SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION
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TO: Commissioners and Alternates

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SUBJECT: Staff Report, Revised Preliminary Recommendation and Environmental Assessment for Proposed Bay Plan Amendment 1-08 Concerning Climate Change
(For Commission consideration on September 1, 2011)

Revised Preliminary Staff Recommendation Summary

The staff preliminarily recommends that the Commission:

1. Amend the Bay Plan Tidal Marsh and Tidal Flats findings and policies (pp. 7 through 11);
2. Add a new Climate Change findings and policies section to the Bay Plan at the beginning of Part IV "Developing the Bay and Shoreline Findings and Policies (pp. 12 through 26);" and
3. Amend the Bay Plan Safety of Fills, Protection of the Shoreline, and Public Access findings and policies (pp. 27 through 36).

Background

Between 1850 and 1960, one-third of San Francisco Bay was diked, filled or reclaimed as land. Alarmed by projections that as much as 70 percent of the remaining Bay might be lost by 2020, in 1965 the California Legislature passed the McAteer-Petris Act to create a new temporary state agency—the San Francisco Bay Conservation and Development Commission (BCDC). The new law directed BCDC to prepare a plan for the long-term use and protection of San Francisco Bay. The Commission delivered its *San Francisco Bay Plan* to the Legislature on time and under budget in 1968. The plan contained findings and policies the Commission recommended be used to guide future regulatory decisions on activities in and around the Bay. In 1969, the Legislature made BCDC a permanent state agency, adopted the Bay Plan by reference into state law, and directed the Commission to use the Bay Plan findings, policies and maps to guide the Commission's regulatory decisions on permit applications for development and other activities within BCDC's jurisdiction.

The Bay Plan includes findings and policies on 26 subject areas ranging from water quality and weather to commercial fishing and airports. All of the policies have equal status, and every BCDC permit decision must be consistent with all applicable policies. However, the policies are applied on a case-by-case basis to the specific conditions of that site where a project is proposed and the nature of the proposed project. As a result, not all of the policies apply in all situations. For example, the policies on dredging are not relevant to a proposed development project located entirely on existing land along the shoreline, and the policies on ports are not applied to a wetlands restoration project proposed in a salt pond.

In addition to serving as mandatory state policies that are enforced by the Commission through its regulatory authority, some the Bay Plan policies are declarations of the Commission's intention to undertake future studies or planning, and others offer advice to local governments, other agencies and organizations in dealing with Bay management issues. However, both state law and the Bay Plan stipulate that any such recommendations are advisory only and cannot be enforced by the Commission.

The Legislature directed the Commission to keep the Plan up-to-date so that it reflects the latest scientific research on the Bay and addresses emerging issues that could impact the Bay in the future. To accomplish this, the Legislature empowered the Commission to amend the Bay Plan if two thirds (18) of the 27 members of the Commission vote for the amendment, after providing an opportunity for public review of the proposed amendment and after holding a public hearing on the amendment. Over the past 42 years, the Commission has made numerous amendments to the Bay Plan, some of which dealt with simple matters, such as changing a boundary of a Plan map designation, and some of which have addressed major issues, such dredging and dredged material disposal.

The initial step in revising the Bay Plan is a policy decision by the Commission whether to consider an amendment dealing with a specified issue. Thereafter, the staff prepares a report containing the results of research and policy analysis on the issue, preliminary recommended findings and policies and an environmental assessment of the proposed amendment. One such staff report entitled, *Sea Level Rise: Predictions and Implications for San Francisco Bay*, was released in December 1987. Relying on this report in 1989, the Commission amended the findings and policies in the section of the Bay Plan dealing with Safety of Fills, making BCDC one of the first public agencies in the country to address the issue of sea level rise when making permit decisions and to provide policy advice to local governments.

Perhaps the biggest change the those twenty years since the Commission first adopted sea level rise policies is the attention received by the international, consensus-based approach to delivering scientific conclusions for policy-makers initiated by the United Nations Intergovernmental Panel on Climate Change (IPCC). Because the IPCC represents a wide range of scientific opinion, its conclusions are generally conservative, but widely accepted. However, another important change in the last twenty years is that the effects of climate change are already being observed. Conclusions in both the IPCC and state-sponsored work are based, in part, on observed changes in global surface temperature, ocean water temperature, ocean acidification, and land and sea ice melt. Finally, what was lacking twenty years ago was conclusive evidence that climate change is caused largely by human actions—primarily the release of carbon dioxide into the atmosphere. Today, such evidence solidly links the significant human contribution to greenhouse gases, beginning with industrialization, to increases in global temperature.

In 2006, the State of California used IPCC scenarios to develop a report on climate change impacts in the state. In that same year, the legislature passed the Global Warming Solutions Act requiring reductions in greenhouse gas emissions. The most recent update to the IPCC assessment reports was in 2007 and, in 2008, the state reported the results of an updated analysis of climate change scenarios. Both reports conclude that the reduction of greenhouse gases now will reduce the degree to which the world must adapt to the effects of climate change. However, it is inevitable that over the next century global temperatures will increase 1° to 3° C (1.8° to 5.4° F). To deal with this increase in temperature, adapting to climate change and its impacts is both unavoidable and essential.

Three years ago, the Commission decided to again deal with the issue of sea level rise within the larger context of global climate change. To accomplish this, in November 2008, the Commission initiated the process of considering Bay Plan Amendment No. 1-08 by authorizing the staff to propose amendments of the findings and policies in four sections of the Bay Plan—Tidal Marshes and Tidal Flats, Safety of Fills, Protection of the Shoreline, and Public Access—and to develop additional findings and policies in an entirely new section to the Plan entitled Climate Change. In

April 2009, the staff released a report entitled *Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on the Shoreline*. In addition to providing extensive background information on the most current scientific research on climate change, the report contained maps depicting the low-lying areas around the Bay that could be vulnerable to future flooding from sea level rise and storm surge. Along with the background report, the staff provided a preliminary recommendation on proposed Bay Plan amendments to address climate change.

The background report indicated that while the rate of global climate change will depend on the volume of future greenhouse gas emissions, sea level rise in San Francisco Bay could be as much as 16 inches by mid-century and 55 inches by the end of the century. By mid-century, 180,000 acres of Bay shoreline could be vulnerable to flooding, and 213,000 acres vulnerable by the end of the century. The area vulnerable to inundation with a 16-inch sea level rise roughly corresponds to today's 100-year floodplain. The economic value of Bay Area shoreline development at risk from a 55-inch rise in sea level is estimated at $62 billion—nearly double the estimated value of development vulnerable to sea level rise along California's Pacific Ocean coastline. An estimated 270,000 people in the Bay Area would be at risk of flooding from a 55-inch rise in sea level, 98 percent more than are currently at risk from flooding.

The Commission held its first public hearing on the preliminary staff recommendation on May 7, 2009. To respond to requests for more time for public review and input, the Commission held three more public hearings, held three public workshops and kept the public comment period open for three months. The staff revised its preliminary recommendation to address the public comments and incorporate suggestions that had been made to improve the amendment language, and a revised preliminary recommendation was released on October 1, 2009. The Commission held another public hearing on the revised preliminary staff recommendation on November 5, 2009, and another public workshop on December 3, 2009.

A third staff recommendation and response to comments was released on September 3, 2010. The Commission held eight public hearings on this draft during the fall of 2010, and the staff worked with local governments, business interests and environmental organizations to further refine the amendment language. In all, since April 2009, the Commission has held 35 public hearings, workshops and meetings on the amendment language as it has evolved, and the Commission will hold another public hearing on September 1, 2011 before voting on the amendment on October 6, 2011.

Five principal policy goals will be achieved by adopting proposed Bay Plan Amendment No. 1-08.

1. Outdated language on sea level rise policy that has been in the Bay Plan since 1989 will be eliminated. This current policy language recommends that new development not be approved in low-lying areas that are in danger of flooding now or in the future unless the development is elevated above possible flood levels. The amended policies allow protection from flooding, encourage innovative means of dealing with flood danger, and make it clear that local governments will determine how best to deal with development proposals inland of the Commission's jurisdiction.

2. A variety of types of projects that have regional benefits will be encouraged, and proposed new development will continue to be evaluated by the Commission on a case-by-case basis to determine if the benefits of a project outweigh the risk from flooding and to ensure steps are taken to deal with the flooding danger.

3. The Bay and other valuable natural resources within BCDC's jurisdiction will continue to have the same level of protection that has worked so well for the past half-century.

4. Because wetlands play vital roles in both reducing greenhouse gases and providing flood protection, existing tidal wetlands will continue to be protected and, where appropriate, expanded. To accomplish this, resource protection and habitat enhancement in undeveloped low-lying areas will be encouraged, but development will not be absolutely prohibited in these areas.

5. The Commission will commit itself to working with its regional partners, local governments, businesses, labor, environmentalists, investors, insurers, and the general public to develop a comprehensive regional strategy that deals with all the impacts of climate change. Such a strategy is essential to the Bay Area's long-term economic prosperity.

In addition to concerns that have been expressed about specific language in the proposed findings and policies, there has been considerable concern expressed about the maps of shoreline areas that are potentially vulnerable to flooding from sea level rise and storm surge. These maps can be found in both the staff background report and on the Commission's website.

At the most basic level, the maps depict areas around the Bay that have low elevations. Overlays compare these ground elevations with projected Bay water depths that are 16 inches (0.4 meter) and 55 inches (1.4 meters) higher to illustrate possible sea levels around the middle of the 21st century and the beginning of the 22nd century. The maps do not take into account wind and waves that would increase the extent of inundation, and do not show existing levees that might provide protection from flooding, because detailed information on wind and wave conditions and levee heights and strengths was not available at a regional scale. Nor do the maps show where new levees or other shoreline protection to prevent flooding could be built, or the cost of any such protection. These limitations of the maps are reflected in the following legal disclaimer on each map:

> "Inundation data does not account for existing shoreline protection or wave activity. These maps are for informational purposes only. Users, by their use, agree to hold harmless and blameless the State of California and its representatives and its agents for any liability associated with its use in any form. The maps and data shall not be used to assess actual coastal hazards, insurance requirements, or property values or be used in lieu of Flood Insurance Rate Maps issued by the Federal Emergency Management Agency (FEMA)."

Despite efforts to make it clear that the maps simply show low land elevations in relation to possible future water depths, three types of objections to the maps have been raised. The first is that the presence of the maps is inhibiting capital from being invested in what critics call the "inundation zone" around the Bay. While it may be true that some investors may be more cautious about supporting development around the Bay, the maps are not the cause of concern. As noted, the maps simply depict areas around the Bay that have low elevations in relation to projected water depths. These elevations will be the same whether or not BCDC's maps exist. Similar maps have been published by the U.S. Geological Survey, the California Energy Commission, the Pacific Institute, and others.

The second objection to the maps is that they depict the area over which BCDC intends to exert regulatory authority even though the maps will not be adopted as part of the Bay Plan and, therefore, cannot be used by the Commission in making regulatory decisions.

The Commission's "Bay" jurisdiction extends to the Mean High Tide line, an elevation that is established by the National Oceanic and Atmospheric Administration. If nothing is done to protect low-lying areas around the Bay, over time these areas could become flooded and eventually fall within BCDC's jurisdiction. With this in mind, some have conjectured that BCDC intends to extend its jurisdiction over this area now. This simply is not true. BCDC cannot change its jurisdiction without a change of state law, and BCDC has not requested such a change. And even if an area becomes flooded by Bay waters, BCDC has a legal obligation to notify a landowner of the flooding, and the landowner then has a year to repair any levee or other shoreline protection. If these repairs are made, BCDC's jurisdiction remains unchanged. If the area has no pre-existing shoreline protection, the proposed policies in Bay Plan Amendment No. 1-08 would allow the construction of such protection.

The third objection raised about the maps is that the Commission could use its authority under the federal Coastal Zone Management Act and the California Environmental Quality Act to exert jurisdiction over development proposals within the low-lying areas around the Bay that are vulnerable to future flooding and to pre-empt local government control. The Commission never had any such intention. Rather, the Commission's intention is to adopt Bay Plan Amendment No. 1-08, pursuant to the provisions of the McAteer-Petris Act and the Suisun Marsh Preservation Act of 1977. The Amendment is not intended to, and does not increase or decrease BCDC's jurisdiction or authority under either act. To express this intention and to reassure critics, proposed Bay Plan Climate Change Policy 1 was drafted in consultation with the Attorney General's staff and attorneys representing the business community, labor and local governments. Proposed Climate Change Policy 1 explicitly states that the climate change findings and policies will apply only within BCDC's current jurisdiction, that local governments will retain their authority over development more than 100 feet inland from the Bay shoreline, and that the provisions of the Bay Plan do not apply outside the Commission's jurisdiction for purposes of implementing the California Environmental Quality Act.

Global climate change has been described as one of the most challenging problems ever faced by humans. The quality of the lives of future generations depends on how the current generation deals with this challenge. The course outlined in Bay Plan Amendment No. 1-08 is an initial, cautious and modest step in the long journey the people of the Bay Area will need to take to ensure that our region remains viable, sustainable and prosperous in the future and that our beloved San Francisco Bay continues to be protected.

Consideration of Alternatives

On November 18, 2010, the Commission considered the Staff Report on Optional Strategic Approaches for Dealing with Proposed Bay Plan Amendment No. 1-08 Concerning Climate Change to respond to concerns about the third preliminary staff recommendation. Public comments expressed concerns about whether any amendments were needed to the Bay Plan to address climate change, about specific language proposed by the staff, about limiting the application of the amendments to the Commission's current jurisdiction, and about whether guidance should be provided to local governments on how to deal with sea level rise. The staff report identified, and the Commission considered, six possible optional approaches to deal with these concerns.

1. Revise the proposed language in response to comments from the public as part of the process of updating the 21-year-old sea level rise findings and policies in the Bay Plan and adding a new section to the Plan to deal more broadly with climate change and adapting to sea level rise to address concerns that the proposed amendments would vastly increase BCDC's regulatory authority, usurp local autonomy, institute a moratorium on development in low-lying areas, and block all development.
2. Abandon the process of updating the Bay Plan and leave the current sea level rise findings and policies in place.
3. Amend the Bay Plan to delete the current sea level rise findings and policies.
4. Amend the Bay Plan to update the current sea level rise findings and policies in a new section dealing with climate change to clearly specify that the new provisions will be used exclusively to guide the Commission in making regulatory decisions within its permit jurisdiction and are not intended to be advisory for local governments.
5. Amend the Bay Plan to update the current sea level rise findings and policies in a new climate change section that calls only for the preparation of a long-term regional sea level rise adaptation strategy, and not include any interim guidance for the Commission or advice for local governments.
6. In combination with any of the options above, develop a guidance document that can be used by the Commission, local governments and others when dealing with sea level rise. The document would explicitly state that the guidelines are not binding or enforceable.

At its December 2, 2010 meeting, after receiving public comment on the six options, the Commission directed the staff to prepare a revised recommendation that would propose findings and policies that are exclusively for the Commission's use in carrying out BCDC's regulatory responsibilities within its current permit jurisdiction (Option 4). The Commission postponed to 2011 a decision on whether and in what form any guidance or advice will be provided for dealing with sea level rise outside BCDC's regulatory jurisdiction. To date, the Commission has not provided any additional direction with respect to preparing stand-alone guidelines for local governments.

On December 16, 2010, the Commission considered another Staff Report on Policy Alternatives for Bay Plan Amendment No. 1-08 Concerning Climate Change that considered a range of possible alternative approaches for addressing comments and issues raised during the public hearings on the third preliminary recommendation. The staff report discussed (1) the preparation of risk assessments for planning shoreline areas and designing larger projects within the Commission's permit jurisdiction; (2) the preparation of a regional adaptation strategy to address sea level rise; and (3) limiting development in low-lying areas within the Commission's jurisdiction to a broad list of project types. The Commission considered a range of alternatives for each of these policies and directed staff to utilize the discussion and public input to modify the staff recommendation.

Over the course of the Commission's consideration of Bay Plan Amendment No. 1-08, various alternatives for dealing with sea level rise were advanced. Environmental organizations recommended that state legislation should be enacted to give BCDC regulatory jurisdiction over all low-lying areas around the Bay affected by sea level rise. The California Climate Adaptation Strategy recommends that state agencies should consider prohibiting projects that would place development in undeveloped areas containing critical habitat or containing opportunities for tidal wetland restoration. Business groups and local governments suggested the Commission should not amend the Bay Plan at all until the economy improves and there is more certainty about the impacts of climate change. The Commission considered these ideas but selected a more moderate course of action—one that will provide the Commission with updated policies for regulating development within BCDC's jurisdiction to address the impacts of sea level rise and will commit the Commission to working in partnership with all stakeholders on a comprehensive and long-range climate change resilience strategy for the Bay Area.

Outreach, Public Hearings and Workshops

In 2008, the Commission mailed its descriptive notice of the proposed amendments to all interested agencies, organizations, and individuals (14 CCR §11002). Over the past three years, all three prior staff recommendations have been mailed to all federal, state and local agencies interested in or potentially affected by the amendments, as well as members of the public, including organizations and individuals who have expressed interest in the amendments. All documents are transmitted to everyone on the mail and email list, which includes approximately 1,200 addresses. All documents are posted to the Commission's website (http://www.bcdc.ca.gov).

In addition to the public hearings on October 7, 21, November 2, 4 and 18 and December 2, 2010, BCDC staff hosted a workshop on October 29, 2010 in the Commission's offices for local governments to answer questions about the proposed amendments. Local governments reiterated their comments made in the two prior public hearings and their written comments, which are addressed in the response to comments. In the winter of 2010 and again in the summer of 2011 the staff had two series of meetings with local governments and interested parties throughout the region to provide additional opportunities for input on the proposed Bay Plan amendment, to clarify the purpose and effects of the amendments, and highlight recent changes to the proposed language. The staff also consulted with a group of technical advisors with expertise in hydrology, biology, climate science, coastal management and coastal engineering who reviewed and commented on the administrative draft of the staff background report *Living with a Rising Bay*. The three prior preliminary staff recommendations summarized the public outreach efforts that the Commission conducted prior to publishing those recommendations, including the public hearings and workshops associated with the review and comment of each prior recommendation.

Fourth Revised Preliminary Recommendation

The staff preliminarily recommends that the Commission amend the Bay Plan as follows:

1. **Proposed Additions to Bay Plan Findings and Policies**
   a. Create a climate change policy section of the Bay Plan that addresses the following:
      (1) Incorporating sea level rise projection ranges and using them in the permitting process;
      (2) Developing a long-term strategy to address sea level rise and storm activity and other Bay-related impacts of climate change in a way that protects the shoreline and the Bay and allows for appropriate, well-planned development that responds to the impacts of climate change and future sea level rise;
      (3) Working with the Joint Policy Committee (JPC) and other agencies to integrate regional mitigation and adaptation strategies and adaptation responses of multiple government agencies, to analyze and support equity issues, and to support research that provides useful climate change information and tools;
      (4) Providing recommendations and requirements to guide planning and permitting of development in areas vulnerable to sea level rise; and
      (5) Including policies that promote wetland protection, creation, enhancement and migration.
2. **Proposed Changes to Existing Bay Plan Findings and Policies**
   a. Amend the findings and policies on tidal marshes and tidal flats to ensure that buffer zones are incorporated into restoration projects where feasible and sediment issues related to sustaining tidal marshes are addressed.
   b. Amend the policies on safety of fills by updating the findings and policies on sea level rise and moving some to the new climate change section of the Bay Plan.
   c. Amend the policies on protection of the shoreline to address protection from future flooding.
   d. Amend the findings and policies on public access to provide public access that is sited, designed and managed to avoid significant adverse impacts from sea level rise and ensure long-term maintenance of public access areas through site-specific adaptive management strategies.

Proposed Additions and Deletions to Bay Plan Findings and Policies

The following format has been used to clarify additions and deletions in staff's revised (fourth) preliminary recommendation:

1. Proposed additions in language are shown as <u>underlined</u>, while proposed language deletions are shown as ~~struck through.~~
2. Reasons for the proposed changes are included in the Staff Analysis in the right column.
3. Existing Bay Plan language is shown as plain text.

Copies of staff's preliminary recommendation and revised (second) preliminary recommendation are available on the Commission's website at: http://www.bcdc.ca.gov/planning/climate_change/climate_change.shtml.

Tidal Marshes and Tidal Flats. The staff preliminarily recommends the Commission revise the findings and policies in the "Tidal Marshes and Tidal Flats" policy section as shown below.

More context on how other findings and policies in this section of the Bay Plan relate to the proposed changes, especially those that the staff is not proposing to change, is available at http://www.bcdc.ca.gov/laws_plans/plans/sfbay_plan.shtml

Tidal Marshes and Tidal Flats	
Findings	**Staff Analysis**
Add underlined language and delete struck-through language as follows: g. The Baylands Ecosystem Habitat Goals report provides a regional vision of the types, amounts, and distribution of wetlands and related habitats that are needed to restore and sustain a healthy Bay ecosystem, including restoration of 65,000 acres of tidal marsh. These recommendations were based on conditions of tidal inundation, salinity, and sedimentation in the 1990s. While achieving the regional vision would help promote a healthy, resilient Bay ecosystem, global climate change and sea level rise are expected to alter ecosystem processes in ways that require new, regional targets for types, amounts, and distribution of habitats.	The finding has been updated to reflect the current status of the Habitat Goals and the potential need to update them in light of new information regarding climate change.
Add underlined language and delete struck-through language as follows: i. Tidal marshes are an interconnected and essential part of the Bay's food web. Decomposed plant and animal material and seeds from tidal marshes wash onto surrounding tidal flats and into subtidal areas, providing food for numerous animals, such as the Northern pintail. In addition, tidal marshes provide habitat for insects, crabs and small fish, which in turn, are food for larger animals, such as the salt marsh song sparrow, harbor seal and great blue heron. Diking and filling have fragmented the remaining tidal marshes, degrading the quality of habitat and resulting in a loss of species and an altered community structure.	The finding has been updated to include impacts from past activities that will affect the sustainability of tidal marshes as sea level rises.
Add underlined language as follows: k. Landward marsh migration may be necessary to sustain marsh acreage around the Bay as sea level rises. As sea level rises, high-energy waves erode inorganic mud from tidal flats and deposit that sediment onto adjacent tidal marshes. Marshes trap sediment and contribute additional material to the marsh plain as decaying plant matter accumulates. Tidal habitats respond to sea level rise by moving landward, a process referred to as transgression or migration. Low sedimentation rates, natural topography, development, and shoreline protection can block wetland migration.	The new finding describes the process of marsh migration—essential to sustain marshes as sea level rises—and further elaborates on the roles of plants and sediment in that process and potential impediments to it.

Tidal Marshes and Tidal Flats	
Findings	**Staff Analysis**
Add underlined language and delete struck-through language as follows: ~~k~~ l. Sedimentation is an essential factor in the creation, maintenance and growth of tidal marsh and tidal flat habitat. ~~However,~~ S~~s~~cientists studying the Bay ~~estimate~~ have observed that ~~sedimentation will not be able to keep pace with accelerating sea level rise, due largely to declines in~~ the volume of sediment entering the Bay annually from the Sacramento and San Joaquin Delta is declining. As a result, the importance of sediment from local watersheds as a source of sedimentation in tidal marshes is increasing. As sea level rise accelerates, the erosion of tidal flats may also accelerate, thus potentially exacerbating shoreline erosion and adversely affecting the ecosystem and the sustainability of ~~future wetland~~ ecosystem restoration projects. An adequate supply of sediment is necessary to ensure resilience of the Bay ecosystem as sea level rise accelerates.	The finding has been updated to reflect the most current information on Bay sediment supply, how the supply has been altered and how reduced sediment will impact tidal marsh and tidal flat habitats in combination with climate change. The finding has been re-lettered from k. to l.
Add underlined language as follows: m. Human actions, such as dredging, disposal, ecosystem restoration, and watershed management, can affect the distribution and amount of sediment available to sustain and restore wetlands. Research on Bay sediment transport processes is needed to understand the volume of sediment available to wetlands, including sediment imported to and exported from the Bay. Monitoring of these processes can inform management efforts to maintain an adequate supply of sediment for wetlands.	The new finding describes information that is needed to understand sediment transport and volumes in the Bay so that efforts can be made to effectively manage sediment supply.
Add underlined language as follows: n. Buffers are areas established adjacent to a habitat to reduce the adverse impacts of surrounding land use and activities. Buffers also minimize additional loss of habitat from shoreline erosion resulting from accelerated sea level rise and allow tidal habitats to move landward. Buffer areas may be important for achieving the regional goals for the types, amounts, and distribution of habitats in the Baylands Ecosystem Habitat Goals report or future updates to these targets.	The new finding defines buffer areas, describes their current benefits, and highlights the need for them as space where marshes can migrate as sea level rises.

Tidal Marshes and Tidal Flats	
Findings	**Staff Analysis**
The finding has been re-lettered: ~~l.~~ o. Plant and animal species not present in San Francisco Bay prior to European contact in the late 18th century, known as non-native species, which thrive and reproduce outside of their natural range have made vast ecological alterations to the Bay and have contributed to the serious reduction of native regulations of certain plants and animals through: (1) predation; (2) competition for food, habitat, and other necessities; (3) disturbance of habitat; (4) displacement; or (5) hybridization. Many non-native species enter the Bay from commercial ship ballast water that is discharged into the Bay. Approximately 170 species have invaded the Bay since 1850, and possibly an additional 115 species have been deliberately introduced. By 2001, over 1,200 acres of recently restored tidal marshes have been invaded by introduced cordgrass species, such as salt meadow cordgrass, dense-flowered cordgrass, English cordgrass and smooth cordgrass. At present an average of one new non-native species establishes itself in the Bay every 14 weeks. Control or eradication is a critical step in reducing the harm associated with non-native species.	The finding has been re-lettered from l. to o.
Re-letter from m. to p. ~~m.~~ p. Fill material, such as rock and sediments dredged from the Bay, can enhance or beneficially contribute to the restoration of tidal marsh and tidal flat habitat by: (1) raising areas diked from the Bay to an elevation that will help accelerate establishment of tidal marsh; and (2) establishing or recreating rare Bay habitat types.	The finding has been re-lettered from m. to p.

Tidal Marshes and Tidal Flats	
Policies	**Staff Analysis**
Add underlined language and delete struck-through language as follows: 4. Where ~~and whenever possible~~ feasible, former tidal marshes and tidal flats that have been diked from the Bay should be restored to tidal action in order to replace lost historic wetlands or should be managed to provide important Bay habitat functions, such as resting, foraging and breeding habitat for fish, other aquatic organisms and wildlife. As recommended in the Baylands Ecosystem Habitat Goals report, around 65,000 acres of areas diked from the Bay should be restored to tidal action to maintain a healthy Bay ecosystem on a regional scale. Regional ecosystem targets should be updated periodically to guide conservation, restoration, and management efforts that result in a Bay ecosystem resilient to climate change and sea level rise. Further, local government land use and tax policies should not lead to the conversion of these restorable lands to uses that would preclude or deter potential restoration. The public should make every effort to acquire these lands ~~from willing sellers~~ for the purpose of habitat restoration and wetland migration.	The policy has been modified to change the restoration criterion from "whenever possible" to "feasible," and to recommend periodic updates to the Habitat Goals report to establish targets that reflect the effects of climate change on wetlands. Also, the purpose of facilitating wetland migration has also been added. The reference "from willing sellers" has been deleted because it conflicts with the power of eminent domain held by many jurisdictions that overlap with the Commission's jurisdiction. Wetland migration has been added as a purpose of habitat restoration projects.
Add underlined language as follows: 5. The Commission should support comprehensive Bay sediment research and monitoring to understand sediment processes necessary to sustain and restore wetlands. Monitoring methods should be updated periodically based on current scientific information.	The new policy recommends supporting sediment research and monitoring that can inform future management decisions on projects in the Bay, particularly wetland restoration projects.
Add underlined language and delete struck-through language as follows: ~~5~~ 6. Any ecosystem ~~tidal~~ restoration project should include clear and specific long-term and short-term biological and physical goals, and success criteria, and a monitoring program to assess the sustainability of the project. Design and evaluation of the project should include an analysis of: (a) ~~the effects of relative~~ how the system's adaptive capacity can be enhanced so that it is resilient to sea level rise and climate change; (b) the impact of the project on the Bay's sediment budget; (c) localized sediment erosion and accretion; (d) the role of tidal flows; (e) potential invasive species introduction, spread, and their control; (f) rates of colonization by vegetation; (g) the expected use of the site by fish, other aquatic organisms and wildlife; ~~and~~ (h) an appropriate buffer, where feasible, between shoreline development and habitats to protect wildlife and provide space for marsh migration as sea level rises; and (i) site characterization. If success criteria are not met, appropriate ~~corrective~~ adaptive measures should be taken.	The policy has been updated to add and revise criteria for habitat restoration projects by focusing on restoring resilient ecosystems, to include new analysis of the potential for buffer areas for marsh migration where feasible, and to rename adaptive management. The policy was re-numbered from 5 to 6.

Climate Change. The staff preliminarily recommends the Commission add a new Bay Plan "Climate Change" section at the beginning of Part IV of the Plan - Developing the Bay and its Shoreline - and include the proposed findings and policies below.

Climate Change (Add New Section to Part IV)	
Findings	**Staff Analysis**
Add underlined language as follows: 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.	The new finding describes the causes of climate change.
Add underlined language as follows: 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.	The new finding describes how United Nations scenarios are used to address uncertainty regarding future global development and the corresponding impacts of development on climate change.
Add underlined language as follows: 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.	The new finding explains the connection between global warming and sea level rise. It describes the Commission's responsibility to use a prudent approach to protect the public from flooding and to protect the Bay ecosystem from climate change impacts. This finding also explains the sound science that supports such an approach. The finding also acknowledges regional factors affecting sea level rise and, references the California Climate Action Team's projections for California: a mid-century range (10-17 inches), a three-quarter century range (17-32 inches) and a end-of-century range (31-69 inches) as a guide for implementing the policies. The finding also acknowledges that scientific uncertainty remains, the impact of melting land ice is not well understood and that sea level rise projections will continue to change.

Climate Change	
Findings	**Staff Analysis**
Add underlined language as follows: 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.	The new finding makes the point that most flooding will occur during storm events before sea level rise regularly inundates shoreline areas. The finding describes how sea level rise and storm activity combine to cause flooding.
Add underlined language as follows: 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.	The new finding describes the potential for shoreline flooding as sea level rises and the likely need for new shoreline protection to address it, particularly in subsided areas. The finding identifies agencies, including the Commission with flood protection responsibilities. It recommends using the most current, science-based, regionally specific projections of future sea level rise, utilizing adaptive management and evaluating the resiliency and adaptive capacity of proposed development.

Climate Change	
Findings	**Staff Analysis**
Add underlined language as follows: 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.	The new finding defines two important concepts in climate adaptation planning: shoreline resilience and adaptive capacity. It also defines the related practices of vulnerability and risk assessment and describes the outcomes of these practices.
Add underlined language as follows: 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.	The new finding defines "mitigation" as the term is commonly used to address climate change. The finding also defines adaptation, points out that mitigation and adaptation efforts can be integrated, and describes the benefits of implementing some adaptation strategies early. The finding also acknowledges the many interests who will need to be involved in implementing adaptation strategies around the Bay.

Climate Change	
Findings	**Staff Analysis**
Add underlined language as follows: 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 though a process involving various stakeholders and local, regional, state and federal agencies.	The new finding describes the range of likely innovative adaptation approaches and describes criteria for an effective innovative strategy. The finding also outlines some of the challenges for developing innovative strategies
Add underlined language as follows: 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.	The new finding defines adaptive management, as it is commonly understood in managing human interventions in complex systems. It also describes how effective adaptive management is implemented.
Add underlined language as follows: 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.	The new finding defines sustainability in the context of climate change, resilience and adaptive capacity.

Climate Change	
Findings	**Staff Analysis**
Add underlined language as follows: 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.	The new finding describes the impacts of flooding on the developed shoreline. It also acknowledges funding limitations for adaptation planning and implementation, the potential impacts of inaction, and the need for collaboration and innovation.
Add underlined language as follows: 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.	The new finding describes the impacts of flooding on shoreline recreation facilities areas and trails.
Add underlined language as follows: 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.	The new finding describes the importance of the Bay ecosystem and some of the benefits humans derive from the Bay and the impacts of climate change on the Bay ecosystem. It acknowledges benefits of agricultural lands, existing stresses on ecosystems and projected climate change effects on ecosystems and the potential loss of ecosystem services.

Climate Change	
Findings	**Staff Analysis**
Add underlined language as follows: 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.	The new finding describes the particular vulnerabilities of residential communities to flooding, especially low-income residents, the elderly and those with disabilities.
Add underlined language as follows: 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.	The new finding describes the range of potential human development responses to sea level rise. It also describes processes for selecting appropriate strategies.
Add underlined language as follows: 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 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.	The new finding describes the FOCUS program and the region's sustainable communities strategy in the context of Bay Area shoreline development that considers sea level rise.

Climate Change	
Findings	**Staff Analysis**
Add underlined language as follows: 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.	The new finding acknowledges the need to provide a different approach to regulating minor repairs, small projects or interim uses that do not increase public safety risks.
Add underlined language as follows: 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.	The new finding outlines some of the potentially conflicting regional goals and potential safety risks from developing in low-lying areas. It outlines possible methods for minimizing risks and avoiding unfair distribution of costs associated with those risks. It also acknowledges the need for collaborative processes to fairly allocate risks and costs.
Add underlined language as follows: 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.	The new finding acknowledges some undeveloped areas contain critical habitat or could be enhanced for habitat, and some developed areas may be ideal for bay migration and habitat enhancement as sea level rises. It also acknowledges that relocating development raises difficult public policy issues and costs.

Climate Change	
Findings	**Staff Analysis**
Add underlined language as follows: 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.	The new finding describes the complexity of government authority over the Bay and shoreline. It further describes the broad authority and limited capacity of local governments to address climate change and benefits of collaboration and flexibility.
Add underlined language as follows: 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.	The new finding describes the need to provide a decision-making framework that resembles the scale of climate change impacts within a manageable scope. It also acknowledges the role the Joint Policy Committee can play in planning for climate change at the regional level.
Add underlined language as follows: 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.	The new finding acknowledges that the challenges climate change presents to San Francisco Bay, and shoreline development cannot be successfully met by relying solely on the Commission's existing regulatory authority.

Climate Change	
Findings	**Staff Analysis**
Add underlined language as follows: 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: • Protect public health and safety and critical infrastructure; • Protect restore, and enhance ocean and coastal ecosystems, on which the State economy and well-being depend; • Ensure public access to coastal areas and protect beaches, natural shoreline, and park and recreational resources; • Plan and Design new development and communities-for long-term sustainability in the face of climate change; • Facilitate adaptation of existing development and communities to reduce their vulnerability to climate change impacts over time; and • 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	The new finding summarizes some of the relevant elements of the California Climate Adaptation Strategy.

Climate Change	
Findings	**Staff Analysis**
(Finding w., continued) 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.	
Policies	**Staff Analysis**
Add underlined language as follows: 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;	The new policy describes how the Commission will implement the climate change policies. It restates the McAteer-Petris Act and Bay Plan policies that limit enforceability of Bay Plan policies to the Commission's jurisdiction; describes how the policies should be used in environmental reviews; and describes how the Commission will use the policies for consistency review under the federal Coastal Zone Management Act.

Climate Change	
Policies	**Staff Analysis**
(Policy 1., continued) 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.	
Add underlined language as follows: 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.	The new policy requires assessment of sea level rise and flood risks in shoreline area planning and project design for some permit applications submitted to BCDC. The policy specifies the approach for selecting a sea level rise projection for the assessment, how inundation maps should be prepared and by whom, and other assessment criteria.

Climate Change	
Policies	**Staff Analysis**
Add underlined language as follows: 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.	The new policy requires certain developments to be designed to be resilient to sea level rise based on a mid-century sea level rise projection and for developments of longer duration to also develop an adaptive management plan for addressing ongoing sea level rise, based on a sea level rise projection.
Add underlined language as follows: 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.	The new policy encourages the protection or enhancement of low-lying areas with diverse habitat values or those that are suitable for natural resource enhancement. The policy articulates the Commission's preference for preservation or enhancement of these areas.
Add underlined language as follows: 5. Wherever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.	The new policy encourages the development and implementation of innovative sea level rise adaptation strategies.
Add underlined language as follows: 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 new policy recommends that the region develop and regularly update a regional strategy to adapt to the Bay-related impacts of climate change. The policy suggests a framework is needed to organize multiple jurisdictions and allow for the type of adaptive management planning that is necessary when working with a high degree of uncertainty, complex, interconnected systems, limited resources, and the ongoing release of new scientific information.

Climate Change	
Policies	**Staff Analysis**
(Policy 6., continued) 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;	The new policy acknowledges the need to identify areas where existing development should be protected, those areas where development should eventually be removed and those areas where the Bay should be allowed to migrate inland; it includes sustainability as a criterion.

Climate Change	
Policies	**Staff Analysis**
(Policy 6., continued) 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, and provide diverse housing served by transit; 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.	

Climate Change	
Policies	**Staff Analysis**
Add underlined language as follows: 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; and 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.	The new policy describes an interim approach to regulating development in low-lying areas within the Commission's jurisdiction. It encourages certain types of development in low-lying areas, if that development provides significant regional benefits, is resilient to sea level rise and has a strategy for funding adaptive management. It also encourages certain projects that will not negatively affect the Bay, or increase public safety risks.
Add underlined language as follows: 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.	The new policy encourages coordination between jurisdictions with overlapping authority over shoreline development.

Safety of Fills. The staff preliminarily recommends the Commission revise the findings and policies in the *Safety of Fills* policy section as shown below.

More context on how other findings and policies in this section of the Bay Plan relate to the proposed changes, especially those that the staff is not proposing to change, is available at http://www.bcdc.ca.gov/laws_plans/plans/sfbay_plan.shtml

Safety of Fills	
Findings	**Staff Analysis**
Add underlined language and delete struck-through language as follows: f. Flood damage to fills and shoreline areas can result from a combination of sea level rise, storm surge, ~~heavy~~ rainfall, high tides, and winds blowing onshore. The most effective way ~~T~~to prevent such damage~~,~~ is to locate projects and facilities ~~structures~~ on fill or near the shoreline ~~should be~~ above ~~the~~ a ~~highest expected water level~~ 100-year flood level that takes future sea level rise into account, during the expected life of the project. ~~or should be protected for the expected life of the project by~~ Other effective approaches that can reduce flood damage include protecting structures or areas with levees, ~~of an adequate height~~ seawalls, tidal marshes, or other protective measures; and employing innovative design concepts, such as building structures that can be easily relocated, tolerate periodic flooding or are adaptively designed and managed to address sea level rise over time.	The finding has been updated to be consistent with language in the proposed Climate Change section of the Bay Plan and to include new ideas for shoreline development that might accommodate rising waters levels.
Add underlined language and delete struck-through language as follows: g. ~~Bay water levels are likely to increase in the future because of a relative rise in sea level. Relative rise in sea level is the sum of: (1) a rise in global sea level and (2) land elevation change (lifting or subsidence) around the Bay. If historic trends continue, global sea level should increase between four and five inches in the Bay in the next 50 years and could increase approximately one and one-half to five feet by the year 2100 depending on the rate of accelerated rise in sea level caused by the "greenhouse effect," the long-term warming of the earth's surface from heat radiated off the earth and trapped in the earth's atmosphere by gases released into the atmosphere. The warming would bring about an accelerated rise in sea level worldwide through thermal expansion of the upper layers of the oceans and melting of some of the earth's glaciers and polar ice packs.~~ Sea level is rising at an accelerated rate due to global climate change. Land elevation change caused by tectonic (geologic, including seismic) activity, consolidation or compaction of soft soils such as Bay muds, and extraction of subsurface groundwater or natural gas extraction, is variable around the Bay. Consequently, some parts of the	The finding has been revised to update and relocate substantial portions of text regarding climate change and sea level rise to the proposed Climate Change section of the Bay Plan and to reconcile these two findings and policy sections.

Safety of Fills	
Findings	**Staff Analysis**
(Finding g., continued) Bay will experience a greater relative rise in sea level than other areas. Relative rise in sea level is the sum of: (1) a rise in global sea level and (2) land elevation change (lifting or subsidence) around the Bay. ~~For example, in Sausalito, the land area has been gradually lifting while in the South Bay excessive pumping from underground fresh water reservoirs has caused extensive subsidence of the ground surface in the San Jose area and as far north as Dumbarton Bridge (map of Generalized Subsidence and Fault Zones shows subsidence from 1934 to 1967). Indications are that if heavy groundwater pumping is continued indefinitely in the South Bay area, land in the Alviso area (which has already subsided about seven feet since 1912) could subside up to seven feet more; if this~~ Where subsidence occurs, more extensive ~~levees~~ shoreline protection and wetland restoration projects may be needed to minimize ~~prevent inundation~~ flooding of low-lying areas by the extreme high water levels.	
Policies	**Staff Analysis**
Delete struck-through language as follows: 3. To provide vitally-needed information on the effects of earthquakes on all kinds of soils, installation of strong-motion seismographs should be required on all future major land fills. In addition, the Commission encourages installation of strong-motion seismographs in other developments on problem soils, and in other areas recommended by the U.S. ~~Coast and Geodetic~~ Geological Survey, for purposes of data comparison and evaluation.	The policy has been updated to include the current name of the U.S. Geological Survey.
Add underlined language and delete struck-through language as follows: 4. Adequate measures should be provided ~~T~~to prevent damage from sea level rise and storm activity ~~flooding,~~ that may occur ~~structures~~ on fill or near the shoreline over the expected life of a project. ~~should have adequate flood protection including consideration of future relative sea level rise as determined by competent engineers. As a general rule,~~ The Commission may approve fill that is needed to provide flood protection for existing projects and uses. New projects ~~structures~~ on fill or near the shoreline should either be ~~above the wave runup level or sufficiently~~ set back from the edge of the shore so that the project ~~structure is~~ will not be subject to dynamic wave energy~~.~~, be built so ~~In all cases,~~ the bottom floor level of structures ~~should~~ will be above a ~~the highest estimated tide~~ 100-year flood elevation that takes future sea level rise into account for the expected life of the project~~.~~, be	The policy has been updated for clarity and consistency with new language in other areas of the Bay Plan. The policy also makes it explicit that fill can be approved for shoreline protection—a practice in which the Commission has engaged for most of its existence, consistent with provisions in Section 66605 of the McAteer-Petris Act, which allow fill to establish a permanent shoreline, minimal amounts of fill to improve shoreline appearance, and fill for water-oriented uses. Text from former Safety of Fills Policy 5 has been incorporated into this policy.

Safety of Fills	
Policies	**Staff Analysis**
(Policy 4., continued) ~~Exceptions to the general height rule may be made for developments~~ specifically designed to tolerate periodic flooding, or employ other effective means of addressing the impacts of future sea level rise and storm activity. Rights-of-way for levees or other structures protecting inland areas from tidal flooding should be sufficiently wide on the upland side to allow for future levee widening to support additional levee height so that no fill for levee widening is placed in the Bay.	
Delete Safety of Fills Policy 5. 5. ~~To minimize the potential hazard to Bay fill projects and bayside development from subsidence, all proposed developments should be sufficiently high above the highest estimated tide level for the expected life of the project or sufficiently protected by levees to allow for the effects of additional subsidence for the expected life of the project, utilizing the latest information available from the U.S. Geological Survey and the National Ocean Service. Rights-of-way for levees protecting inland areas from tidal flooding should be sufficiently wide on the upland side to allow for future levee widening to support additional levee height so that no fill for levee widening is placed in the Bay.~~	The first part of the policy has been deleted and the last sentence of the policy has been moved to Policy 4. Proposed policy language in the Climate Change policy section and the Shoreline Protection section of the Bay Plan were inconsistent with the first part of this policy.
Delete Safety of Fills Policy 6. ~~6. Local governments and special districts with responsibilities for flood protection should assure that their requirements and criteria reflect future relative sea level rise and should assure that new structures and uses attracting people are not approved in flood prone areas or in areas that will become flood prone in the future, and that structures and uses that are approvable will be built at stable elevations to assure long-term protection from flood hazards.~~	The policy has been deleted to be consistent with policy 1 in the Climate Change section to clarify that the Commission's policies addressing climate change are not providing advice to local governments.

Protection of the Shoreline. The staff preliminarily recommends the Commission revise the findings and policies in the *Protection of the Shoreline* policy section as shown below.

More context on how other findings and policies in this section of the Bay Plan relate to the proposed changes, especially those that the staff is not proposing to change, is available at http://www.bcdc.ca.gov/laws_plans/plans/sfbay_plan.shtml

~~Protection of the~~ Shoreline Protection	
Findings	**Staff Analysis**
Add underlined language as follows: a. Well designed shoreline protection projects, such as levees, wetlands, or riprap, can prevent shoreline erosion and damage from flooding.	The new finding explains that well-designed shoreline protection provides protection against flooding and erosion.
Add underlined language and delete struck-through language as follows: ~~a.~~ b. ~~Erosion control~~ 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 ~~protect~~ reduce damage to shoreline property and improvements. ~~from erosion~~. ~~Because so much shoreline consists of soft, easily eroded soils, protective structures are usually required to stabilize and establish a permanent shoreline. These structures~~ Structural shoreline protection, such as riprap, levees, and seawalls, often requires periodic maintenance and reconstruction.	The finding has been updated to reflect why shoreline protection is needed and that it requires periodic maintenance. The finding was re-lettered from a to b.
Add underlined language and delete struck-through language as follows: ~~b~~. c. Most ~~erosion control~~ 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. ~~marshes, and mudflats.~~ 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.	The finding has been updated and significantly expanded to reflect new information regarding the full suite of potential impacts from structural shoreline protection. The finding was re-lettered from b to c.

~~Protection of the~~ Shoreline Protection	
Findings	**Staff Analysis**
Add underlined language and delete struck-through language as follows: ~~c~~.d. Structural ~~S~~shoreline protection ~~structures, such as riprap and sea walls, are~~ is most effective and less damaging to natural resources if ~~they are~~ it is the appropriate kind of structure for the project site and erosion and flood problem, and ~~are~~ 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 ~~of~~, 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.	The finding has been updated to incorporate flooding and to clarify the challenges accompanying structural shoreline protection projects. The finding has been re-lettered from c to d.
Add underlined language as follows: 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).	The new finding anticipates demand for new and extensive shoreline protection as sea level rises and describes some of the issues that can arise where shoreline protection projects extend across jurisdictional and property boundaries.
Add underlined language and delete struck-through language as follows: ~~d~~ f. Nonstructural ~~erosion control~~ shoreline protection methods, such as tidal marshes ~~marsh plantings~~, can provide effective flood control, but are typically effective for erosion control only in areas experiencing mild erosion. ~~However, i~~ In some instances, it may be possible to combine ~~marsh~~ habitat restoration, enhancement or protection with structural approaches to provide protection from flooding and control shoreline erosion, thereby minimizing the ~~erosion control~~ shoreline protection project's impact on natural resources.	The finding has been updated to be consistent with the language used in other findings and to reflect current information regarding flood protection provided by tidal marshes and to acknowledge that existing habitats should be protected when designing shoreline protection. The finding has been re-lettered from d to f.

~~Protection of the~~ Shoreline Protection	
Findings	**Staff Analysis**
Add underlined language and delete struck-through language as follows: ~~e.~~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.	The finding has been updated to include flood protection and acknowledge the potential for pollutant release from shoreline protection constructed with inappropriate materials. The finding has been re-lettered from e to g.
Policies	**Staff Analysis**
Add underlined language and delete struck-through language as follows: 1. New shoreline ~~erosion control~~ protection projects and the maintenance or reconstruction of existing ~~erosion control facilities~~ projects and uses should be authorized if: (a) the project is necessary to ~~protect the shoreline from~~ 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; ~~and~~ (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 ~~of erosion control projects~~.	The policy has been updated and expanded to reflect the potential need to provide protection for existing or proposed development, infrastructure and uses from flooding due to sea level rise and storm activity. The update includes specific guidance regarding the circumstances under which a shoreline protection structure is allowable at a given location.

~~Protection of the~~ Shoreline Protection	
Policies	**Staff Analysis**
Add underlined language and delete struck-through language as follows: 2. 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, ~~or~~ and are carefully selected for size, density, and durability~~, and freedom of extraneous materials from demolition debris~~ will meet these requirements. Riprap revetments constructed out of other debris materials should not be authorized.	The policy has been updated to more clearly identify appropriate riprap materials.
Add underlined language and delete struck-through language as follows: 3. 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 ~~erosion control~~ shoreline protection project on natural resources during the life of the project will be the minimum necessary.	The policy has been updated to incorporate flooding as a criterion for shoreline protection design and maintenance.
Add underlined language and delete struck-through language as follows: 4. Whenever feasible and appropriate, shoreline protecti~~ve~~on projects should include provisions for nonstructural methods such as marsh vegetation ~~where feasible~~ 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 protecti~~ve~~on projects include provisions for establishing marsh and transitional upland vegetation as part of the protective structure, wherever ~~practicable~~ feasible.	The policy has been updated for clarity and to include the requirement that adaptive management be incorporated into vegetated shoreline protection projects. Also, the standard for requiring vegetated shoreline protection has been changed from "practicable" to "feasible".
Add underlined language as follows: 5. 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.	The new policy requires mitigation and/or the provision of alternative public access when adverse impacts to natural resources and/or public access from shoreline protection are unavoidable.

Public Access. The staff preliminarily recommends the Commission revise the findings and policies in the *Public Access* policy section as shown below.

More context on how other findings and policies in this section of the Bay Plan relate to the proposed changes, especially those that the staff is not proposing to change, is available at http://www.bcdc.ca.gov/laws_plans/plans/sfbay_plan.shtml

Public Access	
Findings	**Staff Analysis**
Add underlined language as follows: f. Accelerated flooding from sea level rise and storm activity will severely impact existing shoreline public access, resulting in temporary or permanent closures. Periodic and consistent flooding would increase damage to public access areas, which can then require additional fill to repair, raise maintenance costs, and cause greater disturbance and displacement of the site's natural resources. Risks to public health and safety from sea level rise and shoreline flooding may require new shoreline protection to be installed or existing shoreline protection to be modified, which may impede physical and visual access to the Bay.	The new finding describes the range of impacts on public access from flooding due to sea level rise and storm activity and identifies related issues, such as higher maintenance costs.
Re-letter findings f. and g. to g. and h. respectively.	Existing findings f and g have been re-lettered to g and h.
Add underlined language as follows: ~~h~~ i. Public access areas obtained through the permit process are most utilized if they provide physical access, provide connections to public rights-of-way, are related to adjacent uses, are designed, improved and maintained clearly to indicate their public character, and provide visual access to the Bay. Flooding from sea level rise and storm activity increases the difficulty of designing public access areas (e.g., connecting new public access that is set at a higher elevation or located farther inland than existing public access areas).	The finding has been updated to reflect the difficulties of designing public access in the face of sea level rise and related flooding. The finding has been re-lettered from h. to i.
Re-letter findings i. and j. to j. and k. respectively	Existing findings i. and j. have been re-lettered to j. and k.

Public Access	
Findings	**Staff Analysis**
Add underlined language as follows: ~~k~~ l. Studies indicate that public access may have immediate effects on wildlife (including flushing, increased stress, interrupted foraging, or nest abandonment) and may result in adverse long- term population and species effects. Although some wildlife may adapt to human presence, not all species or individuals may adapt equally, and adaptation may leave some wildlife more vulnerable to harmful human interactions such as harassment or poaching. The type and severity of effects, if any, on wildlife depend on many factors, including physical site configuration, species present, and the nature of the human activity. Accurate characterization of current and future site, habitat and wildlife conditions, and of likely human activities, would provide information critical to understanding potential effects on wildlife.	The finding has been updated to recommend characterization of current and future wildlife habitats as they may be significantly altered by sea level rise and, thus, any impacts from public access on wildlife may be more serious than otherwise anticipated, or may change over time. The finding has been re-lettered from k. to l.
Add underlined language and delete struck-through language as follows: ~~l~~ m. Potential adverse effects on wildlife from public access may be avoided or minimized by siting, designing and managing public access to reduce or prevent adverse human and wildlife interactions. Managing human use of the area may include adequately maintaining improvements, periodic closure of access areas, pet restrictions such as leash requirements, and prohibition of public access in areas where other strategies are insufficient to avoid adverse effects. Properly sited and/or designed public access can avoid habitat fragmentation and limit predator access routes to wildlife areas. In some cases, public access adjacent to sensitive wildlife areas may be set back from the shoreline a greater distance because buffers may be needed to avoid or minimize human disturbance of wildlife. Appropriate siting, design and management strategies depend on the environmental characteristics of the site, ~~and~~ the likely human uses of the site, and the potential impacts of future climate change.	The finding has been updated to reflect the need to site and design public access that is compatible with wildlife even as sea level rises and sites change. The finding has been re-lettered from l. to m.
Re-letter from m. to n. ~~m~~ n. Providing diverse and satisfying public access opportunities can reduce the creation of informal access routes to decrease interaction between humans and wildlife, habitat fragmentation, and vegetation trampling and erosion. Formal public access also provides for more predictable human actions, which may increase the ability of wildlife to adjust to human use.	The finding has been re-lettered from m. to n.

Public Access	
Policies	**Staff Analysis**
Add underlined language as follows: 5. Public access should be sited, designed, managed and maintained to avoid significant adverse impacts from sea level rise and shoreline flooding.	The new policy requires the creation of public access that will be resilient to sea level rise.
Add underlined language and delete struck-through language as follows: ~~5~~ 6. Whenever public access to the Bay is provided as a condition of development, on fill or on the shoreline, the access should be permanently guaranteed. This should be done wherever appropriate by requiring dedication of fee title or easements at no cost to the public, in the same manner that streets, park sites, and school sites are dedicated to the public as part of the subdivision process in cities and counties. Any public access provided as a condition of development should either be required to remain viable in the event of future sea level rise or flooding, or equivalent access consistent with the project should be provided nearby.	The policy has been updated to require that required public access account for sea level rise. Since a permit requiring public access is recorded with the property document, the public access is guaranteed for the life of the project even if sea level rises.
~~6~~ 7. Public access improvements provided as a condition of any approval should be consistent with the project and the physical environment, including protection of Bay natural resources, such as aquatic life, wildlife and plant communities, and provide for the public's safety and convenience. The improvements should be designed and built to encourage diverse Bay-related activities and movement to and along the shoreline, should permit barrier free access for persons with disabilities ~~the physically handicapped~~ to the maximum feasible extent, should include an ongoing maintenance program, and should be identified with appropriate signs.	The policy has been revised to reflect more current and appropriate guidance on providing barrier free access.
Renumber Public Access Policies 7 through 13 to 8 through 14.	Policies 7 through 13 were renumbered to 8 through 14

Amendment Consistency with the McAteer-Petris Act

Section 66652 of the McAteer-Petris Act requires that amendments of the Bay Plan be consistent with the Findings and Declarations of Policy in the McAteer-Petris Act. The relevant Findings and Declarations of Policy sections of the McAteer-Petris Act are Section 66605 regarding fill in the Bay, Section 66602 regarding public access and Section 66632.4 regarding the Commission's authority to issue permits in the shoreline band.

Section 66605 of the McAteer-Petris Act states, in part: (a) the public benefits from fill must clearly exceed the public detriment from the loss of water areas, and fill should be limited to water-oriented uses, such as bridges; (b) no alternative upland location exists for the fill; (c) the fill should be the minimum amount necessary; (d) the fill should minimize harmful effects to the Bay including the water volume, circulation, and quality, fish and wildlife resources, and marsh fertility; (e) the fill should be constructed in accordance with sound safety standards. The McAteer-

Petris Act broadly defines the term "fill" to include "earth or any other substance or material, including pilings or structures placed on pilings, and structures floating at some or all times and moored for extended periods…." The updated findings and policies pertain to several types of fill.

The amendment will add a new Climate Change section to the Bay Plan, which includes policies that require evaluation of sea level rise and storm activity for permit decisions regarding fill. The amendment will also update the Commission's Safety of Fills policies to allow fill for flood protection and to incorporate similar requirements for fill projects. The proposed policies anticipate future desire to place fill for shoreline protection in areas that are vulnerable to flooding from sea level rise and provides guidance on the circumstances under which such fill is allowable, to ensure that such fill is consistent with the provisions of Section 66605, particularly subparagraph 66605(e) regarding safety. Therefore, the portion of the amendment that proposes to add a new climate change section to the Bay Plan is consistent with Section 66605 of the McAteer-Petris Act.

The amendment will revise existing policies regarding Protection of the Shoreline, which are currently confined to shoreline protection to deal with erosion. The proposed revisions to the findings and policies would expand the scope of the policy section to address flooding in addition to erosion, thereby anticipating again the future desire to construct additional shoreline protection or modify existing shoreline protection as sea level rises. The revisions continue to require the use of natural shoreline protection, when feasible, and the minimization of harmful effects to the Bay so that fill for shoreline protection is consistent with Section 66605 of the McAteer-Petris Act.

The amendment further will revise existing policies in the Tidal Marsh and Tidal Flats policy section of the Bay Plan to improve the analysis of climate change impacts required for marsh restoration (which usually involves fill) so that marshes are more likely to sustain the impacts of climate change and adapt over time.

For all of the reasons above, the proposed amendment is consistent with Section 66605 of the McAteer-Petris Act.

Section 66632.4 of the McAteer-Petris Act applies within the Commission's shoreline band jurisdiction and allows that the Commission may only deny a permit for a project that: (1) fails to provide maximum feasible public access consistent with the project; or (2) conflicts with the use designated in a priority use area. The Commission can only condition a permit—require changes to the project—to bring the project into compliance with the requirement to provide maximum feasible public access and to be consistent with a priority use. Section 66602 of the McAteer-Petris Act states that existing public access to the shoreline and waters of San Francisco Bay is inadequate and that maximum feasible public access, consistent with a proposed project, should be provided. A portion of this proposed amendment would revise the public access findings and policies. The policies would be updated to reflect the significant vulnerabilities of shoreline public access to flooding from sea level rise and the need to maintain and guarantee public access for the life of the project. The proposed amendment is, therefore, consistent with Sections 66602 and 66632.4 of the McAteer-Petris Act.

Environmental Assessment

Environmental Assessment for Fourth Preliminary Recommendation on Bay Plan Amendment 1-08

Introduction. BCDC is not required to prepare environmental impact reports (EIRs) under the California Environmental Quality Act (CEQA) because its regulatory program has been certified by the Secretary of Natural Resources under Public Resources Code §21080.5(d) and 14 CCR §15250(h). Therefore, a formal EIR or negative declaration (ND) is not required under CEQA for adopting Bay Plan Amendment No. 1-08. In lieu of an EIR or ND, BCDC's regulations provide for an Environmental Assessment (EA) to be prepared, which is considered the "functional equivalent" of an EIR (14 CCR §§ 11521 et seq.).

An EA is required to be part of the staff planning report prepared and distributed prior to amending the Bay Plan. The EA must either: (1) state that the proposed amendment will have no significant adverse environmental impacts; or (2) describe the significant adverse environmental effects, the public benefits of the proposed amendments, any feasible mitigation measures that would lessen the significant adverse environmental impacts, and any feasible alternatives (14 CCR §11003(a)(6)). After the final public hearing, a staff planning recommendation must be prepared that: (1) summarizes and responds to significant environmental issues raised during the public comment process; (2) makes any necessary revisions to the initial assessment and analysis of environmental effects; and (3) makes a final recommendation to the Commission on the proposed amendment (14 CCR §11005). Because the proposed amendment is a programmatic policy change, rather than a specific project with more quantifiable impacts, the discussion in this Environmental Assessment is more general than an environmental assessment for a specific project.

On April 7, 2009, prior to the first public hearing on the proposed Bay Plan climate change amendments, BCDC's staff distributed a staff report and preliminary recommendation, which concluded, based on the analysis in the staff background report, *Living with a Rising Bay*, that the amendments would have no significant adverse environmental impacts. This EA also concludes that the amendments do not have significant adverse environmental effects for the reasons explained below.

Project Description. The proposed project is a series of amendments to the *San Francisco Bay Plan* to address new scientific information about the impacts of sea level rise and storms on San Francisco Bay and its shoreline within the Commission's jurisdiction as defined in Cal Gov't Code Section 66610. The project involves adding a new Climate Change section to the Bay Plan, in part by relocating and revising current sea level rise policies in the Safety of Fills section; and changes to the Tidal Marshes and Tidal Flats; Safety of Fills; Protection of the Shoreline; and Public Access sections. The proposed changes are detailed above in the findings and policy tables of the staff report and the purpose and effect of the proposed changes are explained in the column entitled staff analysis.

Background. The Commission initiated the process of considering Bay Plan Amendment No. 1-08 in November 2008, by authorizing the staff to prepare amendments to the findings and policies in three sections of the Bay Plan—Protection of the Shoreline, Tidal Marshes and Tidal Flats, and Safety of Fills. It also authorized staff to prepare new findings and policies for a new section of the Bay Plan entitled Climate Change. In April 2009, the staff released a background report entitled *Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on the Shoreline* (background report). The report provides extensive background information on current scientific research on climate change, and contains maps depicting the low-lying areas around the Bay that could be vulnerable to future flooding from sea level rise and storm surge. Along with the background report, the staff provided a preliminary recommendation on proposed Bay Plan amendments to address climate change.

The background report indicates that a variety of projects along the shoreline that have regional benefits will need to be protected so long as the benefits outweigh the risk from flooding and steps are taken to address any flooding danger. The background report also notes the vital role that tidal wetlands play in both reducing greenhouse gases and providing flood protection, and suggests that resource protection and habitat enhancement should be encouraged in undeveloped low-lying areas. Finally the Report suggests that the Commission work with its regional partners, local governments, businesses, labor, conservation organizations, and the general public to develop a comprehensive regional strategy to deal with the impacts of climate change because of the Commission's limited authority and jurisdiction and the need for such a strategy for the Bay Area's long-term economic prosperity.

Public Hearings and Workshops. The Commission held its first public hearing on the preliminary staff recommendation on May 7, 2009. To respond to requests for more time for public review, the Commission held three more public hearings, three public workshops, and kept the public comment period open for three months. The staff revised its preliminary recommendation to address the public comments and incorporate suggestions to improve the amendment language, and released a revised preliminary recommendation on October 1, 2009. The Commission held another public hearing on the revised preliminary staff recommendation and response to comments on November 5, 2009, and held another public workshop at the December 3, 2009 Commission meeting.

A third staff recommendation and response to comments was released on September 3, 2010. The Commission held eight public hearings on the third draft during the fall of 2010, and the staff worked with local governments, business interests and environmental organizations to further refine the amendment language. In all, since April 2009, the Commission has held 35 public hearings, workshops and meetings on the amendment language, and the Commission will hold another public hearing on September 1, 2011.

The Environmental Impacts of Climate Change. The background report for the Bay Plan amendments assesses in great detail the impacts that climate change will have on the Bay. In summary, the Report indicates that global warming is expected to result in sea level rise in San Francisco Bay of 16 inches by mid-century and 55 inches by the end of the century. This would make 180,000 acres of Bay shoreline vulnerable to flooding by mid-century and 213,000 acres vulnerable by the end of the century, placing at risk from flooding an estimated 270,000 people in the Bay Area, 98 percent more than are currently at risk. The economic value of shoreline development along the Bay at risk from a 55-inch rise in sea level is estimated to be $62 billion—nearly double the estimated value of development vulnerable to sea level rise along the entire California Pacific Ocean coastline. The Report notes that, "Residents, businesses and entire industries that currently thrive on the shoreline are subject to flooding by the middle of the century, and probably earlier. By mid-century, shoreline development located in the current 100-year flood plain will be subject to flooding from not just a 100-year flood, but from high tide." (at 93). It concludes that, "The impacts of climate change will substantially alter the Bay ecosystem by inundating or eroding wetlands and transitional habitats, altering species composition, changing freshwater flow, and impairing water quality. Changes in salinity from reduced freshwater inflow affect fish, wildlife and other aquatic organisms in intertidal and subtidal habitats." (at 118) These changes will profoundly affect and significantly alter San Francisco Bay and its surrounding communities.

Environmental Impacts of the Bay Plan Amendments. While the background report indicates that environmental impacts of climate change on the Bay are likely to be significant, the Bay Plan amendments themselves will have limited environmental effects because: (1) BCDC's existing laws and policies prevent significant environmental impacts within the limited scope of its jurisdiction and authority; and (2) the amendments themselves do not have significant adverse environmental effects. Moreover, any discussion of whether particular future projects reviewed by BCDC would result in different impacts under the proposed amendments as compared to existing policies would involve a high degree of speculation.

(1) BCDC's Existing Laws and Policies Prevent Significant Impacts. BCDC was created in 1965 to stop the rampant filling of the Bay. Between 1850 and 1960 an average of four square miles of San Francisco Bay was filled each year, reducing the size of the Bay by a third. Alarmed by the impacts on the Bay, the Legislature enacted the McAteer-Petris Act authoring BCDC to prepare a plan for the long-term use and protection of San Francisco Bay to stop the unnecessary filling of the Bay, guide development of the shoreline, provide public access, and preserve water-oriented uses. Some Bay Plan policies are mandatory and enforced by the Commission through its regulatory authority; some policies declare the Commission's intentions to undertake future planning; and some policies make recommendations to local governments and other agencies and organizations on dealing with Bay management issues. However, both state law and the Bay Plan stipulate that such recommendations are advisory only and cannot be enforced by the Commission.

The McAteer-Petris Act confers upon BCDC limited authority to regulate only bay fill, the extraction of materials from the Bay, and any substantial change in use of any water, land or structure (Gov't Code §66604). BCDC's jurisdiction is also limited to submerged lands, areas subject to tidal action, and certain named waterways in San Francisco Bay, marshlands lying between mean high tide and five feet above mean sea level, managed wetlands, salt ponds, and certain named waterways. (Gov't Code §66610). Onshore, the Commission's jurisdiction is limited to the shoreline band extending 100 feet from the mean high tide line. (Gov't Code §66610). The Commission does not have shoreline band jurisdiction adjacent to salt ponds, managed wetlands, or named waterways.

BCDC also has jurisdiction over certain portions of the Suisun Marsh under the Suisun Marsh Preservation Act. However, the Commission's authority in the Marsh is limited to reviewing development within the primary management area for consistency with the Marsh Act and Suisun Marsh Protection Plan (PRC §29501). The Commission also has the authority to hear appeals from local government permits issued within the secondary management area of the Marsh to determine if they are consistent with the local protection program (PRC §29503).

The McAteer-Petris Act confers upon BCDC substantial authority to minimize the impacts of fill placed in the Bay itself, in tidelands and submerged lands, salt ponds, and managed wetlands. Fill in the Bay must be for water-oriented uses (or minor fill for improving shoreline appearance or public access), and only if the public benefits clearly exceed the public detriments, there are no alternative upland locations available, the amount of fill is the minimum necessary, and the fill minimizes harmful effects on water quality, marshes, fish and wildlife, or other conditions impacting the environment (Gov't Code §66605(a)-(g)). The amendments do not alter statutory requirements that prevent projects from having significant adverse effects on the environment.

Projects in salt ponds and managed wetlands are not limited to water-oriented uses, are not subject to the balancing test that the public benefits clearly exceed the detriments, and not are required to demonstrate that there are no alternative upland locations available. However, projects in salt ponds and managed wetlands must preserve the maximum open water area, and minimize all harmful effects on water quality, marshes, fish and wildlife, or other conditions impacting the environment. These provisions ensure that projects located in managed wetlands and salt ponds reviewed under the new amendments will not have significant adverse environmental effects and will not compromise public safety. (Gov't Code §66605(c)-(g)).

Within the 100-foot shoreline band, the Commission may deny a permit for a project only if (1) it fails to provide maximum feasible public access to the Bay or shoreline consistent with the project, or (2) it conflicts with a water-oriented priority land use designed by the Commission (Gov't Code §66632.4). Water oriented priority land use areas are reserved for shoreline uses that require a shoreline location, including water-related industries, airports, wildlife refuges, waterfront parks and beaches. Shoreline areas are designated as priority use areas in order to minimize the need to fill the Bay for those uses, and the new Bay Plan amendments do not affect these priority uses.

The Commission does not have the authority to determine if a project located in the 100-foot shoreline band adequately addresses the impacts of climate change or sea level rise, is adequately protected from flooding, or is properly designed, except as the project affects public access. Local governments retain the primary land use authority to make such decisions. Therefore, within the 100-foot shoreline band, the effect of the new Bay Plan amendments is limited to ensuring that public access is provided and maintained, and other Bay Plan policies continue to ensure that the environmental impacts of public access are not significant (see Public Access discussion below and current Bay Plan Public Access Policies 4 and 7 and new Public Access Policy 5).

In summary, the law limits BCDC's authority to regulating changes in use, fill and the extraction of material in the Bay, managed wetlands, salt ponds and certain waterways. Within the 100-foot shoreline band, the Commission may only require public access be provided and reserve areas for water-oriented uses. Within the Suisun Marsh, the Commission must review any development for consistency with the March Act and March Plan and review appeals of locally issued marsh development permits for consistency with local protection programs developed by local governments and approved by the Commission as consistent with the Marsh Act. BCDC's

limited authority and jurisdiction limit the application, scope and effects of the new climate change amendments. Moreover, within BCDC's limited jurisdiction the amendments do not alter the implementation of existing laws and policies to address the significant environmental effects of projects located in the Bay, managed wetlands or salt ponds (Gov't Code 66605(a)-(g)).

(2) The Amendments Themselves Do Not Have Significant Adverse Impacts. When the Commission initiated the process of considering Bay Plan Amendment No. 1-08 to address sea level rise and climate change, it authorized the staff to propose amendments to the findings and policies in three sections of the Bay Plan – Protection of the Shoreline, Tidal Marshes and Tidal Flats, and Safety of Fills. The Commission also directed staff to draft new Bay Plan findings and policies on Climate Change and minor changes to the Public Access policies to address impacts of sea level rise and shoreline flooding on public access.

The current Bay Plan policies on Tidal Marshes and Tidal Flats, Safety of Fills, and Protection of the Shoreline were amended in 1988 and 2000 based on the best available information on climate change at that time, but no longer are sufficient to address current projections on the impacts of climate change and sea level rise on the Bay. However, the amendments themselves do not have significant environmental effects, and do not alter the BCDC's existing laws and policies that protect the environment and limit significant adverse environmental effects. There is no foreseeable increase in adverse impacts resulting from projects approved under the new policies, and any attempt to predict impacts resulting from future projects would be highly speculative.

Tidal Marshes and Tidal Flats. Tidal Marshes and Tidal Flats, Policy 5 currently provides that:

> "Any tidal restoration project should include clear and specific long-term and short-term biological and physical goals, and success criteria and a monitoring program to assess the sustainability of the project. Design and evaluation of the project should include an analysis of: (a) the effects of relative sea level rise; (b) the impact of the project on the Bay's sediment budget; (c) localized sediment erosion and accretion; (d) the role of tidal flows: (e) potential invasive species introduction, spread, and their control; (f) rates of colonization by vegetation; (g) the expected use of the site by fish, other aquatic organisms and wildlife; and (h) site characterization. If success criteria are not met, appropriate corrective measures should be taken."

The background report recommended revisions to the Tidal Marshes and Tidal Flats policies to ensure that where feasible, buffer zones are incorporated into restoration projects, and sediment issues related to sustaining tidal marshes are addressed. The amendments therefore renumber Policy 5 as Policy 6, and include a new provision to Policy 6 to include an analysis of adequate buffers when designing restoration projects. The amendments add a new Policy 5 to support comprehensive sediment research and monitoring to protect wetlands, and revise Policy 4 to call for updating regional ecosystem targets to guide conservation, restoration, and management efforts and ensure that the Bay's ecosystem is resilient to climate change and sea level rise. These changes are intended to protect wetlands and the Bay's ecosystem from climate change and sea level rise and do not cause significant adverse environmental effects.

Safety of Fills. The Commission's authority in the 100-foot shoreline band is limited to addressing impacts on public access and reserving priority use areas for designated uses. Therefore, except for projects proposed on Bay fill, or in salt ponds or managed wetlands, the Bay Plan policies on Safety of Fills largely provide non-binding guidance to permit applicants and local governments on siting and designing projects to minimize impacts from flooding. Safety of Fills, Policy 4 currently states that:

> "To prevent damage from flooding, structures on fill or near the shoreline should have adequate flood protection including consideration of future relative sea level rise as determined by competent engineers. As a general rule, structures on fill or near the shoreline should be above the wave run-up level or sufficiently set back from the edge of the shoreline so that the structure is not subject to dynamic wave energy. In all cases, the bottom floor level of structures should be above the highest estimated tide elevation. Exceptions to the general height rule may be made for developments specifically designed to tolerate periodic flooding."

The amendments revise Policy 4 to provide that:

> "Adequate measures should be provided to prevent damage from sea level rise and storm activity that may occur on fill or near the shoreline over the expected life of a project. The Commission may approve fill that is needed to provide flood protection for existing projects and uses. New projects on fill or near the shoreline should either be set back from the edge of the shore so that the project will not be subject to dynamic wave energy, be built so the bottom floor level of structure~~s~~ will be above a 100-year flood elevation that takes future sea level rise into account for the expected life of the project, be specifically designed to tolerate periodic flooding, or employ other effective means of addressing the impacts of future sea level rise and storm activity. Rights-of-way for levees or other structures protecting inland areas from tidal flooding should be sufficiently wide on the upland side to allow for future levee widening to support additional levee height so that no fill for levee widening is placed in the Bay."

The revisions to Policy 4 specifically authorize the Commission to approve Bay fill if needed to protect existing projects and uses from flooding caused by sea level rise. It also calls for structures on fill or near the shoreline to: provide "adequate measures…to prevent damage from sea level rise and storm activity…over the expected life of the project; and be set back from the shoreline to be above the 100-year flood elevation taking future sea level rise into account for the expected life the project, or employ other effective means to address the impacts of future sea level rise and storm activity."

New Policy 4 also incorporates provisions in existing Policy 5 that call for providing sufficient widths for levee rights of way to prevent bay fill for future levee widening projects. Many of the environmental impacts of the revisions to Policy 4 are either insignificant or too speculative to be analyzed at this time. Outside the shoreline band, the new Policy is advisory only. Within the shoreline band, the Policy applies only to public access. Within the Bay, this Policy is subject to McAteer-Petris Act requirements that Bay fill may be allowed only for water oriented uses, only if public benefits clearly exceed public detriments, only if the fill is the minimum necessary, only if no alternative upland locations are available, and only if harmful environmental effects are minimized (Gov't Code §66605). Therefore, the revisions to Policy 4 do not have significant adverse environmental effects.

The amendments also move the provisions dealing with levee widening in current Safety of Fills Policy 5 into new Policy 4, and therefore new Policy 4 does not cause new impacts. The amendments also delete the provisions of current Policy 5 and Policy 6 that provide advice to local governments and special districts acting outside the Commission's jurisdiction. Instead such issues will be addressed in the new Climate Change Policy 6 calling for the formulation of a regional strategy to deal with the impacts of climate change and sea level rise in the Bay. Therefore, the changes to safety of Fills Policy 5 and deletion of Policy 6 do not have significant adverse effects on the environment.

Protection of the Shoreline. Protection of the Shoreline, Policy 1 currently states that:

> "New shoreline erosion control projects and the maintenance or reconstruction of existing erosion control facilities should be authorized if: (a) the project is necessary to protect the shoreline from erosion; (b) the type of the protective structure is appropriate for the project site and the erosion conditions at the site; and (c) the project is properly designed and constructed. Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes, should participate in the design of erosion control projects."

The Bay Plan amendments change the title of the "Protecting the Shoreline" policies to "Shoreline Protection." Current Bay Plan policies on Protection of the Shoreline do not adequately address risks from future flooding, or address the construction of shoreline protection to protect existing development from flooding caused by climate change and sea level rise. Therefore, the amendments revise Shoreline Protection Policy 1 to provide that:

> "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."

The amendments to Shoreline Protection Policy 1(a) expand the authorization of shoreline protection to provide "flood protection" as well as erosion control to address the threats to the Bay and shoreline from future rise in sea level. The amendments also authorize the protection of "existing" as well as "proposed" development, uses and infrastructure, so long as they are consistent with other Bay Plan policies protecting the environment and advance regional climate change mitigation and adaptation goals. Other changes to Policy 1 ensure that shoreline protection is properly engineered to take into account sea level rise as well as a 100-year flood event, does not significantly impede public access required under existing law, and is integrated with adjacent current or planned shoreline protection. All other provisions of current Policy 1 are retained. None of the changes significantly alter the effects of Policy 1 on the environment because existing BCDC laws and policies continue to require the prevention adverse environmental impacts. In particular, new Policy 5 provides that:

> "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."

Therefore, the changes to Policy 1 do not have significant adverse environmental effects.

The amendments also make minor changes to Shoreline Protection Policy 2; add "flooding" to provisions in Policy 3 that require shoreline protection to be regularly maintained to prevent "erosion;" and call for integrating non-structural shoreline protection projects into ecosystem enhancement using adaptive management techniques and replace the word "practical" with the word "feasible" in Policy 4.

The minor changes to current Shoreline Protection Policies 2-4 and new Policy 5 enhance resource protection and do not have significant adverse environmental effects.

Public Access. The amendments renumber Public Access Policy 5 to Public Access Policy 6, and add a provision to Policy 6 to ensure that any public access provided as a permit condition should remain viable in the event of sea level rise or flooding or equivalent access should be provided nearby. A new Public Access Policy 5 is added providing that:

> "Public access should be sited, designed, managed and maintained to avoid significant adverse impacts from sea level rise and shoreline flooding."

These changes to the Public Access Policies do not have significant adverse environmental effects.

In addition, current Bay Plan Public Access policies prevent significant environmental impacts. Public Access Policy 4 requires that "public access should be sited, designed and managed to prevent significant adverse effects on wildlife…. If significant adverse effects cannot be avoided or reduced to a level below significance through siting, design and management strategies, then in lieu

public access should be provided." Public Access Policy 7 currently requires public access improvements provided as a permit condition to be consistent "with the physical environment including protection of Bay natural resources, such as aquatic life, wildlife and plant communities." These current policies ensure public access authorized under the new Bay Plan policies do not cause significant adverse environmental effects.

Climate Change. Since the Bay Plan was last amended in 1989 to address sea level rise, much new information has been generated about the likelihood and effects of climate change and sea level rise on the Bay. New data and information presented in the background report *Living with a Rising Bay* emphasizes the importance of understanding vulnerabilities in order to develop effective short-term and long-term adaptation strategies to address the impacts of sea level rise and climate change. Consequentially, new short and long-term strategies were added to the Bay Plan to address climate change and sea level rise. These new Climate Change policies are described below.

Climate Change Policy 1 clarifies that the amendments to the Bay Plan policies to address climate change sea level rise apply only within BCDC's jurisdiction under the McAteer-Petris Act and Suisun Marsh Preservation Act. This is consistent with State law which states that the policies are advisory only beyond the Commission's regulatory jurisdiction: "If a function or activity is outside the area of the commission's jurisdiction or does not require the issuance of a permit, any provisions of the plan pertaining thereto are advisory only." Gov't Code §66653. Policy 1 was added to address concerns that BCDC's climate policies were an attempt to extend its jurisdiction and authority, and has no significant adverse environmental effects.

Climate Change Policy 2 provides that:

> "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."

Climate Change Policy 2 requires that risk assessments be prepared that take sea level rise into account when planning shoreline development, using the best and most current projections of sea level rise. The risk assessments themselves have no significant adverse environmental effects. Moreover, projects reviewed under Policy 2 must undergo separate review under existing Bay Plan policies to ensure that significant adverse environmental impacts are addressed appropriately, and must also undergo CEQA review by local governments when acting as lead agencies. The Commission will be able to utilize these environmental analyses to address any significant adverse environmental effects.

Climate Change Policy 3 provides that:

> "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."

Climate Change Policy 3 requires that where risk assessments determine that projects are vulnerable to future flooding and threaten public safety, projects must be designed to be resilient to mid-century sea level rise projections and provide an adaptive management plan to address long-term impacts, if likely to remain in place longer than mid-century. Policy 3 applies to all projects involving fill in the Bay, but only to public access provided in the 100-foot shoreline band, limiting the effect of the Policy. It excludes repairs of existing facilities, small projects that do not increase risks to public safety, interim projects and infill projects within existing urbanized areas. Climate Change Policy 3 has no significant adverse environmental effects because it simply requires that projects be resilient to flooding. Moreover, such projects will undergo separate environmental review by the Commission and other lead agencies under CEQA and will be subject to existing BCDC laws and policies to address any significant adverse environmental effects.

Climate Change Policy 4 provides that:

> "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."

Climate Change Policy 4 is intended to encourage the preservation and enhancement of undeveloped areas vulnerable to flooding that have significant habitat value or are especially suitable for ecosystem enhancement. Policy 4 has no significant adverse environmental effects.

Climate Change Policy 5 provides that:

> "Wherever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged."

Climate Change Policy 5 encourages the utilization of effective and innovative approaches to adapt to sea level rise and has no significant adverse environmental effects. The impacts of any project designed under this policy will undergo separate environmental review by the Commission and other lead agencies, and existing BCDC laws and policies will be utilized to address any significant adverse environmental effects.

Climate Change Policy 6 provides that:

> "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: (a) the strategy incorporate an adaptive management approach; (b) the strategy be consistent with the goals of SB 375 and the principles of the California Climate Adaptation Strategy; (c) 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; (d) 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 (e) 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, and provide diverse housing served by transit;

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."

Climate Change Policy 6 implements the McAteer-Petris Act (Gov't Code §66646.2) by proposing a long-term strategy to develop a detailed regional climate change adaptation plan for the Bay in collaboration with the Joint Policy Committee (JPC) and other agencies, local governments and the general public. It does not mandate the development of the plan, but commits BCDC to work with other Bay Area agencies and stakeholders to formulate a strategy to protect the shoreline and natural ecosystems, and enhance the resilience of the Bay and its shoreline by identifying areas where tidal wetlands and tidal flats can migrate landward, assuring adequate volumes of sediment for marsh accretion, identifying conservation areas for acquisition, preservation and enhancement, and maintaining sufficient habitat and upland buffer areas around tidal wetlands.

Climate Change Policy 6 has no significant adverse environmental effects. The impacts of any plan developed under this process are too speculative to be analyzed at this time and will undergo independent environmental review under CEQA, if and when it is implemented. Moreover, projects undertaken under the Plan, if developed within the Commission's jurisdiction, will be subject to BCDC's laws and policies to address significant adverse environmental effects.

Climate Change Policy 7 provides that:

"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, 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; and

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."

Climate Change Policy 7 establishes an interim-term strategy to evaluate the effects of climate change and sea level rise on projects prior to the development of the long-term regional sea level rise adaptation strategy called for in Climate Change Policy 6. Climate Change Policies 7(a)-(d) call for the Commission to evaluate projects on a case-by-case basis consistent with its decades – long practice, to determine the public benefits, resilience to flooding, and capacity to adapt to climate change impacts. Projects with regional benefits are identified, including environmental remediation, critical public infrastructure, infill that concentrates employment or housing near transit service, and natural restoration or enhancement. These projects must also comply with other BCDC laws and policies to address environmental impacts, and the impacts of any project designed under this policy will undergo separate environmental review by the Commission and other agencies under CEQA. Therefore, Climate Change Policies 7(a)-(d) do not have significant adverse environmental effects.

Climate Change Policies 7(e)-(h) encourage certain small-scale projects that do not negatively impact the Bay and increase risks to public safety. Such small-scale projects are encouraged, but not approved per se. They are minor or temporary projects that do not have significant adverse environmental effects, must still be reviewed under the Commission's existing laws and polices to address any environmental impacts, and will undergo separate environmental review under CEQA by the Commission and other agencies. Therefore, Policies 7(e)-(h) do not have significant adverse environmental effects.

In summary, the amendments updating the Bay Plan findings and policies on Tidal Marshes and Tidal Flats, Safety of Fills, Shoreline Protection, and Public Access, and the new Climate Change findings and policies, do not increase adverse environmental impacts; in fact they generally provide the Commission with additional tools to address the impacts of climate change and sea level rise on the Bay. Moreover, predicting impacts from future projects are highly speculative, and the amendments do not alter existing laws and policies that allow BCDC to protect and limit environmental impacts on the Bay. Therefore, the amendments have no significant adverse environmental effects.

Environmental Justice and Social Equity Concerns. Addressing environmental justice concerns involves both preventing discrimination, and ensuring the meaningful participation in environmental policymaking. Environmental justice is defined as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (EPA, 2004; *see also* Cal Gov't Code §65040.12(e)). While the McAteer-Petris Act and BCDC's other laws or policies do not address environmental justice and social equity issues specifically, other state and federal laws and policies call for measures to prevent discrimination, promote equal access to its programs, and promote fair treatment in the development, adoption and implementation of laws, regulations and policies.

The legal basis for environmental justice resides both in federal and state law. Executive Order 12898 (1994), entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," directs federal agencies to make environmental justice part of their mission, and describes existing federal laws that can be used to further environment justice. These laws include Title VI of the Civil Rights Act of 1964, which prohibits the recipients of federal financial assistance from discriminating, excluding or denying benefits to persons on the basis of race, color, or national origin (42 USC §§2000d-§2000d-7). The Civil Rights Restoration Act of 1987 extends this requirement to all state or local agency programs and activities, regardless of whether those programs and activities receive direct federal funding (42 U.S.C. §2000d-4a). NOAA has promulgated regulations implementing Title VI that prohibit grantees from discrimination based on race, color and national origin (15 CFR §8.4(b)(2)), and has adopted guidance requiring grantees to take reasonable steps to provide meaningful access to its programs and activities to persons with limited English proficiency (68 Fed. Reg. at 14182-14183 (2003)). The U.S. Supreme Court has held

that conduct that has a disproportionate effect on persons with limited English proficiency constitutes national-origin discrimination under Title VI, "even through no purposeful design is present." (Lau v Nichols, 414 U.S. 563, 568 (1974)). As the recipient of federal funding under the Coastal Zone Management Act (CZMA), BCDC is subject to these requirements, as well as similar provisions in state law prohibiting discrimination and the denial of full and equal access to programs and activities conducted or funded by the State of California (Gov't Code §11135(a)).

The Governor's Office of Planning and Research (OPR) is the coordinating agency for state environmental justice programs in California, and the California Environmental Protection Agency (Cal EPA) has developed environmental justice programs, policies, and standards, and a model environmental justice mission statement (Gov't Code §65040.12). OPR consults with state agencies and interested members of the public, coordinates and shares information with federal agencies, conducts environmental justice training workshops, and provides guidance on integrating environmental justice into local general plans to ensure the equitable distribution of housing and public and industrial facilities and services. To the extent funds are available, the Dymally-Alatorre Bilingual Services Act requires state agencies to employ bilingual persons and explain benefits in non-English languages spoken by a substantial number of the public served by the agency (Gov't Code §§7290-7299.8).

The California Environmental Quality Act (CEQA) does not have specific environmental justice requirements, and does not treat the economic or social effects of a project as significant effects on the environment (CEQA Guidelines, 14 CCR §15131(a)). However, when an EIR is prepared because a project has a significant effect on the environment, the EIR must assess such issues as urban decay and deterioration when it is reasonably foreseeable that such impacts will occur (Anderson First Coal. v. City of Anderson, 130 Cal. App. 4th 1173 (2005), American Canyon Cmty. United for Responsible Growth v. City of American Canyon, 145 Cal. App. 4th 1062 (2006)). Therefore, the analysis of environmental impacts can raise environmental justice issues as part of the CEQA process.

BCDC's limited jurisdiction and authority in the 100-foot shoreline band limits the application and impact of the proposed amendments on such issues as blight, displacement of low-income residents, affordable housing, increased traffic congestion and increased tailpipe emissions. BCDC does not propose development or design development projects. Moreover, unlike local governments, BCDC does not dictate land uses outside of its existing designated priority use areas. The amendments state that the kind of transit-oriented development that benefits environmental justice communities should be encouraged and allows for shoreline protection projects. Although climate change and sea level rise may have disproportionate impacts on certain communities, the Bay Plan amendments themselves will not affect certain communities disproportionately.

The Commission has taken the following steps to address environmental justice concerns and improve public participation in the development of these Bay Plan amendments:

- Held meetings with elected officials in all nine Bay Area counties, including meetings in low-income and minority communities;
- Translated the Bay Plan amendment fact sheet into the five languages most commonly spoken by Bay Area residents with limited English proficiency (Spanish, Chinese, Vietnamese, Tagalog and Korean) to provide such communities with a fair opportunity to provide comments and concerns to the Commission;
- Solicited local governments and other interested parties in distributing the translated fact sheets to their constituencies; and
- Worked with environmental justice and community-based groups to gather input.

A recent report by the California Climate Change Center estimates that 150,000 Asian, black and Latino residents live in areas vulnerable to a 100-year flood event along the Bay with a 1.4-meter rise in sea levels (California Climate Change Center Report at 49), and confirms that "along the San Francisco Bay…communities of color are disproportionately impacted by sea-level rise" (CCCC Report at 43). Bay Area counties with populations that disproportionately include people of color vulnerable to sea level rise, compared to the county as a whole, are Contra Costa, Marin, Solano,

Napa, Sonoma, Alameda and San Mateo (CCCC Report at 45). Sea level rise in Contra Costa, Solano, Sonoma, Marin and Napa counties also will have disproportionate impacts on vulnerable low-income populations (CCCC Report at 47). The Report concludes, that "the greater proportion of people of color in areas affected by a 1.4-meter sea-level rise highlights the need for these counties to take concerted efforts to understand and mitigate potential environmental injustice" (CCCC Report at 43).

In such communities it is especially important to take proactive measures to prevent harm and reduce vulnerabilities, such as reinforcing residential buildings, obtaining insurance, storing emergencies supplies, and having access to transportation, evacuation services and emergency medical care. This may be particularly difficult in vulnerable areas with high concentrations of rental housing and low English-speaking populations. In vulnerable areas along the Bay, there are currently 47,000 rental households and 9,700 "linguistically isolated" households (meaning no one over the age of 14 speaks fluent English, CCCC Report. at 48). People of color in California also live disproportionately near (within 3 kilometers) hazardous waste facilities (CCCC Report. at 50). It is estimated that 130 EPA-regulated sites that contain hazardous wastes are currently vulnerable to a 100-year flood event in San Francisco Bay; the number of facilities at risk increases to 330 with a 1.4-meter rise in sea levels (CCCC Report at 53). Additional studies are needed to determine where vulnerable populations are located in proximity to these and other sites with hazardous or toxic substances. The California Climate Change Center notes, "what we choose to protect and how we pay for it may have a disproportionate impact on low-income neighborhoods and communities of color" (CCCC at 51).

The background report for the Bay Plan climate change amendments recognizes that shoreline flooding from climate change and sea level rise may affect communities differently depending on their location and resources, and that minority and low-income communities may have more difficulty relocating and dealing with the impacts of flooding and sea level rise. The Report calls for a regional analysis of social equity issues, regional assistance programs, and measures to assist low-income communities prepare for and adapt to climate change and sea level rise and participate in the regional decision-making process. The background report states that:

> "**Social Equity Study and Financial Assistance Programs**. Although BCDC has no authority to address social equity issues, the social equity analysis in this report highlights the need for further study of the significant impacts to low-income communities. The risk of shoreline flooding as well as actual flooding from sea level rise and related storm activity will impact communities differently. Those who have fewer resources at their disposal will have a more difficult time relocating or enduring interruptions in services. The region must be prepared with assistance programs to those most in need. Measures to include low-income communities in regional decision-making should be identified and implemented. Most importantly, a regional analysis of social equity issues related to sea level rise is needed. The analysis should look at low-income communities at risk of flooding or adjacent to future flood zones and should recommend measures to prepare for and/or retreat from flood zones. Social-equity, environmental justice organizations and public agencies are already working on climate change mitigation and other measures to reduce climate change impacts to and increase resilience of low-income communities. The risks and impacts associated with sea level rise must be a component of these efforts. Beginning to address the issue now allows more time to adapt in the future." (background report at 145)
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> "Strategies that the Commission can begin implementing immediately should be incorporated into the Bay Plan in the following manner:…Create a climate change policy section of the Bay Plan that addresses the following:…c. Working with the Joint Policy Committee (JPC) and other agencies to integrate regionally mitigation and adaptation strategies and adaptation responses of multiple government agencies, to analyze and support environmental justice issues, and to support research that provides useful climate change information and tools." (background report at 155)

The Bay Plan recognizes environmental justice concerns in Climate Change Finding "n" which states that:

> "Some Bay Area residents, particularly those with low incomes or disabilities and the 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."

Accordingly, Climate Change Policy 6(g) calls for the development of a regional sea level rise adaptation strategy to "address environmental justice and social equity concerns," and the Policy commits BCDC's participation in the development of the regional strategy. Given its limited jurisdiction and authority and the number of other partners involved in such an effort, BCDC cannot develop such a strategy alone. Therefore, BCDC will collaborate with the JPC and other regional, state and federal agencies, local governments, the general public, and especially low-income and minority communities, in the preparation of the regional climate change strategy to address environmental justice concerns.

The Commission is also addressing environmental justice concerns in other ways. The Commission is currently undertaking the Adapting to Rising Tides Program (ART) project to bring together community members and local and state officials collectively to gain a better understanding of how sea level rise and other climate change impacts will affect Bay Area communities along the Alameda County shoreline. This Program will involve representatives of the environmental justice community to help identify strategies for community-based adaptation planning to address challenges from climate change and sea level rise and develop a process for implementing them. Thus, the ART project, the background report, and the proposed Bay Plan amendments all recognize the importance of addressing environmental justice concerns and the amendments call for meaningful participation of low-income and minority populations in the formulation of the regional climate change adaptation strategy to shape the policies that affect their communities.

One commenter on the Commission's proposed Bay Plan amendments expressed concern that disseminating information related to sea level rise could lead to disinvestment in disadvantaged communities. However, such information is widely available from other sources, such as the USGS and the Pacific Institute. Moreover, informing disadvantaged communities of development risks provides more time to plan, develop adaptation strategies and secure funding.

A concern was also raised that the proposed amendments themselves may disproportionately affect low-income communities that have difficulty constructing shoreline protection and critical infrastructure, and lack the resources to construct projects outside the Commission's jurisdiction (Comments of Nicholas Targ, Holland & Knight, November 14, 2010). In fact, the amendments facilitate the construction of shoreline protection. Safety of Fills Policy 4 states, "The Commission may approve fill needed to provide flood protection for existing projects and uses." This Policy allows fill to protect existing development and uses from the risks of flooding and sea level rise for all communities. The Findings recognize that some communities may lack the financial resources to respond effectively to the impacts of sea level rise and storm activity, and states that "financial and other assistance is needed to achieve regional equity goals and help everyone be part of resilient shoreline communities" (Climate Change Finding n). Thus it is not the new Policies that cause disproportionate impacts on low-income and minority communities; it is the risks from climate change and sea level rise. The new policies are intended to facilitate the approval of shoreline protection to protect existing structures in all communities.

New fill proposed within the Bay, certain waterways, managed wetlands, and salt ponds regulated by the Commission must ensure that public safety is protected. The lessons from New Orleans instruct that development in vulnerable areas without adequate protection is unwise, unsafe and serves no public purpose. The amendments to the Bay Plan are designed to facilitate the protection of low-income communities from hazardous new development and support the appropriate siting of low-income housing.

Finding of No Significant Environmental Effects. A significant effect on the environment is "a substantial, or potentially substantial, adverse change in the environment." (Public Resources Code §21068) If significant environmental effects are identified, CEQA requires feasible alternatives or mitigation measures to be adopted to avoid or reduce such effects unless specific economic, social or other conditions make infeasible such alternatives and mitigation measures (Public Resources Code §21002). The background report notes that the effects of climate change on the Bay will be profound and significant. However, the amendments themselves do not have significant adverse environmental effects for several reasons.

Amending the Bay Plan is only a preliminary first step to project review. Each project that comes before the Commission requires further environmental review, and specific or potential environmental impacts can be identified and mitigated at subsequent stages. The amendments do not commit the Commission to approve or disapprove any particular project or any particular type of project. They do not specify a particular land use for any area of land. At this stage it is not known what projects will be undertaken under the Bay Plan amendments, where they will be located, or what impacts they will have on the Bay. The impacts of any particular future development project are speculative.

Because the Bay Plan amendments do not authorize physical alterations or commit the Commission to approve or deny any particular future physical alteration, the impacts of the amendments at this stage are very limited in scope and effect. The potential impacts of projects to be considered by the Commission in the future are highly speculative. The Commission will be able to conduct a more detailed review to determine the impacts of specific projects undertaken pursuant to these policies if and when they are proposed on a case-by-case basis. The proposed amendments improve the Commission's program for protecting the environment within its jurisdiction, including the built and natural environments. Finally, the amendments do not substantially alter the extent to which BCDC may address environmental impacts in permitting decisions under its existing laws and policies that protect the Bay. Indeed, the amendments provide the Commission with additional tools to address environmental impacts of future projects. Therefore, adoption of these amendments do not have significant adverse environmental effects.

Response to Comments Received During the Public Comment Period and Public Hearing

Given the number of comments and the similarity of many of the comments, the staff has developed 15 master responses that address many of the specific comments made by agencies, individuals and organizations. For those comments that could not be partially or fully responded to with the master responses, individual responses are provided. Comments received outside the public hearing were mailed under separate cover to Commissioners, Alternates and interested parties without responses.

The staff's fourth preliminary recommendation included a different finding and policy sequence from the September 3, 2010 staff recommendation. A new finding w was added to the findings, and a new policy 1 was added to staff's fourth preliminary recommendation so that policies 1 through 7 in the September 3, 2010 staff recommendation were renumbered to 2 through 8 in this fourth staff preliminary recommendation. The master and individual comment responses below use the numbering of the fourth preliminary staff recommendation to refer to the climate change policies, even though the commenter refers to a different policy (in the third preliminary recommendation).

Following the master responses are letters and spoken comments received from the public: (1) during the 32-day public comment period prior to the public hearing (September 3 through October 7, 2010); (2) at the six public hearings on October 7 and 21, November 2, 4, and 18 and December 2, 2010; and (3) for written comments through December 17, 2010, and staff responses to those comments. The Commission held the public hearing open from October 7 through December 2, 2010 for written and spoken comments, and through December 17, 2010 for written comments only.