

San Francisco Bay Conservation and Development Commission

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TO: Environmental Justice Commissioner Working Group Committee Members

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SUBJECT: Background Material for Discussion of Shoreline Protection and Environmental Justice at BCDC's Environmental Justice Commissioner Working Group meeting on November 1, 2018

Background

On July 20, 2017, at the culmination of the commissioner workshop series on rising sea levels, the Commission voted to initiate a process to amend the San Francisco Bay Plan (Bay Plan) in order "to address social equity and environmental justice" by updating policies in certain sections of the Bay Plan, specifically:

1. Shoreline Protection;
2. Public Access;
3. Mitigation; and/or
4. Adding a new section on Social Equity and Environmental Justice.

Questions for the Working Group to Consider

1. What can BCDC learn from other policy examples or recommendations? How could BCDC's existing policies be amended? Or are there new policies that could be created?
2. Can or should BCDC require an equity or EJ analysis in the permitting of shoreline protection structures? What would such an analysis look like?
3. How can BCDC address current and future inundation of contaminated lands?

Discussion Materials

On November 1, 2018, BCDC staff will lead a discussion on how to incorporate environmental justice and social equity into BCDC's Bay Plan shoreline protection policies. Staff requests that the working group review the following materials:

1. Sections of the McAteer-Petris Act and the San Francisco Bay Plan pertaining to shoreline protection;
2. Sections of the San Francisco Bay Plan pertaining to climate change (note: this section has not been approved by the Commission to amend but often is used in tandem with the shoreline protection policies);
3. Portions of the California Coastal Commission's and draft environmental justice policy;
4. Portions of the California State Lands Commission's draft environmental justice policy;
5. Portions of the Environmental Justice Working Group's Recommendations for the State Lands Commission's Environmental Justice Policy Update; and
6. Portions of the Climate Justice Working Group's Review of Safeguarding California Implementation Action Plans and Recommendations for 2017 Update of Safeguarding California.

1. Sections of the McAteer-Petris Act and the San Francisco Bay Plan pertaining to shoreline protection.

The McAteer-Petris Act

66605. Findings and Declarations as to Benefits, Purposes and Manner of Filling.

The Legislature further finds and declares:

- A. That further filling of San Francisco Bay and certain waterways specified in subdivision (e) of Section 66610 should be authorized only when public benefits from fill clearly exceed public detriment from the loss of the water areas and should be limited to water-oriented uses (such as ports, water-related industry, airports, bridges, wildlife refuges, water-oriented recreation, and public assembly, water intake and discharge lines for desalinization plants and power generating plants requiring large amounts of water for cooling purposes) or minor fill for improving shoreline appearance or public access to the bay.
- B. That fill in the bay and certain waterways specified in subdivision (e) of Section 66610 for any purpose should be authorized only when no alternative upland location is available for such purpose.
- C. That the water area authorized to be filled should be the minimum necessary to achieve the purpose of the fill.

- D. That the nature, location, and extent of any fill should be such that it will minimize harmful effects to the bay area, such as, the reduction or impairment of the volume surface area or circulation of water, water quality, fertility of marshes or fish or wildlife resources, or other conditions impacting the environment, as defined in Section 21060.5 of the Public Resources Code.
- E. That public health, safety, and welfare require that fill be constructed in accordance with sound safety standards which will afford reasonable protection to persons and property against the hazards of unstable geologic or soil conditions or of flood or storm waters.
- F. That fill should be authorized when the filling would, to the maximum extent feasible, establish a permanent shoreline.
- G. That fill should be authorized when the applicant has such valid title to the properties in question that he or she may fill them in the manner and for the uses to be approved.

San Francisco Bay Plan – Shoreline Protection Findings and Policies

- A. Well-designed shoreline protection projects, such as levees, wetlands, or riprap, can prevent shoreline erosion and damage from flooding.
- B. Because vast shoreline areas are vulnerable to flooding and because much of the shoreline consists of soft, easily eroded soils, shoreline protection projects are often needed to reduce damage to shoreline property and improvements. Structural shoreline protection, such as riprap, levees, and seawalls, often requires periodic maintenance and reconstruction.
- C. Most structural shoreline protection projects involve some fill, which can adversely affect natural resources, such as water surface area and volume, tidal circulation, and wildlife use. Structural shoreline protection can further cause erosion of tidal wetlands and tidal flats, prevent wetland migration to accommodate sea level rise, create a barrier to physical and visual public access to the Bay, create a false sense of security and may have cumulative impacts. Physical and visual public access can be provided on levees and other protection structures. As the rate of sea level rise accelerates and the potential for shoreline flooding increases, the demand for new shoreline protection projects will likely increase. Some projects may involve extensive amounts of fill.
- D. Structural shoreline protection is most effective and less damaging to natural resources if it is the appropriate kind of structure for the project site and erosion and flood problem, and is properly designed, constructed, and maintained. Because factors affecting erosion and flooding vary considerably, no single protective method or structure is appropriate in all situations. When a structure is not appropriate or is improperly designed and constructed to meet the unique site characteristics, flood conditions and erosion forces at a project site, the structure is more likely to fail, require additional fill to repair, have higher long-term maintenance costs because of higher frequency of repair, and cause greater disturbance and displacement of the site's natural resources.

- E. Addressing the impacts of sea level rise and shoreline flooding may require large-scale flood protection projects, including some that extend across jurisdictional or property boundaries. Coordination with adjacent property owners or jurisdictions to create contiguous, effective shoreline protection is critical when planning and constructing flood protection projects. Failure to coordinate may result in inadequate shoreline protection (e.g., a protection system with gaps or one that causes accelerated erosion in adjacent areas).
- F. Nonstructural shoreline protection methods, such as tidal marshes, can provide effective flood control, but are typically effective for erosion control only in areas experiencing mild erosion. In some instances, it may be possible to combine habitat restoration, enhancement or protection with structural approaches to provide protection from flooding and control shoreline erosion, thereby minimizing the shoreline protection project's impact on natural resources.
- G. Loose dirt, concrete slabs, asphalt, bricks, scrap wood and other kinds of debris, are generally ineffective in halting shoreline erosion or preventing flooding and may lead to increased fill or release of pollutants. Although providing some short-term shoreline protection, protective structures constructed of such debris materials typically fail rapidly in storm conditions because the material slides bayward or is washed offshore. Repairing these ineffective structures requires additional material to be placed along the shoreline, leading to unnecessary fill and disturbance of natural resources.
- H. New shoreline protection projects and the maintenance or reconstruction of existing projects and uses should be authorized if: (a) the project is necessary to provide flood or erosion protection for (i) existing development, use or infrastructure, or (ii) proposed development, use or infrastructure that is consistent with other Bay Plan policies; (b) the type of the protective structure is appropriate for the project site, the uses to be protected, and the erosion and flooding conditions at the site; (c) the project is properly engineered to provide erosion control and flood protection for the expected life of the project based on a 100-year flood event that takes future sea level rise into account; (d) the project is properly designed and constructed to prevent significant impediments to physical and visual public access; and (e) the protection is integrated with current or planned adjacent shoreline protection measures. Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes, should participate in the design.
- I. Riprap revetments, the most common shoreline protective structure, should be constructed of properly sized and placed material that meet sound engineering criteria for durability, density, and porosity. Armor materials used in the revetment should be placed according to accepted engineering practice, and be free of extraneous material, such as debris and reinforcing steel. Generally, only engineered quarrystone or concrete pieces that have either been specially cast, are free of extraneous materials from demolition debris, and are carefully selected for size, density, and durability will meet these requirements. Riprap revetments constructed out of other debris materials should not be authorized.

- J. Authorized protective projects should be regularly maintained according to a long-term maintenance program to assure that the shoreline will be protected from tidal erosion and flooding and that the effects of the shoreline protection project on natural resources during the life of the project will be the minimum necessary.
- K. Whenever feasible and appropriate, shoreline protection projects should include provisions for nonstructural methods such as marsh vegetation and integrate shoreline protection and Bay ecosystem enhancement, using adaptive management. Along shorelines that support marsh vegetation, or where marsh establishment has a reasonable chance of success, the Commission should require that the design of authorized protection projects include provisions for establishing marsh and transitional upland vegetation as part of the protective structure, wherever feasible.
- L. Adverse impacts to natural resources and public access from new shoreline protection should be avoided. Where significant impacts cannot be avoided, mitigation or alternative public access should be provided.

Amended October 2011

2. Sections of the San Francisco Bay Plan pertaining to climate change (note: this section has not been approved by the Commission to amend but often is used in tandem with the shoreline protection policies).

San Francisco Bay Plan – Climate Change Findings and Policies

- A. Greenhouse gases naturally reside in the earth's atmosphere, absorb heat emitted from the earth's surface and radiate heat back to the surface causing the planet to warm. This natural process is called the "greenhouse effect." Human activities since industrialization have increased the emissions of greenhouse gases through the burning of fossil fuels. The accumulation of these gases in the atmosphere is causing the planet to warm at an accelerated rate.
- B. The future extent of global warming is uncertain. It will be driven largely by future greenhouse gas emissions levels, which will depend on how global development proceeds. The United Nations Intergovernmental Panel on Climate Change (IPCC) developed a series of global development scenarios and greenhouse gas emissions scenarios for each development scenario. These emissions scenarios have been used in global models to develop projections of future climate, including global surface temperature and precipitation changes.
- C. Global surface temperature increases are accelerating the rate of sea level rise worldwide through thermal expansion of ocean waters and melting of land-based ice (e.g., ice sheets and glaciers). Bay water level is likely to rise by a corresponding amount. In the last century, sea level in the Bay rose nearly eight inches. Current science-based projections of global sea level rise over the next century vary widely. Using the IPCC greenhouse gas emission scenarios, in 2010 the California Climate Action Team (CAT) developed sea level rise projections (relative to sea level in 2000) for the state that range from 10 to 17 inches by 2050, 17 to 32 inches by 2070, and 31 to 69 inches at the

end of the century. The CAT has recognized that it may not be appropriate to set definitive sea level rise projections, and, based on a variety of factors, state agencies may use different sea level rise projections. Although the CAT values are generally recognized as the best science-based sea level rise projections for California, scientific uncertainty remains regarding the pace and amount of sea level rise. Moreover, melting of the Greenland and Antarctic ice sheet may not be reflected well in current sea level rise projections. As additional data are collected and analyzed, sea level rise projections will likely change over time. The National Academy of Sciences is in the process of developing a Sea Level Rise Assessment Report that will address the potential impacts of sea level rise on coastal areas throughout the United States, including California and the Bay Area.

- D. Climate change will alter key factors that contribute to shoreline flooding, including sea level and storm frequency and intensity. During a storm, low air pressure can cause storm surge (a rapid rise in water level) and increased wind and wave activity can cause wave run up, which will be higher as sea level rises. These storm events can be exacerbated by El Niño events, which generally result in persistent low air pressure, greater rainfall, high winds and higher sea level. The coincidence of intense winter storms, extreme high tides, and high runoff, in combination with higher sea level, will increase the frequency and duration of shoreline flooding long before areas are permanently inundated by sea level rise alone.
- E. Shoreline areas currently vulnerable to a 100-year flood event may be subjected to inundation by high tides at mid-century. Much of the developed shoreline may require new or upgraded shoreline protection to reduce damage from flooding. Shoreline areas that have subsided are especially vulnerable to sea level rise and may require more extensive shoreline protection. The Commission, along with other agencies such as the National Oceanic and Atmospheric Administration, the Federal Emergency Management Agency, the United States Army Corps of Engineers, cities, counties, and flood control districts, is responsible for protecting the public and the Bay ecosystem from flood hazards. This can be best achieved by using a range of scientifically based scenarios, including projections, which correspond to higher rates of sea level rise. In planning and designing projects for the Bay shoreline, it is prudent to rely on the most current science-based and regionally specific projections of future sea level rise, develop strategies and policies that can accommodate sea level rise over a specific planning horizon (i.e., adaptive management strategies), and thoroughly analyze new development to determine whether it can be adapted to sea level rise.
- F. Natural systems and human communities are considered to be resilient when they can absorb and rebound from the impacts of weather extremes or climate change and continue functioning without substantial outside assistance. Systems that are currently under stress often have lower adaptive capacity and may be more vulnerable or susceptible to harm from climate change impacts. Human communities with adaptive capacity can adjust to climate change impacts by taking actions to reduce the potential damages, taking advantage of new opportunities arising from climate change, and

accommodating the impacts. Understanding vulnerabilities to climate change is essential for assessing climate change risks to a project, the Bay or the shoreline. Risk is a function of the likelihood of an impact occurring and the consequence of that impact. Climate change risk assessments identify and prioritize issues that can be addressed by adaptation strategies.

- G. In the context of climate change, mitigation refers to actions taken to reduce greenhouse gas emissions, and adaptation refers to actions taken to address potential or experienced impacts of climate change that reduce risks. Adaptation actions that protect existing development and infrastructure can include protecting shorelines, promoting appropriate infill development, and designing new construction to be resilient to sea level rise. Another option is relocating structures out of flood and inundation zones. Some actions can integrate adaptation, mitigation, and flood protection strategies and may be cost-effective when implemented before sea level rises. For example restoring tidal marshes sequesters carbon, provides flood protection and provides habitat, and may protect lives, property and ecosystems. Identifying appropriate adaptation strategies requires complex policy considerations. Implementing many adaptation strategies will require action and funding by federal, state, regional and local agencies with planning, funding and land use decision-making authority beyond the Commission's jurisdiction.
- H. In the context of sea level rise adaptation, it is likely that myriad innovative approaches will emerge, likely including financing mechanisms to spread equitably the costs of protection from sea level rise, design concepts and land management practices. Effective, innovative adaptation approaches minimize public safety risks and impacts to critical infrastructure; maximize compatibility with and integration of natural processes; are resilient over a range of sea levels, potential flooding impacts and storm intensities; and are adaptively managed. Developing innovative adaptation approaches will require financial resources, testing and refinement to ensure that they effectively protect the Bay ecosystem and public safety before they are implemented on a large scale. Developing the right mix of approaches would best be accomplished through a comprehensive regional adaptation strategy developed through a process involving various stakeholders and local, regional, state and federal agencies.
- I. Adaptive management is a cyclic, learning-oriented approach that is especially useful for complex environmental systems characterized by high levels of uncertainty about system processes and the potential for different ecological, social and economic impacts from alternative management options. Effective adaptive management requires setting clear and measurable objectives, collecting data, reviewing current scientific observations, monitoring the results of policy implementation or management actions, and integrating this information into future actions.
- J. The principle of sustainability embodies values of equity, environmental and public health protection, economic vitality and safety. The goal of sustainability is to conduct human endeavors in a manner that will avoid depleting natural resources for future generations and producing no more than can be assimilated through natural processes,

while providing for improvement of the human condition for all the people of the world. Efforts to improve the sustainability of natural systems and human communities can improve their resilience to climate change by increasing their adaptive capacity.

- K. Shoreline development and infrastructure, critical to public and environmental health and the region's economic prosperity, may be, or may become, vulnerable to flooding from sea level rise and storm activity. Public safety may be compromised and personal property and agricultural land may be damaged or lost during floods. Important public shoreline infrastructure and facilities, such as airports, ports, regional transportation facilities, landfills, contaminated lands and wastewater treatment facilities are at risk of flood damage that could require costly repairs, or result in the interruption or loss of vital services or degraded water quality. A current lack of funding to address projected impacts from sea level rise necessitates a collaborative approach with all stakeholder groups to find strategic and innovative solutions to advance the Bay Area's ability to meet environmental, public health, equity and economic goals.
- L. Waterfront parks, beaches, public access sites, and the Bay Trail are particularly vulnerable to flooding from sea level rise and storm activity because they are located immediately adjacent to the Bay. Flooding of, or damage to these areas would adversely affect the region's quality of life, if important public spaces and recreational opportunities are lost.
- M. The Bay ecosystem contains diverse and unique plants and animals and provides many benefits to humans. For example, tidal wetlands improve water quality, sequester carbon and can provide flood protection. Tidal high marsh and adjacent ecotones are essential to many tidal marsh species including endangered species. Agricultural lands along the Bay shoreline function as buffers that can reduce the adverse impacts of nearby land uses and activities on the Bay and tidal marshes and can also provide habitat for terrestrial species. The Bay ecosystem is already stressed by human activities that lower its adaptive capacity, such as diversion of freshwater inflow and loss of tidal wetlands. Climate change will further alter the ecosystem by inundating or eroding wetlands and ecotones, changing sediment dynamics, altering species composition, raising the acidity of Bay waters, changing freshwater inflow or salinity, altering the food web, and impairing water quality, all of which may impair the system's ability to rebound and function. Moreover, further loss of tidal wetlands will increase the risk of shoreline flooding.
- N. Some Bay Area communities, particularly those whose residents have low incomes, disabilities or are elderly, may lack the resources or capacity to respond effectively to the impacts of sea level rise and storm activity. Financial and other assistance is needed to achieve regional equity goals and help everyone be part of resilient shoreline communities.

- O. Approaches for ensuring public safety in developed vulnerable shoreline areas through adaptive management strategies include but are not limited to: (1) protecting existing and planned appropriate infill development; (2) accommodating flooding by building or renovating structures or infrastructure systems that are resilient or adaptable over time; (3) discouraging permanent new development when adaptive management strategies cannot protect public safety; (4) allowing only new uses that can be removed or phased out if adaptive management strategies are not available as inundation threats increase; and (5) over time and where feasible and appropriate, removing existing development where public safety cannot otherwise be ensured. Determining the appropriate approach and financing structure requires the weighing of various policies and is best done through a collaborative approach that directly involves the affected communities and other governmental agencies with authority or jurisdiction. Some adaptive management strategies may require action and financing on the regional or sub-regional level across jurisdictions.
- P. The Association of Bay Area Governments and the Metropolitan Transportation Commission initiated the FOCUS program to develop a regional strategy that promotes a more compact Bay Area land use pattern. In consultation with local governments, the FOCUS program has identified Priority Development Areas for infill development in the Bay Area. These Priority Development Areas, along with other sites, are anticipated to be key components of the Bay Area's Sustainable Communities Strategy that will be adopted and periodically updated pursuant to the Sustainable Communities and Climate Protection Act of 2008 (SB 375). One of the Commission's objectives in adopting climate change policies is to facilitate implementation of the Sustainable Communities Strategy. Some shoreline areas that are vulnerable to flooding are already improved with public infrastructure and private development that has regionally significant economic, cultural or social value, and can accommodate infill development.
- Q. When planning or regulating development within areas vulnerable to flooding from sea level rise, allowing small projects, such as minor repairs of existing facilities, and interim uses may be acceptable if they do not significantly increase overall risks to public safety.
- R. In some cases, the regional goals of encouraging infill development, remediating environmentally degraded land, redeveloping closed military bases and concentrating housing and job density near transit may conflict with the goal of minimizing flood risk by avoiding development in low-lying areas vulnerable to flooding. Methods to minimize this conflict, include, but are not limited to: clustering infill or redevelopment in low-lying areas on a portion of the property to reduce the area that must be protected; formulating an adaptation strategy for dealing with rising sea level and shoreline flooding with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; incorporating measures that will enhance project resilience and sustainability; and developing a project-based financial strategy and/or a public financing strategy, as appropriate, to fund future flood protection for the project, which may also protect existing nearby development. Reconciling these different worthy goals and taking appropriate action requires weighing competing policy

considerations and would be best accomplished through a collaborative process involving diverse stakeholders, similar to that being undertaken by the Joint Policy Committee to develop the Sustainable Communities Strategy.

- S. Some undeveloped low-lying areas that are vulnerable to shoreline flooding contain important habitat or provide opportunities for habitat enhancement. In these areas, development that would have regional benefits could preclude wetland enhancement that would also have regional benefits. Some developed areas may be suitable for ecosystem restoration, if existing development is removed to allow the Bay to migrate inland, although relocating communities is very costly and may result in the displacement of neighborhoods.
- T. There are multiple local, state, federal, and regional government agencies with authority over the Bay and shoreline. Local governments have broad authority over shoreline land use, but limited resources to address climate change adaptation. Working collaboratively with local governments, including agencies with responsibility for flood protection is desirable to optimize scarce resources and create the flexibility needed to plan amidst a high degree of uncertainty.
- U. Government jurisdictional boundaries and authorities in the Bay Area are incongruent with the regional scale and nature of climate-related challenges. The Joint Policy Committee, which is comprised of regional agencies, provides a framework for regional decision-making to address climate change through consistent and effective regionwide policy and to provide local governments with assistance and incentives for addressing climate change. The Commission can collaborate with the Joint Policy Committee to assure that the Bay Plan Climate Change policies are integrated with the emerging Sustainable Communities Strategy and other regional agencies' policies that deal with climate change issues.
- V. The Commission's legal authority and regulatory jurisdiction were created to address the Legislative findings and advance the declarations of state policy established in the McAteer-Petris Act and the Suisun Marsh Preservation Act of 1977. Climate change and sea level rise were not considerations when this authority and jurisdiction were established.
- W. The California Ocean Protection Council has endorsed the guiding principles of the California Climate Adaptation Strategy, which recommends that state agencies pursue the following policy objectives in their adaptation planning:
 1. Protect public health and safety and critical infrastructure;
 2. Protect restore, and enhance ocean and coastal ecosystems, on which the State economy and well-being depend;
 3. Ensure public access to coastal areas and protect beaches, natural shoreline, and park and recreational resources;

4. Plan and design new development and communities for long-term sustainability in the face of climate change;
5. Facilitate adaptation of existing development and communities to reduce their vulnerability to climate change impacts over time; and
6. Begin now to adapt to the impacts of climate change.

The California Climate Adaptation Strategy recognizes that significant and valuable development has been built along the California coast for over a century. Some of the development is currently threatened by sea level rise or will be threatened in the near future. Similarly, the coastal zone is home to many threatened or endangered species and sensitive habitats. The strategy acknowledges that the high financial, ecological, social and cultural costs of protecting everything may prove to be impossible; in the long run, protection of everything may be both futile and environmentally destructive. The strategy recommends that decision guidance strategies frame cost-benefit analyses so that all public and private costs and benefits are appropriately considered.

The strategy further recommends that state agencies should generally not plan, develop, or build any new significant structure in a place where that structure will require significant protection from sea-level rise, storm surges, or coastal erosion during the expected life of the structure. However, the strategy also acknowledges that vulnerable shoreline areas containing existing development or proposed for new development that has or will have regionally significant economic, cultural, or social value may have to be protected, and infill development in these areas should be closely scrutinized and may be accommodated. The strategy recommends that state agencies should incorporate this policy into their decisions. If agencies plan, permit, develop or build any new structures in hazard zones, the California Climate Adaptation Strategy recommends that agencies employ or encourage innovative engineering and design solutions so that the structures are resilient to potential flood or erosion events, or can be easily relocated or removed to allow for progressive adaptation to sea level rise, flood and erosion.

The strategy further recommends that the state should consider prohibiting projects that would place development in undeveloped areas already containing critical habitat, and those containing opportunities for tidal wetland restoration, habitat migration, or buffer zones. The strategy also encourages projects that protect critical habitats, fish, wildlife and other aquatic organisms and connections between coastal habitats. The strategy recommends pursuing activities that can increase natural resiliency, such as restoring tidal wetlands, living shorelines, and related habitats; managing sediment for marsh accretion and natural flood protection; and maintaining upland buffer areas around tidal wetlands.

1. The Commission intends that the Bay Plan Climate Change findings and policies will be used as follows:
 - a. The findings and policies apply only to projects and activities located within the following areas: San Francisco Bay, the 100-foot shoreline band, salt ponds, managed wetlands, and certain waterways, as these areas are described in Government Code section 66610, and the Suisun Marsh, as this area is described in Public Resources Code section 29101;

- b. For projects or activities that are located partly within the areas described in subparagraph a and partly outside such area, the findings and policies apply only to those activities or that portion of the project within the areas described in subparagraph a;
 - c. For the purposes of implementing the federal Coastal Zone Management Act, the findings and policies do not apply to projects and activities located outside the areas described in subparagraph a, even if those projects or activities may otherwise be subject to consistency review pursuant to the federal Coastal Zone Management Act; and
 - d. For purposes of implementing the California Environmental Quality Act, the findings and policies are not applicable portions of the Bay Plan for purposes of CEQA Guideline 15125(d) for projects and activities outside the areas described in subparagraph a and, therefore, a discussion of whether such proposed projects or activities are consistent with the policies is not required in environmental documents.
2. When planning shoreline areas or designing larger shoreline projects, a risk assessment should be prepared by a qualified engineer and should be based on the estimated 100-year flood elevation that takes into account the best estimates of future sea level rise and current flood protection and planned flood protection that will be funded and constructed when needed to provide protection for the proposed project or shoreline area. A range of sea level rise projections for mid-century and end of century based on the best scientific data available should be used in the risk assessment. Inundation maps used for the risk assessment should be prepared under the direction of a qualified engineer. The risk assessment should identify all types of potential flooding, degrees of uncertainty, consequences of defense failure, and risks to existing habitat from proposed flood protection devices.
3. To protect public safety and ecosystem services, within areas that a risk assessment determines are vulnerable to future shoreline flooding that threatens public safety, all projects—other than repairs of existing facilities, small projects that do not increase risks to public safety, interim projects and infill projects within existing urbanized areas—should be designed to be resilient to a mid-century sea level rise projection. If it is likely the project will remain in place longer than mid-century, an adaptive management plan should be developed to address the long-term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century.
4. To address the regional adverse impacts of climate change, undeveloped areas that are both vulnerable to future flooding and currently sustain significant habitats or species, or possess conditions that make the areas especially suitable for ecosystem enhancement, should be given special consideration for preservation and habitat enhancement and should be encouraged to be used for those purposes.

5. Wherever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.
6. The Commission, in collaboration with the Joint Policy Committee, other regional, state and federal agencies, local governments, and the general public, should formulate a regional sea level rise adaptation strategy for protecting critical developed shoreline areas and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity.

The Commission recommends that: (1) the strategy incorporate an adaptive management approach; (2) the strategy be consistent with the goals of SB 375 and the principles of the California Climate Adaptation Strategy; (3) the strategy be updated regularly to reflect changing conditions and scientific information and include maps of shoreline areas that are vulnerable to flooding based on projections of future sea level rise and shoreline flooding; (4) the maps be prepared under the direction of a qualified engineer and regularly updated in consultation with government agencies with authority over flood protection; and (5) particular attention be given to identifying and encouraging the development of long-term regional flood protection strategies that may be beyond the fiscal resources of individual local agencies.

Ideally, the regional strategy will determine where and how existing development should be protected and infill development encouraged, where new development should be permitted, and where existing development should eventually be removed to allow the Bay to migrate inland.

The entities that formulate the regional strategy are encouraged to consider the following strategies and goals:

- a. Advance regional public safety and economic prosperity by protecting: (i) existing development that provides regionally significant benefits; (ii) new shoreline development that is consistent with other Bay Plan policies; and (iii) infrastructure that is crucial to public health or the region's economy, such as airports, ports, regional transportation, wastewater treatment facilities, major parks, recreational areas and trails;
- b. Enhance the Bay ecosystem by identifying areas where tidal wetlands and tidal flats can migrate landward; assuring adequate volumes of sediment for marsh accretion; identifying conservation areas that should be considered for acquisition, preservation or enhancement; developing and planning for flood protection; and maintaining sufficient transitional habitat and upland buffer areas around tidal wetlands;
- c. Integrate the protection of existing and future shoreline development with the enhancement of the Bay ecosystem, such as by using feasible shoreline protection measures that incorporate natural Bay habitat for flood control and erosion prevention;

- d. Encourage innovative approaches to sea level rise adaptation;
 - e. Identify a framework for integrating the adaptation responses of multiple government agencies;
 - f. Integrate regional mitigation measures designed to reduce greenhouse gas emissions with regional adaptation measures designed to address the unavoidable impacts of climate change;
 - g. Address environmental justice and social equity issues;
 - h. Integrate hazard mitigation and emergency preparedness planning with adaptation planning by developing techniques for reducing contamination releases, structural damage and toxic mold growth associated with flooding of buildings, and establishing emergency assistance centers in neighborhoods at risk from flooding;
 - i. Advance regional sustainability, encourage infill development and job creation, provide diverse housing served by transit and protect historical and cultural resources;
 - j. Encourage the remediation of shoreline areas with existing environmental degradation and contamination in order to reduce risks to the Bay's water quality in the event of flooding;
 - k. Support research that provides information useful for planning and policy development on the impacts of climate change on the Bay, particularly those related to shoreline flooding;
 - l. Identify actions to prepare and implement the strategy, including any needed changes in law; and
 - m. Identify mechanisms to provide information, tools, and financial resources so local governments can integrate regional climate change adaptation planning into local community design processes.
7. Until a regional sea level rise adaptation strategy can be completed, the Commission should evaluate each project proposed in vulnerable areas on a case-by-case basis to determine the project's public benefits, resilience to flooding, and capacity to adapt to climate change impacts. The following specific types of projects have regional benefits, advance regional goals, and should be encouraged, if their regional benefits and their advancement of regional goals outweigh the risk from flooding:
- a. Remediation of existing environmental degradation or contamination, particularly on a closed military base;
 - b. A transportation facility, public utility or other critical infrastructure that is necessary for existing development or to serve planned development;

- c. A project that will concentrate employment or housing near existing or committed transit service (whether by public or private funds or as part of a project), particularly within those Priority Development Areas that are established by the Association of Bay Area Governments and endorsed by the Commission, and that includes a financial strategy for flood protection that will minimize the burdens on the public and a sea level rise adaptation strategy that will adequately provide for the resilience and sustainability of the project over its designed lifespan;
 - d. A natural resource restoration or environmental enhancement project. The following specific types of projects should be encouraged if they do not negatively impact the Bay and do not increase risks to public safety;
 - e. Repairs of an existing facility;
 - f. A small project;
 - g. A use that is interim in nature and either can be easily removed or relocated to higher ground or can be amortized within a period before removal or relocation of the proposed use would be necessary; and
 - h. A public park.
8. To effectively address sea level rise and flooding, if more than one government agency has authority or jurisdiction over a particular issue or area, project reviews should be coordinated to resolve conflicting guidelines, standards or conditions.

Adopted October 2011

3. Portions of the California Coastal Commission's and draft environmental justice policy.

Th[e Environmental Justice] Policy Statement is designed to achieve more meaningful engagement, equitable process, effective communication, and stronger coastal protection benefits that are accessible to everyone, and incorporates and is further implemented by the following Statement of Principles:

Climate Change. The Commission recognizes that climate change impacts on coast and ocean resources have a disproportionate impact on underserved communities who may rely on public access for indigenous gathering activities, subsistence fishing, and lower-cost recreational opportunities. A warming climate means that access to cooler coastal temperatures will increasingly become a public health imperative for inland residents. Low-income communities are more vulnerable to climate-driven water quality and supply issues that can result from seawater intrusion, contamination from extreme storm events, and drought. The Commission will take this reality into consideration when analyzing the effectiveness and the impacts of sea level rise adaptation and mitigation measures.

4. Portions of the California State Lands Commission's Draft Environmental Justice Policy.

Environmental Justice Vision and Objectives

a. ANALYZE IMPACTS/IDENTIFY BENEFITS

- (1) Assess and analyze information gained from environmental justice research and outreach to evaluate how environmental justice communities might be impacted by a proposed Commission action. Where applicable, analyze climate justice and climate resiliency and adaptation for disadvantaged communities.
- (2) Identify and analyze potential benefits that may accrue to disadvantaged communities from changes to project proposals and create greater equity in the distribution of environmental benefits and burdens resulting from the Commission's decisions.

b. REDUCE IMPACTS/INCREASE BENEFITS

- (1) Strive to minimize additional burdens and increase benefits to marginalized and disadvantaged communities through careful consideration of the equitable distribution of benefits and burdens on vulnerable communities resulting from a proposed project or lease.
- (2) Work to reduce and mitigate adverse impacts on vulnerable communities that are disproportionately impacted by reduced air and water quality, water pollution, climate change, sea-level rise, displacement, lost economic opportunities, and inadequate access to open space and Public Trust lands and resources.

5. Portions of the Environmental Justice Working Group's Recommendations for the State Lands Commission's Environmental Justice Policy Update.

a. CLIMATE ADAPTATION AND RESILIENCE

- (1) While climate change will affect everyone, not everyone will be affected the same way, nor have the same ability to recover. The most vulnerable and disadvantaged communities need the most help because they often lack the resources to relocate, find jobs, and seek medical support. Consider frontline communities first in the development and implementation of climate adaptation programs, including adaptation to sea level rise.
- (2) Study, include and implement climate resiliency and adaptation for EJ communities as outlined in the Climate Justice section of the Safeguarding California Plan for adaptation (2018 update) as it relates to the jurisdiction of the SLC.
- (3) Implement principles from the Public Trust doctrine relating to sea-level rise.

- (4) Study “just transition” strategies that EJ leaders are developing to move away from an extractive economy that negatively impacts indigenous people and EJ communities, and instead moves toward a local living economy and resiliency practices that honor our relationship with the natural world.
- (5) Support allocation of comparable resources, including funding for disadvantaged communities, to the more than 150 Native Nations in California to support their development of adaptation and resilience strategies for their communities.
- (6) Where appropriate, protect communities along the State’s shoreline using natural habitats to stem the risks of severe coastal flooding caused by storms and high water levels. Promote nature-based flood protection through wetland and habitat restoration. Support construction and/or improvement of flood protection levees that are a necessary part of wetland restoration activities and protect existing shoreline communities, agriculture, and infrastructure.
- (7) Take steps to ensure that sea-level rise does not exacerbate differential coastal access across income and racial lines, including incorporating consideration of those issues in permitting commercial uses of public trust lands and resources.

6. Portions of the Climate Justice Working Group’s Review of Safeguarding California Implementation Action Plans and Recommendations for 2017 Update of Safeguarding California.

Sector Plan Analysis and Recommendations of the Oceans and Coastal Resources sector implementation action plan (IAP).

Part 1: Review of individual IAP

What issues and programs included in this IAP address the needs of communities most vulnerable to climate change? What are the principal challenges to implementation of such issues and programs?

- **Vulnerability Assessments**
 - Actions by the BCDC to evaluate vulnerable communities in Contra Costa and Alameda county are helpful, but more effort should be made to include input from residents. Although much of the implementation lies within cities, counties, and agencies, there is a missing component of engagement of residents living in these vulnerable communities.
 - In performing an analysis of vulnerable communities, there should be workshops/community events for awareness and community action. Communities in areas of higher risk of sea-level rise and coastal flooding must be advised of the potential risk to make necessary preparations. In EJ communities, moving out of a current residence can be difficult due to various socioeconomic factors.
 - Allocation of grant funding for disadvantaged coastal communities must include outreach and engagement to residents living these communities.

- **Public Trust Doctrine**
 - California should prioritize public coastal access, because it provides no-cost recreational opportunities and access to natural resources for disadvantaged communities in coastal regions who cannot afford beachfront property. However, as the coastline moves inland, the boundaries between public coastal land and private property will need to move inland as well. California should not prioritize the preservation of private coastal property over public coastal recreational access.
- **In Granting Coastal development permits, the following considerations should be made:**
 - CCC should avoid coastal protection measures such as seawalls that protect beachfront homes behind them at the expense of diminishing public recreational areas in front of them.
- **Research and Management practices must include outreach and community education for public recreational areas**
 - Findings of potentially hazardous conditions for recreation or fishing should be made available to the community in a way that respects culture and diversity.
- **Adaptation Co-benefits**
 - Since many energy facilities such as refineries and power plants are in coastal communities, the California Air Resources board should consider the proximity of these stationary sources of pollution to disadvantaged communities when assessing adaptation co-benefits. Major transportation hubs like airports and ports must also be considered.
 - In the development of criteria for defined adaptation co-benefits, environmental justice communities must be a part of developing this criterion. Cumulative impacts from pollution and climate change impacts like sea level rise and extreme heat events could have deadly impacts on our communities. By engaging environmental justice communities, CARB will be able to create a criterion that will truly benefit our at-risk communities through adaptation co-benefits.
 - *Example:* Coastal residents living in communities with constant exposure to pollution from varying surrounded sources are sensitive to extreme events. The extra sensitivity of being acclimatized to cooler weather and the result respiratory illnesses from exposure to cumulative impacts can result in deadly extreme heat events.

What issues and programs are missing from this IAP? What are the principal challenges to implementation of missing issues and programs?

- **Cleanup sites in coastal locations must be addressed quickly to prevent higher future costs**
 - Cleanup sites such as EPA Superfund sites often have long timelines for removal and remediation, and have been capped or had other temporary measures taken to prevent spreading of contamination. However, coastal flooding events present higher risks of spreading contamination from cleanup sites, endangering nearby communities and creating much higher cleanup costs. Coastal sites need accelerated timelines for cleanup to prevent higher economic and human costs in the future.
- **Improve flood resilience by limiting and reducing coastal industrial infrastructure**
 - Industrial areas are often located along coasts and rivers because of the former needs of obsolete technology, yet because these areas continue to be zoned industrial, they are the default sites for new industrial facilities like power plants. With flooding risks from increasingly frequent extreme storm events, siting transportation and energy infrastructure along coasts and rivers increases communities' vulnerabilities to natural disasters by creating potential shutoffs of critical services in emergencies. Municipalities need to update their Coastal Plans with sea level rise projections and will often need assistance from the state to discourage new industrial development on the coast and remove industrial infrastructure from the coast.
- **Transportation facilities like ports, airports, rail lines, and piers must also make efforts to harden their infrastructure as to not harm nearby communities.**

What further actionable recommendations and program areas should be incorporated into future adaptation work in this sector?

- Major ongoing coastal resilience planning must include environmental justice communities
 - As state and local agencies plan for coastal climate resilience, low-income communities of color rarely have a seat at the table, yet will be most negatively impacted. Planners need to do more to engage environmental justice communities, including convening and dedicating resources to tables of people of color-led community groups to play a major role in developing coastal resilience plans.

Part 2: Cross-cutting questions

As an overarching matter, how can California better listen to and integrate the perspectives of vulnerable communities, and address their needs, as it develops the 2017 update to Safeguarding California?

- **Outreach and education to vulnerable communities**
 - Outreach must be performed in a manner that considers the culture and diversity of vulnerable coastal communities
- **Special considerations should be made for publicly attended meetings (i.e. Coastal Commission hearings)**
 - Provide interpreters, or interpreting services
 - Offer variety of public commenting periods for there to be opportunities for comments in the afternoon
 - Alternate locations should be considered so that hearings and meetings can be held closer to communities of color, centric city locations with adequate public transportation
- **Defining Vulnerable coastal communities**
 - Low-income residents living in areas that face sea-level rise and coastal flooding require incentives and programs to help implement cost-effective green infrastructure to reduce flood risk.
- **Low-income residents living in residential areas bordering industrial land uses require these types of infrastructure to protect property and livelihood from hazardous and toxic releases transported through flooding.**
 - Race, Income, and linguistic isolation are important to consider when evaluating vulnerable communities. Considerations for vulnerable communities must be made across all sectors for coastal planning.
 - Major Energy facilities such as power plants, refineries, toxic facilities, and oil drilling sites should be taken into consideration when assessing potential impact of sea level rise on these facilities. Energy facilities must assess the impact of system failures and transference of toxic and hazardous releases could have on surrounding communities.
- **Findings of potential impacts of sea-level rise or coastal flooding of local energy facilities should be made available to the public.**
- **New or Expanding Energy Facilities in Coastal communities**
 - Proposals for new or expanding energy facilities must take into account impacts of sea-level rise and potentially infeasible mitigation of impacts on the surrounding community.