can cross jurisdictional boundaries and serve cities and unincorporated area in one or more counties. Special district boundaries do not need to be contiguous, but can include separate pockets of territory.

Special districts are limited-purpose governments that have only the powers that the state legislature has delegated to them. State law lets districts provide public facilities and services, but rarely gives them regulatory powers. Special districts can sign contracts, employ workers, and acquire real property through purchase or eminent domain. Following constitutional limits, they can also issue bonds, impose special taxes, levy benefit assessments, and charge service fees. Special districts can sue and be sued. They have corporate powers (the ability to do things, like building public works projects or running a program) and tax powers (the ability to raise money to pay for projects and services), but rarely do they have police power (the authority to regulate private behavior to accomplish a public goal.)

Local Agency Formation Commissions (LAFCOs) are responsible for overseeing the formation of new special districts and other public agencies, as well as changes in agency boundaries. LAFCOs also adopt a sphere of influence, or a plan for the potential boundaries and service area, for each agency. LAFCOs conduct regular municipal service reviews of special districts and other local agencies to capture and analyze information about the governance structures and efficiencies of service providers, and to identify opportunities for greater coordination and cooperation between agencies (CSDA/CALAFCO 2016).

Special districts operate either under a principal act or a special act. A principal act is a generic statute which applies to all special districts of that type. For example, the Community Services District Law governs all community services districts. There are about 50 principal act statutes which local voters can use to create and govern special districts. All principal acts are state laws in the California state codes.

Where local circumstances do not fit the general conditions anticipated by the principal acts, the state legislature can create a special act district tailored to the unique needs of a specific area. Districts that are regional in nature, have unusual governing board requirements, provide unique services, or need special financing, result in special act districts. Most special acts are not codified.

There are three general categories of special districts that are not mutually exclusive:

1. Dependent or Independent

- Dependent Special Districts: Dependent districts are governed by the existing legislative bodies of existing governmental agencies such as a city (city council) or county (board of supervisors).
- Independent Special Districts: Independent districts are governed by autonomous boards that are locally elected by voters or appointed to fixed terms. Where a special district's services primarily benefit land and not people (i.e., the special district does not provide service to the general public), the courts have upheld the use of landowner-voter districts.

2. Single Function or Multi-Function

- Single Function Districts: Single function districts provide just one service such as water, wastewater, or fire protection service.
- Multi-Function Districts: Multi-function districts provide two or more services.

3. Enterprise or Non-Enterprise

- Enterprise Special Districts: Enterprise districts run much like business enterprises and provide specific benefits to their customers. They are primarily funded by fees paid by service recipients.
- Non-Enterprise Special Districts: Non-enterprise districts deliver services that provide general benefits to entire communities and do not lend themselves to fees. They are primarily funded by property taxes and assessments.

Special districts generate revenue from several sources. Their operations and maintenance programs are funded through general property taxes; special taxes that must receive 2/3-voter approval and normally are a flat sum per lot or per acre of ground; benefit assessments to pay for operating and maintaining public facilities and service programs that directly benefit property and that must be approved by affected property owners in a weighted-ballot election; and service charges that are generally used by districts that run enterprise activities or deliver specific services, although some non-enterprise districts collect services charges to pay for special programs.

Funding for capital projects is obtained by creating debt to borrow the money, i.e., through the issuance of bonds. General obligation bonds are paid off with revenue generated by higher property tax rates that require 2/3-voter approval. User fees, which may require majority-voter approval, pay for revenue bonds. Benefit assessment bonds require weighted-ballot approval of the property owners who own properties that benefit from a particular capital project. Mello-Roos Act bonds require 2/3-voter approval, with revenue streams generated from parcel taxes. There are other types of borrowing options such as certificates of participation, promissory notes, and state and federal government loans.

### Applicability for Regional Sea Level Rise Planning

The Humboldt County Flood Control District may be an appropriate organization to consider for management of sea level rise in the Humboldt Bay region. The District was created by the [Humboldt County Flood Control District Act \(1945 ch 939\)](#), "AN ACT to create a flood control district to be called Humboldt County flood Control District and dividing said district into zones; to

*provide for the control and conservation of flood and storm waters and the protection of watercourses, watersheds, public highways, life and property from damage or destruction from such waters; to provide for the retention and reclaiming of drainage storm, flood and other waters and to save and conserve such waters for beneficial use in said district; to authorize the incurring of indebtedness, the issuance and sale of bonds, and the levying and collection of taxes and assessments on property within said district and in the respective zones thereof; to define the powers of said district; to provide for the government, management and operation of said district and for the acquisition and construction of property and works to carry out the purposes of the district.”*

Section 5 Purposes of the act states: *“The objects and purposes of this act are to provide for the control of the flood and storm waters of the district and the flood and storm waters of streams that have their sources outside the district, but which streams and floodwaters flow into the district, and to conserve such waters for beneficial and useful purposes by spreading, storing, retaining, and causing such waters to percolate into the soil within the district, or to save and conserve in any manner all or any of such waters and to protect from such flood or storm waters the public highways, life and property in the district, and the watercourses and watersheds in the district and the watercourses and watersheds of streams flowing into the district, and to increase, and to prevent the waste or diminution of the water supply in the district, and to obtain, retain and reclaim drainage, storm, flood and other waters for beneficial use within the district, and to generate and sell electric energy at wholesale rates.*

*It is a further purpose of this act to provide water to inhabitants of the district for any domestic use, irrigation, sanitation, industrial use, fire protection and recreation and to provide for all necessary facilities for distribution, sale, and storage of water for distribution, sale and storage of water for distribution for any such uses.*

The Flood Control District consists of all of the territory of Humboldt County’s exterior boundaries except for islands within the boundaries of the county that lie in the Pacific Ocean. The Humboldt County Board of Supervisors is designated as, and empowered to act as, ex officio the board of supervisors for the District. Modification of the District to include sea level rise management and adaptation and to likely make the District independent (i.e., no longer governed by the County Board of Supervisors but instead by a board elected by voters) would require approval of the state legislature.

An example of a special district, and specifically a flood control district that had its purpose expanded to include sea level rise protection, is the San Mateo County Flood and Sea Level Rise Resiliency District, known as [OneShoreline](#). The act that created the San Mateo Flood Control District (1959, ch 2108) has similar objects and purposes to those for the Humboldt County Flood District. The expanded OneShoreline district that now includes sea level rise protection has the following objects and purposes:

*The objects and purposes of this act are to address and protect against the impacts of sea level rise, including, but not limited to, tidal flooding, coastal erosion, and combined impacts from tidal and riverine flooding, and to provide for the control and comprehensive management of the floodwaters and stormwaters of the district, including tidal floodwater and the floodwaters and stormwaters of streams that have their source outside of the district but which streams and the waters thereof flow into the district, and, as a part of that control, to conserve the waters for beneficial and useful purposes when practical by retarding, spreading, storing, retaining, and causing the waters to percolate into the soil within or without the district or to save or conserve in any manner all or any of the waters, and protect from floodwaters or stormwaters the watercourses, watersheds, harbors, public highways, life, and*

*property in the district, and to prevent waste of water or diminution of the water supply in, or exportation of water from the district and to obtain, retain, and reclaim drainage, stormwaters, floodwaters, and other waters for beneficial use in the district, and to engage in recreation activities incidental to and in connection with those purposes.*

OneShoreline is an independent government agency that works throughout San Mateo County to increase resiliency to the climate change-related impacts of sea level rise, flooding, and coastal erosion. The agency is comprised of unincorporated San Mateo County and 20 incorporated cities. It is governed by a seven-member board of directors, two of whom are members of the County Board of Supervisors and five that are members of different city or town councils.

OneShoreline conducts planning activities, secures funding, constructs resiliency projects, and “provides a unified vision and voice to plan for the future.” The district recognizes that the challenge posed by climate change for San Mateo County is “irrespective of jurisdictional boundaries, and far exceeds the capabilities of a single agency to face alone. By working together through OneShoreline, local governments, residents, and businesses can integrate their planning, design, permitting, and project implementation to create a resilient San Mateo County to head off the increasing impacts of climate change.”

The history of how OneShoreline came into being is particularly germane to Humboldt County in light of the County’s efforts to explore the feasibility of regional sea level rise planning for Humboldt Bay as well as the recent [The Sea Also Rises](#) Grand Jury report recommending a regional approach to Humboldt Bay sea level rise planning. This [history](#) is excerpted from the web site for OneShoreline:

*In 1959, State legislation established the San Mateo County Flood Control District to address flooding challenges in several specific flood prone areas called “flood zones.”*

*In 2015, the County’s Civil Grand Jury issued a Report, “[Flooding Ahead: Planning for Sea Level Rise](#),” that posed the question: What actions can the County of San Mateo, and the 20 cities and two relevant local special agencies within the county, take now to plan for sea level rise?” It answered this question by recommending “that a single organization undertake SLR planning on a countywide basis.”*

*In 2016, the County’s Department of Public Works established a Flood Resilience Program that developed a Memorandum of Understanding (MOU) to plan three potential projects: Bayfront Canal/Atherton Channel (MOU with Menlo Park, Redwood City, and Atherton); Belmont Creek (MOU with Belmont and San Carlos); and Navigable Slough (MOU with San Bruno and South San Francisco).*

*March 2018, the City/County Association of Governments ([C/CAG](#)) convened the “Floods, Droughts, Rising Seas, Oh My!” water summit, bringing together regional experts and policy-makers to discuss San Mateo County water management challenges and opportunities. There, Congresswoman Jackie Speier identified the need for a countywide agency to address the challenges of flooding, sea level rise and coastal erosion. This agency would allow San Mateo County and its 20 cities to: 1) coordinate the planning and implementation of projects across jurisdictional lines, which enables uniform levels of protection and the sharing of technical information and resources, and 2) create a broad and unified vision and voice that would position the new regional agency and its projects to obtain funding and regulatory permits.*

*In April of 2018, the City/County Association of Governments of San Mateo County (C/CAG) Countywide Water Coordination Committee began to develop a proposal to form a countywide agency to address sea level rise, flooding, coastal erosion, and regional stormwater infrastructure. After analyzing various potential approaches to the agency, the Water Coordination Committee recommended that new State legislation expand the mission, geographic reach, and governing Board of the 1959 San Mateo County Flood Control District. This legislation, [Assembly Bill 825](#) (Mullin), was signed into law in September 2019, and on January 1, 2020, the San Mateo County Flood and Sea Level Rise Resiliency District was born.*

Another countywide special district that currently exists in the County is the Humboldt County Resource Conservation District (RCD). The RCD works in voluntary cooperation with landowners, residents, and community groups to enhance the resiliency of the County's natural resources and the productivity of the County's working lands. Their mission is to assist private and public landowners in the planning, design, and implementation of soil, water, and forest resource conservation practices to improve and enhance natural and working lands in Humboldt County. The RCD assists with funding, education, implementation, and maintenance of resource conservation projects to serve the District's constituents.

This special district could perhaps be modified to address sea level rise adaptation, particularly in light of the extensive impacts to agricultural lands around Humboldt Bay. However, Division 9 of the California Public Resources Code authorizes the formation of RCDs, defines the State of California's framework for conducting the business of resource conservation within the state, and details the general powers and operations of RCDs. Therefore, changes in the Humboldt County RCD to accommodate sea level rise adaptation would need to be consistent with state law governing the RCD.

The Humboldt Bay Harbor, Recreation and Conservation District (Harbor District) has been identified in this memo as a core entity for regional sea level rise management in the Humboldt Bay region and is another special district that could be involved in regional sea level rise adaptation efforts. The Harbor District has development jurisdiction, and land use jurisdiction with some exceptions, on Humboldt Bay over tidal areas up to mean higher high water and on the islands up to mean high water. The Harbor District's involvement in regional sea level rise planning is discussed above in the subsection II.A.

As an alternative to modification of the existing Humboldt County Flood Control District, Resource Conservation District, or Harbor District to include regional management of sea level rise, a new special district could be created. Creation of a new special district would involve Humboldt County's Local Agency Formation Commission (LAFCo) as well as the state legislature.

### Strengths and Weaknesses

Strengths and weakness with underlined titles are excerpted from *What's So Special About Special Districts?*

Strengths:

- Special districts tailor services to meet local needs. Counties and cities must protect their residents' health, safety, and welfare and, thus, must provide many services, regardless of citizen demand. Special districts, however, only provide the services that their communities desire.

- Special districts link costs to benefits. General purpose local governments – counties and cities – levy general taxes to pay for public services. The services that taxpayers receive are not directly related to the amount of taxes they pay. In a special district, only those who benefit from the district’s services pay for them. Those who do not benefit do not pay.
- Special districts respond to their constituents. Because most special districts are geographically smaller and have fewer residents than counties and cities, they’re more responsive to their constituents. Small groups of citizens can be quite effective in influencing special districts’ decisions.
- There are two special districts already in place that could be modified to address sea level rise.
- Special districts can span jurisdictional boundaries and can act independently of member jurisdictions to facilitate a unified and comprehensive approach to sea level rise.
- Special districts have the ability to generate funding from several sources.

Weaknesses:

- Too many special districts means inefficiency. Many special districts provide the same services that counties and cities provide. Overlapping jurisdictions can create competition and conflict among special districts, and also between districts and general purpose governments. In addition, when communities incorporate, some Local Agency Formation Commissions (LAFCOs) fail to dissolve the special districts that exist within the new city limits, resulting in extra administrative costs and duplicated services.
- Special districts hinder regional planning. Having numerous special districts can hamper planning efforts. For example, it can be difficult to organize the various water, sewer, and fire services in one region to deliver services to property owners and residents. Because about 2/3 of the districts have independent governing boards, no single agency coordinates their efforts.
- Special districts decrease accountability. The multiplicity of limited purpose special districts can make it harder for residents and property owners to find out who’s responsible for services. Separate special districts may provide water, sewer, parks, library, and fire protection services to the same unincorporated community. Residents have a hard time finding out who’s in charge. Furthermore, the narrow and technical nature of a district’s activities often results in low civic visibility until a crisis arises. Special district elections typically have very low voter turnouts. Although some view low voter turnout as a sign of voter satisfaction, representative democracy relies on broad participation.
- Creating a new special district is an expensive and time-consuming process. Once formed, the administrative overhead associated with district operations can be burdensome, particularly for districts with a small customer base.
- Special districts do not have land use authority. Options to facilitate consistent land use regulations in areas impacted by sea level rise would still be required.
- A sea level rise special district could result in some sea level rise management control being moved from existing local jurisdictions to the special district, which could be met with resistance by local jurisdictions.

## References

Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000

[https://leginfo.legislature.ca.gov/faces/codes\\_displayexpandedbranch.xhtml?tocCode=GOV&division=3.&title=5.&part=&chapter=&article=](https://leginfo.legislature.ca.gov/faces/codes_displayexpandedbranch.xhtml?tocCode=GOV&division=3.&title=5.&part=&chapter=&article=)

CGC Title 2, Division 4 Fiscal Affairs, Part 1.5, Chapter 3 Special Districts

[https://leginfo.legislature.ca.gov/faces/codes\\_displayexpandedbranch.xhtml?tocCode=GOV&division=4.&title=2.&part=1.5.&chapter=3.&article=](https://leginfo.legislature.ca.gov/faces/codes_displayexpandedbranch.xhtml?tocCode=GOV&division=4.&title=2.&part=1.5.&chapter=3.&article=)

CSDA webpage - Special Districts

<https://www.csdanet.org/special-districts/learn-about>

CSDA's Guide to Special District Laws and Related Codes

[https://calafco.org/sites/default/files/resources/CSDA\\_Guide\\_to\\_Laws\\_%26\\_Codes.pdf](https://calafco.org/sites/default/files/resources/CSDA_Guide_to_Laws_%26_Codes.pdf)

CSDA-CALAFCO 2016 Special District Formation Guide

<https://calafco.org/sites/default/files/documents/2016%20Formation%20Guide%20WEB.PDF>

CALAFCO webpage with Special District Formation Guide link

<https://calafco.org/resources/calafco-publications/special-district-formation-guide>

CALAFCO web page with What's So Special About Special Districts link

<https://calafco.org/resources/special-districts-and-lafco/whats-so-special-about-special-districts>

*What's So Special About Special Districts?*, Senate Local Government Committee, October 2010

[https://www.ca-ilg.org/sites/main/files/file-attachments/resources\\_2010WSSASD4edition.pdf](https://www.ca-ilg.org/sites/main/files/file-attachments/resources_2010WSSASD4edition.pdf)

Institute for local Government - About Special Districts

<https://www.ca-ilg.org/post/about-special-districts>

CA Association of Local Agency Formation Commissions - Serving The Public Interest: A Legislative History of SB 1458 and the "County Service Area Law", Senate Local Government Committee

<https://calafco.org/sites/default/files/resources/STPIPublication.pdf>

OneShoreline

<https://oneshoreline.org/>

OneShoreline history

<https://oneshoreline.org/our-history/>

1959 San Mateo County Flood Control District Legislation ch 2108

[https://clerk.assembly.ca.gov/sites/clerk.assembly.ca.gov/files/archive/Statutes/1959/59Vol2\\_Chapters.pdf#page=2](https://clerk.assembly.ca.gov/sites/clerk.assembly.ca.gov/files/archive/Statutes/1959/59Vol2_Chapters.pdf#page=2)

## **4. Memorandum of Understanding (MOU) and Memorandum of Agreement (MOA)**

### Background

Cross-jurisdictional coordination could be facilitated utilizing a memorandum of understanding (MOU) or a Memorandum of Agreement (MOA). An MOU is a common-cause written agreement between two or more parties that expresses their aligned will and agreement to proceed with their

mutual goals. It expresses a convergence of will between the parties, indicating an intended common line of action, rather than a legal commitment. It is a more formal alternative to a gentlemen's agreement, but generally lacks the binding power of a contract, although MOUs can include one or more elements that may render them legally binding.

As provided by [University of Alaska Southeast Administrative Services](#), an MOA establishes common legal terms that establish a "conditional agreement" where the transfer of funds for service are anticipated. An MOA or cooperative agreement is a document written between parties to cooperatively work together on an agreed upon project or meet an agreed upon objective. The MOA can also be a legal document that is binding and holds the parties responsible to their commitment, or it can be just a partnership agreement.

Research seems to indicate that while some consider MOUs and MOAs generally interchangeable, there are some differences cited, as noted in the University of Alaska description. Another information source, [techtarget.com](#), notes that an MOA is an alternate term for MOU, and that they are essentially the same kind of document that expresses a mutual understanding between two or more companies, government agencies or other parties. Both MOAs and MOUs often precede a more formal, detailed legal document or agreement. However, they point out one important difference – an MOA is an enforceable document and can be enforced in a court of law, whereas an MOU is generally a nonbinding agreement unless all parties sign it and some sort of consideration -- such as a fee -- is exchanged.

[Lawpath](#) notes that the critical difference between an MOU and an MOA is their purpose. The purpose of an MOA is to write down the parties' confirmation that they agree to work together, whereas the purpose of an MOU is to outline what the parties understand about the agreement. Additionally, an MOU serves a range of purposes according to Lawpath, which include structuring a framework for future negotiations; outlining all parties' general commitment to cooperate; stating the details of the agreement; and identifying regulatory and dispute resolution arrangements.

### Applicability for Regional Sea Level Rise Planning

Within the boundaries of a local agency LCP, the Commission relies on Coastal Act Chapter 3 for development authorization in retained jurisdiction while local jurisdictions authorize development in reliance on their certified LCPs. It would therefore be desirable to have some level of consistency and commitment among the local agencies, and between the Commission and local agencies, regarding the goals, objectives, and adaptation implementation for addressing sea level rise on the bay.

An MOU could be a starting point for negotiating and maintaining momentum on a particular issue, particularly where there is a possibility of staffing changes. An MOU among the three local LCP agencies could memorialize their commitment to work together to obtain policy consistency to facilitate sea level rise management across jurisdictional boundaries. It could pave the way forward to signing a binding MOA that forms a more binding cooperative agreement for managing sea level rise, or for the purpose of implementing a particular sea level rise adaptation project.

An MOU between local LCP agencies and the Commission could serve as a way for the Commission to be more strongly committed to implementing LCP sea level rise policies on Humboldt Bay since the Commission only uses LCPs as guidance when considering authorization of development. An MOU could memorialize the Commission's commitment to local policy direction provided by local agency LCPs, help ensure interpretation of Chapter 3 policies in consideration and support of LCP policies, and make future Commission findings supporting LCP

sea level rise policies on Humboldt Bay easier to make. While an MOU would not bind the Commission to any specific action, something that local Commission staff have expressed would need to be the case, it would at least be an expression of intent on the part of the CCC.

### Strengths and Weaknesses

#### Strengths:

- MOUs and MOAs are relatively easy to enter into as compared to other organizational options.
- MOUs are generally nonbinding, contributing to the relative ease of creating them.
- MOAs are enforceable, which would facilitate more commitment to cross-jurisdictional coordination, yet remain relatively easier to utilize than some other organization options.
- An MOU could be used an initial step in creating regional cooperation for sea level rise management.
- An MOU would be one of the more likely organizational options the Coastal Commission would be willing to be party to, given their initial indication that they would not be willing to sign a binding agreement that committed them to any specific course of action.
- An MOU with the Coastal Commission could serve as an expression of intent on the part of the Commission. It would be a way to clearly memorialize the Commission's commitment to LCP sea level rise policy direction, help ensure interpretation of Coastal Act Chapter 3 policies in consideration and support of LCP policies, and make future Commission findings supporting LCP sea level rise policies on Humboldt Bay easier to make on the part of the Commission.
- An MOU could be a starting point for negotiating and maintaining momentum on a particular issue, particularly where there is a possibility of staffing changes.

#### Weaknesses:

- A non-binding MOU would help encourage cooperation managing sea level rise, but would not create an enforceable commitment to sea level rise management.
- An enforceable MOA would require commitment from all involved parties, may result in loss of control for any involved party, and it could therefore be difficult to achieve consensus of potential signatories.

### References

ContractsCounsel – Memorandum of Understanding

<https://www.contractsounsel.com/t/us/memorandum-of-understanding>

Lawpath – Memorandum of Agreement and Memorandum of Understanding: Key Differences

<https://lawpath.com.au/blog/memorandum-of-agreement-and-memorandum-of-understanding-key-differences>

Whatis.com – Memorandum of Understanding (MOU) by Paul Kirvan

<https://www.techtarget.com/whatis/definition/memorandum-of-understanding-MOU-or-MoU>

Adobe – What is a memorandum of understanding (MOU) and how do you write one?

<https://www.adobe.com/sign/esignature-resources/memorandum-of-understanding.html>.

Techopedia – Memorandum of Understanding (MOU)

<https://www.techopedia.com/definition/12912/memorandum-of-understanding-mou>

University of Alaska Southeast – Memoranda of Understanding/Agreement (MOU/MOA)

<https://uas.alaska.edu/admin/mous-moas.html>

Key Differences – Difference Between Agreement and Memorandum of Understanding (MoU)

<https://keydifferences.com/difference-between-agreement-and-memorandum-of-understanding-mou.html#:~:text=Key%20Differences%20Between%20Agreement%20and,the%20terms%20of%20an%20agreement.>

## IV. Funding Frameworks and Opportunities (Task 2.3.)

*Identify ways in which sea level rise adaptation strategies and measures could be funded, including but not limited to identification of how funding could be received (i.e., what entity could apply for and receive funding), funding avenues or sources, and the pros and cons of various approaches.*

### A. Funding Options for Regional Sea Level Rise Planning Coordination

Funding for regional planning could come from one or more of the federal, state, local and private funding options discussed in this subsection. It is likely that some combination of state and federal programs (e.g., grants), fees (e.g., stormwater fees), and/or taxes (e.g., parcel tax) will be necessary to meet the funding needs of a collaborative regional planning effort. The list of individual funding options detailed below is not likely to be all of the options possible. Future updates of this memo will add or remove funding options as appropriate. Most of the funding options listed below were inspired by studies conducted and presented by San Mateo OneShoreline (officially named the San Mateo County Flood and Sea Level Rise Resiliency District) and the Finance Guide For Resilient By Design Bay Area Challenge Design Teams. Additional references are noted below each option.

#### 1. Federal Funding

There are a variety of ways that the federal government can provide funding to regional sea level rise work, chief among them being grant funding as discussed below in subsection B.1. Grants. Potential funding sources come from a variety of entities with vastly different roles including the Federal Emergency Management Agency (FEMA), the Army Corps of Engineers, and the Department of Housing and Urban Development. Federal programs support local and state infrastructure investments that may be damaged or impaired, such as roads, bridges, and municipal water facilities. However, federal and state funding for infrastructure (particularly non-transportation related infrastructure) has been in steep decline since the 1970's.

Significant federal funding for sea level rise adaptation infrastructure in California in advance of a disaster is not likely, as the federal budget faces much higher demands for sea level rise adaptation elsewhere. A 2017 scientific study by the Union of Concerned Scientists looked at projected levels of effective inundation on US coastlines up to the year 2100 and due to the greater levels of development and shallower continental shelf, the areas most affected are along

the Gulf of Mexico, Florida, and the East Coast. Only 1-2% of US coastal communities affected were located on the West Coast. However, strategic planning of sea level rise projects or programs increases the likelihood of federal funding or partnerships. For instance, projects that benefit critical assets owned by the federal government are likely to garner more attention and potential funding at the federal level. There also might be more funding opportunities for projects that provide protection of vulnerable communities and the provision of ecosystem benefits, as these would help some federal agencies meet their goals or fit their priorities.

For example, FEMA administers the National Flood Insurance Program (NFIP) Community Rating System (CRS) which credits community efforts that go above the minimum standards for flood protection and resilience. By becoming part of the Community Rating System (CRS), participating jurisdictions would help their partners in addressing flood plain issues with a similar approach, have a foundation for collaboration on special flood hazard areas, possibly lower the County Wide Flood Insurance Rate, and open avenues of grant funding related to CRS. Although becoming a part of this program would require additional staff to implement and requires annual recertification, it would credit the County for flood management efforts already being undertaken or implemented, which include outreach, planning, and mapping. There are more details on CRS in the Local Funding subsection below.

## References

San Mateo OneShoreline Board Meeting PowerPoint

<https://oneshoreline.org/wp-content/uploads/2021/04/FSLRRD-Board-mtg.-4.26.2021-presentation.pdf>

Finance Guide For Resilient By Design Bay Area Challenge Design Teams Final Version 2.0

<https://static1.squarespace.com/static/579d1c16b3db2bfbd646bb4a/t/5b5f4da288251b0f228a990e/1532972477684/RBD+Financing+Guide+%28NHA+Advisors%29+Final+Version+2a.pdf>

National Flood Insurance Program Community Rating System A Local Official's Guide to Saving Lives, Preventing Property Damage, and Reducing the Cost of Flood Insurance

[https://www.fema.gov/sites/default/files/documents/fema\\_community-rating-system\\_local-guide-flood-insurance-2018.pdf](https://www.fema.gov/sites/default/files/documents/fema_community-rating-system_local-guide-flood-insurance-2018.pdf)

FEMA Application for Funding with the Community Assistance Program – State Support Services Element

<https://www.fema.gov/floodplain-management/community-assistance-program/apply>

The Department of Homeland Security (DHS) Notice of Funding Opportunity (NOFO) Fiscal Year 2021 Community Assistance Program-State Support Services Element

[https://www.fema.gov/sites/default/files/documents/fema\\_CAP-SSSE-nofo\\_FY21.pdf](https://www.fema.gov/sites/default/files/documents/fema_CAP-SSSE-nofo_FY21.pdf)

## **2. State Funding**

California signed a \$15 billion climate-investment package in 2021 that includes 24 bills dedicated to tackling the climate crisis and protecting frontline communities in California. The bills address clean energy, wildfire, drought, community climate resilience, sustainable agriculture, extreme heat, and sea-level rise, among other topics. Of this package, \$3.7 billion was allotted for climate resilience and \$150 million was allotted for urban waterfront parks. The majority of this investment is being distributed in the form of grants (see Grants in subsection B below).

Since federal funding is likely to be limited, most sea level rise adaptation work will likely require state or local public sector revenue sources to secure project financing long-term. However, the amount available for long-term financing from California is likely to be limited as well, although predevelopment project funding is more available. As mentioned earlier, federal and state funding for infrastructure saw its peak in the 70's. Funding opportunities for projects that provide neighborhood flood control protection, reduce traffic, and produce more affordable housing might get more attention from the state, as these projects would help some state agencies meet their goals or fit their priorities. Critical assets located within the community that are state-owned would also receive more interest and potential funding if they were directly included or benefited from a sea level rise adaptation project.

For example, there is potential that Caltrans could partner on projects, particularly on the Highway 101 corridor between Eureka and Arcata where according to the Humboldt County Association of Governments, 41,500 vehicles traverse daily. Caltrans' Capital Outlay Support (COS) Program is the funding mechanism for construction contracts and right-of-way acquisition for projects that preserve and improve the state highway system (SHS). If a regional project or program required construction that addressed sea level rise impacts on vulnerable portions of the SHS, there is potential that Caltrans' capital budget could use their annual federal obligation authority. A successful partnership would require complete and reasonable estimates of each proposed project to avoid undesired consequences, including loss of federal or local funds. The COS Program's role would be to develop capital projects on the SHS and prepare the construction contract documents for these projects.

A regional effort could incorporate Caltrans Division of Transportation Planning (DOTP) which articulates a long-term vision for California's transportation system and implements statewide transportation policy through partnerships with state, regional, and local agencies. The DOTP provides quality planning products, services, and information to support and guide transportation investment decisions. Caltrans could therefore be a partner from the planning to implementing phase of regional sea level rise adaptation efforts by collaborating on regional planning with DOTP and having specific projects financially supported by COS. Caltrans' ability to implement large projects (not disaster-related or emergency repairs) may hinge upon adequate notice and time to secure funding, which may need to be obtained from multiple sources due to funding availability or caps. Caltrans Planning (and HCAOG) could help to mobilize Caltrans and project partners to budget for large capital expenditures.

## References

San Mateo OneShoreline Board Meeting PowerPoint

<https://oneshoreline.org/wp-content/uploads/2021/04/FSLRRD-Board-mtg.-4.26.2021-presentation.pdf>

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California Dedicates \$15 Billion for Climate Action and Protecting Frontline Communities

<https://www.adaptationclearinghouse.org/resources/california-dedicates-15-billion-for-climate-action-and-protecting-frontline-communities.html>

Humboldt Bay Sea Level Rise Regional Planning Feasibility Study Stakeholder Catalogue, March 2022

[https://humboldt.gov/DocumentCenter/View/106574/Rerelease-LCP\\_2019\\_Stakeholder\\_Catalogue\\_June\\_2022?bidId=](https://humboldt.gov/DocumentCenter/View/106574/Rerelease-LCP_2019_Stakeholder_Catalogue_June_2022?bidId=)

### 3. Local Funding

There are two types of local government related entities in California: Non-enterprise and Enterprise. Non-enterprise local government entities are general purpose agencies such as cities, counties, and community services districts who have the authority to impose general taxes. Enterprise local government entities are operators for services (such as sewer and wastewater utilities), seaports, and airports. They are predominantly supported by the fees, rates, and charges generated by the services they provide. The general funds coming from non-enterprise local government entities are under high financial pressure due to unfunded pension liabilities. This is being addressed by the California Public Employees Retirement System (CalPERS) which has implemented a financial plan to reduce or pay off pension liabilities with regular payments over the next few years with a significant increase in payroll contribution rates. Until the pension liabilities are cleared, these agencies will be under fiscal stress, resulting in fewer commitments to major new funding projects. Since enterprise local government entity funding is associated with the public services they provide, adding fees or raising rates for these services could potentially fund long-term projects. These options are further explored in subsection a. Tax Related and subsection c. Stormwater and Utility Related below.

In order to create a new revenue source in the State of California, a public entity must obtain a level of community support, necessitating large scale community outreach and engagement from entities hoping to create this new revenue source. This is because under California law, most new funding sources dedicated to specific uses require a 2/3 vote of the electorate or property owners. There are a few key exceptions which are impact fee programs and large asset owners not subject to Proposition 218 (such as electric utilities). Aside from these exceptions, a new revenue source cannot be created solely by the action of a public entity's elected board. It is important to note the State's constitutional limitations on taxation and debt apply to all of these options.

Further break down on potential revenue sources at the local scale are presented by categorical subsection below.

#### References

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<https://static1.squarespace.com/static/579d1c16b3db2bfb646bb4a/t/5b5f4da288251b0f228a990e/1532972477684/RBD+Financing+Guide+%28NHA+Advisors%29+Final+Version+2a.pdf>

#### **a. Tax Related**

##### *General Tax Increase*

A general tax increase is a relatively simple option for funding sea level rise planning in that it is a tax increase that can be used for any governmental purpose and only requires a majority vote (as opposed to 2/3 vote a special tax would require). The other subsections below provide further detail on special taxes. The downside to a general tax increase is that it cannot be pledged to a specific project or public service, which means it may not necessarily fund sea level rise efforts. An agency must provide funding for all of its basic services and can only account for revenues in the general fund. General taxes also cannot be used for debt financing although they can be used to sell Certificates of Participation (such as installment sales and lease-purchase agreements)

which local agencies can use from general revenues to finance specific public facilities. In general, the inability to allocate the funds specifically to sea level rise adaptation work limits this option's ability to provide sustainable or long-term revenue for sea level rise work.

However, there is a possible work around. Some agencies have taken advantage of lower voter approval requirements for general taxes compared to special taxes and have used a two-ballot measure strategy. In this approach there is one measure authorizing a general tax increase and a second measure that is an advisory measure with an expenditure plan scaled so that it matches the tax increase. If the second measure is approved, it becomes a non-binding guidance for the agency on what to use the tax increase for.

### References

San Mateo OneShoreline Board Meeting PowerPoint

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<https://static1.squarespace.com/static/579d1c16b3db2bfb646bb4a/t/5b5f4da288251b0f228a990e/1532972477684/RBD+Financing+Guide+%28NHA+Advisors%29+Final+Version+2a.pdf>

Tiny Town, Big Decision: What Are We Willing to Pay to Fight the Rising Sea? News Article

<https://www.nytimes.com/2021/03/14/climate/outer-banks-tax-climate-change.html>

A Tax On Rising Sea Levels Is Making Waves In The San Francisco Bay

<https://www.fastcompany.com/3060581/a-tax-on-rising-sea-levels-is-making-waves-in-the-san-francisco-bay>

### *Property Tax Increase*

Property taxes are taxes levied on real estate by the government at a state, county and/or local level. Property taxes can be secured or unsecured. Secured property taxes are levied against real property (which includes the land and any property attached to land, such as a house). Unsecured property taxes are levied against property that can be relocated (such as business equipment or a boat). Secured property is taxed at a rate of 1% of its assessed value in the State of California. Additional taxes for voter approved bonds and direct charges for special assessments can also be added based on where the property is located. Property tax increases could be done at a small scale where it would only apply to property owners in a specific geographic area such as a flood plain, or could be done at a wider scale depending on what a taxing entity determines is necessary coupled with what a majority of voters would support. Any increase would require at least a 2/3 vote of the property owners impacted. For this reason, this funding option would require a significant concentrated effort by sea level rise collaborators to perform stakeholder engagement and community outreach.

An example of this is in Foster City, California, where voters in 2018 passed the Levee Improvement Bond Measure P. This authorized Foster City to issue \$90 million in general obligation bonds to fund critical levee improvements, and levied their property tax for 30 years to repay what they borrowed. For the first year, the tax rate was around \$36 per \$100,000 of assessed property value followed by a decrease to roughly \$33 annually. Further decreases in tax rate was anticipated in the future with the assumption that assessed property valuations would continue to rise. Voters were persuaded to approve this measure to protect mortgage-holding

residents from high flood insurance premiums that come with having their properties designated as within a flood zone.

### References

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<https://oneshoreline.org/wp-content/uploads/2021/04/FSLRRD-Board-mtg.-4.26.2021-presentation.pdf>

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<https://static1.squarespace.com/static/579d1c16b3db2bfd646bb4a/t/5b5f4da288251b0f228a990e/1532972477684/RBD+Financing+Guide+%28NHA+Advisors%29+Final+Version+2a.pdf>

2021 Multijurisdictional Local Hazard Mitigation Plan Volume 1 – Planning Area Wide Elements

[https://oneshoreline.org/wp-content/uploads/2022/02/2021-10-19\\_SanMateoHMP\\_Vol1\\_AdoptionDraft.pdf](https://oneshoreline.org/wp-content/uploads/2022/02/2021-10-19_SanMateoHMP_Vol1_AdoptionDraft.pdf)

2021 Multijurisdictional Local Hazard Mitigation Plan Volume 2—Planning Partner Annexes

[https://oneshoreline.org/wp-content/uploads/2022/02/2021-11-04\\_SanMateoHMP\\_Vol2\\_AdoptionDraft\\_SanMateoCountyFSLRRDOnly.pdf](https://oneshoreline.org/wp-content/uploads/2022/02/2021-11-04_SanMateoHMP_Vol2_AdoptionDraft_SanMateoCountyFSLRRDOnly.pdf)

### *Special Parcel Tax (District and/or Voter Initiated)*

California cities, counties, and certain special districts have the authority to levy taxes but are unable to directly pledge the tax revenue to specific uses without a 2/3 voter approval. These taxes that have designated uses are called special taxes. Special taxes are more reliable long term funding sources because of their ability to secure debt in special tax revenue bonds. They are, however, more difficult to attain because of the higher required voter approval margin. This means that any entity hoping to pass a special tax like a parcel tax will need to do significant community and stakeholder engagement and outreach.

A parcel tax is a form of real estate tax similar to a property tax, in that both types of taxes are imposed on parcels of real property. However, while a property tax is based on the value of real property, a parcel tax is assessed based on characteristics of a parcel rather than its value. The simplest form of a parcel tax is a flat tax which does not vary according to the size, improvements, or use of a parcel.

In 2016, voters in the Bay Area passed the Measure AA parcel tax for the San Francisco Bay Area Restoration Authority (SFBRA). This regional agency was created to use the estimated \$25 million in revenue generated from the \$12 parcel tax to fund shoreline projects that will protect, restore, and enhance San Francisco Bay. Part of their wetland and habitat restoration efforts around the Bay are able to incorporate flood management infrastructure.

The success of Measure AA to generate the funds needed to implement projects is perhaps part of what influenced San Mateo OneShoreline’s Board of Directors Strategic Planning Committee to identify this funding method as their recommended long-term funding mechanism for climate mitigation and sea level rise projects. In a 2021 Board of Directors meeting, the parcel tax was highlighted by the Strategic Planning Committee as the only “long-term stable yet flexible funding for projects and for operations” of the 28 funding options presented to the Committee. In order to assess the feasibility of a parcel tax being approved, the Committee “examined the costs, risks, and timelines associated with various ballot measures” and “focused on building resilience to climate-driven wildfires, sea level rise, coastal erosion, and flooding” in order to “protect against

the greatest climate change threats” to their county. To move forward with this funding option, they looked at several parcel tax scenarios and selected a choice few to poll for public perceptions that would influence the language used in the potential ballot measure. San Mateo County worked with consultants to design, plan, and implement a public engagement push concerning the potential ballot measure meant to contact each household in the county 4-6 times before June 2022. However, by July 2022 officials had decided the parcel tax measure would not appear on the November ballot after low polling support for the measure. It was hypothesized that economic uncertainty associated with rising gas prices, inflation, and a possible recession was suppressing voter enthusiasm, although officials did express hope to bring the ballot measure back to life in the future.

## References

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<https://static1.squarespace.com/static/579d1c16b3db2bfb646bb4a/t/5b5f4da288251b0f228a990e/1532972477684/RBD+Financing+Guide+%28NHA+Advisors%29+Final+Version+2a.pdf>

Lincoln Institute of Land Policy California’s Parcel Tax

<https://www.lincolninst.edu/publications/working-papers/californias-parcel-tax>

San Mateo County Eyes Parcel Tax to Address Climate News Article

[https://www.smdailyjournal.com/news/local/san-mateo-county-eyes-parcel-tax-to-address-climate/article\\_bbca2882-9e9c-11ec-838f-6b258466989f.html](https://www.smdailyjournal.com/news/local/san-mateo-county-eyes-parcel-tax-to-address-climate/article_bbca2882-9e9c-11ec-838f-6b258466989f.html)

San Mateo County Ditches Parcel Tax News Article

[https://www.smdailyjournal.com/news/local/san-mateo-county-ditches-parcel-tax/article\\_126a3ae8-ff3b-11ec-bec8-6f5d6d8744cb.html](https://www.smdailyjournal.com/news/local/san-mateo-county-ditches-parcel-tax/article_126a3ae8-ff3b-11ec-bec8-6f5d6d8744cb.html)

## *Gas Tax*

A gas tax is a special tax on consumers purchasing gas. The current federal gas tax rate is 18 cents per gallon for gasoline while the state gas tax rate in California increased with inflation to 53.9 cents a gallon as of July 1, 2022. SB 1, the [Road Repair and Accountability Act of 2017](#), increased the gas tax, diesel tax and vehicle registration fees to invest approximately \$5.4 billion annually in state and local roads, goods movement, public transit and active transportation programs. Roadway projects at the County have already used the state gas tax funding on projects such as culvert replacements undertaken by Public Works. A special gas tax at the local level could increase funding available for sea level rise adaptation projects by raising gas taxes just within the county or a specific region. Special taxes however would require a 2/3 majority vote by community members impacted. With high inflation making everything, especially gas, more expensive for consumers, it is not likely voters would pass this funding option anytime soon.

Although there are no current examples of regional efforts to fund sea level rise adaptation using a gas tax to reference, one was considered as recently as 2016 in the San Francisco Bay Area. The Metropolitan Transportation Commission (MTC) considered proposing a regionwide gas tax increase. MTC decided against moving forward with the gas tax of five to ten cents a gallon as approval would have required support from two-thirds of voters and legislature passed SB 1 around this time. Possibly in lieu of the regionwide gas tax, they proposed an alternative MTC

proposal to increase in bridge tolls (Regional Measure 3). Humboldt County does not have bridge tolls to fall back on, but the beginning plans to implement a regional gas tax in other regions within California does show that it has some merit as a possible long term funding source.

## References

### SB 1 FAQs

<http://rebuildingca.ca.gov/sb-1-faqs>

### San Mateo OneShoreline Board Meeting PowerPoint

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### Humboldt County Oks 32 Road Projects Using State Gas Tax Funds News Article

<https://www.times-standard.com/2018/04/27/humboldt-county-oks-32-road-projects-using-state-gas-tax-funds/>

## **b. Fees**

### *Development Impact Fees*

Development impact fees are a one-time charge to new development imposed under the Mitigation Fee Act. These fees are charged to new development to mitigate impacts resulting from the development activity and cannot be used to fund existing deficiencies. If improvements benefit both existing as well as new development, other sources of revenue must be used to cover costs of improvements that benefit existing uses. Fees must bear a reasonable relationship to the facilities required, be expended on the facilities for which they are collected, and be proportional to the impact of the development project. Development impact fees do not require voter approval and are commonly used by California cities and counties to address the impact of new development on schools, parks, transportation, etc.

Revenue associated with development impact fees fluctuates with the amount of development. Depending on the amount of anticipated development in the region, this has potential to be a long-term funding source. However, it is questionable to encourage development in sea level rise inundation zones and it is also questionable if only collecting a one-time fee would properly offset the long term impacts a development might have on public facility costs.

Neither Arcata, Eureka, nor Humboldt County have adopted development impact fees. There are no examples of development impact fees being used for sea level rise adaptation in California. However, while perhaps not necessarily viable in California due to stricter environmental regulations, officials in Miami-Dade County in Florida are planning to raise money for flood mitigation through development impact fees on developers who build in environmentally sensitive areas. They plan to spend \$400 million to reduce the impacts of flooding, attributed to climate-change-induced rising sea levels, in low-lying regions by building a system of valves, pumps, and raised roadways. Before moving forward, the commissioners plan to get input from the public and local businesses and have asked the Mayor to prepare a feasibility report on the fees.

## References

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Impact Fees On Development Proposed To Fund Miami's Rising Sea Level Resiliency Plans  
News Article

<https://www.bdcnetwork.com/impact-fees-development-proposed-fund-miamis-rising-sea-level-resiliency-plans>

Southern California Association of Governments (SCAG) Development Impact Fees Overview

<https://scag.ca.gov/post/development-impact-fees>

### *Stormwater In-Lieu Fee Program*

In general, an in-lieu fee is a one-time charge that is paid “in lieu” of a certain requirement for a development. For a stormwater in-lieu fee program, the fee is paid instead of the required incorporation of stormwater mitigation or adaptation into a development project. Payment for this kind of program would go to an approved in-lieu fee sponsor as an alternative to permittee-responsible mitigation or a purchase from a stormwater mitigation bank. The fees stay in the sponsor's fund until such a time that they identify a mitigation project and have enough funds collected to implement the project.

A benefit to having a stormwater in-lieu fee program is that it enables the program sponsor to consolidate funds from several projects or contributors, thus potentially generating enough revenue for larger and more complex projects, in this case, sea level rise adaptation projects. Regional projects tend to be more extensive and likely will require higher levels of funding. However, impacts to habitat usually happen before the sponsor has used in-lieu fees on a project, complicating the evaluation of whether a fee is sufficient to fully mitigate project impacts. Regulations for the fees need to specify standards or procedures for the use of the program funds, otherwise they could be expended inappropriately and might even fail to achieve the target unit for unit replacement of required mitigation.

Sometimes project habitat impacts lag in time and are not fully known when determining mitigation and fee requirements; therefore, these impacts may not be fully accounted for in assigned mitigation. Once a permit has been issued, there is very little regulators can do to influence a development, and a permit might be issued before all necessary mitigation has been realized. Essentially the payment of an in-lieu fee absolves the permittee of further responsibility, so all of the direct and indirect costs associated with the potential project throughout its anticipated life need to be incorporated into the fee estimate; otherwise, the fee is an ineffective mitigation tool. The long-term feasibility of this funding option for sea level rise adaptation is only as effective as the amount of development that is anticipated in areas that would require mitigation. Similar to development impact fees, this begs the question of if it is wise to allow development in sea level rise inundation zones and if only collecting a one-time fee would properly offset the long term impacts a development might have on public facility costs.

The EPA has been using in-lieu fees for wetland mitigation for many years. In fact, regulators initially thought that implementing an in-lieu fee program would be more valuable than smaller scale, scattered, permittee-responsible mitigation for development projects. Prior to 2008, regulations were more lenient because regulations did not have specific standards or procedures for applicable in-lieu fee usage. This brought criticism about the disparity between in-lieu fees and other options, particularly as mitigation projects were failing to achieve the appropriate acre-for-acre wetland replacement requirement. In response, the EPA created the 2008 rule (40 C.F.R. § 230) which strengthened their standards and requirements for in-lieu fee programs and made it equivalent to mitigation bank requirements.

## References

San Mateo OneShoreline Board Meeting PowerPoint

<https://onshoreline.org/wp-content/uploads/2021/04/FSLRRD-Board-mtg.-4.26.2021-presentation.pdf>

Off-Site Stormwater Crediting: Lessons from Wetland Mitigation

[https://www.epa.gov/sites/default/files/2018-10/documents/off-site\\_stormwater\\_crediting\\_lessons\\_from\\_wetland\\_mitigation-2018-04.pdf](https://www.epa.gov/sites/default/files/2018-10/documents/off-site_stormwater_crediting_lessons_from_wetland_mitigation-2018-04.pdf)

### **c. Stormwater and Utility Related**

#### *Stormwater Credit Trading Market*

A Stormwater Credit Trading Market is a market-based approach that incentivizes private property owners subject to onsite stormwater regulations to choose green infrastructure approaches for managing their stormwater by reducing costs of onsite stormwater management. Stormwater credit trading could involve trading based on stormwater volume, trading based on the amount of pollutant reduced, and mitigation banking based on measures such as greened acres or acres of wetland. Regarding stormwater volume trading, property owners can meet a portion of their stormwater management requirements offsite through the purchase of volume-based stormwater “credits” from other property owners who are either not subject to stormwater regulation requirements or have exceeded their requirements. Generally, credits are generated by installation and maintenance of green infrastructure projects or other best practices for stormwater management that reduce stormwater runoff and are located off-site.

In terms of sea level rise, potential trading market participants providing credits could be either property owners/third parties who voluntarily implement sea level rise green infrastructure projects on properties not subject to postconstruction stormwater management requirements or developers/property owners who are subject to postconstruction stormwater management requirements and built sea level rise green infrastructure projects that exceed minimum stormwater requirements.

Stormwater credit trading has the benefit of reducing costs for municipalities and could also advance the implementation of sea level rise related green infrastructure locally. This market-based approach encourages private sector investment in managing stormwater, rewards proactive participants for contributing to the protection of their community and environment, and redistributes funds across communities. The distribution potential of a stormwater credit trading market might be particularly useful for addressing historical discrepancies in infrastructure investment and addressing sea level rise challenges in underrepresented communities. The downside to a trading program is the amount of staff time needed from a local entity to implement,

oversee, and manage the marketplace to ensure that the projects involved in credit creation are sustainably maintained.

### References

San Mateo OneShoreline Board Meeting PowerPoint

<https://oneshoreline.org/wp-content/uploads/2021/04/FSLRRD-Board-mtg.-4.26.2021-presentation.pdf>

American Rivers How-to Guide for Stormwater Credit Trading

<https://www.americanrivers.org/2019/12/how-to-guide-for-stormwater-credit-trading/>

Establishing A Stormwater Volume Credit Trading Program - A Practical Guide For Stormwater Practitioners

[https://www.americanrivers.org/wp-content/uploads/2019/09/AR\\_StormwaterVolumeCreditTrading\\_Final.pdf](https://www.americanrivers.org/wp-content/uploads/2019/09/AR_StormwaterVolumeCreditTrading_Final.pdf)

### *Utility Rate Increase*

A utility rate is the amount of money a customer is charged for a certain unit of a particular utility they utilize. One possible funding option for sea level rise adaptation is to increase the rate for any utility that is potentially impacted by sea level rise (such as electricity, water, or sewer) to incorporate the potential cost increases associated with continuing to provide utility services in the face of sea level rise impacts. This could include the cost to relocate utility infrastructure such as electrical poles or sewer and water mains, or to retrofit infrastructure such as installing freshwater pumps to combat the saltwater erosion or exposure caused by sea level rise impacts. The *Finance Guide For Resilient By Design – Bay Area Challenge Design Teams Final Version 2.0*, notes that “water, sewer, and storm water utilities with vulnerable assets are one of the most readily available funding source (sic) for resilient infrastructure in California.”

Certain utilities in California (water, sewer, and stormwater) are controlled by a process commonly referred to as “Prop. 218,” named after the 1996 statewide voter-approved proposition called the “Right to Vote on Taxes Act” (see Stormwater Utility Rate Increase subsection below). The main benefit of utility rate increases is that utilities are more flexible to implement rate increases because they do not require voter or landowner approval. Utilities also have long-range planning horizons and the capability to support engineering during an extended predevelopment design process, are used to working on systematic solutions that may involve other stakeholders while reducing adaptation costs, and those vulnerable to sea level rise (such as sewer treatment plants) have a direct incentive to implement sea level rise adaptation solutions.

In 2020 California regulators issued a proposal to have the state’s investor-owned utilities incorporate climate change vulnerability assessments into their general rate case cycles, with a special focus on how climate change affects disadvantaged communities in their service territory, in an effort to guide infrastructure investments over the long-term. The proposed decision was approved, requiring utilities to submit reports on their exposure to temperature, sea level, wildfire, and other climate risks, as well as measures to mitigate them, to the California Public Utilities Commission (CPUC) every four years. The 2020 decision was facilitated by a 2018 decision to integrate climate change adaptation matters in relevant CPUC proceedings. Because safeguarding California’s utility access against climate threats is a major undertaking, the CPUC anticipated multiple phases in order to deal with aspects of the water, telecommunication, electric and natural gas utilities with the current phase, Phase 1, only addressing electric and natural gas utilities.

## References

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California Regulators Instruct Utilities To Incorporate Climate Planning Into Rate Cases Dive Brief

<https://www.utilitydive.com/news/cpuc-proposal-climate-planning-utility-rate-case/581273/>

California Public Utilities Commission (CPUC) - Climate Change Impacts Utility Services

<https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/climate-change>

### *Stormwater Utility Rate Increase*

A stormwater utility rate is similar to a water or sewer utility rate, as they are all based on volume. In essence, customers pay a certain rate to convey a volume of stormwater from their property. This rate could be implemented or increased to address sea level rise impacts and fund mitigation or adaptation. Normally these rates are set by the utility provider, but property owners can vote to approve a new Storm Water Management rate or increased rates to cover the cost of sea level rise adaptation.

As mentioned in the subsection above, rate setting for water, sewer and storm water utilities in California is controlled by a process commonly referred to as “Prop. 218”. In order to increase the rate for these utilities, in this case a stormwater utility rate, the governing board of a public enterprise (e.g., a public utility district) is required to notify all ratepayers of a proposed rate increase, and hold a public hearing and consider written protests to the rate increase. The governing board may proceed with the rate increase unless a majority of all ratepayers protest the increase. Achieving a majority protest (especially in larger utility districts) is difficult unless the rate increase is highly controversial. Debt issuance may be done by a majority vote of the governing board without voter approval. Stormwater received authority to do this simplified process in 2018 under SB 231. Prior to that, a stormwater rate increase required a simple majority approval from ratepayers via a mailed ballot proceeding.

There are no readily available examples of stormwater rates increasing specifically to fund sea level rise adaptation work. However, there are examples of utility rates under Prop 218 (which includes wastewater, stormwater, and water utilities) being used to fund infrastructure improvements. For example, in early 2022, the City of San Diego increased their wastewater rates by 5%. This was the first time the rate had been changed in ten years. The rate adjustment was done to upgrade core infrastructure (such as aging pipes and sewer mains) as well as fund investments like a water recycling project. Although it has not explicitly targeted sea level rise adaptation, San Diego has the potential to incorporate sea level rise adaptation into the upgrades of their infrastructure or create a sea level rise specific project funded by this rate increase. The process the City underwent to get this rate increase was (1) conduct a cost-of-service study on wastewater rates; (2) present the proposed water and wastewater rate increase to the City Council’s Budget and Government Efficiency Committee; (3) obtain City Council Approval; (4) mail out Prop 218 notices; and (4) hold three virtual community forums. Due to low protest against the rate increase, the City was able to move forward with the increase.

To better understand the potential efficacy for this method of funding approval in addressing long-term sea level rise adaptation funding needs, the San Diego example can be compared with a stormwater fee increase (not rate increase) in Vallejo, California. Also in early 2022, the Vallejo Flood and Wastewater District sought to increase the stormwater fee for Vallejo property owners annually over the next five years. They mailed out ballots to all property owners in the District regarding the fee increase which was meant to cover the cost of various projects, including providing flood protection. The stormwater fee had been a modest \$1.79 a month for 25 years, and would increase to \$4.50 a month. The ballot proposal failed, with voters 32% in favor and 68% opposed.

The process for both the San Diego wastewater rate increase and Vallejo stormwater fee increase included a cost-of-service study to decide on the potential increase. However, the Vallejo fee increase only needed the Vallejo Flood and Wastewater District Board of Trustees approval to bring the proposed fee change to ballot, providing a shorter process. Although the Vallejo process was technically shorter, convincing voters to approve a rate or fee increase involves a much more concentrated outreach and education effort by the utility provider due to status quo bias (also called status quo inertia). When given the choice to maintain the status quo, as shown by the stormwater fee in Vallejo, the average person will vote not to change things unless they feel strongly about an issue, even if it is not in their best interest to do so. However, if the rate or fee increase is presented to stakeholders in a different way, such as making the increase a default outcome of a process which requires a person to actively voice their dissent in order for it to be implemented. as was the case with the San Diego wastewater rate increase, the average person will not decide to protest the increase unless they feel strongly about the issue.

## References

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City of Palo Alto Engineering Services - Storm Water Management Fee

<https://www.cityofpaloalto.org/Departments/Public-Works/Engineering-Services/Storm-Water-Management-Fee>

Vallejo Flood and Wastewater District Proposed Stormwater Fee Increase

<https://www.vallejowastewater.org/333/Proposed-Stormwater-Fee-Increase>

City of San Diego September 2022 Rate Increases

<https://www.sandiego.gov/public-utilities/customer-service/water-and-sewer-rates/increases>

Opt-in vs opt-out consent: How to be both self-serving and customer-centric

<https://www.mycustomer.com/customer-experience/engagement/opt-in-vs-opt-out-consent-how-to-be-both-self-serving-and-customer>

#### **d. Insurance Related**

##### *Community Rating System Insurance Credits*

As mentioned earlier in the federal subsection, the NFIP's Community Rating System (CRS) is a program that credits community flood protection efforts that go beyond minimum standards via the reduction of flood insurance premiums for the community's property owners. CRS is similar to, but separate from the private insurance industry's programs that grade communities on the effectiveness of their fire suppression and building code enforcement efforts. The discounts CRS gives on flood insurance premiums range from 5% up to 45% (depending on the CRS credit points awarded to the community involved). The discounts provide an incentive for communities to implement new flood protection activities that can help save lives and property when a flood occurs, and could make flood insurance policy holders more amenable to an insurance surcharge that could divert funds to sea level rise adaptation (see subsection below). As mentioned earlier, enrollment in the program also provides a foundation for future flooding collaboration and opens more avenues of federal grant support, although it does require more staff time for participating entities to monitor qualifying community actions and report them to CRS for annual recertification.

##### References

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National Flood Insurance Program Community Rating System A Local Official's Guide to Saving Lives, Preventing Property Damage, and Reducing the Cost of Flood Insurance

[https://www.fema.gov/sites/default/files/documents/fema\\_community-rating-system\\_local-guide-flood-insurance-2018.pdf](https://www.fema.gov/sites/default/files/documents/fema_community-rating-system_local-guide-flood-insurance-2018.pdf)

Application for Funding with the Community Assistance Program - State Support Services Element

<https://www.fema.gov/floodplain-management/community-assistance-program/apply>

The Department of Homeland Security (DHS) Notice of Funding Opportunity (NOFO) Fiscal Year 2021 Community Assistance Program-State Support Services Element

[https://www.fema.gov/sites/default/files/documents/fema\\_CAP-SSSE-nofo\\_FY21.pdf](https://www.fema.gov/sites/default/files/documents/fema_CAP-SSSE-nofo_FY21.pdf)

##### *Insurance Surcharge*

An insurance surcharge is an additional fee, above a base premium, that is added to a flood or home insurance rate to cover special risks associated with a property. At present, all National Flood Insurance Program (NFIP) policyholders are assessed for a Homeowner Flood Insurance Affordability Act of 2014 (HFIAA) surcharge. HFIAA is a flat fee applied to all flood or home insurance policies based only on the occupancy type of the insured building. This fee is not associated with the flood zone in which the building is located or the construction date of the building. It also applies to a renter's contents-only policy based on the policyholder's occupancy of the building or unit. For primary residences, the charge is \$25; for all other properties, the charge is \$250.

There is also one other type of flood insurance surcharge related to NFIP called a probation surcharge. A community can be placed on probation by FEMA if it finds that the community is failing to adequately enforce the floodplain management standards it has adopted. If a community is on probation, all policyholders in that community will be charged a probation surcharge of \$50 for a full one-year period, even if the community brings its program into compliance and is removed from probation. Ultimately, if the community does not correct its cited deficiencies after given time periods described in regulations, the community will be suspended from the NFIP by FEMA.

To fund sea level rise implementation, a flat fee surcharge that is similar to the HIFIAA surcharge could be implemented. The rate would change according to the characteristics of the property or buildings on a property, and the generated income could go to a fund specific to sea level rise adaptation projects. The building or property characteristics would need to be specific enough that the governing body implementing the fee could apportion the insurance surcharge between policyholders vulnerable to sea level rise and other policyholders in a fair and equitable manner. This could potentially lead to the issue of how to structure the insurance surcharge subvention formula for community resilience strategies that incentivize local action while also adjusting for disadvantaged communities with lower revenue potential.

It is likely that imposing an insurance surcharge would require a 2/3 vote of the state legislature and it is unlikely this would be a very popular option among voters. There also is more research needed to determine the revenue potential of a surcharge on local or regional policyholders. The Resilient by Design Finance Guide suggests further investigation could potentially be done with assistance from the California Department of Insurance. There would also need to be a governance structure to manage the revenue and determine how the funding should be allocated to which projects. This would require staff time for a local entity or possibly a Community Infrastructure Resilience Authority (see subsection g. below). However, the benefit of this approach is that the potential generated revenue could be substantial, depending on the number of policyholders.

California does not have a current example of an insurance surcharge, so the best example is reports coming from organizations on the east coast hoping to implement a state-mandated insurance surcharge. Most notably, the state of New York is considering implementing a surcharge. One report by an independent non-profit civic organization in New York has determined that an insurance surcharge could generate between \$900 million and \$2.7 billion in proceeds, assuming a rate of 0.5 percent to 1.5 percent of premiums collected over a 10-year horizon. Background analysis for the report evaluated portfolio allocation strategies with a mix of grants and loan products to determine how the fund could become self-sustaining after the surcharge sunsets in 10 years.

## References

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FEMA National Flood Insurance Program (NFIP) Fact Sheet

<https://www.selective.com/~media/Files/S/Selective/documents/hfiaa-surcharge-factsheet.pdf>

National Flood Insurance Program: The Current Rating Structure and Risk Rating 2.0  
<https://sqp.fas.org/crs/homesec/R45999.pdf>

Proposed Funding Pathways for Adaptation to Climate Change in California  
<https://barc.ca.gov/sites/default/files/Proposed-Funding-Pathways-for-Adaptation-to-Climate-Change-in-California.pdf>

New York State Sea Level Rise Task Force Report to the Legislature  
[https://www.sallan.org/pdf-docs/DEC\\_SeaLevelRise\\_Report.pdf](https://www.sallan.org/pdf-docs/DEC_SeaLevelRise_Report.pdf)

## **e. Bonds**

### *Green Bonds*

A Green Bond is a fixed-income financial instrument used to fund projects that have positive environmental and/or climate benefits. An issuer (typically a corporation, government, or financial institution) borrows a significant sum of money from investors for use in sustainability-focused projects. These types of projects could include sea level rise resiliency projects. Green bonds work similarly to a traditional bond except that the funds are slated for use in projects that meet certain sustainability requirements. These are often formalized in a green bond “framework” developed by the issuer. They typically involve one or more third-party firms who underwrite, certify, and monitor the bond issuance.

The Green Bond Principles, voluntary guidelines for issuing Green Bonds, identify four core components of a Green Bond framework that make it successful: description of use of proceeds; project evaluation and selection processes; management plan for proceeds; and reporting methodology. External reviews increase the transparency of the Green Bond process and ensure that they are being properly allocated and distributed.

Designating a bond as a Green Bond does not change the interest rate and thus does not make it cheaper; it is still debt that must be repaid. Depending on the project, it is also not easy to identify the actual impact of bond proceeds due to the time and money needed to do proper evaluations. However, passing a dedicated Green or Resilience Bond provides a signal to investors and the public about priorities and commitment. By showing investors and the public that sea level rise is top of the agenda, it might attract bond buyers interested in diversifying their portfolio to incorporate more environmental sustainability related investments.

The San Francisco Public Utilities Commission (SFPUC) issued its first green bond in 2015. Since then, it has sold a total of more than \$1.4 billion in certified green bonds to fund its three enterprise utilities: Water, Wastewater, and Power. Impacts from the bonds to date have addressed some sea level rise issues such as the use of green infrastructure to divert stormwater from treatment plants. In addition, all San Francisco City projects undergo a sea level rise vulnerability assessment and identify anticipated consequences which must be responded to through redesign or relocation. In this way, even projects funded by Green Bonds that are more tangentially associated with sea level rise address sea level rise adaptation in the planning process and improve the resilience of the city’s infrastructure to SLR impacts.

Resilience Bonds are a subset of Green Bonds, and are discussed in the Resilience Bond subsection below.

## References

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<https://static1.squarespace.com/static/579d1c16b3db2bfd646bb4a/t/5b5f4da288251b0f228a990e/1532972477684/RBD+Financing+Guide+%28NHA+Advisors%29+Final+Version+2a.pdf>

The Invading Sea Florida and the Climate Crisis - Upgrading Our Building Standards For Flooding From Sea Level Rise Will Let Us Finance Resilient Construction With Private Sector Green Bonds

<https://www.theinvadingsea.com/2022/06/16/upgrading-our-building-standards-for-flooding-from-sea-level-rise-will-let-us-finance-resilient-construction-with-private-sector-green-bonds/>

California Debt And Investment Advisory Commission Issue Brief: Green Bonds

<https://www.treasurer.ca.gov/cdiac/publications/1409.pdf>

San Francisco Public Utilities Commission - Green Bond Report Water Enterprise FY 2018-19

[https://sfpuc.org/sites/default/files/about-us/policies-reports/FY19\\_WaterGreenBondReport.pdf](https://sfpuc.org/sites/default/files/about-us/policies-reports/FY19_WaterGreenBondReport.pdf)

The World Bank - The Pros and Cons of Green Bonds

<https://www.worldbank.org/en/news/opinion/2018/10/10/the-pros-and-cons-of-green-bonds>

Green Bond Principles

[https://www.icmagroup.org/assets/documents/Sustainable-finance/2022-updates/Green-Bond-Principles\\_June-2022-280622.pdf](https://www.icmagroup.org/assets/documents/Sustainable-finance/2022-updates/Green-Bond-Principles_June-2022-280622.pdf)

## *Resilience Bonds*

Resilience bonds are a subset of green bonds, and seek to raise capital specifically for investment that addresses a climate risk such as sea level rise (see Green Bonds subsection above). Resilience Bonds create incentives for cities to invest in resilience so as to reduce the human and financial cost of catastrophes when they strike. Resilience Bonds are designed to fund risk reduction projects via a resilience rebate that turns avoided losses into a revenue stream.

In 2018, San Francisco voters passed, with an 82.7% approval rate, a \$425 million bond to repair and replace the Embarcadero Seawall which protects the city from urgent and increasing seismic and flood hazards. The first phase of this program began with a \$50 million General Obligation bond sale to fund planning of immediate life safety improvements for seismic and flooding hazards in 2019.

## References

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<https://static1.squarespace.com/static/579d1c16b3db2bfd646bb4a/t/5b5f4da288251b0f228a990e/1532972477684/RBD+Financing+Guide+%28NHA+Advisors%29+Final+Version+2a.pdf>

County of San Mateo Office of Sustainability - A Climate Ready County  
<https://www.smcsustainability.org/climate-change/climate-ready>

Sea Change San Mateo County Community Resilience Grants Program  
<https://seachangesmc.org/resilience-grants/>

Mayor London Breed Announces First Bond Sale to Strengthen the Embarcadero Seawall  
<https://sfmayor.org/article/mayor-london-breed-announces-first-bond-sale-strengthen-embarcadero-seawall>

Governor's Budget Summary 2020-21 Climate Resilience  
<https://www.ebudget.ca.gov/2020-21/pdf/BudgetSummary/ClimateResilience.pdf>

California Considers Community-Based Approach to Climate Resilience  
<https://climate-xchange.org/2021/08/24/california-considers-community-based-approach-to-climate-resilience/>

### *Social Impact Bonds*

A Social Impact Bond is an innovative financing mechanism created by agreements between governments or commissioners and social service providers to fund the delivery of pre-defined social outcomes. A social outcome could be applied in a sea level rise context by combining it with an environmental focus, for example a project could increase infrastructure resilience in a historically vulnerable coastal community. This is not necessarily a bond but rather a future contract on social outcomes. This investment product creates public-private partnerships by bringing together donors, impact investors, and nonprofit organizations with government entities to fund performance driven socially beneficial projects. For this type of bond, impact investors provide the capital that allow a project to scale their work for high-quality service providers through accomplishment-based contracts. The government then pays back investors if/when the project generates public value outcomes. For this reason, Social Impact Bonds are also referred to as Payment-for-Success bonds or Pay-for-Benefits bonds. A benefit to this potential funding option is the amount of brainpower and cross sector collaboration that goes into defining and achieving the performance metrics basis to the bond combined with the financial innovation it provides. It also reduces government risk and the amount of capital a government needs to have on hand to implement projects. The downside to a Social Impact Bond is that it is a newer funding concept and there has not been a Social Impact Bond created yet with an environmental or adaptation consideration.

Although there is not yet a real-world example of Social Impact Bonds utilized to address an adaptation issue, Duke University has created a Working Paper looking at implementing the Social Impact Bond model for environmental impacts and created examples based off of existing Social Impact Bond programs. One of the possible projects they created was addressing Philadelphia's Stormwater Management Plan. They analyzed the Stormwater Management Plan against three main criterion that they identified for a successful implementation of the Social Impact Bond model as a funding mechanism: standardized metrics, consistent annual payments, and required regulations. It was determined that Philadelphia's Stormwater Management Plan would be suitable for implementing a social impact bond with an environmental focus because they have standardized metrics that could be applied (square footage of impervious structure removed and gallons/acre feet of stormwater runoff avoided), their stormwater fees are levied on an annual basis in a consistent manner, as well as a clearly established stormwater fee structure for regulation. The research team determined that based off of these findings, this water quality

program may benefit financially from an environmentally focused Social Impact Bond. Using a similar model to address sea level rise, the standardized metrics could be replaced by something like square footage of coastal structures protected from sea level rise impacts by resilient design.

For more information on potential partners please see subsection 4.a. Nonprofit subsection 4.b. Private Philanthropy or Investors below.

## References

San Mateo OneShoreline Board Meeting PowerPoint

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<https://static1.squarespace.com/static/579d1c16b3db2bfbd646bb4a/t/5b5f4da288251b0f228a990e/1532972477684/RBD+Financing+Guide+%28NHA+Advisors%29+Final+Version+2a.pdf>

Social Impact Bonds - Investing in Positive Social Outcomes

<https://socialfinance.org/social-impact-bonds/>

LEED Understanding Social Impact Bonds

<https://www.oecd.org/cfe/leed/UnderstandingSIBsLux-WorkingPaper.pdf>

Stanford Innovation Review - Bringing Social Impact Bonds to the Environment

[https://ssir.org/articles/entry/bringing\\_social\\_impact\\_bonds\\_to\\_the\\_environment](https://ssir.org/articles/entry/bringing_social_impact_bonds_to_the_environment)

Case i3 Working Paper #1 Environmental Impact Bonds

[https://sites.duke.edu/casei3/files/2013/03/CASEi3\\_EIB\\_Report\\_FINAL-links.pdf](https://sites.duke.edu/casei3/files/2013/03/CASEi3_EIB_Report_FINAL-links.pdf)

## **f. District Designation**

### *Assessment District*

An Assessment District, also known as a Benefit Assessment District or Special Assessment District, is a financing mechanism under the California Streets and Highways Code, Divisions 10 and 12, used by local government to fund public improvements. It enables cities, counties, and certain special districts to designate specific geographical areas that receive a “special” benefit from specific public improvements and services as Assessment Districts. Establishment of an Assessment District requires the approval of a majority of the landowners within a District based on financial obligations, and allows these Districts to collect special assessments to finance public improvements and services that result in a “special” benefit to parcels located within the District. A Special Assessment District has been compared to a Homeowners Association in function and funding mechanism, with the main difference being that project work is managed by a local government and the charge appears on property tax bills. Sea level rise adaptation improvements could potentially be the focus of a special assessment district.

Assessment Districts help ensure that property owners pay their fair share of the costs of such improvements and services over a period of years at reasonable interest rates, and ensures these costs will be spread to all properties that receive direct and special benefit from the improvements and services. Assessments are charged via a lien placed against a property. The lien is amortized over the life of the assessment and is collected along with regular property taxes. The amount that each property owner pays must be directly proportional to the benefit the property will receive

from proposed improvements and services. The formula for the assessment must specifically account for and exclude the “general” benefits to properties inside or outside of the district. This means that any multi-use or multi-benefit project would by definition be a “general” project and not applicable under this district.

Both a benefit and drawback of a Special Assessment District is that costs of improvements or services to a neighborhood are localized to only those within the affected area. This could pose an environmental justice issue if the district encompasses an historically disadvantaged area. It otherwise has the benefit of being a direct mode of taxation and could improve neighborhood participation by giving neighborhood residents more say in their governance process. However, the larger the scope and scale of properties included in a Special Assessment District, the more difficult it is to separate a special benefit from a general benefit. For this reason, larger Special Assessment Districts might encounter issues finding bond counsel for debt financing that is willing to tackle the issue of general vs special benefit allocation. This can be particularly difficult when there are no clear standards in statutes or case law.

Examples of sea level rise related Special Assessment Districts do not exist yet, although the city of Burlingame and the counties of Marin and San Mateo have independently considered the feasibility of utilizing one as funding source at some point in the last ten years. Most notably, Marin County released a 2015 Marin Ocean Coast Sea Level Rise Adaptation Report that evaluated the level of support for various potential projects and their funding sources. They had two potential projects that were proposed to be funded by a special assessment district, an artificial reef and an enhanced living shoreline. Both projects were indicated as having low levels of support.

Technically, a Geological Hazard Abatement District (GHAD) is considered a type of Special Assessment District because it is strictly related to addressing a geologic hazard in a specific community. Broad Beach in Malibu, California, provides an example of a GHAD related to the beach erosion aspect of sea level rise (see Geologic Hazard Abatement District subsection below).

## References

San Mateo OneShoreline Board Meeting PowerPoint

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CivicMic Introduction to Benefit Assessment Districts

<https://www.civmic.com/benefit-assessment-districts-in-california/>

Pacifica’s new Seawall is a Moral Hazard News Article

<https://www.coastsidebuzz.com/pacificas-new-seawall-is-a-moral-hazard/>

Burlingame Eyes New Taxes News Article

[https://www.smdailyjournal.com/news/local/burlingame-eyes-new-taxes/article\\_c0a3389a-1c23-11ec-a53d-0ffeaddc8574.html](https://www.smdailyjournal.com/news/local/burlingame-eyes-new-taxes/article_c0a3389a-1c23-11ec-a53d-0ffeaddc8574.html)

Marin Ocean Coast Sea Level Rise Adaptation Report

[https://www.marincounty.org/-/media/files/departments/cd/planning/slr/c-smart/2019/181211\\_csmart\\_adaptation\\_report\\_final\\_small.pdf?la=en](https://www.marincounty.org/-/media/files/departments/cd/planning/slr/c-smart/2019/181211_csmart_adaptation_report_final_small.pdf?la=en)

Southern California Association of Governments – Special Assessment District

<https://scag.ca.gov/post/special-assessment-district#:~:text=Post%20November%2019%2C%2020,or%20services%20within%20that%20district.>

City of San Mateo – What is an Assessment District?

<https://www.cityofsanmateo.org/1765/What-is-an-Assessment-District>

California Department of Conservation – Geologic Hazard Abatement Districts

<https://www.conservation.ca.gov/cgs/Pages/GHAD.aspx#:~:text=The%20Geologic%20Hazard%20Abatement%20District,in%20solving%20a%20common%20problem.>

Broad Beach GHAD

<http://www.bbghad.com/>

### *Community Facilities District*

A Community Facilities District (CFD), also known as a Mello-Roos District, is a financing district that can impose special taxes on property that are not based on the property's assessed value, for the purposes of financing various services and infrastructural improvements. Two-thirds of the voters within a CFD must agree to authorize a tax on their property located within the designated area of the District to fund services, public improvements, or infrastructure projects. A CFD is similar to a Special Assessment District, but it is not required to distinguish special benefits from general benefits, although it does have a higher voter approval hurdle. They are created by a local public agency with the authority to provide public services and facilities through sponsorship. It is a seven-step process to form a CFD: (1) Initiation of CFD by a local agency or property owner; (2) Adoption of local goals and policies by the local agency; (3) Proposal of Resolution of Intention; (4) Public Hearing; (5) Adoption of Resolution of Formation; (6) Election requiring two-thirds affirmative vote of property owners if 12 or fewer voters in the District, or two-thirds vote of registered voters if more than 12 voters in the District; and (7) Issue Debt, if applicable.

CFDs can provide a flexible tool for channeling benefits that accrue to private landowners and their tenants into funding for sea level rise resilient infrastructure. To fund resilient infrastructure, a CFD can levy special taxes on the basis of exposure to rising sea levels and amount of property protected. Furthermore, the special tax formula can subsidize lower income households or senior citizens. This great flexibility makes CFDs an attractive option compared to special assessment districts, in spite of the higher approval hurdle (two-thirds versus simple majority).

A CFD is able to annually fund sea level rise related projects such as flood and storm protection services, maintenance of roads and open space, and maintenance/operation of any real property or other tangible property with an estimated useful life of five or more years that is owned by the local agency or by another local agency. They can also fund a sea level rise related capital project with a lifespan of over 5 years that addresses infrastructural improvements (such as but not limited to roads, bridges, water systems, and sewage systems).

Advantages to implementing a CFD as a funding mechanism include its versatility in uses and flexibility in financing. However, due to lowered private market financing needs there might be incentivized development within a CFD which is not necessarily ideal in a sea level rise inundation zone. Improvement to community facilities due to CFD funding might also entice more home buyers into these areas which again, might not be ideal. A CFD also creates administrative burden, raises taxes, and penalized property owners unable to pay the tax which would disproportionately affect lower income communities.

In San Francisco Bay, there is a manmade island built upon sand bars named Treasure Island. This island is connected to Yerba Buena Island, a natural island where the eastern and western sections the Bay Bridge between San Francisco and Oakland connect. The Treasure Island Development Authority (TIDA) is the governing body that oversees both islands. It began making development plans for low-density housing on Treasure Island in 2011. However, development on the island soon began running into problems related to building thousands of housing units on an island built of compacting fill with an elevation of ten feet. By 2016, TIDA had begun incorporating improvements meant to take sea level rise into consideration, including storm drains, levees, and floodwalls.

In order to fund these sea level rise adaptation projects, TIDA established two funding mechanisms, an Infrastructure and Revitalization Financing District and a CFD. The planned developments were placed under the CFD which subjected them to a supplemental property tax assessed based on square footage of each property. The district is currently what is referred to as a “Capital CFD” and will rise at 2% of the initial assessment. Once the CFD has reached \$250 million in funding in 2016 dollars, it will become a “Maintenance CFD”. This Maintenance CFD will remain in place in perpetuity and can be indexed to inflation. This enables more funding to become available for adaptation as the impacts of climate change accelerate. The San Francisco Bay Conservation and Development Commission (BCDC) has recognized this development as a model in the region for planning shoreline development in terms of adaptation strategy and funding.

## References

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CivicMic Introduction to Community Facilities Districts

<https://www.civicmic.com/introduction-to-community-facilities-districts>

California Opportunity Zones Community Facilities Districts (CFDs) Overview

<https://opzones.ca.gov/community-facilities-districts-cfds/>

TIDA Infrastructure and Transportation Committee Review Sea Level Rise

<https://sftreasureisland.org/sites/default/files/012716%20ITC%20Item%204%20Sea%20Level%20Rise.pdf>

Treasure Island Development Program Infrastructure and Revitalization Financing District and Community Facilities District PowerPoint

<https://sftreasureisland.org/sites/default/files/CAB%20IFD-CFD%20Summary%2002%2007%2017.pdf>

Community Facilities District No. 2016-1 (Treasure Island) Capital Planning Committee Resolution for Special Tax Bonds PowerPoint

[https://onesanfrancisco.org/sites/default/files/2021-05/Agenda%20Item%206%20-%20Treasure%20Island%20CFD%20Bond%20Issuance%20Approve%20Presentation\\_0.pdf](https://onesanfrancisco.org/sites/default/files/2021-05/Agenda%20Item%206%20-%20Treasure%20Island%20CFD%20Bond%20Issuance%20Approve%20Presentation_0.pdf)

Island of Dreams - The Promising and Precarious Future of SF's Treasure Island Magazine Article

<https://devinsmithwork.medium.com/island-of-dreams-8c402ab3de4b>

### *Geologic Hazard Abatement District*

A Geologic Hazard Abatement District (GHAD) is a public agency formed by communities to provide a management structure and funding source to protect from landslides, erosion, liquefaction, flooding, and other hazards. Since this type of district is strictly related to addressing a geologic hazard in a specific community, it is considered a type of Special Assessment District. Enabled by the Beverly Act of 1979 (SB 1195), this local assessment district has the purpose of preventing, mitigating, abating, or controlling geologic hazards.

There are two ways of proposing the formation of a GHAD: a petition signed by at least 10% of real property owners within the district or a resolution by a local legislative body. The GHAD must also have a certified engineering geologist create a “plan of control” which would describe the geologic hazard, its location, and the area affected by the geologic area; and a plan for the prevention, mitigation, abatement, or control of the geologic hazard. The area within the district does not need to be contiguous, but it is required that lands within a GHAD must be specially benefitting of the proposed construction and that formation of the district is required to ensure the health, safety, and welfare of the residents within the GHAD.

Public hearings must be held prior to the formation of the district. The proceedings must be abandoned if owners of more than 50% of the assessed valuation of the proposed GHAD object. If objections are below this threshold, the legislative body may form the GHAD and initially appoint five property owners to form the board of directors. Thereafter, the district will become an independent entity with an elected board. A GHAD has the authority to issue bonds, purchase and dispose of property, acquire property through eminent domain, levy and collect assessments, sue and be sued, and construct and maintain improvements

This approach for addressing sea level rise would require significant community and stakeholder engagement and outreach, although it is a potentially useful tool for effectively managing sea level rise since a GHAD crosses property boundaries and according to Ca. Pub. Res. Code § 26531, the lands included within a district may be situated in more than one local agency. In the case of a proposed GHAD located within the jurisdiction of more than one local agency, according to Ca. Pub. Res. Code § 26551, the legislative body of the local agency wherein lies the greater amount of assessed valuation of real property as shown on the assessment roll last equalized by the county, can be the agency to initiate and conduct the proceedings to form a GHAD. Once formed, the GHAD would then be recognized by all of the local agencies the district is located within. A GHAD could alleviate some legal and financial liabilities among adjacent landowners and allow them to cooperate rather than individually struggle with addressing sea level rise impacts. It could also provide for a cost-effective solution to sea level rise adaptation, requiring only one geotechnical engineering firm and one plan to solve the problems of several landowners.

In 2011, a group of homeowners at Broad Beach in the city of Malibu created the first GHAD for sea level rise in the country. This public agency was created to combat sea level rise and beach erosion through beach nourishment. A majority of the 123 parcel owners agreed to fund the beach nourishment project, which was initially projected to cost \$20 million and has now increased to an estimated \$70 million. The project met opposition by some of the homeowners within the GHAD area, which has stalled implementation of the beach nourishment and resulted in a cost of \$20 million in legal fees and permitting costs (separate from the initial estimate of the project). Alternative solutions to adapt to sea level rise impacts aside from sand renourishment have been proposed, including building a sand retention artificial reef, but part of Broad Beach is in a Marine Protected Area, and stakeholders have not reached a consensus with the GHAD and the Coastal Commission.

## References

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<https://static1.squarespace.com/static/579d1c16b3db2bfb646bb4a/t/5b5f4da288251b0f228a990e/1532972477684/RBD+Financing+Guide+%28NHA+Advisors%29+Final+Version+2a.pdf>

California Department of Conservation Geologic Abatement District Overview

<https://www.conservation.ca.gov/cgs/Pages/GHAD.aspx>

Cal. Pub. Resources Code § 26531

<https://casetext.com/statute/california-codes/california-public-resources-code/division-17-geologic-hazard-abatement-districts/chapter-2-district-formation/article-2-lands-included/section-26531-lands-situated-in-more-than-one-local-agency>

Cal. Pub. Resources Code § 26551

<https://casetext.com/statute/california-codes/california-public-resources-code/division-17-geologic-hazard-abatement-districts/chapter-2-district-formation/article-3-initiation-of-proceedings/section-26551-local-agency-initiating-proceedings-if-territory-included-in-more-than-one-local-agency>

Curbed Los Angeles The Fight to Save Broad Beach News Article

<https://la.curbed.com/2020/4/22/21230250/sea-level-rise-malibu-california>

Broad Beach GHAD

<http://www.bbghad.com/>

### *Enhanced Infrastructure Financing District*

An Enhanced Infrastructure Financing District (EIFD) is a tool to fund economic development projects within a specified region through tax increment financing. Tax increment financing freezes tax revenues that flow from a designated project area to a city, county and other taxing entities at the base level in the current year. Additional tax revenue in future years (the increment) is diverted into a separate pool of money to be used to either pay for improvements or pay back bonds issued against the anticipated tax increment financing.

EIFDs are popular for level economic development, and provide a way to encourage new infrastructure, attract new capital deployment, and align public funding resources within a geographic area to support the businesses and residents. They do not increase property taxes. What EIFDs are able to fund has evolved over time but in regard to sea level rise adaptation, they can currently fund climate change adaptation projects including those related directly to sea level rise (AB 733), fund infrastructure maintenance costs (AB 1145), and issue bonds without public vote although they do have elevated public engagement requirements (AB 116). In general, EIFDs are able to fund infrastructure maintenance and housing development, economic development, transportation infrastructure, sewage treatment, and climate adaptation projects, among other uses.

The downside is EIFDs are somewhat complicated to implement. EIFDs are governed by a Public Financing Authority (PFA), a separate and independent governing body which consists of 5

members: a minimum of 3 elected officials and 2 community members who live or work locally within the district area. The PFA outlines what specific projects the District will fund by overseeing the creation of a District Infrastructure Financing Plan (IFP).

In 2022, Humboldt County Board of Supervisors adopted a resolution to establish an EIFD for the Samoa Peninsula for infrastructure improvement, spur job growth, and boost economic prosperity in the county. Two of the stated purposes of the EIFD is to assist “with the infrastructure investment gap by allocating tax increment to provide a stable source of financing for strategic infrastructure projects, and to other eligible EIFD uses” and “support land assembly and environmental mitigation”. The FAQ for the EIFD includes a subsection on sea level rise and states “the Samoa Peninsula EIFD can actually be used to reduce the impacts. An EIFD can fund infrastructure which specifically mitigates climate change including sea level rise.” Aside from this newly formed Samoa Peninsula EIFD, the only other proposed EIFD in California to mention potential sea level rise mitigation or adaptation is the proposed Waterfront Ballpark District at Howard Terminal in Oakland.

### References

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California Opportunity Zones Enhanced Infrastructure Financing Districts (EIFDs) Overview

<https://opzones.ca.gov/enhanced-infrastructure-financing-districts-eifds/>

Southern California Association of Governments (SCAG) Enhanced Infrastructure Financing District (EIFD) Overview

<https://scag.ca.gov/post/enhanced-infrastructure-financing-district-eifd>

GoHumCo Economic Development Samoa Peninsula EIFD FAQ

<https://www.gohumco.com/FAQ.aspx?QID=76>

GoHumCo Economic Development Samoa Peninsula EIFD Overview

<https://www.gohumco.com/273/Samoa-Peninsula-EIFD>

Waterfront Ballpark District at Howard Terminal Development Agreement Term Sheet

<https://cao-94612.s3.amazonaws.com/documents/July-7-2021-CED-Presentation.pdf>

### *Climate Resilience District*

Senate Bill (SB) 852 (Government Code § 62300 et seq.), is legislation approved by the Governor in September 2022 that created the Climate Resilience Districts Act. This act authorizes local governments and special districts to form climate resilience districts to raise and allocate funds for capital projects that address sea level rise, extreme heat and cold, wildfire and flood risk, and drought. The district is required to follow specified project priorities, and specified requirements for each project, and require those performing the work to use a skilled and trained workforce.

The following is an informative excerpt from a Client Update for Public Agencies about SB 852 by the law firm Liebert Cassidy Whitmore:

*SB 852 deems climate resilience districts an enhanced infrastructure financing districts and requires each climate resilience district to comply with existing laws concerning enhanced infrastructure financing districts. This would also require participating local entities to adopt resolutions allocating tax revenues to the climate resilience district that comply with existing law.*

*SB 852 also grants the climate resilience districts certain powers related to financing such as levying a benefit assessment, special tax, property-related fee, or other service charge or fee consistent with the requirements of the California Constitution. SB 853 requires climate resilience districts to prepare and review specified plans and budgets on an annual basis, to prepare an annual expenditure plan, an operating budget, and a capital improvement budget, and would require this material to be adopted by the governing body of the district and subject to review and revision at least annually.*

“Eligible projects” are projects designed and implemented to address climate change mitigation, adaptation, or resilience. Projects that may be appropriate in the Humboldt Bay region that are specifically referenced as eligible under this legislation include projects that address “...bay, or sea level rise, or rising groundwater, including wetlands or marsh restoration, vegetated dunes, living shorelines, erosion control, or levees.” This district could be formed by any of the Core Entities which include the County of Humboldt, City of Arcata, City of Eureka, and the Harbor District.

Since this a new legislation, there are no examples of newly formed climate resilience districts. However, the Sonoma County Regional Climate Protection Authority (RCPA) is an existing district that SB 852 deems a climate resilience district, and therefore grants this district the authority and powers available to such a district, one caveat being that the Sonoma County Regional Climate Protection Authority may not use any tax increment revenue unless it complies with the requirements for receiving and using tax increment revenue applicable to a new climate resilience district.

The RCPA was formed in 2009 to coordinate countywide climate protection efforts among Sonoma County’s nine cities and multiple agencies. The RCPA fosters collaboration, helps to set goals, pools resources, formalizes partnerships, and works across silos. The RCPA coordinates the activities of local jurisdictions with regional, state, and federal entities at both policy and administrative levels. As a coordination agency, the RCPA provides a forum for local elected officials to engage in dialogue on countywide issues, and enables discussions among local and regional entities on a wide range of issues related to greenhouse gas reduction, including planning, program management, and project delivery. The RCPA has three main areas of focus: decarbonization, carbon sequestration, and resilience. The RCPA is focused on securing grant funding for GHG reducing programs and projects as well as leading countywide climate planning efforts. Data collection, public information and education are significant elements of the climate protection effort. The RCPA and the local governments of Sonoma County were recognized as Climate Action Champions by the White House in 2014, to acknowledge the outstanding leadership in climate action demonstrated within and across each of the entities involved.

## References

Bill Text - SB-852 Climate resilience districts: formation: funding mechanisms  
[https://leginfo.ca.gov/faces/billNavClient.xhtml?bill\\_id=202120220SB852](https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB852)

Client Update for Public Agencies - SB 852 - Local Agencies Are Authorized To Create Climate Resilience Districts To Address Climate Change Effects And Impacts

<https://www.lcwlegal.com/news/sb-852-local-agencies-are-authorized-to-create-climate-resilience-districts-to-address-climate-change-effects-and-impacts/>

Sonoma County Regional Climate Protection Authority Website

<https://rcpa.ca.gov/>

## **g. Community Entity Related (Not Districts)**

### *Community Infrastructure Resilience Authority*

The concept of a Community Infrastructure Resilience Authority (IRA) is a funding option unique to the Resilient by Design Finance Guide (RbD Finance Guide). To best explain this concept, the following is excerpted from the RbD Finance Guide:

*The concept of a Community Infrastructure Resilience Authority is a combined premium and fee based approach that coordinates implementation of actions to make essential Bay Area infrastructure networks more resilient. Revenue producing elements of an IRA would include flood insurance premiums and fees for accrual of essential infrastructure asset retirement obligations (ARO).*

*Community Choice Insurance (CCI), as part of a Community IRA, offers the potential to apply flood insurance premiums to a tiered risk transfer program that can satisfy requirements for insurance and invest in flood risk reduction projects. New accounting requirements for public AROs create the opportunity to introduce fiscally responsible ARO fees, while coordinating similar fees related to essential private, regulated infrastructure that is commingled with or connected to essential public infrastructure.*

*In effect, an IRA offers the potential to delineate an array of choices for flood insurance buyers and users of essential infrastructure, such as water, wastewater, energy, transportation, and communications. Subject to comparisons of specific CCI and ARO choices, credits might be offered to CCI buyers for the flood risk components of applicable AROs, coordinated by the IRA. The fees and premiums derived from the choices would be used to identify and implement the most effective investments in resilient infrastructure networks and flood risk reduction.*

*Implementation of a Community IRA and CCI in collaboration with a regional governance structure could be supported by experts in risk financing, asset retirement obligations, flood insurance, reinsurance, and catastrophe bonds.*

The RbD Finance Guide provides the following benefits of a Community IRA:

- *Regional: local control and coordination*
- *Relatable: CCI funding based on risk*
- *Scalable: potentially significant funds for risk-mitigation investments and long-term solutions*
- *Attractive: potentially enhanced solutions for property owners needing flood insurance*
- *Defensible: fiscally responsible fees for AROs*
- *Flexible: choices among CCI and ARO options*

This option would, however, require extensive research, planning, and staff time to implement. It is also still an untested system.

Since Community IRA is a newer concept for potential funding being suggested in the Bay Area to fund flood risk mitigation projects, there are no examples available to reference. San Mateo OneShoreline also considered this funding option in 2020 before ultimately rejecting it in favor of pursuing a parcel tax by March 2022.

### References

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### *Memorandums of Understanding (MOU's) or Memorandums of Agreement (MOA's)*

A Memorandum of understanding (MOU) is a nonbinding agreement that states each party's intentions to take action, conduct a business transaction, or form a new partnership. The purpose of an MOU is to state a simple common cause between parties who intend to cooperatively work together. This could potentially include cost sharing for sea level rise adaptation work or collaboration. A Memorandum of Agreement (MOA) takes this a step further and establishes in common legal terms a "conditional agreement" where the transfer of funds for services are anticipated. It is a written formal understanding of the agreement between parties to cooperatively work together on an agreed upon project or meet an agreed upon objective.

In San Mateo County, there is a low elevation area that drains urban stormwater runoff for the Bayfront Canal and Atherton Channel watersheds. This area includes the municipalities of Redwood City, Menlo Park, Atherton, and Woodside, and unincorporated San Mateo County. In the past 70 years, this area has flooded 40 times due to high tides keeping flows from the Canal and Channel from draining into San Francisco Bay during rainfall events. Following a flooding event in 2017, the affected municipalities entered into an MOU that established shared funding responsibilities for the design, environmental documentation, and land access agreements for a project to reduce the frequency and impacts of flooding. This project was taken over by OneShoreline with the original MOU signees as partners.

### References

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University of Alaska Southeast Overview of Memoranda of Understanding/Agreement (MOU/MOA)

<https://uas.alaska.edu/admin/mous-moas.html#:~:text=It%20is%20important%20to%20understand,a%20bilateral%20agreement%20between%20parties.>

Memorandum of Understanding Among the San Mateo County Flood and Sea Level Rise Resiliency District, City Of Redwood City, City Of Menlo Park, Town Of Atherton, and County of San Mateo to Plan, Permit, Design, Construct, Operate and Maintain the Bayfront Canal and Atherton Channel Flood Protection and Ecosystem Restoration Project

<https://onshoreline.org/wp-content/uploads/2021/06/Bayfront-MOU-Construction-Executed-Feb.-3-2021.pdf>

#### **4. Private Funding**

Without designated funds from a federal or state entity, or if federal and state funding is inadequate, sea level rise collaborators may need to look to the private sector for help. In this case, cost sharing between local entities and local private funders is a potential funding option for sea level rise projects and collaboration.

##### **a. Nonprofit**

Like a partnership with a federal agency, or a state agency such as Caltrans highlighted above in the State Funding subsection above, a partnership with local nonprofits could help both key stakeholders and partner nonprofit organizations meet their sea level rise or climate change impact related goals by having the nonprofit sponsor provide assistance in completing a sea level rise project. Again, it is important to note a group-based framework would create a unified voice for sea level rise and flooding projects when communicating with potential funders. Local agency identification and connection with suitable nonprofit organizations would require some level of outreach, consistent communication, and staff time from agencies wishing to partner with a nonprofit. The long-term sustainability of such a partnership would also require projects or programs to remain mutually beneficial to both the local agency involved and the partner nonprofit, so partnering nonprofits should likely be already interested in sea level rise, flooding, or climate change related work.

There are many potential nonprofits that could be viable partners for regional sea level rise projects (see Humboldt Bay Sea Level Rise Regional Planning Feasibility Study Stakeholder Catalogue). The Humboldt Area Foundation (HAF), for instance, has expressed interest in partnering on a regional sea level rise program in some capacity. In 2021 they launched a new initiative called the Redwood Region Climate and Community Resilience Hub (“CORE Hub”). The mission of CORE Hub is to solve the climate emergency by transitioning built and natural systems to be both decarbonized and resilient at the same time. They have identified three main methods of accomplishing this, one of which is Community Engagement. Actions that fall under this method include “Funding and resourcing community convenings and dialogue for education, decision-making, and implementation with a strong, trusted, and replicable engagement process focused on tangible and beneficial outcomes.” Since this method of achieving HAF’s mission would be in alignment with the goals of a regional sea level rise collaborative effort, they could be an ideal candidate to consider for a partnership.

Furthermore, in 2022 HAF announced a new partnership to boost regional capacity for Public and Private Investment. The result of this partnership with their regional affiliate the Wild Rivers Community Foundation (HAF+WRCF) and the Arcata Economic Development Corporation (AEDC) is the Public Investing and Innovation Project (PIIP). In addition, they have received a generous amount of start-up funding from The California Endowment (TCE). They do not have a formal collaborative effort to prioritize or leverage projects yet, but the partnership does intend to make “significant regional impacts as public funding for climate mitigation, economic development, and equity increases.” Again, the goals of PIIP would match well with a regional sea level rise collaborative effort, thus working with HAF could open several possible avenues of private nonprofit funding.

Nonprofits are also possible partners for Social Impact Bonds; please see Social Impact Bonds subsection under subsection e. Bonds above for more information.

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Humboldt Area Foundation Redwood Core Hub Announcement

<https://www.hafoundation.org/About-Us/All-News/ArticleId/77/redwoodcore-announcement>

Redwood Core Hub Website

<https://redwoodcorehub.org/>

Humboldt Area Foundation Public Investing and Innovation Project (PIIP) Announcement

<https://www.hafoundation.org/About-Us/All-News/ArticleId/85/new-partnership-looks-to-boost-regional-capacity-for-public-and-private-investment>

### **b. Private Philanthropy or Investors**

Private philanthropy or investment includes funding from a variety of nongovernmental funders, ranging from individuals or family foundations to large national foundations or corporations, that donate or invest sums of money to support or create initiatives, which could include as sea level rise projects. As a long-term option, private funding sources are unlikely to be reliable nor have revenue potential, though they do have the benefit of requiring limited community engagement for authorization. Similar to nonprofits, a successful philanthropic or investor partnership would require outreach to identify an investor or philanthropic entity interested in sea level rise adaptation, high levels of communication, and staff time from entities within the partnership to manage the relationship with the investor or philanthropic entity.

Projects with well-defined objectives and timelines tend to attract interest from the private sector due to the generally short-term nature of philanthropy and investment, since this often presents as a one-time award of funds. The role of philanthropy in funding projects is often where there is significant government funding. However, rather than replacing or augmenting public funding, philanthropy wants to add value in areas that funding from public sectors does not address, that is, philanthropic investment wants to accomplish something that would not otherwise be possible.

In some cases of resilience infrastructure projects such as bridges or recreation areas, a long-term private investor could operate the project and therefore receive future bond proceeds, tolls, or a combination of both. With respect to sea level rise, this type of infrastructure could manifest as a shoreline structure or recreation area that was built to add resilience against sea level rise impacts that requires fees for the public to enter.

The Resilient by Design Finance Guide (RbD Finance Guide) provides the following excerpted examples for types of elements that might be appealing in grant applications to private philanthropy in the context of resilient infrastructure projects:

- **Community Engagement** – *Philanthropy may provide grants to ensure that marginalized communities have a voice in the planning stage.*
- **Multiple Benefit Projects** – *Philanthropy has been interested in the past several years in the concept of developing prototypes of multi-benefit projects where both human communities and natural communities benefit from the infrastructure. For example, using wetlands to mitigate storm surges. Multiple benefit could also mean an infrastructure project that provides a community park or opportunities for recreation. Philanthropy is interested in supporting park-poor communities.*
- **Community Equity** – *Philanthropy frequently has a focus on addressing needs that government programs have not served effectively, including marginalized communities. Projects that will reduce the vulnerability and increase resilience of low income or marginalized communities in the face of sea level rise will be appealing to philanthropy. Conceivably there might be ways to engage communities in implementation: for example, a job training program connected to the infrastructure project.*
- **Pilots That Can Be Replicated** – *Philanthropy often tries to position grants to seed new innovations and demonstrate new approaches. Projects that can credibly demonstrate this potential are appealing. Government funds often cannot take risks, and this is where philanthropy can play a role. Philanthropy does have a focus on helping communities adapt to climate change and there are likely to be opportunities for grants to design and implement innovative projects and approaches that can be demonstrations for other communities.*

One example of this type of partnership is the RbD Bay Area Challenge that was a year-long collaborative design challenge seeking to bring together local stakeholders, public officials, and experts from all over (local, national, international) to develop innovative community-based solutions to strengthen the San Francisco Bay Area's resilience to sea level rise, severe storms, flooding, and earthquakes. RbD created a Finance Guide for resilience infrastructure work that is used heavily in this memo to provide information on various funding options. The effort to expand the concepts of RbD into other areas of the state by replicating the community resiliency planning process received a \$1 million private philanthropic commitment from PG&E.

Private philanthropy and investors are also possible partners for Social Impact Bonds, please see Social Impact Bonds subsection under subsection e. Bonds above for more information.

## References

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### **c. Corporate Sustainability Initiatives**

Corporate sustainability is business approach aiming to create long-term stakeholder value through the implementation of a business strategy that focuses on the ethical, social, environmental, cultural, and economic dimensions of doing business. As part of these business practices, corporations might implement initiatives that create internal and/or support external environmental, social, or economic programs. This poses the possibility of receiving funding in the form of loans or financing for sea level rise adaptation projects.

More and more businesses are coming to recognize the importance of corporate sustainability initiatives. In fact, in 2021 the global total for sustainability-linked loans and financing exceeded \$1.6 trillion (an increase by a factor of three since 2019). There is also a growing number of companies committed to science-based targets, such as reduced carbon output through carbon offsetting projects, which could be met by partnering with local entities on sea level rise adaptation projects such as living shorelines or seagrass habitat restoration. Like other private funding options, the longevity of this funding option is not necessarily reliable. However, receiving corporate funds does not require voter majority or internal board approval for interested receiving entities, so there is some flexibility in obtaining and utilizing these types of funds.

One example specific to sea level rise is from OneShoreline where the city of Menlo Park was offered \$10 million contribution from PG&E to fund levees that would protect bayfront areas and simultaneously protect PG&E utility infrastructure. A less direct example that provides insight into potential sea level rise corporate sustainability initiatives is the Chevron Corporate Responsibility grant which was implemented in the San Francisco Bay Area to plant trees with the intention of addressing poor air quality. Chevron created this funding source for the North Richmond area because they suffer from some of the highest rates of asthma in the Bay Area, and Chevron has a historic role in degrading air quality. Coastal regions, particularly in coastal-dependent industrial zones, have similarly suffered from environmental impacts that can be directly attributed to corporations located in those areas. Long-term funding for a sea level rise project could therefore possibly follow the Chevron Corporate Responsibility model and identify a corporation to provide funding as part of their strategy to be both environmentally sustainable while achieving economic growth.

#### References

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The Strategic Race to Sustainability

<https://www.bcg.com/publications/2022/winning-strategic-race-to-sustainability>

Corporate Sustainability

[https://en.wikipedia.org/wiki/Corporate\\_sustainability](https://en.wikipedia.org/wiki/Corporate_sustainability)

## WHAT DOES "SUSTAINABILITY" MEAN IN BUSINESS?

<https://online.hbs.edu/blog/post/what-is-sustainability-in-business>

### The 3 Pillars of Corporate Sustainability

<https://www.investopedia.com/articles/investing/100515/three-pillars-corporate-sustainability.asp>

### A new business paradigm to address climate change

<https://www2.deloitte.com/us/en/insights/topics/strategy/corporate-climate-change-sustainability.html>

## **B. Additional Federal and State Funding Options**

### **1. Grants**

If a regional coordination effort does not have the ability to generate stable funds, it is likely local stakeholders will pursue grants to pay for planning, project development, and adaptation implementation projects. A grant is a financial award that does not need to be repaid, which is given by one entity to another in order to facilitate the goal of the granting entity by funding ideas or projects that provide a public service and stimulate the economy. Grant funding is not likely to be a reliable source for long-term project funding as the amount of funding available, the types of projects that would qualify, and the funding requirements involved are often variable over time. Depending on the program, a grant opportunity is also not necessarily guaranteed to be available consistently year after year nor guaranteed to be awarded.

Often grants are competitive and are awarded after an application process in which the granting entity reviews each proposal, pitting projects from entities that have a wide variety of community compositions and priorities, against each other. Grant applicants that have an urban population or represent larger populations in general, often have more sway in this kind of application process due to the larger impact the project is likely to have on the public. Eligible entities to apply for state or federal grants generally include cities, counties, special districts, tribes, universities, non-profits, or community-based organizations. Key components for competitive grants usually include cost estimates and a feasibility study or other local or regional plans that support the project. Generally, the funding of regional sea level rise projects through grants would benefit from the following:

- Development of priority regional projects (such as through a regional sea level rise resiliency investment plan, Climate Action Plan, Local Hazard Mitigation Program, or Public Works Plan)
- Development of multi-benefit projects to provide a wider range of funding opportunities (e.g., flood control, habitat restoration, public access)
- Development of a common strategy that is shared among regional partners
- Pre-identification and development of trusted partnerships  
A co-benefit of a regional forum is that if partnerships are already established, applicants can respond quickly to funding opportunities. Additionally, to help with equity practices, relationships should be established with community-based organizations (CBOs) to partner with for mutually beneficial funding applications.
- Pre-identification of leveraged funding for state and federal grants

One key grant opportunity is the California Coastal Commission Local Coastal Program (LCP) Local Assistance Grant Program. This competitive program has been and could likely continue to be an excellent funding source for Eureka, Arcata and County LCP updates to address climate change and sea level rise. A non-competitive, rolling application process that is separate from the Commission’s competitive grant rounds is also an option for Commission funding. This rolling application process is designed for targeted projects up to \$100,000 which have a high likelihood of success over a shorter grant term, such as a single feasibility study with targeted LCP changes. This grant opportunity could be very beneficial to a rural county like Humboldt.

Another key grant opportunity is the CalOES/FEMA Building Resilient Infrastructure and Communities (BRIC) Program. This program could be a good funding resource due to its focus on proactive planning rather than reactive disaster spending. Other potential sources could include owners and managers of local vulnerable assets such as Caltrans or PG&E.

New grants related to sea level rise are usually announced via Request for Proposals (RFPs) or Notice of Funding Opportunities (NOFO), which can be hard to find although there is a California Grants Portal. Email list-servs for specific government departments or programs are a direct way to find these grant opportunities. As mentioned before, grants can vary from year to year and new opportunities are offered sporadically. Currently available state and federal grant opportunities are listed in the table below, but will need to be updated regularly for accuracy if used for regional sea level rise collaborative efforts or by a future regional sea level rise planning entity.

**Table of State and Federal Grant Opportunities**

<b>State Agencies</b>	<b>State Grant Opportunities*</b>
CA Coastal Commission	LCP Local Assistance Grant Program (Grants can be non-competitive below \$100,000 and competitive above that)
CA State Coastal Conservancy	Prop 68 Climate Ready Program  Note: Governor Newson’s Sept 23, 2021 budget bill appropriates \$500 million for coastal resilience in the Fiscal Years 2022-23 and 2023-24.
CA Parks & Recreation	California Department of Boating and Waterways: Public Beach Restoration and Shoreline Erosion Control Regional Park Program
CA Dept. of Fish & Wildlife	Environmental Enhancement Fund Proposition 1 Restoration Grant Programs
CA Dept. of Water Resources	Integrated Regional Water Management Grants Prop 1 Coastal Watershed Flood Risk Reduction Grant Program Prop 68 Floodplain Management, Protection and Risk Awareness (FMPRA) Grant Program Flood Corridor Program Sustainable Groundwater Planning Grant Program Prop 84 Local Levee Assistance Program (LLAP)
CA Strategic Growth Council	Regional Climate Collaboratives (RCC) Program
CA Wildlife Conservation Board	Prop 1 Stream Flow Enhancement Program Prop 68 Wildlife Corridor and Fish Passage Program Prop 84 The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Program  Note: The General Grant Application Process does not require an applicant to identify a specific fund source when preparing an application

Caltrans	Sustainable Transportation Planning Grant Program
CalOES	Hazard Mitigation Grant Program Flood Mitigation Assistance Program Building Resilient Infrastructure and Communities (BRIC) Grant Program Pre-Disaster Mitigation Program  Note: Local Hazard Mitigation Program is an eligibility requirement Note: Application through CalOES and approval by FEMA
California Environmental Protection Agency	Environmental Justice Small Grant Program
Ocean Protection Council	Proposition 1 Protecting Rivers, Lakes, Streams, Coastal Waters, and Watersheds Grant Coastal Environmental Justice Grant Proposition 68 Coastal Resilience Grant SB 1 Bond Funds
State Water Resources Control Board	Prop 1 Water Recycling, Stormwater, Groundwater Grant Program Prop 68 Groundwater Treatment - Remediation Grant Program Seawater Intrusion Control Loan Program Clean Water Act Section 319 Nonpoint Source Pollution Grant  Note: Climate Action Plan will gain more points on applications
<b>Federal Agencies</b>	<b>Federal Grant Opportunities</b>
Dept. of Housing and Urban Development	Community Development Block Grant – Disaster Recovery Program
Dept. of Homeland Security	Regional Resilience Assessment Program (RRAP)
Dept. of Interior Bureau of Reclamation	WaterSMART Environmental Water Resources Projects
Federal Highway Administration	Emergency Relief for Federally Owned Roads Program
FEMA	Hazard Mitigation Grant (HMGP) Program Flood Mitigation Assistance (FMA) Grant Pre-Disaster Mitigation (PDM) Grant Building Resilient Infrastructure and Communities (BRIC) Grant Program (see CalOES above) Community Assistance Program – State Support Services Element (CAP-SSSE)
NOAA	National Coastal Resiliency Grants Program
US Fish & Wildlife Service	National Coastal Wetlands Conservation Grant Program Farm Bill Conservation Programs
US Army Corps of Engineers	Planning Assistance Continuing Authorities Program (CAP) Floodplain Management Services

\*Additional state grant opportunities can be searched for at California Grants Portal ([https://www.grants.ca.gov/?mc\\_cid=5a1d172a14&mc\\_eid=79451f60a7](https://www.grants.ca.gov/?mc_cid=5a1d172a14&mc_eid=79451f60a7)).

## 2. Legislation

Various legislation, recently approved or in process, could provide additional funding opportunities. In order to access the funding available from approved or soon to be approved bills, it is highly important and urgent that the Humboldt Bay region create some sort of regional group that can access funding targeted towards regional entities. If the region can organize relatively soon as the Humboldt County Civil Grand Jury suggests, it is possible there will be slightly less competition from other areas. ARCCA provides an online Legislative Tracker to follow bills related to climate change and adaptation; open the following link for more information: [https://arccacalifornia.org/2021-legislative-tracker/?mc\\_cid=5a1d172a14&mc\\_eid=79451f60a7](https://arccacalifornia.org/2021-legislative-tracker/?mc_cid=5a1d172a14&mc_eid=79451f60a7)

- AB 691 - State lands: granted trust lands: sea level rise – approved 2013 – requires Public Land Trustees to provide the State Lands Commission with a sea level rise Impact Assessment (IA) of their granted lands. The Harbor District and City of Eureka are Land Trustees. The Harbor District, however, has not completed/submitted their IAs due to changes in staff and capacity issues. This could affect funding and assistance coming to HB to address sea level rise if state-level evaluations are supported by these IAs or if future funding opportunities require completed IAs.
- SB-1 (Atkins and Petrie-Norris) Sea Level Rise Mitigation and Adaptation Act of 2021 – approved – will require the Coastal Commission to establish guidelines for the identification, assessment, minimization, and mitigation of sea level rise for each local coastal program. Although the Coastal Commission already addresses sea level rise, this bill adds to the California Coastal Act the goal of “anticipating, assessing, planning for, and, to the extent feasible, avoiding, minimizing, and mitigating the adverse environmental and economic effects of sea level rise within the coastal zone.” It will create the California Sea Level Rise State and Regional Support Collaborative within the Ocean Protection Council (OPC) which will provide \$100,000,000 annually for grants to local and regional governments to update local and regional land use plans with sea level rise updates and fund plan implementation. It will authorize the Secretary for Environmental Protection to expend \$2 million in grants in which \$500,000 is earmarked for sea level rise in disadvantaged communities.
- AB 72 (Petrie-Norris) Coastal Adaptation Permitting Act of 2021 – approved – will require the Natural Resources Agency to explore and implement efforts to create a more coordinated and efficient regulatory review and permitting process for coastal adaptation projects that use natural infrastructure.
- SB 1078 (Allen) sea level rise revolving loan program – pending – would create a Sea Level Rise Revolving Loan Pilot Program to help coastal cities plan proactively for the effects of climate change. The law draws heavily from the framework of SB 83.
- SB 83 (Allen) sea level rise revolving loan program – pending, vetoed by Governor – would require OPC and State Coastal Conservancy (SCC) to develop a sea level rise revolving loan program to provide low-interest loans to local jurisdictions to purchase properties vulnerable to sea level rise.
- AB 11 (Ward) Regional Climate Change Authority – pending – would require the Strategic Growth Council (SGC) to establish and administer a regional climate collaborative program for under-resourced communities to access climate change mitigation and adaptation grants. SGC would establish regional climate change authorities to receive annual grants and to coordinate among the region’s stakeholders.

- AB 50 (Boerner Horvath) Climate Adaptation Center and Regional Support Network - pending - would establish the OPC Climate Adaptation Center and Regional Support Network to provide information and a state technical expert “point person” to support local governments in planning for sea level rise.
- AB 51 (Quirk) Regional Climate Adaptation Planning groups – pending – would require the SGC to develop guidelines for the creation of regional climate adaptation planning groups and criteria for regional climate adaptation plans. This would include grant funding to SGC certified regional adaptation planning groups.
- AB 897 (Mullin) Office of Planning and Research: regional climate networks: regional climate adaptation and resilience action plans – pending – would require OPR to provide technical assistance to regions interested in creating a regional climate network and regional climate adaptation and resilience action plans. OPR would be required to make recommendations of state funding sources for regional networks and plans, especially for vulnerable and under-resourced communities.
- AB 1500 (Garcia) Safe Drinking Water, Wildfire Prevention, Drought Preparation, Flood Protection, Extreme Heat Mitigation, and Workforce Development Bond Act of 2022 – Failed on February 1, 2022 – would finance capital projects protecting California against the hazards posed by sea level rise, wildfires, droughts, extreme heat and other natural disasters. If approved by the voters, would authorize the issuance of bonds in the amount of \$7,080,000,000 pursuant to the State General Obligation Bond Law to finance projects for safe drinking water, wildfire prevention, drought preparation, flood protection, extreme heat mitigation, and workforce development programs.

### **C. Public Perception of Funding Options**

Based on results from a survey conducted by Cal Poly Humboldt (formerly Humboldt State University) and Humboldt County of the general public and coastal professionals regarding sea level rise, the vast majority of public and professional survey respondents supported funding sea level rise-related activities (see 2021 Survey Results Figures). The most support was shown for the use of external grant funds when available, the passage of state or federal laws or programs with mechanisms to fund sea level rise work, and the use of public funds for sea level rise adaptation projects on private lands that will protect both public and private assets. A slight majority supported passing a local tax measure to address sea level rise (public survey: 44% support and 31% oppose; coastal professional survey: 47% support and 18% oppose). Less support was shown for encouraging insurance companies to require upgrades on homes and businesses to reduce sea level rise risks as a condition of insurance. The least desirable options were to require individuals and businesses to pay for their own sea level rise protection to minimize local government costs, and to increase funding for sea level rise protection by cutting other local programs and services.

In the surveys, respondents were also given the opportunity to provide additional comment and share ideas about funding. Coastal professional responses included modifying federal budgets to accommodate coastal adaptation funding, multi-benefit funding opportunities (such as creating a regional mitigation bank or adding sea level rise considerations to proposed projects like road or trail improvements), and encouraging considerations of equity in funding options (such as the unequal funding burdens that certain taxes impose on poorer communities or individuals).

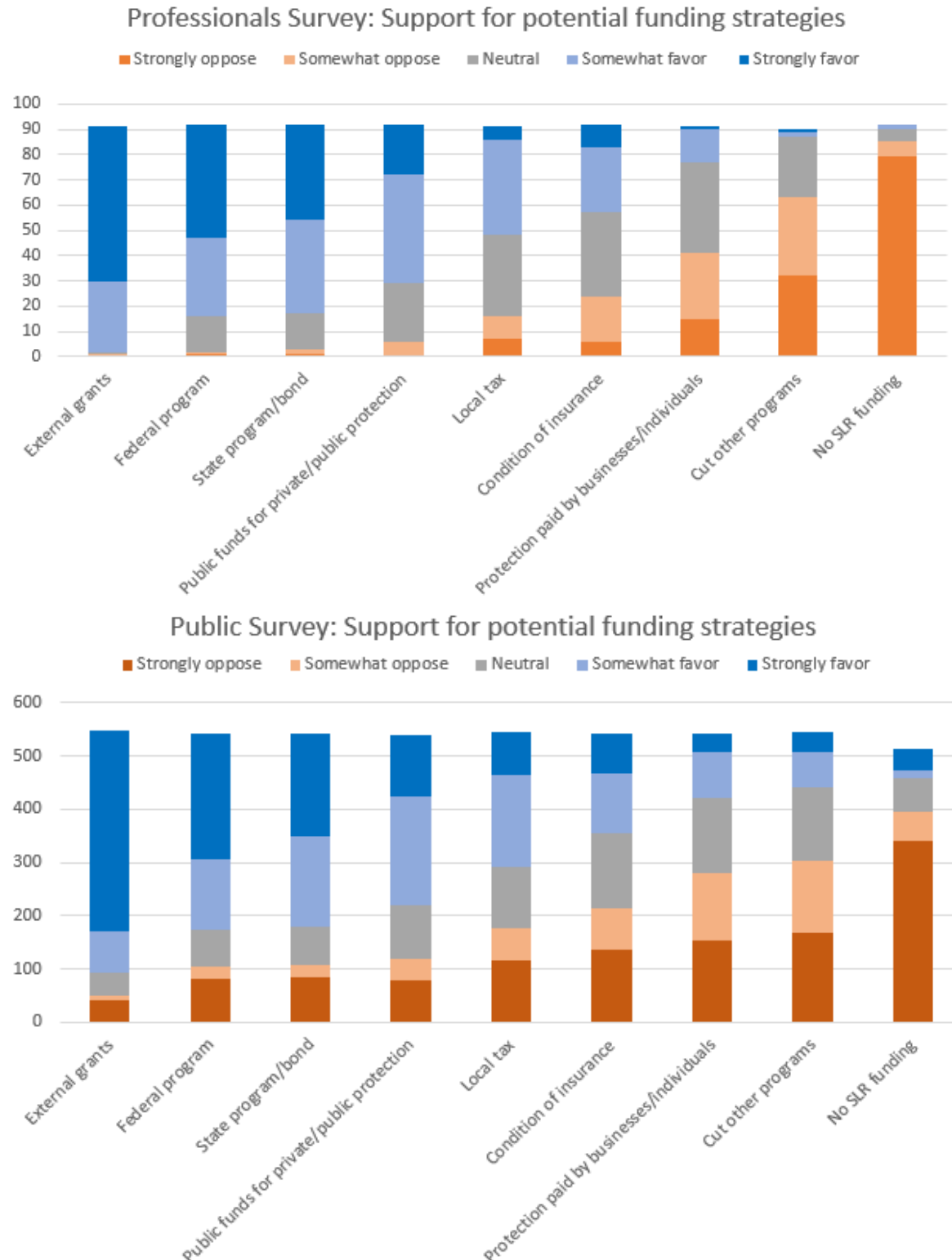


Figure 9. 2021 Survey Results Figures: Indicate your level of support for various potential funding mechanisms for sea level rise planning and adaptation (either a stand-alone project or within other projects).

Separate from the survey and interview process undertaken by the County, a graduate student named Kristen Orth-Gordinier at Cal Poly Humboldt (formerly Humboldt State University) conducted a series of interviews of coastal professionals for her thesis entitled “Social Science Research to Help Advance Regional Coordination and Collaboration of Sea Level Rise Planning and Adaptation on Humboldt Bay”. Interview questions asked 46 Coastal Professionals their opinion on a variety of issues, including funding options and opportunities. Portions of her thesis pertaining to funding are included below.

While many of the SLR adaptation efforts on Humboldt Bay to date have been paid by state and federal grants, some interviewees noted that grants are often “*opportunistic*,” and do not “*promote efficiency or strategic planning and implementation*”. And grants often do not assist with staff capacity issues, as this interviewee noted,

*“The jurisdictions don't typically hire more staff because the grants limited time and hiring is expensive, and you don't want to hire someone to just lay them off. So, you hire a consulting firm. So, in the end, the staff at the jurisdictions who are holding the longer-term picture don't really get extra time to”*

Although grants may not assist directly in developing capacity and institutional knowledge internally, this did not deter agencies/organization from spending time pursuing grants. According to the survey, 42% of respondents stated that their agencies have been or were currently engaged in collaborating with other agencies/organizations to apply for and/or secure SLR-related project funding through grants or other sources. Of those not engaged, 96% were interested; this was the activity with the highest interest out of the series of 10 different types of collaborative activities presented in the survey.

Another capacity challenge was the need for designated staff to focus on SLR efforts and provide consistent, sustainable momentum. A government employee stated,

*“Government doesn't really want anybody to have any free time because that would be a waste. So, if everybody's fully allocated to stuff, when something new comes up, you have to find a way to break people loose and create new allocations and say this is important.”*

This becomes a “*multiplier on the capacity issue...when you try to create new or grow interdepartmental coordination*”, which would be critical for regional coordination. The same interviewee noted that “*in the absence of a funding opportunity, I think that's incredibly hard to sustain coordination and commitment at a scale that goes so far beyond any particular agency's mandate, or capacity, really*”. Which once again, noted the lack of current capacity of staff to deal with the fairly recent emphasis on SLR issues. Overall, interview participants noted a local need for funding for staff to enable the time and focus necessary to plan for SLR adaptation.

“Social Science Research to Help Advance Regional Coordination and Collaboration of  
Sea Level Rise Planning and Adaptation on Humboldt Bay”

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<https://digitalcommons.humboldt.edu/etd/568/>

Interviewees wondered where the funds for SLR adaptation would come from and some postulated that state and federal funding resources would be necessary. A concern shared by many interviewees was future competition for funding resources between locations as well as other hazard types. Some interviewees, such as this coastal professional, worried that the Humboldt Bay region would be a low priority compared to urban centers,

*“You think about how much of California’s people and infrastructure is really low, we’re going to be competing for the same pots of federal money with the San Francisco Bay Area, okay, we’re nothing compared to them in populous or Gross Domestic Product.”*

However, some interviewees thought that the sooner relative time scale of impacts to Humboldt Bay could elevate the priority of the region for funding. Another competition for funding could be due to the prioritization of other hazards, as stated by this interviewee,

*“The next thing is going to be fires, especially in California. If you were a year ago wanting to get funding for sea level rise, you may have gotten some grant money here or there and been able to build up some type of program. Today, I think 90% of the available money is going to go to forest research, planning, [and implementation,] because more people are affected by fire than are affected by sea level rise.”*

In addition to competition for future funding resources, interviewees noted how current emergency priorities, such as the COVID-19 pandemic, can hinder the prioritization of resources to an issue that is perceived as not having immediate impacts, such as SLR. An interviewee mentioned this when talking about SLR planning and adaptation efforts,

*“If you’re talking about a government entity doing that, then they need the funds to do it. Which now is going to be increasingly difficult with dealing with a pandemic, and even more costly ... and the lack of tax dollars coming in through sales, and all the all the impacts from COVID.”*

In addition to re-prioritization of funds, as this interviewee noted, the region may be dealing with long-term effects of reduced funding. In the survey question about engagement and interest in collaborative activities, only 29% of respondents have or are currently contributing funding towards SLR-related projects that benefit multiple agencies/organizations and 65% were interested, which was the lowest interest shown for any of the activities presented in the survey.

**“Social Science Research to Help Advance Regional Coordination and Collaboration of  
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Although insufficient funding was a notable challenge, many interviewees also shared ideas or strategies for funding SLR planning and implementation. Many saw an opportunity for regional coordination to set the region up for receiving more significant amounts of funding, pooling resources, and creating stakeholder buy-in. A coastal professional commented,

*“In these regional discussions, we need to start thinking about what we can afford locally as a community to do this stuff. That's another thing that's going to drive this and be too late. If we wait for 30 or 40 years, and then want to jump on it, we're not going to be able to compete with San Diego, LA, and San Francisco. Whereas, if we get creative now, there's probably funding opportunities for us to do things in the next 10-20 years, that could help us 50-60 years out.”*

Essentially this interviewee suggests that working together can give the region a louder voice in state and federal funding conversations. Many commented that the region has and can continue to strategically place representatives in state conversations,

*“Lobbying groups can end up being mutually helpful in securing resources... [for example,] the county has a supervisor on the Coastal Commission, a supervisor that's on the Rural Counties Association, a supervisor that's on the California Association of Counties.”*

Generally, interviewees thought the biggest funding opportunities could come from state and federal sources and a few noted that the state could use funding to incentivize SLR planning, retreat, or other state priorities.

Another funding opportunity discussed by interviewees focused on strategic regional project planning through short-term investments and focusing on SLR projects with multiple benefits for multiple stakeholders and jurisdictions. Short-term investments or projects that were urgent currently due to other reasons, such as a failed culvert or unsafe road, could consider SLR in a way that was appropriate for phased adaptation. An interviewee noted that,

*“If we make targeted investments in certain locations, especially the most vulnerable locations, we might be able to buy ourselves some time...” and “...even if something's too expensive to address now, there might be some smaller things that we can consider. If we just look at future scenarios and not more short-term scenarios, then we're kind of losing an opportunity to make strategic investments.”*

Several interviewees suggested that regional-wide planning could help identify projects and priorities to implement before they are urgent,

*“Then it'll be much more cost effective, we'll already be looking at the next thing as opposed to trying to react just to sea level rise. It won't be sucking up all our resources to be moving roads and moving infrastructure when it becomes urgent. And so, we can plan for and gather the funding before it becomes an emergency.”*

This interviewee indicated that strategic, timely investments in short-term projects with future phases were a potential funding opportunity for the Humboldt Bay region that could be supported by a regional coordination effort.

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## **D. Funding Considerations and Example Funding Strategies**

The feasibility of a funding strategy will be an important consideration in choosing a regional framework. When potentially feasible frameworks are selected for consideration, additional funding strategy research should occur for each framework. Regional partners should provide feedback on what may be feasible or acceptable for their jurisdiction.

Important considerations when choosing a regional framework include identifying where the startup funds come from and how to develop a stable long-term funding strategy. The benefits of involvement in a funding collaboration will need to be communicated to potential partners and beneficiaries. If the benefit seems great enough, there may be existing resources that can be tapped for startup funds from partners who would see a direct benefit more quickly than others, such as asset owners and managers.

The considerations for a long-term funding strategy are partially dependent on the scope of the regional framework. For example, if there are current funding streams available to existing agencies, could revising that agency's authority to include sea level rise efforts provide a startup funding source for a framework approach or only for individual projects? Can aspects of sea level rise planning efforts be coupled with compatible planning processes, such as the Humboldt County Hazard Mitigation Plan which is updated every five years? Ideally, a long-term effort should not rely only on grant funding in order to maintain a dependable funding stream and thus preserve the consistency of a programmatic approach and continual involvement of all stakeholders in sea level rise planning.

Overall, while grants reduce strain on local resources, they would not be ideal for ongoing regional coordination, and reliance on grant funding could result in inconsistencies in efforts. Grants are available short term, and projects will often need multiple grants for phased work and may lack adequate planning and monitoring funding. Grants are likely better for discrete adaptation projects. Grant applicants for adaptation projects may need to have the capacity and expertise to manage complex multi-million-dollar projects. Based on the significant amount of Coastal Commission retained jurisdiction on Humboldt Bay, they are likely a good source for planning funds as long as planning and projects are relative to the LCP updates.

Many locations along the coast of California and the U.S. will be competing for similar pots of money for climate change resilience planning and adaptation implementation projects. It would be advantageous for the Humboldt Bay region to create a regional group (can be formal or informal) to be more competitive for state funds that will be available in the next few years for regional planning. Partnerships with community-based organizations (CBOs) and consideration of environmental justice will also make the region more competitive and promote more equitable local planning. Creating a regional collaborative group and developing partnerships with CBOs are initial tasks that can be started now to position the region favorably for upcoming funding opportunities.

The scope of a sea level rise regional planning framework can vary, as discussed in other Task 2 memo sections, which impacts the level of funding needed. Some examples of regional frameworks or collaborations with a variety of focuses include the Humboldt Bay sea level rise Adaptation Planning Working Group (2013-2015), the Climate Action Plan (2019-current), Humboldt County Association of Governments, Humboldt Waste Management Authority (1999-current), Reclamation District #768, and the San Mateo OneShoreline Sea Level Rise Resiliency District. Overviews of funding strategies for each example are outlined below:

- Humboldt Bay Sea Level Rise Adaptation Planning Project

This regional sea level rise effort was funded by a State Coastal Conservancy grant. The grant applicant was a local nonprofit, the Coastal Ecosystems Institute of Northern California. The grant funded consultants to conduct a shoreline inventory, mapping, and sea level rise vulnerability assessment (2010-2013), and to facilitate Adaptation Planning Working Group (APWG) meetings (2013-2015) along with additional technical work. The APWG consisted of 22 regional stakeholders and attendees were not paid through the grant to participate. Humboldt County and the Harbor District were project co-chairs. This effort concluded in 2015 after the funding expired.

- Regional Climate Action Plan (CAP) Partnership

The CAP partnership includes Redwood Coast Energy Authority (RCEA), the County of Humboldt and the cities of Arcata, Eureka, Blue Lake, Ferndale, Fortuna, Rio Dell, and Trinidad. The County and cities signed an MOU to facilitate the partnership. The County has generally taken the lead and contracted with RCEA for technical consulting. This planning effort has been paid with general funds from the participating agencies and with assistance from RCEA through small grants for participating agencies. RCEA's small grants are from a PG&E strategic energy planning initiative grant. RCEA is also providing ongoing coordination support through their general funds.

The initial effort for the CAP was supported by the Civic Spark program, which helps build local government capacity by placing a dedicated Civic Spark Fellow with a host entity at a relatively low cost. Civic Spark Fellows have been utilized by Humboldt County for the CAP as well as this Regional Sea Level Rise Planning Feasibility Study. The Climate Corps is a similar program that could be used to enhance regional capacity and provide a dedicated focus on sea level rise.

A funding strategy has not yet been identified for project implementation or to fund a dedicated coordinator; however, the planning process is researching potential sources of funds that could be pursued as a region or by individual partners.

- Humboldt County Association of Governments (HCAOG) Joint powers agreement.

This Regional Transportation Planning Agency was created by legislative statute and is funded by state transportation funds (gas/diesel taxes and DMV user fees). Members include the cities of Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Rio Dell, Trinidad, and the County of Humboldt. Local jurisdictions do not fund HCAOG. Consistent state funding provides basic administrative functions and if available, remaining funds can be spent on local projects. Some additional discretionary funds are used for state-specified purposes.

Recently, HCAOG received one-time state funding through the Regional Early Action Planning (REAP) grant program which supports efforts that accelerate housing production across California. It will be used to fund a regional CEQA Vehicles Miles Traveled (VMT) study and hire a dedicated CAP coordinator for the two-year funding cycle. HCAOG qualified for this funding due to its status as a regional entity as a Council of Governments (COG).

- Reclamation District #768

District #768 is a special district overseen by Humboldt LAFCo and funded by a special tax on the properties in the District. The District was awarded \$10 million in Public

Assistance funds from CalEMA/FEMA in 2005 to repair approximately 5 miles of its dike system.

- San Mateo OneShoreline (officially San Mateo County Flood and Sea Level Rise Resiliency District)

OneShoreline is an independent government agency working throughout San Mateo County to make the county more resilient to the climate change-related impacts of sea level rise, flooding, and coastal erosion. The agency, which began operation in January 2020, plans, secures funding, and builds projects to protect the county from sea level rise impacts, enhance the environment, and create recreational opportunities.

The initial funding contribution for OneShoreline was allocated by population (broken into 3 tiers) of the 20 participating cities and the county. Its current operational funding is \$1.5M annually for the first 3 years that comes primarily from contributions by the County and cities, plus portions of flood zone taxes when those areas have active projects. One of their goals within the first 3 years is to pursue a sustainable long-term revenue source. One source being evaluated is a parcel tax that would support sea level rise and wildfire mitigation efforts.

## References

OneShoreline website  
<https://oneshoreline.org/>

San Mateo County Civil Grand Jury 2020-21 Report  
[http://www.sanmateocourt.org/documents/grand\\_jury/2020/Sea%20Level%20Rise.pdf](http://www.sanmateocourt.org/documents/grand_jury/2020/Sea%20Level%20Rise.pdf)

## V. Regulatory and Feasibility Pathways and Barriers (Task 2.4.)

*Identify regulatory and feasibility pathways and barriers to forming and implementing a regional sea level rise planning framework, and ultimately to adopting and implementing a Humboldt Bay regional sea level rise adaptation plan.*

### A. Regulatory and Feasibility Pathways

At present, regional sea level rise planning consists of informal coordination among Humboldt Bay stakeholders primarily through various meetings. Aside from specific project contracts, there are no formal agreements or established regional planning efforts. There was a countywide coordination effort at one time called the Adaptation Planning Working Group, but that collaborative effort ended in 2015 due to lack of funds. That effort did not have a formal contract among participants, so there is no precedent yet for formal regional agreements concerning sea level rise in the Humboldt Bay region.

According to the County's 2021 Coastal Professionals Survey, a formal collaborative is the most supported option for regional collaboration, with 79% of respondents favoring this option. A majority of respondents also favored empowering an existing regional authority (65%) and engaging in informal coordination (55%). Respondents had the most neutral responses (35%) for

establishing a new regional authority, which may be due to the uncertainty regarding what such a change would entail. According to this survey, over 60% of respondents strongly opposed and another 25% somewhat opposed the idea that no regional planning should occur.

Following the question on support of different regional collaboration options, survey takers were given the open-ended opportunity to share their thoughts on regional collaboration. Additional ideas expressed in this section included the development of a multi-agency task force to identify action items for areas across jurisdictions and to develop MOUs to outline budgets and timelines for those areas, as well as to consider the political aspects of which agency is best suited to regionally manage sea level rise on Humboldt Bay and will not create resentment from other agencies.

Sections III and IV of this memo contain various regulatory and funding options for forming and implementing regional sea level rise planning and adaptation in the Humboldt Bay region. The regulatory options are broken down into LCP modifications and organizational options. Funding options are divided in federal, state, local and private sources. These are not the only options that could be considered, they are not necessarily meant to be used as standalone strategies, and some of the options may not be reasonably feasible given the hurdles they would face such as amending the Coastal Act. However, these options are hopefully sufficient to facilitate meaningful dialogue and consideration of a regional approach best suited to the Humboldt Bay region for the management of sea level rise impacts.

It is likely that more than one regulatory framework or funding option will need to be implemented at any point in time or over a span of time. The information and options in this memo can be used by decision makers for regional collaboration at time or spatial scale. There are two particularly useful implementation models for sea level rise adaptation that were identified during the stakeholder feedback process: a phased model and a nested spatial scale model. These models can be utilized for addressing sea level rise regionally and collaboratively, as well as being appropriate for individual jurisdictions.

Phased Adaptation Model. A phased adaptation model is the incremental implementation of adaptation and resilience strategies over time as sea level rises. This model, also known as an adaptation pathway approach or trigger-based adaptation, utilizes different adaptation strategies over time as certain sea level rise thresholds, or adaptation implementation triggers, are met. Given the changes that are anticipated to the coastline over the near-, middle-, and long-term, the accelerating pace of sea level rise, and the decades of preparation often required to plan for and implement significant infrastructure adaptation, phased adaptation addresses the needs of coastal communities as the circumstances on the shoreline change. For example, adaptation phases can start with protection strategies, such as hard armoring, or accommodation strategies, such as dike repair and elevation, and lead to eventual relocation in the longer term as protection and accommodation strategies become infeasible due to increasing hazards, costs, and coastal resource impacts.

Regional collaborative frameworks and funding strategies associated with adaptation could be implemented in a similar phased manner. Phased implementation of regional collaboration can be reactive as necessary to the changing coastal conditions and adaptation pathways as best available science is updated. When planning and collaboration is done in phased stages, it can bring together the necessary stakeholders as needed which reduces upfront costs, reduces immediate staff burden for core entities, and allows for the time needed to plan for and develop longer-term adaptation strategies.

More guidance on phased adaptation can be found in the California Coastal Commission guide “Critical Infrastructure at Risk: Sea Level Rise Planning Guidance for California’s Coastal Zone November 2021 Draft” at the following link:

[https://documents.coastal.ca.gov/assets/slr/guidance/SLR%20Guidance\\_Critical%20Infrastructure\\_11.3.2021\\_FINAL\\_FullPDF.pdf](https://documents.coastal.ca.gov/assets/slr/guidance/SLR%20Guidance_Critical%20Infrastructure_11.3.2021_FINAL_FullPDF.pdf)

Nested Spatial Scale Implementation. Although this research document is primarily focused on facilitating large-scale regional collaboration, the collaboration options presented can be utilized at smaller scales to fit the needs of a specific coastal community or to address the specific conditions of certain stretches of the shoreline. These smaller scale efforts could potentially be nested, meaning they could work together within a unified greater effort to adapt to sea level rise, under a larger spatial scale such as the whole Humboldt Bay region. The Coastal Commission’s Local Government Sea Level Rise Working Group (LGRWG) has recognized smaller scale adaptation, which they refer to as “neighborhood-scale” or “community adaptation”, as a potentially useful framework for ensuring a balanced approach to adaptation throughout a larger region.

Smaller scale planning has the advantage of bringing together only relevant and therefore fewer stakeholders, burdening less core entity staff, and requiring less upfront adaptation implementation costs. Smaller scale planning also has the benefit of being more responsive to the specific needs of a community or section of shoreline instead of having to accommodate these needs within the general guidance of a broader sea level rise planning effort. By aligning these smaller scale nested sea level rise planning actions, a nested spatial scale implementation effort could potentially contribute to consistent and efficient decision-making processes for the entire Humboldt Bay region. As with the phased implementation model, nested spatial scale implementation allows for more immediate action which therefore also allows for stakeholders and communities to prevent more immediate negative impacts of sea level rise while still planning for long-term solutions. Building smaller scale partnerships also provides the basis for strong relationship building necessary to bring core entities and stakeholders to consensus for larger planning efforts and facilitate better partnerships. By still being part of a greater effort, a nested approach also helps to avoid unnecessary duplication of effort by participating stakeholders.

The Coastal Commission has noted in “Coastal Commission Staff Comments on the Humboldt County Draft Research Memo for the Sea Level Rise Regional Planning Feasibility Study” that in some cases, a nested neighborhood-scale approach *“may be appropriate for such strategies to include armoring, at least in the short term, for sections of shoreline for which strict application of the Coastal Act might not allow armoring, but where (1) the context suggests that armoring is a more practical approach that can still appropriately minimize and mitigate impacts to coastal resources overall (e.g., within areas that are already significantly developed and armored and which are unlikely to support significant beach/habitat area even if there was no armoring); and (2) when such an approach is accompanied by appropriate mitigation for impacts and additional strategies that will ensure protection and enhancement of coastal resources elsewhere (e.g., requiring managed retreat in other places); and (3) when armoring approaches are proposed in tandem with requirements for future shoreline planning and implementation of strategies to achieve preferred long-term outcomes. The Cities of Eureka and Arcata are relatively densely developed compared to some areas of the County, which may have more areas where mitigation, managed retreat of land uses in highly vulnerable urban areas, or nature-based adaptation solutions could be viable as part of a regional adaptation strategy. Critically, a regional approach to LCP planning in the Humboldt Bay area may allow for better exploration of these and other adaptation ideas that allow local governments to think creatively about adaptation.”*

More guidance on aligning smaller scale SLR planning with larger efforts can be found in the Ocean Protection Council guide “Making California’s Coast Resilient to Sea Level Rise: Principles for Aligned State Action” at the following link:

[http://www.opc.ca.gov/webmaster/media\\_library/2020/05/State-SLR-Principles\\_FINAL\\_April-2020.pdf](http://www.opc.ca.gov/webmaster/media_library/2020/05/State-SLR-Principles_FINAL_April-2020.pdf)

More guidance on “neighborhood-scale” or “community adaptation” adaptation can be found in the California Coastal Commission’s “Coastal Adaptation Planning Guide: Residential Development” at the following link:

<https://www.coastal.ca.gov/climate/slr/vulnerability-adaptation/residential/>

## **B. Regulatory and Feasibility Barriers**

On Humboldt Bay the primary regulatory barriers to regional sea level rise planning and implementation are the existence of Coastal Commission retained jurisdiction immediately surrounding and extending inland from the bay, and the existence of multiple land use jurisdictions. Pursuant to the Coastal Act, the Commission retains permit jurisdiction on public trust lands while LCP authorities have permit jurisdiction within their respective LCPs in the remainder of the Coastal Zone. Only the Commission could approve regional sea level rise adaptation projects on public trust lands, which include most of the area vulnerable to sea level rise this century on Humboldt Bay. In addition, given that the Commission’s permit jurisdiction covers most of the area vulnerable to one and two meters of sea level rise, it may be difficult for LCP authorities to secure funding for regional sea level rise planning on Humboldt Bay, other than from the Commission.

For regional sea level rise planning on Humboldt Bay to be most effective, a regional collaborative effort would likely include at a minimum, Humboldt County, the cities of Eureka and Arcata, the Harbor District, and the Coastal Commission. According to the County’s 2021 Stakeholder Interviews, 82% of the 18 stakeholder groups interviewed explicitly expressed interest in having regional collaboration, and all three LCP authorities (Eureka, Arcata, and the County) plus the Coastal Commission were part of that majority. However, each of these LCP authorities have their own community priorities; thus, bringing everyone onto the same page politically could take considerable time and mediation and may not be successful. Depending on what regional framework is chosen, some entities might have to cede some of their power to a regional entity or accept some level of impact to their jurisdiction to protect assets in another jurisdiction. Given limitations on funding and capacity, and with the focus of a regional collaborative framework, some individual entities’ priorities and assets might need to be reprioritized or not addressed at all in favor of higher priority assets. The variety of conflicting agendas concerning sea level rise could create community stress or political conflicts.

In addition to governmental agency cross-jurisdictional issues, privately owned assets add yet another layer of issues and conflicts associated with a sea level rise regional planning effort. On Humboldt Bay, regionally critical utility assets (energy and communications) are privately owned and managed. Developing and implementing regional sea level rise strategies and projects with private utilities may be more complicated than with public utility agencies.

It will undoubtedly be challenging to create a single entity that is capable of handling the multiple and varied facets of sea level rise planning and adaptation at a regional level. Sea level rise is a broad reaching issue with multiple impacts beyond flooding. Depending on the regional framework chosen, the framework might tackle one issue associated with sea level rise and not all. For

instance, a framework focused on transportation issues might not fix dike system failures on private land or vice versa. Sea level rise impacts also do not abide by jurisdictional boundaries but rather HU characteristics, so the individual entities working on a specific asset or issue might vary.

Effectively engaging the public in sea level rise planning and adaptation in general will be difficult. Sea level rise is a contentious topic due to its association with climate change, and the science behind sea level rise is not always clear to the public. During the County's 2021 sea level rise Public Survey, landowners within the affected areas of each HU were provided a paper copy of the survey and they, as well as the general public, were given the option of digitally taking the survey. Some of the questions within the survey were concerning the public's knowledge of sea level rise on Humboldt Bay. The results showed that 61% of all respondents felt moderately to extremely informed about sea level rise in the Humboldt Bay region. For respondents who self-identified as property owners within the affected HUs, 72% of respondents felt moderately to extremely informed about sea level rise hazards at their residence or property. This leaves some room for improvement, as only 69% of all respondents felt concern for the sea level rise in Humboldt Bay, despite the region being subject to one of the fastest rates of sea level rise on the West Coast.

In addition, some methods to address sea level rise will adversely affect private landowners wishing to remain on their property, causing compounding tension between private landowners with strong ideologies and coastal professionals attempting to do regional planning. This was a common theme noted by the County in their 2021 sea level rise Stakeholder Interviews. Desire to increase landowner participation or engaging with landowners was the third most common theme shared across the 18 stakeholder groups (65%). Some of County's 2021 sea level rise Public Survey questions also addressed public engagement. Survey respondents were asked if they had attended any sea level rise presentations, events, or workshops in the last five years and if not, reasons why they had not attended sea level rise related outreach. Almost half of respondents (45%) had not attended sea level rise outreach and 55% of these respondents claimed they did not attend because they had not heard of any events. An additional question asked survey respondents for their preferred method of public outreach. The top two options respondents would prefer were Email (37%) and Webpage (34%), which are technology and internet dependent and can have limited access in a rural county like Humboldt. In fact, from the paper surveys sent out to property owners within the affected HU, only 31% preferred outreach to be a Webpage and 24% preferred Email. Several write-in comments mentioned they did not own a computer or have internet.

However, Humboldt County is fortunate to be able to look to San Mateo OneShoreline and other examples of regional collaboration for inspiration in the face of such large-scale issues (see Section VI. Examples of sea level rise Planning Collaboration and other sea level rise Resources). San Mateo OneShoreline began as a County Flood Control District similar to what already exists in Humboldt County. Following a 2015 County Civil Grand Jury report on sea level rise planning which recommended a "single organization undertake sea level rise planning on a countywide basis", San Mateo County began partnering with 20 cities and two relevant local agencies within the impacted area to develop options. By the next year, the County's Department of Public Works had established a Flood Resilience Program that developed an MOU among multiple cities and the County for three potential sea level rise projects. This demonstrates that formal regional sea level rise collaboration can be done on a large scale, particularly considering that Humboldt County's flood control district has the same foundational characteristics as San Mateo County's should a similar collaborative effort be pursued. This is further supported by the Humboldt County Civil Grand Jury Findings in its second report "The Sea Also Rises" which states "a regional voice

speaks louder than multiple local voices” whether it be “as simple as an informal working group or as formal as a newly created regional agency.”

Should Eureka, Arcata, and the Harbor District choose not to pursue regional collaboration, regional planning could continue to be pursued by the County in collaboration with the Coastal Commission across all six hydrologic units on Humboldt Bay. For example, the County could work with various public and private asset owners to implement sea level rise adaptation projects, contingent upon consistency with the cities’ and Harbor Districts land use policies and regulations if a project crossed jurisdictional boundaries. However, only 35% of stakeholder groups interviewed during the County’s 2021 Stakeholder Interviews expressed interest in having a County led regional collaboration and only one of the local LCP agencies explicitly expressed interest in this.

The County’s Humboldt Bay Area Plan encompasses a significant portion of the areas vulnerable to sea level rise as well as critical utility and transportation infrastructure, agricultural lands, vulnerable shorelines, and three Communities at Risk. The City of Eureka would be an important regional sea level rise planning partner as its LCP encompasses three hydrologic units (Eureka Slough, Eureka Bay, and Elk River Slough) and significant at-risk assets on Humboldt Bay. Arcata’s involvement based on cross-jurisdictional assets would be somewhat limited. However, the 102-mile shoreline of Humboldt Bay, some of which is located in Arcata, is a critical asset that will be exposed to the effects of sea level rise, and would clearly include Arcata.

#### *Coastal Professional perceptions of feasibility barriers and pathways*

As part of the thesis entitled “Social Science Research to Help Advance Regional Coordination and Collaboration of Sea Level Rise Planning and Adaptation on Humboldt Bay” conducted by Kristen Orth-Gordinier at Cal Poly Humboldt, 46 Coastal Professionals were asked interview questions about possible barriers and pathways to regional sea level rise planning and collaboration. Results from the interviews were divided into “Governmental Barriers and Opportunities” and “Behavioral Barriers and Opportunities” with quotes from Coastal Professionals to corroborate findings. Portions of the Governmental Barriers and Opportunities were quoted earlier in subsection IV.C. in reference to Funding options. To read more in depth into Ms. Orth-Gordiniers findings, please refer to her thesis itself at the Cal Poly Humboldt Digital Commons: <https://digitalcommons.humboldt.edu/etd/568/>

Portions of the conclusion of this thesis are provided on the following pages.

### Humboldt Bay Coordination and Governance

One of the most fundamental findings from this research is that coastal professionals from the Humboldt Bay region overwhelmingly expressed a need for better coordination of SLR planning and adaptation efforts and a need for governance changes in order to sufficiently address SLR impacts and concerns. The Humboldt Bay SLR Adaptation Planning Working Group was the first regional planning effort that helped develop local foundational knowledge and build social capital through co-learning opportunities. However, study participants thought it was missing landowner and public input and lacked actionable outcomes. While its structure may have been sufficient for the time, in order to build on what was learned and move forward, stakeholders may need to evaluate other governance structures that allow for adaptation implementation, shared or simultaneous decision making, fund commitment, and consistent public outreach.

Although study participants supported a variety of governance structures, no clear consensus emerged on which structure would be the best option. Participants thought that leadership should be focused at the state and local level, not at the federal level. Most participants indicated an interest in their organization or agency participating in SLR planning efforts, but few were interested in leading such an effort. Entities that were most frequently mentioned as potential leaders included Humboldt County, the Humboldt Bay Harbor Recreation and Conservation District, the Cities of Eureka and Arcata, the Coastal Commission, and Caltrans. As for the spatial extent of planning, survey respondents mostly favored a bay-wide planning effort, although interviewees also expressed a need for more specific planning at smaller spatial scales due to the technical complexity of projects. This research did not identify an entity that was willing to lead regional SLR adaptation efforts, had the political will to take responsibility for pushing forward tough adaptation conversations, was willing to build better relationships with other coastal management entities, and that had the resources to dedicate to an effort with no clear path forward and no clear end in sight. The lack of consensus regarding a single lead entity, perhaps also supports the need to build a regional collaborative or coalition of entities so that no single entity carries the responsibilities of encouraging regional dialogue and decision making around adaptation strategies. A regional collaborative or coalition could also better allow for the incorporation of Tribal leadership and co-management authority into SLR planning for Humboldt Bay.

Scholarship along with research findings suggest that in developing a governance structure, coastal planners should consider the importance of nesting scales and ideas to plan across jurisdictions and spatial scales that promote transparent communication and support relationship building. Entities and individual personnel that act as boundary spanners by connecting different stakeholders would promote ongoing adaptation planning and eventual implementation. Boundary spanners and facilitated conversations between stakeholders are needed to move the governance framework conversation forward to support adaptation action. Boundary spanners could be individuals from outside the adaptation field to provide more diverse thoughts and perspectives, such as community-based organizations working with vulnerable communities or academic institutions.

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### Institutional and philosophical differences

Coastal professionals expressed perceptions of institutional procedural differences as a challenge to regional coordination of SLR planning. For more effective regional planning, the various organizations and entities may need to work together to determine whether and in what ways it might be feasible to develop more coordinated timelines and decision-making processes. Perhaps imminent projects requiring near-term planning could serve as a useful test, since there are clearer pathways for shorter-term planning projects. Short-term projects could help actors focus on approaches to align procedures and timelines more broadly, or at the least, to help them determine strategies to resolve issues if it is not feasible to conform their processes and procedures. Findings suggest that communication and transparency within entities (e.g., between different departments at the same entity) and across entities may also need to be improved. Small pilot projects could be used to build relationships and communication protocol within and between entities.

Many coastal professionals also shared that they thought current environmental regulations make SLR adaptation difficult. There was a fairly even split of survey respondents who thought environmental regulations did or did not provide an insurmountable barrier to SLR adaptation, with slightly more respondents indicating environmental regulation was a barrier. Some interviewees perceived that SLR changes the status quo and current policies protect the status quo. Static, outdated laws provide challenges to permitting projects and study participants called for more creative approaches that built trust; increased transparency and consistency; and facilitated negotiation of diverse interests. Disagreement on the perceived severity of environmental regulation barriers seemed to contribute to the lack of adaptation action in part, and thus must be resolved in order to move forward. State and federal regulatory agencies have taken some initiative to reduce regulatory hurdles through programs such as CDFW's Cutting the Green Tape Program or San Francisco Bay Restoration Regulatory Integration Team (BRRIT); however, efforts such as these were rarely discussed by interviewees. More information is needed on the efficacy, replicability, and scalability of such programs. An important step in regional coordination and collaboration is working to get stakeholders on the same page in understanding SLR risks and utilizing consistent language when discussing adaptation processes and strategies. Local coastal professionals generally noted that locally specific data was a strength of the region. However, my data suggests coastal professionals in Humboldt Bay perceived that local stakeholders had inconsistent definitions of SLR risks, used different SLR projections and timelines or other strategies for planning, and disagreed on actions needed to address SLR impacts. Additionally, study participants were concerned that conflicting values and preferences would prevent agreement in selecting adaptation strategies. That concern was supported by other research that suggests conflicting values and preferences between stakeholders can hinder adaptation planning efforts and can be a contributing factor to disagreement on adaptation actions. The combination of disagreement on risks and actions, use of inconsistent information and strategies, and perceived conflicting values could be barriers to regional coordination of adaptation planning and could contribute to delays in agreeing on regional strategies and ultimately, implementing them.

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### Institutional and philosophical differences continued

Regionally coordinated adaptation inaction may also stem from how people understand, interpret, and communicate SLR data. SLR provides a challenge due its uncertainty and its associated long planning horizon (Kettle & Dow, 2014b; Moser, 2005), what some interviewees described as long-term urgency. Although state policy guidance, state technical support, and locally specific data and modeling are helpful, SLR uncertainty allows for varied interpretations of the information. Uncertainty in the data used for planning or a lack of acceptance in data projections can be a barrier to adaptation planning and has been used by experts as a reason to delay planning (Kettle & Dow, 2014b; Moser, 2005). Similar to findings from a past local study of coastal manager needs (Thorne et al., 2016), study participants stated needs for more data, updated models, and consistency between local stakeholders to help advance regional planning.

### Behavior of Actors

In California, SLR adaptation projects involve input and approval from multiple federal, state, and local authorities, making coordination and collaboration critical. Efficient coordination between levels of government and scientific disciplines, decision making authorities, and land and asset owners allows for resource and information sharing, encourages open and transparent communication, and builds consistent leadership and trust (Kettle & Dow, 2014b, 2014a; Measham et al., 2011). Study participants identified both opportunities and challenges with local leadership in regard to regional SLR planning. They stated that local political leaders were good at listening and acting on public concerns and thought SLR was a priority issue; however, leadership could contribute to inconsistent direction and slow critical momentum due to turnover and capacity issues. Scholars have found that due to the long-term and interdisciplinary nature of SLR planning, leaders or champions are needed at multiple levels of government and staff positions as well as across sectors in order to sustain SLR adaptation momentum. Additionally, interviewees suggested that the individual actors in positions of leadership can derail SLR planning effort when they act on personal interests or are uninterested in collaborating, explaining the reason why friendly relationship building between stakeholders is so important for the success of regional planning. This may be especially relevant for smaller rural communities with fewer personnel working on a given effort. Interviewees generally felt that existing relationships between coastal professionals helped local SLR planning due to the accessibility of individual actors and personal connections they share. This finding also supports the importance of social-ecological actor-related variables within adaptation process.

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<https://digitalcommons.humboldt.edu/etd/568/>

### Behavior of Actors continued

Interviewees generally seemed to feel a sense of personal responsibility for SLR adaptation and had personal interest in the topic. It may be possible that the feeling of personal responsibility reinforced the importance of personal relationships in SLR planning and adaptation efforts. Authenticity and trust of individuals and entities were cross-cutting themes that emerged in conversations about public engagement, staff capacity/consistency, environmental regulations, leadership, and data uncertainties. Similar to other research, this study on Humboldt Bay suggests the critically important role of actor-related barriers (i.e., leadership, communication, trust, understanding) in adaptation planning and therefore the importance of social science research in advancing adaptation.

### Public Engagement

Involving the community in SLR planning can help decision makers prioritize strategies based on stakeholder needs and values which in turn builds public support for adaptation strategies and builds resilient communities. Local coastal professionals recognized the importance of educating and gaining public support for these potentially contentious projects. Study participants thought the public was interested in engaging in this topic.

However, few coastal professional respondents thought public engagement to date had been sufficient or effective, nor had it incorporated equity and justice considerations. Future planning efforts need to improve engagement with the public, especially shoreline landowners, improve access to SLR engaging the community in or related information, and work on authentically derive to build trust.

One interviewed landowner noted how overwhelming it was to wade through information and meeting invitations; and since they felt they could not keep up, they were deterred from further engaging on the subject. Coastal professionals will need to consider how to communicate information and what information is communicated in order to more effectively engage the public. Understanding the social values of various public stakeholders could aid in developing more efficient outreach and equitable outcomes. A high level of perceived risk can motivate and help prioritize adaptation actions coastal professionals and the surveyed. The majority of surveyed Humboldt Bay general public viewed SLR as an existing and imminent impact to the region. One factor in local acceptance of SLR could be due to direct flooding experiences by the community. There are many places around Humboldt Bay where community members can observe flooding, especially during king tide events. Direct experience of climate risks and extreme events has been shown to decrease political polarization over climate issues and increase the relative importance of climate adaptation for individuals and communities.

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## VI. Examples of Sea Level Rise Planning Collaboration and other Sea Level Rise Resources

### ResilientCA.org Adaptation Clearinghouse - Case Studies

<https://resilientca.org/>  
<https://resilientca.org/case-studies/>

The Adaptation Clearinghouse is the State of California's consolidated searchable database of resources for local, regional, and statewide climate adaptation planning and decision-making. The Clearinghouse provides a searchable database of adaptation and resilience resources that have been organized by climate impact, topic, and region. It also provides a platform for Californians to share and access case studies and stories about how and why their communities, businesses, and organizations are responding to climate change impacts. The Adaptation Clearinghouse aims to support a community of practice across the state through knowledge exchange between communities, businesses, and across levels of government. Case studies, such as those provided below, are just one type of a wide variety of climate adaptation resources available through the Adaptation Clearinghouse.

#### 1. **SB1 Case Study: Southern California Regional Climate Adaptation Framework (2022)**

Southern California Association of Governments engaged with local jurisdictions, councils of government, non-profits, and other entities engaged in adaptation planning. SCAG also collaborated with other MPOs and State agencies including the Governor's Office of Planning and Research, the California Natural Resources Agency, the Strategic Growth Council, Caltrans, and the Integrated Climate Adaptation and Resiliency Program Technical Advisory Council.

<https://resilientca.org/projects/652f6f5e-1fdc-425b-9398-eb94778c986b/>

<https://resilientca.org/case-studies/southern-california-regional-climate-adaptation/>

<https://scag.ca.gov/>

<https://scag.ca.gov/climate-change-regional-adaptation-framework>

The Southern California Association of Governments (SCAG) prepared a comprehensive adaptation planning framework for the six county region to support local and regional climate adaptation planning. The framework includes resources and implementation tools for local jurisdictions, regional planning agencies, and other stakeholders, including: the Southern California Adaptation Planning Guide, based on the 2020 California Adaptation Planning Guide; a matrix of climate strategies and actions; project checklists to assess project vulnerability to climate hazards; a web tool with detailed scenarios for land use and transportation analysis of climate change impacts to the Southern California region; a climate change communication outreach toolkit; model language for general plan development, including a strategies and actions matrix; and metrics for tracking implementation progress for local jurisdictions and MPOs. SCAG continues ongoing work to spread awareness of the framework and build Southern California local and regional capacity to adapt to climate change.

**2. SB1 Case Study: Transportation Project-Level Climate Adaptation Strategies for the Sacramento Region (2022)**

The Sacramento Area Council of Governments (SACOG) led this project, in collaboration with local jurisdiction staff across the SACOG region, partner agencies such as Caltrans, and the project's technical consultant team.

<https://resilientca.org/projects/3bd39791-bb01-49b2-988c-ae6a76a5f72a/>

<https://resilientca.org/case-studies/transportation-project-level-climate-adaptation/>

This project identified areas of the Sacramento region and transportation infrastructure that are vulnerable to climate impacts, as well as transportation infrastructure and assets that are critical to the function of the transportation network. Components of the project included a vulnerability and criticality assessment of transportation assets, which will inform guidelines for prioritizing funding decisions, and an assessment of the benefits and costs of asset-level climate adaptation strategies for various transportation projects and project types.

**3. SB1 Case Study: SANDAG Regional Transportation Infrastructure Sea Level Rise Assessment and Adaptation Guidance (2021)**

San Diego Association of Governments (SANDAG) served as the lead agency for this project and was responsible for preparation of the Adaptation Guidance. Key information for this project was obtained from vulnerability assessments and adaptation plans currently in process or recently completed by a number of coastal jurisdictions in the San Diego region, as well as information from the Port of San Diego, Caltrans District 11, and the San Diego Regional Airport Authority.

<https://resilientca.org/projects/a57adb43-4fbc-4091-83c8-0d2238625c64/>

<https://resilientca.org/case-studies/sandag-regional-sea-level-rise-adaptation/>

Over a two-year project period (spring 2018 - spring 2020), the San Diego Association of Governments (SANDAG) created the Regional Transportation Infrastructure Sea Level Rise Assessment and Adaptation Guidance (Adaptation Guidance). This document provides recommended updates for existing shoreline management policies to account for sea level rise; examines potential sea level rise impacts to regional transportation infrastructure in San Diego County; and presents a suite of sea level rise adaptation strategies and best practices for local jurisdictions to consider when updating or preparing relevant local plans or vulnerability assessments. Adaptation strategies include policies, potential projects (with an emphasis on natural infrastructure), and funding mechanisms.

**4. SB1 Case Study: Alviso Wetland Railroad Adaptation Alternatives Study (2021)**

The lead agency of the Alternatives Study was the Capitol Corridor Joint Powers Authority, the managing agency of the Capitol Corridor intercity passenger rail service. Major stakeholders of the project included the U.S. Fish & Wildlife Service (who manages the Don Edwards National Wildlife Refuge), the Citizens' Committee to Complete the Refuge (an umbrella organization for concerned citizens as well as NGOs who have an interest in enhancing the Refuge), and the Alviso Neighborhood Group/Water Task Force (a group representing citizens in the Alviso

community). Stakeholders were engaged throughout the Study via regular meetings, where project progress was shared, and feedback solicited.

<https://resilientca.org/projects/73af1b56-f0a7-4b8d-be33-d95eb6b7e873/>

<https://resilientca.org/case-studies/alviso-wetland-railroad-adaptation-alternatives/>

The Alviso Wetland Railroad Adaptation Alternatives Study evaluated possible adaptation alternatives for the railroad infrastructure in the Alviso wetland area, according to broad objectives of increased climate change resiliency, increased train capacity, minimized environmental disturbance, natural habitat restoration, and protected/endangered species preservation.

#### **5. SB1 Case Study: Santa Barbara County Multi-Modal Transportation Network Resiliency Assessment (2020)**

As the project lead, the Santa Barbara County Association of Governments (SBCAG) has been able to leverage its role as the Metropolitan Planning Organization/Regional Transportation Planning Agency (MPO/RTPA) to facilitate partnerships at the local and regional level for this project. The Community Environmental Council worked closely with SBCAG to facilitate working with the Climate Resiliency Team, which consisted of planning staff from the local cities and the County, Caltrans, community-based organizations, school staff, emergency response organizations, and other non-profit organizations.

<https://resilientca.org/projects/4ca303a9-193d-4e81-be50-f311b8fb190b/>

<https://resilientca.org/case-studies/santa-barbara-county-multi-modal-transportation/>

The multi-modal transportation network resiliency assessment conducted for this project included a vulnerability assessment to identify areas where transportation assets are most vulnerable to potential impacts of climate change. SBCAG worked collaboratively to complete a regional climate adaptation strategy for implementation and identified a regional Climate Smart Transportation Network that utilizes nature-based solutions in locations most vulnerable to climate change impacts. The recommendations from the study will be incorporated into the next update of SBCAG's Regional Transportation Plan-Sustainable Communities Strategy (RTP-SCS).

#### **6. Marin Grassroots Climate Action Program - Local Government Challenge Grant Case Study (2020)**

The lead agency for the project was the Marin General Services Authority (MGSA), a joint powers authority representing all Marin County local governments. MGSA served as the fiscal sponsor and contracting authority. The Marin Climate & Energy Partnership (MCEP), an MGSA-sponsored program through which the local governments coordinate climate action efforts, administered the program. MCEP worked with Resilient Neighborhoods, a program of Sustainable Marin, a local nonprofit, to implement the project. Resilient Neighborhoods provided program outreach and marketing, climate action team educational materials and instruction, and data tracking and analysis. Resilient Neighborhoods provided quarterly updates to MCEP, and MCEP members assisted Resilient Neighborhoods in outreach and marketing efforts.

<https://resilientca.org/projects/ab20e208-441b-4c30-ad8b-cc65da6e7233/>

<https://resilientca.org/case-studies/marin-grassroots-climate-action-program/>

<https://maringeneralservicesauthority.com/>

This integrated climate mitigation and adaptation case study features the countywide Marin Grassroots Climate Action program, a program managed by Marin Climate & Energy Partnership in collaboration with Resilient Neighborhoods. The project involved expanding an existing program that recruits and organizes households into Climate Action Teams to educate community members and help them reduce household greenhouse gas emissions and prepare for a changing climate. The project was funded by a California Energy Commission Local Government Challenge Grant.

## **7. SB1 Case Study: Central Coast Highway 1 Climate Resiliency Study (2020)**

AMBAG was the study lead, in partnership with The Nature Conservancy (TNC) and Center for the Blue Economy (CBE). In addition to the leads for the study, there was steering committee involvement. More information on the steering committee can be found in the “Engagement Process” section of this report.

<https://resilientca.org/projects/9d62ef28-b438-47a9-ba86-482a2edc9450/>

<https://resilientca.org/case-studies/central-coast-highway-1-climate-resiliency/>

The Association of Monterey Bay Area Governments (AMBAG), in conjunction with The Nature Conservancy (TNC) and the Center for Blue Economy (CBE), prepared a climate resiliency study for the Central Coast Highway 1 corridor. This study provides a conceptual climate change adaptation transportation planning foundation for integration into the AMBAG Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS). This effort identified transportation improvements and sea level rise adaptation strategies for Highway 1 that can improve transportation mobility, safety and efficiency, promote healthy habitats, and provide economic security and benefits to the local community. The goal is that the completed plan will lead to implementation and development of adaptation projects, by being incorporated into local and regional plans.

## **8. Resilient IE (2020)**

Resilient IE was developed by Western Riverside Council of Governments (WRCOG) in collaboration with the San Bernardino County Transportation Authority (SBCTA) with funding from Caltrans.

<https://resilientca.org/projects/7b5740aa-6f24-4ae7-8401-38c0f8379017/>

<https://ca-wrcog.civicplus.com/285/Resilient-IE>

Resilient IE works to support regional and local efforts to prepare for and mitigate risks associated with climate adaptation on the region's transportation infrastructure. The initiative includes 5 main components: 1) A newly established regional climate collaborative, the Inland Southern California Climate Collaborative (ISC3); 2) Subregional vulnerability assessments and adaptation strategies; 3) City-level, climate-related transportation hazards and evacuation maps; 4) A regionally tailored climate resilient transportation infrastructure guidebook; and 5) A template regional climate adaptation and resiliency element.

## **9. SCAG Climate Adaptation Resources for Transit (2020)**

Southern California Association of Governments (SCAG), funded by a Caltrans Statewide and Urban Transportation Planning Grant.

<https://resilientca.org/projects/e235b5e6-1d0e-4871-8de1-3dfeadf91e1d/>

<https://scag.ca.gov/transit-adaptation-and-resilience-planning>

The Southern California Association of Governments developed an adaptation resource toolkit to assist transit providers with incorporating climate change adaptation into their existing processes. The toolbox webpage also describes the process undergone by SCAG to create the toolkit, including how it was funded and the public outreach and stakeholder coordination involved.

## **10. Regional Adaptation Collaborative Formation Toolkit (2019)**

The Alliance of Regional Collaboratives for Climate Adaptation (ARCCA), a coalition of the Local Government Commission, represents leading collaborative networks from across California that strive to build regional resilience to climate impacts. Our member regional collaboratives in total encompass 80% of the state's population, with the Governor's Office of Planning and Research serving as an ex-officio member. Together, ARCCA members work to enhance public health, protect natural systems, build economies, and create resilient, livable communities throughout California. By sharing best practices and resources, identifying strategies to overcome key barriers and challenges, and conducting joint campaigns and projects, ARCCA members effectively bolster their individual and collective efforts.

<https://resilientca.org/projects/101dd7f0-c53a-4fdc-8c4d-54aa102bf3aa/>

<https://arccacalifornia.org/toolkit/>

The Alliance of Regional Collaboratives for Climate Adaptation developed this toolkit to provide others with a framework for forming a regional adaptation network; guidance for structuring a regional collaborative; and insights into effective governance mechanisms for engaging local, regional, state, and national stakeholders in adoption of new collaborative relationships. By drawing on lessons from ARCCA regions and sharing tips, tools and resources, ARCCA hopes to advance regional adaptation efforts more broadly.

## **11. OPC Spotlight: Legal Risk Analysis for Sea Level Rise Adaptation Strategies in San Diego (2018)**

San Diego Regional Climate Collaborative was established in 2011 as a network for public agencies to advance climate change solutions that mitigate greenhouse gas emissions and adapt to the effects of climate change. Partnering with academia, non-profit organizations, and business and community leaders, the Collaborative raises the profile of regional leadership, shares expertise, and leverages resources. Their mission is to connect the region to advance climate change solutions.

<https://resilientca.org/projects/7ff6616b-bd92-48db-8c98-046f634f8dc9/>

<https://www.eli.org/sites/default/files/eli-pubs/executive-summary-legal-risk-analysis-sea-level-rise-adaptation-strategies-san-diego.pdf>

<https://www.sandiego.edu/soles/hub-nonprofit/initiatives/climate-collaborative/>

The San Diego Regional Climate Collaborative identified emerging legal risks to local governments concerning sea level rise and spotlighted expertise and knowledge gaps on these issues among their members. The Collaborative, as part of a large NOAA-funded resiliency project, commissioned a report by the Environmental Law Institute (ELI). ELI analyzes five strategies for dealing with sea level rise impacts, and for each of the 5 strategies, provides an overview of the general legal risk and an outline of the legal context. After discussing that information, ELI describes a set of possible scenarios that local governments could face around this strategy.

**12. SB1 Case Study: County of San Mateo Climate Vulnerability and Resilience Planning Project (2018)**

<https://resilientca.org/case-studies/?sort=-published&page=4&impacts=13&q=>

<https://resilientca.org/projects/7587371c-fbe9-4312-b1f6-9f944d734c37/>

The Climate Vulnerability and Mainstreaming Resilience Planning project in San Mateo County is an innovative approach to transportation resilience planning that will provide resources for cities and vulnerable communities. This project will assess countywide climate change impacts, assist the County and 20 cities in further defining vulnerable transportation infrastructure, critical assets, and communities, while developing adaptation strategies to prepare for those impacts.

**13. Climate Adaptation Knowledge Exchange (2018)**

The Climate Adaptation Knowledge Exchange (CAKE) is a site that helps users find resources by organizing and explaining data, tools and information available from other sites. It includes an interactive online platform and a directory of practitioners to share knowledge and strategies. CAKE consists of case studies, a virtual library, directory and tools and houses a variety of community forums for the discussion of current issues in climate adaptation.

<https://resilientca.org/projects/08bd087a-5ed1-4e69-93dc-3f27327a57d7/>

<http://www.cakex.org/resources/region/southwest-7081>

**14. San Francisco Bay Restoration Authority (2018)**

The San Francisco Bay Restoration Authority is a regional agency created to fund shoreline projects that will protect, restore, and enhance San Francisco Bay through the allocation of funds raised by the Measure AA parcel tax. It is comprised of a Governing Board of local elected officials; an Advisory Committee to represent the community and public agencies; an Oversight Committee; and Staff from state and regional agencies.

<https://resilientca.org/projects/9544db41-c9d1-42a2-bb96-945a42abd193/>

<https://www.sfbayrestore.org/>

This website is dedicated to the work of the San Francisco Bay Restoration Authority. The California Legislature created the agency in 2008 to find solutions to the need for new, local

funding. In addition to raising funds, the agency works regionally to allocate local resources for the restoration, enhancement, protection, and enjoyment of wetlands and wildlife habitat in San Francisco Bay. The website provides information on taxes the agency collects through Measure AA, the grants the agency gives regionally and successfully funded project.

#### **15. OPC Spotlight: Beach Erosion Authority for Clean Oceans and Nourishment (BEACON) (2018)**

The Beach Erosion Authority for Clean Oceans and Nourishment (BEACON) is a California Joint Powers Agency (JPA) established in 1986 to address coastal erosion, beach nourishment and clean oceans within the Central California Coast from Point Conception to Point Mugu. The member agencies of BEACON include the Counties of Santa Barbara and Ventura as well as the coastal cities of Santa Barbara, Goleta, Carpinteria, Ventura, Oxnard and Port Hueneme. The BEACON Board is made up of two Supervisors from each county and one counsel person from each coastal city for a total of ten. The Board meets every two months at the City of Carpinteria City Council Chambers located at 5775 Carpinteria Avenue.

BEACON is involved in an array of coastal studies and projects within its jurisdiction and works in close coordination with the parks, planning and public works departments of BEACON's member agencies.

BEACON is staffed by a combination of specialist consultants and participation from member agency staff. Funding for BEACON comes through annual agency membership dues and grant funding from State and Federal Agencies. Specific coastal studies and project development activities are contracted out by BEACON to other agencies or consultants. A full organization chart for BEACON can be seen under BEACON Organization.

<https://resilientca.org/projects/3b6c8331-d1f3-4fb4-bd9f-825c487dd0e8/>

<https://beacon.ca.gov/>

BEACON is a two-county, multi-city, joint powers agency established in 1986 to address coastal erosion, beach nourishment, and clean oceans on the Central Coast. BEACON has been involved in an array of coastal studies and projects in close coordination with the parks, planning, and public works departments of the member agencies. In recent years, BEACON has worked to help its members address climate change planning, with a focus on both hazard mitigation and adaptation strategies.

#### **16. Resilient by Design Bay Area Challenge (RbD) (2018)**

<https://resilientca.org/projects/afcde956-3cb6-4237-9a61-17cd1326e45a/>

<http://www.resilientbayarea.org/>

This is the home website for the Resilient by Design Bay Area Challenge (RbD) project. This project is a year-long collaborative design challenge. Modeled on a successful version of a similar project in New York, this challenge brings together local residents, public officials, and local, national and international experts to develop 10 innovative community-based solutions that will strengthen the Bay Area's resilience to sea level rise, severe storms, flooding and earthquakes. The website provides ways for the public to engage with this innovative competition. Additionally,

it contains a wealth of tools and resources relevant both locally and for other tidal estuaries impacted by sea level rise.

### **17. Resilient Coastlines for Greater San Diego (2018)**

San Diego Regional Climate Collaborative

<https://resilientca.org/projects/c6a9905c-b949-4bd8-8c45-386ee1c053e4/>

<https://www.sandiego.edu/soles/hub-nonprofit/initiatives/climate-collaborative/>

This website provides an overview of the work and successes of the Resilient Coastlines Project, which is a multi-faceted approach to build resiliency in the coastal communities of San Diego. It provides access to information and tools associated with the projects four primary components: 1) Applying Science and Research, 2) Building Local Leadership, 3) Community Engagement and 4) Sharing the Model. The website also includes a link to a local story map which shows successful local sea level rise adaptation projects. (San Diego Regional Climate Collaborative)

The project is designed to connect several local sea-level rise initiatives undertaken by different local jurisdictions and pull them together into a regional strategy, fill existing knowledge gaps that were barriers to resilience planning and implementation, and further engage scientific experts and community members in building coastal resilience for the San Diego region.

The project was launched with support from a 2015 NOAA Regional Coastal Resilience Grant designed to directly support community-based coastal hazard planning.

### **18. San Francisquito Creek Joint Powers Authority (2018)**

San Francisquito Creek Joint Powers Authority: After a serious flooding event in 1998, the Joint Powers Authority (JPA) was formed in 1999 to lead projects that mitigate the risk of flooding along the San Francisquito Creek and the Bay. The cities of East Palo Alto, Palo Alto, Menlo Park, and the San Mateo County Flooding and Sea Level Resiliency District and the Santa Clara Valley Water District formed the JPA. The Creek is one of the few mostly natural watercourses in the region and forms the boundary between the Counties of San Mateo and Santa Clara, and the cities of Menlo Park and East Palo Alto to the north and the City of Palo Alto to the south. The JPA integrates habitat protection and restoration and community recreational opportunities into its flood mitigation projects.

<https://resilientca.org/projects/a1edacce-b556-4619-a7cd-65d43d631b13/>

<https://www.sfcjpa.org/>

This website is the home of the San Francisquito Creek - Joint Powers Authority. After years of unsuccessful efforts to deal with creek flooding, five local agencies from two counties—the cities of Palo Alto, Menlo Park, and East Palo Alto, the County of San Mateo, and the Santa Clara Valley Water District—joined together to create this new regional government agency. The agency's goals are to transform San Francisquito Creek from a divisive liability into a unifying asset. The agency works to address the cities' flooding, environmental and recreational concerns. In doing so, the agency plans, designs, and implements projects from the upper watershed to tidal marshes. The agency is currently focused on three primary projects: 1) Upstream of Highway 101

Project, 2) S.F. Bay to Highway 101 Project, and 3) SAFER Bay and Sea Level Rise. Through this website one can access detailed project documents such as Feasibility Studies and information on local meetings.

### **19. Regional AdaptLA (2018)**

The City of Los Angeles, in partnership with University of Southern California (USC) Sea Grant Program, the Los Angeles Regional Collaborative on Climate Action and Sustainability (LARC), and ICLEI - Local Governments for Sustainability - USA (ICLEI), has developed a City-led, science-based, and stakeholder-supported process to begin climate adaptation planning.

This partnership, AdaptLA, engages local businesses, industry experts, L.A. representatives, public utilities, and environmental organizations for considerable stakeholder collaboration and interagency coordination. The plan is to first identify vulnerable assets, resources and communities of Los Angeles, and then provide guidance for adaptation strategies.

<https://resilientca.org/projects/54a1cd8d-8fa4-4230-9547-034fc8c26968/>

<https://dornsife.usc.edu/uscseagrant/adaptla/>

<https://www.adaptationclearinghouse.org/organizations/regional-adaptla.html>

Regional AdaptLA advances a regional sea level rise and coastal impacts planning process and shares critical scientific information to inform planning efforts. This multi-year project brings together a coalition of local municipalities, Los Angeles County, and other organizations, including USC Sea Grant. The program increases collaboration among coalition partners, as well as use of the best available science in planning efforts. This has helped many cities to make progress in integrating climate change considerations into their existing planning mechanisms and evaluating potential strategies for addressing sea level rise impacts.

### **20. Resilient Coastlines Project of Greater San Diego (2018)**

<https://resilientca.org/projects/c6a9905c-b949-4bd8-8c45-386ee1c053e4/>

<https://www.sandiego.edu/soles/hub-nonprofit/initiatives/climate-collaborative/>

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### **21. Resilient Coastlines Project of Greater San Diego (2016)**

San Diego Regional Climate Collaborative (SDRCC)

<https://resilientca.org/projects/3f4a1883-2c19-4cd2-b46a-86f296cc1c5a/>

<https://www.climate-science-alliance.org/archive/resilient-coastlines-project>

The Resilient Coastlines Project of Greater San Diego represents a regional and multi-faceted approach to building coastal resilience. The project is designed to connect several local sea-level rise initiatives through a regional strategy, fill existing knowledge gaps that were barriers to resilience planning and implementation, and further engage scientific experts and community members in building coastal resilience for the San Diego region. The project was launched with support from a 2015 NOAA Regional Coastal Resilience Grant designed to directly support community-based coastal hazard planning.

**Georgetown Climate Center Adaptation Clearinghouse**  
<https://www.adaptationclearinghouse.org/>

The Adaptation Clearinghouse, developed by the Georgetown Climate Center, is focused on the resources that help government policymakers reduce or avoid the impacts of climate change to communities in the United States. The Adaptation Clearinghouse tends to focus on climate change impacts that adversely affect people and our built environment. Content focal areas include the water, coastal, transportation, infrastructure and public health sectors, and adaptation planning, policies, laws, and governance. Resources that fall within these areas receive priority and are the most likely to be published in the Adaptation Clearinghouse.

The Adaptation Clearinghouse has many examples of climate collaboratives. These are just a few of those examples.

**1. Central Coast Climate Collaborative**

<https://www.adaptationclearinghouse.org/organizations/central-coast-climate-collaborative.html>

<https://www.centralcoastclimate.org/#mission>

The Central Coast Climate Collaborative (4C) was established in 2016 as regional climate collaboratives were launching across California. For the first time, leaders from local governments, communities, non-profit organizations, business, and academia across the Central Coast came together to explore ways to address the complex maze of emerging carbon-reduction and adaptation issues. 4C is now an established membership organization and valued regional forum, gathering a broadening set of climate practitioners to share ideas, support projects and initiatives, and form new partnerships.

Over the past five years, 4C has evolved its organizational, technological, and network capacity, while supporting regional initiatives such as local climate resilience projects and planning, academic research, launching of new climate collaboratives, and development of collaboration and networking tools.

**2. Santa Barbara County Regional Climate Collaborative**

The Santa Barbara County Regional Climate Collaborative is a growing multi-sector network of organizations working together to advance climate mitigation and resiliency efforts in Santa Barbara County. The Collaborative advances regional scale climate solutions through coordination and partnership.

<https://www.adaptationclearinghouse.org/organizations/santa-barbara-county-regional-climate-collaborative.html>

<https://sbco.mysocialpinpoint.com/sbcollaborative>

**3. Alliance of Regional Collaboratives for Climate Adaptation (ARCCA)**

California's Alliance of Regional Collaboratives for Climate Adaptation (ARCCA) was formed in early 2012 to coordinate regional and local efforts in preparing California for the impacts of climate

change. ARCCA currently brings together five regional collaboratives from across the state including San Diego, Los Angeles, the San Francisco Bay Area, Sacramento, and the Sierras. The collaboratives are supporting local climate partners in projects to enhance resiliency and adaptation at the community level. The goals of ARCCA's collaboration are to share information and intelligence among regions on best practices and lessons learned; and to work collectively with state and federal agencies to streamline state and regional adaptation assistance to local governments.

ARCCA partnered with the Georgetown Climate Center to explore formation, governance, and funding options for regional adaptation collaboratives throughout the country.

<https://www.adaptationclearinghouse.org/organizations/alliance-of-regional-collaboratives-for-climate-adaptation-arcca.html>

<https://arccacalifornia.org/>

#### **4. Los Angeles Regional Collaborative for Climate Action and Sustainability (LARC)**

The Los Angeles Regional Collaborative for Climate Action and Sustainability (LARC) is an association of Southern California's leading municipal governments, utilities, agencies, universities and organizations. The purpose of this collaboration is to share information, foster partnerships, and develop system-wide strategies to address climate change and promote a green economy through sustainable communities. LARC is one of seven regional collaboratives in California supporting climate change science, policy and planning efforts across sectors.

<https://www.adaptationclearinghouse.org/organizations/los-angeles-regional-collaborative-for-climate-action-and-sustainability-larc.html>

<https://www.laregionalcollaborative.com/>

## Other Examples of Sea Level Rise Collaboration

### 1. San Mateo County Flood and Sea Level Rise Resiliency District - OneShoreline

<https://oneshoreline.org/>

The Flood and Sea Level Rise Resiliency District, known as OneShoreline, is an independent government agency working throughout San Mateo County to make the county more resilient to the climate change-related impacts of sea level rise, flooding, and coastal erosion. With start-up funding from the County and 20 incorporated cities within it, OneShoreline provides a unified vision and voice to plan for the future. Beyond planning, OneShoreline is securing funding for and will build projects that protect the county, enhance the environment, and create recreational opportunities.

In 1959, State legislation established the San Mateo County Flood Control District to address flooding challenges in several specific flood prone areas called “flood zones.” In 2015, the County’s Civil Grand Jury issued a Report, “Flooding Ahead: Planning for Sea Level Rise,” that posed the question: What actions can the County of San Mateo, and the 20 cities and two relevant local special agencies within the county, take now to plan for sea level rise?” It answered this question by recommending “that a single organization undertake sea level rise planning on a countywide basis.”

In 2016, the County’s Department of Public Works established a Flood Resilience Program that developed a Memorandum of Understanding (MOU) to plan three potential projects: Bayfront Canal/Atherton Channel (MOU with Menlo Park, Redwood City, and Atherton); Belmont Creek (MOU with Belmont and San Carlos); and Navigable Slough (MOU with San Bruno and South San Francisco).

In March of 2018, the City/County Association of Governments (C/CAG) convened the “Floods, Droughts, Rising Seas, Oh My!” water summit, bringing together regional experts and policymakers to discuss San Mateo County water management challenges and opportunities. There, Congresswoman Jackie Speier identified the need for a countywide agency to address the challenges of flooding, sea level rise and coastal erosion. This agency would allow San Mateo County and its 20 cities to: 1) coordinate the planning and implementation of projects across jurisdictional lines, which enables uniform levels of protection and the sharing of technical information and resources, and 2) create a broad and unified vision and voice that would position the new regional agency and its projects to obtain funding and regulatory permits.

In April of 2018, the C/CAG Countywide Water Coordination Committee began to develop a proposal to form a countywide agency to address sea level rise, flooding, coastal erosion, and regional stormwater infrastructure. After analyzing various potential approaches to the agency, the Water Coordination Committee recommended that new State legislation expand the mission, geographic reach, and governing Board of the 1959 San Mateo County Flood Control District. This legislation, Assembly Bill 825 (Mullin), was signed into law in September 2019, and on January 1, 2020, the San Mateo County Flood and Sea Level Rise Resiliency District was born.

OneShoreline is governed by a seven-member Board of Directors. Two Board members serve on the San Mateo County Board of Supervisors, and five serve on different city or town councils that govern municipalities throughout the county.

## **2. Building Resilience Together – Military and Local Government Collaboration for Climate Adaptation**

As part of the RAND Corporation's Security 2040 Initiative, the authors of this report explored a critical global challenge that will shape the security landscape over the next 20 years: contending with and preparing for the effects of climate change. Within the United States, many governmental entities, from cities to counties to military services, have already begun to prepare for and directly address climate change's impacts. The resilience of these communities and installations does not lie neatly within designated jurisdictional borders. Communities are dependent on how their neighbors, which include local military installations, choose to adapt to climate change. Likewise, military installations require the communities on which they depend for transportation, resources, and personnel to contend with and plan for climate change. Military installations and communities are coexisting and codependent entities, relying on mutual infrastructure and resources to support their respective functions.

To explore this challenge, the authors reviewed and analyzed relevant literature, assessed other instances of intergovernmental collaboration, and applied the case of the Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Project to examine the role of collaboration in military and local government climate resilience planning.

<https://reliefweb.int/report/world/building-resilience-together-military-and-local-government-collaboration-climate>

[https://reliefweb.int/sites/reliefweb.int/files/resources/RAND\\_RR3014.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/RAND_RR3014.pdf)

## **3. Georgetown Climate Center – Lessons in Regional Resilience**

Regional climate collaboratives help communities overcome the limited resources and technical capacity that many cities face and enables them to share resources, leverage expertise, and develop coordinated plans and policy solutions to foster resilience and reduce carbon pollution. While many collaboratives have experienced significant benefits of working regionally, many are still grappling with challenges of identifying the right stakeholders to engage and developing a funding model that can sustain the collaborative's work over the longer term.

<https://www.georgetownclimate.org/reports/lessons-in-regional-resilience.html>

The Georgetown Climate Center worked with local leaders in six regions to capture the roles and successes of regional collaboratives that are emerging across the country, and developed case studies featuring the following:

- The King County-Cities Climate Collaboration in Washington  
<https://www.georgetownclimate.org/reports/lessons-in-regional-resilience-the-king-county-cities-climate-collaboration.html>
- The Capital Region Climate Readiness Collaborative in the six-county California Capital (Sacramento) region  
<https://www.georgetownclimate.org/reports/lessons-in-resilience-the-capital-region-climate-readiness-collaborative.html>

- The Sierra Climate Adaptation and Mitigation Partnership in the 22-county rural Sierra Nevada region  
<https://www.georgetownclimate.org/reports/lessons-in-resilience-the-sierra-climate-adaptation-and-mitigation-partnership.html>
- The Los Angeles Regional Collaborative for Climate Action and Sustainability in Los Angeles County, California  
<https://www.georgetownclimate.org/reports/lessons-in-regional-resilience-the-los-angeles-regional-collaborative-for-climate-action-and-sustainability.html>
- The San Diego Regional Climate Collaborative in San Diego County, California  
<https://www.georgetownclimate.org/reports/lessons-in-regional-resilience-the-san-diego-regional-climate-collaborative.html>
- The Southeast Florida Regional Climate Change Compact in the four-county Southeast Florida region  
<https://www.georgetownclimate.org/reports/lessons-in-regional-resilience-the-southeast-florida-regional-climate-change-compact.html>

The Georgetown Climate Center's report, Lessons in Regional Resilience, documents lessons learned from regional climate collaboratives, which are bringing together local governments and other stakeholders to coordinate climate change initiatives at a regional level.

[https://www.georgetownclimate.org/files/report/GCC-Lessons-in-Regional-Resilience-Synthesis-Jan\\_2017.pdf](https://www.georgetownclimate.org/files/report/GCC-Lessons-in-Regional-Resilience-Synthesis-Jan_2017.pdf)