Association of Bay Area Governments
Bay Area Air Quality Management District
Bay Conservation and Development Commission
Metropolitan Transportation Commission

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JOINT POLICY COMMITTEE — REGIONAL PLANNING PROGRAM

JPC EXECUTIVE COMMITTEE

CALL AND NOTICE OF SPECIAL MEETING

As Chair of the Executive Committee of the Joint Policy Committee, I am calling a special meeting of the JPC Executive Committee for:

Monday, September 10, 2012
3:00 p.m. to 5:00 p.m.
MetroCenter, 101 8th Street, Auditorium, Oakland, California

The business to be transacted will include:

Climate and Energy Resilience Project Status Report

Regional Sea Level Rise Strategy

Recommendation for Discussion with Senator Mark DeSaulnier

Members of the public shall be provided an opportunity to directly address the JPC Executive Committee concerning any items described in this notice before consideration of that item. Agendas and materials will be posted and distributed for this meeting by JPC staff in the normal course of business.

/s/ Tom Bates
Tom Bates
Chair

September 6, 2012
Date

Revised 9/6/12

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JPC EXECUTIVE COMMITTEE

SPECIAL MEETING

Monday, September 10, 2012
3:00 p.m. to 5:00 p.m.
MetroCenter, 101 8th Street, Auditorium, Oakland, California

AGENDA

1. **Call to Order**

2. **Climate and Energy Resilience Project Status Report** — Information

   Attachment: Riordan memo on Bay Area Climate and Energy Resilience Project dated September 6, 2012

3. **Regional Sea Level Rise Strategy** — Action

   The Executive Committee will consider endorsing a report and recommendation regarding the San Francisco Bay Conservation and Development Commission's request that the JPC facilitate the development of a regional sea level rise strategy. The report incorporates a work plan developed by the staffs of ABAG and BCDC. The Executive Directors of the four JPC agencies will consider endorsing the report and recommendation on September 5, 2012. If both the Executive Directors and the Executive Committee endorses the report, it will be taken up by the JPC at its September 21, 2012 meeting.

   Attachment: Draft memo on JPC's Role in Formulating a Regional Sea Level Rise Adaptation Strategy

4. **Recommendation for Discussion with Senator Mark DeSaulnier** — Discussion

   Senator Mark DeSaulnier intends to attend the September 21, 2012 Joint Policy Committee meeting to discuss matters of mutual concern to the Senator and the JPC. The JPC consultants recommend that in its discussion with Senator DeSaulnier the JPC should focus on what role the JPC can most productively play in advancing the formulation of a regional economic development strategy for the Bay Area.

   Attachment: Draft memo on Recommendation for Discussion with Senator Mark DeSaulnier

5.	**Executive Committee Members Comment**	Discussion
6.	**Public Comment**	Information
7.	**Adjournment**	Action

Next JPC Executive Committee Meeting: TBD

The JPC Executive Committee may take action on any item listed in the agenda.

This meeting is scheduled to end promptly at 5:00 p.m. Agenda items not considered by that time may be deferred.

The public is encouraged to comment on agenda items by completing a request-to-speak card and giving it to JPC staff or the chairperson.

Although a quorum of the Metropolitan Transportation Commission may be in attendance at this meeting, the Joint Policy Committee may take action only on those matters delegated to it. The Joint Policy Committee may not take any action as the Metropolitan Transportation Commission unless this meeting has been previously noticed as a Metropolitan Transportation Commission meeting.

Revised 9/6/12

TO: JPC Executive Committee
FROM: Bruce Riordan, JPC Climate Strategist
RE: Bay Area Climate & Energy Resilience Project
DATE: September 6, 2012

SIGNIFICANT RECENT PROGRESS (MONTH 3 OF 18-MONTH PROJECT)

1. Initial six-month Kresge Foundation grant secured ($85,700)
2. Climate Corps "Win-Win" Solutions Coordinator selected
3. CoCoCAL Adaptation Alliance — SD/LA/BA/SAC + OPR — held 2-day meeting
4. 11-study report on Bay Area climate impacts released by State CEC
5. UC Berkeley/JPC Do-Tank planning meeting set for September 17
6. Meetings underway with ABAG Disaster/Hazard Mitigation staff and consultants

OVERALL PROJECT OUTCOMES

Primary Products to Support Local and Regional Projects (December 2013):

1. The Bay Area has a coordinated structure and process for the on-going assessment of climate impacts, vulnerabilities, risks and adaptation strategies.

2. Information from that process is being mainstreamed into planning processes and disaster preparation for the region, including local general plans, Sustainable Communities Strategy, economic development plans, Bay Plan, Clean Air Plan, and hazard mitigation plans.

3. The region has a viable strategy to secure funding for both planning and initial strategy implementation.

Primary Products to Support Regional Agencies (partial list)

1. Increased support from key regional leaders for Sea Level Rise Strategy and other Bay Area adaptation actions.

2. Increased assistance and cost savings for cities, counties and agencies that are addressing adaptation issues.

3. High quality climate impacts science and strategies input for SCS I and SCS II.

4. Increased action on urban heat island impacts (ozone, health, energy demand, etc.) and other near-term strategies.

18-Month Project Roadmap (July 1, 2012 — December 31, 2013)

Step 1:
Collect information, produce summary report (Versions 1.0/1.1), hold project kickoff workshop, and build the network of experts. (JPC funding — June 30)

Step 2:
Develop a compelling Bay Area story (based on the reports and other input) and produce a short briefing paper to illustrate it.
(JPC funding + Kresge funding — October 15)

Step 3:
Hold 25 small-group meetings with selected adaptation leaders and key non-climate Bay Area leaders to obtain input on their needs, identify champions, obtain resources, and build overall support for accelerated action.
(JPC funding + Kresge funding — December 31)

Step 4:
Conduct special planning exercises to organize four topic areas:

- Social Equity and Community Engagement Work Plan (Bay Localize)
- GHGs + Adaptation Work Plan and Project Implementation (CCBA)
- Researchers + Practitioners Partnership Work Plan (BAECCC)
- Decision-Making Work Plan (Berkeley Law)

(JPC + Kresge funding — January 15, 2013)

Step 5.
Work with UC Berkeley and other academic leaders in the region to develop a "Do-Tank" that will bring academic experts together with Bay Area policy makers for high-level problem-solving and joint projects.
(JPC + University funding — TBD)

Step 6.
Develop and provide coordination and leadership for the CoCoCAL alliance of adaptation collaborative leaders in San Diego, Los Angeles, Sacramento and the Bay Area. Create a formal partnership between the four regions and the State.
(JPC Funding — Underway)

Step 7.
Develop an Action Plan and the Collaborative Structure/Home-Base/Funding to meet the 3 key project goals, obtain buy-in from key partners/stakeholders, and finalize.
(JPC + Kresge funding — February 28, 2013)

Step 8:
Implement the Action Plan to reach the 3 project goals.
(March 1, 2013 — December 31, 2013 — Funding TBD)

Date: September 14, 2012

To: Joint Policy Committee

From: Will Travis and Bruce Riordan, Joint Policy Committee Consultants

Subject: **JPC's Role in Formulating a Regional Sea Level Rise Adaptation Strategy (for JPC Executive Committee consideration on September 21 2012)**

EXECUTIVE SUMMARY

Using the JPC adopted criteria for determining whether JPC leadership on a particular issue or topic is appropriate, we have concluded that the JPC should take on a leadership role in facilitating the formulation of a regional sea level rise adaptation strategy. The staffs of BCDC and ABAG have taken the lead in jointly developing a preliminary work plan to formulate such a strategy. The staffs of the BAAQMD and MTC have been consulted in this process, and all four agencies should be engaged in the refinement of this preliminary work plan.

The staff of the California State Coastal Conservancy should be engaged in formulating the sea level rise adaptation strategy because the Coastal Conservancy administers programs that can provide funding for the implementation of the adaptation strategy.

The sea level rise adaptation strategy should rely heavily on developing a working partnership with the local agencies that are responsible for flood protection, the Bay Area Flood Protection Agencies Association (BAFPAA) and the Bay Area Water Agencies Coalition (BAWAC). This can be accomplished by integrating the strategy into the Bay Area Integrated Regional Water Management Plan (IRWMP), which coordinates the work of BAFPAA, BAWAC and the many other organizations and agencies that deal with water management and habitat protection.

The sea level rise adaptation strategy should be fully integrated into current and future Sustainability Communities Strategies. The JPC should facilitate these processes by providing regional leadership and advocacy of the critical regional economic and environmental importance of having an effective sea level rise adaptation strategy and by exercising its authority to coordinate the regional agencies and to resolve any conflicts that arise in the development a regional sea level rise adaptation strategy and its integration into the Sustainable Communities Strategy.

CONSULTANT'S REPORT

Background. On October 6, 2011, BCDC voted 24-0 to amend the *San Francisco Bay Plan* to address climate change. Among the many revisions to the Bay Plan made by the amendment is one recommending that BCDC, 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.

On December 2, 2011, the Joint Policy Committee considered a recommendation from the executive directors of the four JPC agencies that the JPC should agree to take the lead in facilitating the development of a regional sea level rise adaptation strategy. The JPC decided to refer BCDC's request to each of the JPC member agencies for comment, and at its January 20,

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2012 meeting, the JPC decided to initiate a thorough review of the JPC's purpose, processes and topics to enable the JPC to have a more systematic approach for deciding whether to take on a leadership role in regional issues and projects, such as formulating a regional sea level rise adaptation strategy.

Based on the requested review and further analysis by its consultants, over the next four months, the JPC approved a number of policies and procedures (see Attachment A) to guide the JPC's decision-making process. Among the adopted procedures are six criteria for determining whether JPC leadership on a particular issue or topic is appropriate. Using these criteria, the JPC is now in a position to decide whether to take on the role of facilitating the formulation of a regional sea level rise adaptation strategy.

Bay Plan Amendment: Consultant's Analysis. The *San Francisco Bay Plan* contains the policies that the BCDC uses to determine whether permit applications can be approved for projects within BCDC's jurisdiction, which consists of San Francisco Bay, salt ponds, managed wetlands, certain waterways, and land within 100 feet of the Bay. The California Legislature directed BCDC to keep the Plan up to date by amending it to deal with new information and new issues.

Last fall BCDC amended the Bay Plan to modify existing findings and policies dealing with sea level rise and to add a new section to the plan addressing climate change. The amendment was the result of more than five years of research, planning, drafting and revisions. The public hearings on the amendment were contentious at times, but by the time of adoption, there was broad support for the amendment, which BCDC passed unanimously. For the entire detailed revision language approved by BCDC see http://www.bcdc.ca.gov/proposed_bay_plan/10-01Resolution.pdf.

The revised language that principally affects the JPC is Bay Plan Climate Change Policy 6, which states:

> *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 policy further states, "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:*

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a. *advance regional public safety and economic prosperity by protecting: (i) existing development that provides regionally significant benefits; (ii) new shoreline development that is consistent with other Bay Plan policies; and (iii) infrastructure that is crucial to public health or the region's economy, such as airports, ports, regional transportation, wastewater treatment facilities, major parks, recreational areas and trails;*

b. *enhance the Bay ecosystem by identifying areas where tidal wetlands and tidal flats can migrate landward; assuring adequate volumes of sediment for marsh accretion; identifying conservation areas that should be considered for acquisition, preservation or enhancement; developing and planning for flood protection; and maintaining sufficient transitional habitat and upland buffer areas around tidal wetlands;*

c. *integrate the protection of existing and future shoreline development with the enhancement of the Bay ecosystem, such as by using feasible shoreline protection measures that incorporate natural Bay habitat for flood control and erosion prevention;*

d. *encourage innovative approaches to sea level rise adaptation;*

e. *identify a framework for integrating the adaptation responses of multiple government agencies;*

f. *integrate regional mitigation measures designed to reduce greenhouse gas emissions with regional adaptation measures designed to address the unavoidable impacts of climate change;*

g. *address environmental justice and social equity issues;*

h. *integrate hazard mitigation and emergency preparedness planning with adaptation planning by developing techniques for reducing contamination releases, structural damage and toxic mold growth associated with flooding of buildings, and establishing emergency assistance centers in neighborhoods at risk from flooding;*

i. *advance regional sustainability, encourage infill development and job creation, provide diverse housing served by transit and protect historical and cultural resources;*

j. *encourage the remediation of shoreline areas with existing environmental degradation and contamination in order to reduce risks to the Bay's water quality in the event of flooding;*

k. *support research that provides information useful for planning and policy development on the impacts of climate change on the Bay, particularly those related to shoreline flooding;*

l. *identify actions to prepare and implement the strategy, including any needed changes in law; and*

m. *identify mechanisms to provide information, tools, and financial resources so local governments can integrate regional climate change adaptation planning into local community design processes.*

Until a regional sea level rise adaptation strategy can be completed, BCDC will continue to 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.

JPC Leadership: Consultant's Analysis. On May 18, 2012, the JPC adopted six criteria for determining whether JPC leadership on a particular issue or topic is appropriate. These newly

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adopted criteria have been applied below to analyze whether the JPC should facilitate the formulation of the type of regional sea level rise adaptation strategy envisioned by BCDC.

1. What is the relative importance of addressing the project or issue in achieving the goals of economic prosperity and environmental sustainability in the Bay Area?

Sea level rise from global warming is a fact. Water levels in San Francisco Bay have risen nearly eight inches over the past century, and scientists agree that the rate of sea level rise is accelerating. While exact future increases in sea level rise are uncertain, the State of California has adopted guidance for state agencies which indicates that Bay may rise 10 to 17 inches by 2050, 17 to 32 inches by 2070, and 31 to 69 inches by the end of the century.

Sea level rise is a particularly acute problem for the Bay Area because 240 square miles of shoreline land was reclaimed from the Bay by filling it just high enough to be above past sea level, but not above future sea level. Also because of land subsidence, parts of the South Bay, where a number of high-profile Silicon Valley companies are located, are below current sea level. Approximately 330 square miles of low-lying land around the Bay may be vulnerable to sea level rise over the next century.

Numerous critical regional assets are located within these areas vulnerable to flooding. Some of these assets include San Francisco's financial district, Mission Bay, Treasure Island San Francisco International Airport, Oakland International Airport, the headquarters of a number of Silicon Valley companies, highways, railroads, and communities. In addition to determining how best to protect existing economic assets, the Bay Area needs a cohesive strategy for increasing job growth and enhancing economic prosperity in the decades ahead. To achieve these goals it will be necessary to continue to attract private investment capital to the Bay region. If investors are concerned about the long-term economic viability of development located in areas vulnerable to flooding or if underwriters will not insure such development, the Bay Area will be at a distinct competitive disadvantage in securing this needed investment capital. Therefore, a regional strategy for addressing sea level rise adaptation is critical to the region's continued economic prosperity.

Other regions, states and nations that are facing flood danger from sea level rise are embarking on programs to deal with this challenge. *A Sea Level Rise Adaptation Strategy* for San Diego Bay has been prepared by ICLEI Local Governments for Sustainability through a collaborative, regional stakeholder process that included most of the public agencies and private sector representatives with a major interest in the future of San Diego Bay. Four Florida counties have established the Southeast Florida Regional Climate Change Compact to partner in mitigating the causes and adapting to the consequences of climate change, particularly flooding. Recognizing that New York City has more than 520 miles of coastline, and is among the top ten port cities in the world that are most exposed to coastal flooding, New York City's plan, called *PlaNYC*, is being updated to deal with the complex welter of climate issues facing the city. Delaware is developing a plan for sea level rise that will recommend policy changes and practices to ensure that Delaware makes informed policy and investment decisions to prevent damage and losses to infrastructure, resources and homes. To avoid losses from flooding, the province of British Columbia, Canada is incorporating sea level rise projections into coastal management practices and planning. The City of Vancouver, British Columbia has designed a climate change adaptation strategy to tackle a potential increase in street flooding, sewer backups, damaged forests and heat-related illnesses. Toronto and Halifax already have such plans in place. Rotterdam, Netherlands has an overarching adaptation plan, called *Rotterdam*

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Climate Proof, which allows for climate considerations across all departments and infrastructure types and enables innovative projects and widespread policy changes.

A regional sea level rise adaptation strategy is also critical to the environmental sustainability of the Bay Area. The goal of the South Bay Salt Pond Restoration Project is to enhance over 16,000 acres of diked ponds formerly used for salt making. An additional 10,000 acres of former salt ponds in the North Bay are being restored to wetlands in the Napa-Sonoma Marsh Restoration Project. Together these two initiatives form the nation's largest wetland restoration project outside the Everglades. Wetlands provide flood protection by attenuating wave energy. However, tidal wetlands exist only at intertidal elevations and are, therefore, vulnerable to sea level rise. Moreover, some undeveloped low-lying areas that are vulnerable to shoreline flooding contain important habitat or provide opportunities for habitat enhancement. In these areas, development could preclude wetland enhancement. Therefore, protecting existing wetlands and addressing the trade-off between development and habitat enhancement is critical to the environmental and economic sustainability of the Bay Area.

2. **How broad is the support among government, equity, environmental, and business interests for the JPC to provide leadership on the project or issue?**

It took BCDC over five years to formulate the Bay Plan climate change amendment the Commission adopted in late 2011. During the 26-month public review period, BCDC held 36 public hearings, workshops and stakeholder meetings, which which were contentious at times. Some development and business interests initially argued that the proposed policies would discourage development and economic investment in the Bay Area, while environmental groups pressed BCDC to issue a moratorium on new shoreline development. Local governments also raised concerns about the policies, fearing that they would allow BCDC to intrude into local planning decisions. To deal with these concerns BCDC met with local governments and extended the public comment period for several months. Throughout this process, the amendment language was revised and refined to respond to the excellent ideas advanced by stakeholders, local governments and the general public. In the end, the business community, developers, labor and environmental organizations and local governments supported the amended policies, and BCDC unanimously approved the amendment. One of the critical elements in securing this support was BCDC's position that the JPC should take the lead in formulating a regional sea level rise adaptation strategy and that the strategy should be integrated with the planning of the other JPC member agencies. Therefore, there is broad support for the JPC to provide regional leadership on the issue of sea level rise.

3. **If the JPC does not provide leadership on the project or issue, will another entity do so?**

Given the magnitude of the threat posed by sea level rise to shoreline assets, communities and resources, it is inevitable that some entity (or entities) will deal with the issue––eventually. The question is whether this action will come about only after a series of floods make the vulnerability more obvious or whether new laws or other external pressure mandate the JPC (or another entity) to assume a leadership role.

Some individual local jurisdictions are studying the impacts of sea level rise and beginning to incorporate consideration of greater coastal flooding into their planning. For example, the San Francisco Public Utilities Commission is planning to retrofit shoreline sewage treatment facilities to prevent flood damage, and the City of Mountain View has allocated $300,000 to study the impacts of sea level rise. On a broader scale, sub-regional efforts are coordinating sea

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level rise planning across a number of jurisdictions. The BCDC-initiated Adapting to Rising Tides Project is a multi-jurisdictional partnership that is assessing flood vulnerability and risk assessment along a portion of the Alameda County shoreline, from Emeryville to Union City. The San Francisquito Creek Joint Powers Authority is leading a consortium of county and city agencies to formulate an integrated shoreline and watershed flood protection strategy for the communities along San Francisquito Creek in San Mateo and Santa Clara counties. A public/private partnership in Silicon Valley aims to raise over $1 billion over the next decade to build engineered levees from Redwood City around the south end of the Bay up to Hayward and to contribute to the South Bay Salt Pond Restoration Project.

While these individual local efforts are valuable, and the sub-regional pilot projects will provide valuable information and intergovernmental approaches, ultimately some aspects of sea level rise have regional impacts that require a regional response. Fifty-five local governments have land use authority over portions of the 1,000 miles of Bay shoreline. Special districts, which have no land use authority, have the responsibility for flood protection along much of the shoreline. Other special districts are responsible for wetland restoration, which can play a critical role in a regional sea level rise and flood protection strategy. Coordination among these entities is essential in formulating a strategy that has no weak points in the flood protection system and can protect resources that span jurisdictions.

The State of California took an important leadership role on climate change adaptation when it released the "California Climate Adaptation Strategy" in 2009. That strategy was directed primarily to actions state agencies should take to prepare for the impacts of climate change in the decades ahead. The State is currently in the process of updating that strategy and expanding it to include actions local governments could (and should) be taking. While such actions are not currently mandated by the State, if it becomes clear that the State's interests cannot be advanced without local engagement, legislation could be enacted to achieve this.

Thus, JPC leadership on a regional sea level rise adaptation strategy can be seen as more of an opportunity than an obligation. Regional leadership is clearly needed. If the JPC does not exercise that leadership now, either some other entity may eventually do so at its own initiative or the JPC or some entity may be required to do so. The JPC provides this leadership now in a manner that reflects the perspectives of its member agencies and advances the regional interests of the Bay Area. Therefore, it would be prudent for the JPC to proactively take on this leadership role now rather than have to react to a possible future initiative that may not be fully consistent with Bay Area conditions.

Finally, the JPC already has the responsibility for coordinating the activities of its four member agencies in the development of the Sustainable Communities Strategy. It is critical that any regional sea level rise adaptation strategy be integrated, to the maximum degree feasible, into the SCS that is scheduled to be adopted in 2013, and be fully integrated into the next iterations of the SCS that will be adopted ever four years thereafter. Therefore, the JPC is uniquely positioned to provide regional leadership on a sea level rise adaptation strategy.

4. **Are resources available to support the JPC's leadership role on the project or issue?**

ABAG, BCDC and MTC have some existing financial resources that have been committed to continuing current assessments of sea level rise and formulating adaptation measures. However, there are no funds currently appropriated for or specifically available to formulate a

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comprehensive regional sea level rise adaptation strategy. However, the four regional agencies have been effective in generating financial support that is needed to advance regional objectives.

Over the past five years, BCDC has been able to secure $1.72 million from federal grants, special funds, and other sources to undertake its pioneering work in sea level rise assessment and planning for the Bay Area. The BAAQMD faced a similar problem when it decided to integrate consideration of greenhouse gas emissions into the agency's regulatory functions. To secure revenue for this purpose, the BAAQMD adopted a GHG fee, paid by regulated industry, which generates approximately $1 million annually. Similarly, no funds were appropriated or available to develop the SCS pursuant to SB 375. To meet this mandate, MTC allocated Proposition 84 funds it received, along with a considerable investment of its own funds. In addition, a $5 million HUD grant is funding planning that is being incorporated into the SCS, and ABAG has received over $2 million from the Strategic Growth Council in Proposition 84 funds to support SCS work. ABAG also received $830,000 from multiple sources for disaster preparedness planning.

Based on this experience, it may seem reasonable to assume that the JPC agencies may be able to use their entrepreneurial effectiveness to secure the funds needed to underwrite the cost of formulating a regional sea level rise adaptation strategy. However, it should also be recognized that while the four agencies have been equal partners in advancing the objectives of the JPC, they have not had equal access to financial resources to provide for the funding of JPC activities. For example, MTC has borne the lion's share of the cost of developing the SCS. Also, MTC and the BAAQMD fund the two JPC consultants, while ABAG contributes office space and administrative support for the consultants. As a state agency, BCDC has relatively little direct control over its budget, and due to ongoing state budget constraints, BCDC has only been able to provide in-kind staff work to support JPC activities. This unequal funding approach may not be sustainable over the long term and may eventually have to be replaced with a new funding model that relies on some combination of more equitable financial contributions from all four JPC partners and far more external grants or special funding to finance JPC activities.

In light of this situation, we believe the JPC should depart slightly from its adopted policies and procedures in deciding whether to take a leadership role in facilitating the formulation of a regional sea level rise adaptation strategy. These procedures call for the JPC to <u>first</u> make a decision on whether to take on this leadership role and <u>then</u> for the agency staff to prepare a work plan for carrying out the leadership role. However, given the potential fiscal magnitude of formulating a regional sea level rise adaptation strategy, the agency staffs have prepared a preliminary work plan that identifies the costs and possible funding sources for preparing a regional sea level rise adaptation strategy. We believe providing this work plan will assist the JPC in making a policy decision on its regional leadership role in sea level rise planning.

This preliminary work plan (Attachment B) was developed by the staffs of ABAG and BCDC in consultation with the staffs of the BAAQMD and MTC and the JPC's consultants. It is appropriate for BCDC and ABAG to take on joint leadership in formulating both the work plan and the adaptation strategy because of BCDC's recognized role as a national leader in sea level rise adaptation planning and because of the critical responsibilities the local government members of ABAG will have in formulating and implementing a regional sea level rise adaptation strategy. To advance the goal of having a single integrated Plan Bay Area, the primary thrust of the work plan is to fully integrate the regional sea level rise adaptation strategy into the Sustainability Communities Strategy that is being formulated pursuant to SB

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375. The work plan envisions a sea level rise strategy being pursued in three phases: (1) considering sea level rise exposure in the current SCS and its Environmental Impact Report using existing financial resources; (2) convening and supporting subregional and local planning adaptation planning efforts, and incorporating lessons learned in the region's second SCS; and (3) developing a regional sea level rise adaptation strategy that integrates tasks one and two and incorporates protection of regionally important environmental resources into the third SCS.

To augment the efforts of the JPC agencies, the California State Coastal Conservancy should be actively engaged in formulating the regional sea level rise adaptation strategy. The Coastal Conservancy administers the San Francisco Bay Area Conservancy Program, which provides grants and staff assistance to improve public access to the Bay; to protect, restore, and enhance natural habitats; and to assist in the implementation of the policies of the *San Francisco Bay Plan* and the adopted plans of local governments and special districts. The Conservancy also works in partnership with ABAG to administer the San Francisco Bay Restoration Authority, which is empowered to levy a benefit assessment, special tax, or property-related fees to raise funds needed for wildlife habitat restoration, related public access, recreation, and flood protection projects. Since funding the implementation of a regional sea level rise adaptation strategy will be a critical issue in deciding which elements should be incorporated into the strategy, it is imperative to engage an agency that has the authority to raise funds at the outset the strategy formulation process.

In addition, because the formulation of the strategy relies heavily on developing a working partnership with that local agencies that are responsible for flood protection, the Bay Area Flood Protection Agencies Association (BAFPAA) and the Bay Area Water Agencies Coalition (BAWAC) should be engaged in the development of the sea level rise strategy from the outset. This can be accomplished by integrating the strategy into the Bay Area Integrated Regional Water Management Plan (IRWMP), which coordinates the work of BAFPAA, BAWAC and the many other organizations and agencies that deal with water management and habitat protection. The Coastal Conservancy plays a key role in the management of the IRWMP.

If the JPC decides a regional sea level rise adaptation strategy is needed and that the preliminary work plan for formulating such a strategy is reasonable, if any of the funding needed to develop the strategy is to be provided by JPC member agencies, the funding would have to be agreed upon by the regional agencies contributing funds.

5. **Has a JPC member agency requested that the JPC provide leadership on the project or issue?**

The simple answer is 'yes," BCDC has made this request pursuant to the recommendation contained in the mandated Bay Plan climate change policy adopted by BCDC last fall.

6. **Is there likely to be a significant impact on achieving the mandated responsibilities of one of the regional agencies if the JPC does not take on a leadership role on the project or issue?**

Diking, filing land reclamation projects carried out between 1850 and 1960 reduced the size of San Francisco Bay by one-third. Two-thirds of the remaining Bay was shallow enough to reclaim. BCDC was established in 1965 to prevent this shrinking of the Bay to continue and was empowered to deal with the problem by regulating new Bay fill projects. In other words, BCDC was created to prevent the Bay from getting smaller. However, sea level rise will make the Bay larger, a problem BCDC was not established to address and which it had no authority to control.

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AB 2094 (DeSaulnier), enacted in 2008 to add BCDC as a voting member of the JPC, addressed this shortcoming by allowing BCDC to engage in the development of a regional sea level rise adaptation strategy. Specifically, AB 2094 provides:

> *The San Francisco Bay Conservation and Development Commission, in coordination with local governments, regional councils of government, and other agencies and interested parties, may develop regional strategies, as needed, for addressing the impacts of, and adapting to, the effects of sea level rise and other impacts of global climate change on the San Francisco Bay and affected shoreline areas. These regional strategies may include, but are not limited to, the following: (a) Identification of areas that may be subject to erosion, inundation, or other impacts from sea level rise and climate change. (b) Economic and environmental analyses of the benefits and costs of protecting the areas likely to be impacted.*

Thus, there would be a significant impact on BCDC in carrying out this provision of law if the JPC does not take on a leadership role in the formulation of a regional sea level rise adaptation strategy.

There are multiple local, state, federal, and regional government agencies with authority over the Bay and shoreline. The local governments that are members of ABAG have broad authority over shoreline land use within their boundaries, but no authority over the actions of adjacent jurisdictions and the decisions of state and federal agencies. Local governments also have limited resources to address climate change adaptation. Coordinating adaptation strategies among the agencies involved and securing financial support to plan and implement these strategies will have to be a key component of an effective regional sea level rise adaptation strategy. Therefore, there will be a significant impact on the mandated responsibilities of the local government members of ABAG if such a regional strategy is not undertaken.

The shoreline of the Bay is largely surrounded by transportation infrastructure, including freeways, highways, railroads, ports and airports. As a result, these transportation linkages will be the first to experience the flooding impacts caused by climate change induced sea level rise and storms. Disruptions in mobility will have impacts region-wide, far beyond the areas flooded. Therefore, the formulation of a regional sea level rise adaptation strategy, facilitated by the JPC, will impact MTC, transportation facility owners and operators, and local congestion management agencies in fulfilling their mandated responsibilities.

Conclusion and Recommendation. Using the JPC adopted criteria for determining whether JPC leadership on a particular issue or topic is appropriate, we conclude that it is appropriate for the JPC to take on a leadership role in facilitating the formulation of a regional sea level rise adaptation strategy as requested by BCDC. JPC should fulfill this facilitation role through its responsibilities for regional leadership (i.e., by providing regional leadership and advocacy of the critical regional economic and environmental importance of having an effective sea level rise adaptation strategy) and for regional agency coordination (i.e., by exercising its authority to coordinate the regional agencies and to resolve any conflicts that arise in the development a regional sea level rise adaptation strategy and its integration into the SCS).

To optimize scarce resources and create the flexibility needed to plan amidst a high degree of uncertainty, it is essential that a regional sea level rise adaptation strategy be developed collaboratively with local governments, and especially local agencies with responsibility for flood protection. Moreover, retrofitting the Bay Area's transportation infrastructure system to

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be resilient to flooding will be extraordinarily expensive. However, the potential exists that the process of providing flood protection for transportation facilities can also provide flood protection for low-lying area inland of the transportation facilities along the shoreline. The JPC provides a framework for coordinating the planning and policy development of its four member agencies and local governments; for advancing consistent and effective regional decision-making to address climate change; and for providing local governments with assistance and incentives for addressing climate change. To take advantage of these opportunities, we conclude that the JPC can play a critically important role in facilitating the formulation of a regional sea level rise adaptation strategy, and we therefore recommend that the JPC agree to take on this responsibility.

As called for in the regional leadership policies and procedures adopted by the JPC, we presented a draft this report to the JPC Executive Committee and agency executive directors for their consideration. They support our conclusion that the JPC should take on a leadership role in facilitating the formulation of a regional sea level rise adaptation strategy. Therefore, the recommendation is being advanced to the JPC for endorsement on September 21, 2112. If the JPC also supports this conclusion, the staffs of BCDC and ABAG will initiate work on Task #1 in the work plan (Attachment B), which can be completed by mid-2013 using currently available funds. The staffs of BCDC and ABAG would also take the lead in collaborating with the staffs of the MTC, BAAQMD and the Coastal Conservancy in developing a more refined work plan with a funding strategy for Tasks #2 and #3. When it is completed, the final work plan will be presented to the JPC for its ratification.

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ATTACHMENT A

Joint Policy Committee Adopted Policies, Procedures and Decisions (as of May 18, 2012)

JPC Management. The board of the Joint Policy Committee is responsible for managing the JPC and achieving its objectives. The 20-members of the JPC governing board provide broad representation from throughout the Bay region. However, the current practice of holding two-hour meetings bimonthly has not proven to be particularly effective when dealing with important matters, such as regional policies and interagency coordination. To enhance the JPC's capacity to provide ongoing policy direction and coordination, the JPC established an executive committee, composed of the JPC chair and vice chair and the chairs and vice chairs of each of the four JPC agencies, to work with the agency executive directors in directing the key activities of the JPC. The full JPC board will continue to have the final responsibility on all policy and procedural matters and the selection of issues and projects the JPC will take on. However, the executive committee will provide a nimble, action-oriented leadership approach to JPC management.

Coordination and Collaboration. To help the four JPC member agencies contribute to attaining a shared regional vision, the JPC's primary role will continue to be facilitating collaboration and avoiding duplication among the agencies. A clear and robust process will be used to help the agencies work together on the most critical regional issues and avoid conflicts. This process, featuring early advance work among the agencies, will help the agencies reach consensus through discussion and consultation.

The following six-step process will be used to achieve this desired coordination:

1. The JPC consultants will coordinate the identification of: (a) major opportunities for collaboration; and (b) potential inter-agency conflicts. Topics to be considered can be generated by the JPC consultants, JPC members, agency members and staff, and the public.
2. The JPC consultants will organize and submit potential topics to the JPC chair, member agency chairs, and executive directors for discussion. The JPC will be given an opportunity for early input on a topic's importance, key issues to address, and policy guidance. The business community, environmental interests and equity organizations will be consulted about the topics.
3. The JPC consultants will take selected topics to the agency staff for discussion and action/resolution. Working through the agency chairs and executive directors, the issues will be first taken up by the agency planning directors. If no action/resolution can be agreed upon, the discussion will be elevated to the executive directors. If still no action/resolution can be agreed upon, the issue will be taken up by the agency chairs for action/resolution. Any necessary formal action on the issue will be provided by the JPC.
4. The JPC consultants will provide a written description of the decision to the JPC member agencies, agency staff, and the public.
5. The JPC consultants will monitor the implementation of the decisions, and if issues arise, report on them to the JPC, agency chairs and executive directors.

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6. To enhance the process, the JPC consultants will be responsible for scheduling regular meetings of member agency planning directors, executive directors and chairs and will facilitate opportunities for chairs and executive directors to develop better working relationships outside issue discussions meetings.

Regional Leadership. The JPC will continue to provide regional leadership by facilitating work by others on critical issues that are outside the current scope of the four agencies. Current JPC leadership initiatives include the Bay Area Climate and Energy Resilience Project and the Regional Economic Development Strategy. To improve the JPC's performance on such initiatives a clearer process will be used for selecting issues and for establishing the JPC's specific role(s). This selection process takes into account JPC and agency resources, potential partners, alternatives to JPC involvement, timing, and other relevant factors. To leverage the limited JPC and agency resources emphasis is placed on using non-JPC using resources provided by foundations, universities, other public agencies, the private sector, and other sources of funding.

The following four-step process will be used to identify critical issues and projects:

1. The JPC consultants drafted criteria for selecting JPC projects/initiatives, primarily based on whether JPC leadership would provide clear value-added for a specific issue or topic: The chairs and executive directors discussed, modified and endorsed the project selection criteria, and the JPC ratified the following six selection criteria:
   a. What is the relative importance of addressing the project or issue in achieving the goals of economic prosperity and environmental sustainability in the Bay Area?
   b. How broad is the support among government, equity, environmental, and business interests for the JPC to provide leadership on the project or issue?
   c. If the JPC does not provide leadership on the project or issue, will another entity do so?
   d. Are resources available to support the JPC's leadership role on the project or issue?
   e. Has a JPC member agency requested that the JPC provide leadership on the project or issue?
   f. Is there likely to be a significant impact on achieving the mandated responsibilities of one of the regional agencies if the JPC does not take on a leadership role on the project or issue?
2. In applying the criteria, it is important to recognize that some speculation is involved in deciding whether there is broad support for the JPC taking on a leadership role, what will happen if the JPC does not provide leadership, the relative importance of an issue, and whether funding might or might not become available. In addition, over time an issue that may score low today may emerge as important in the future as conditions change.
3. Using the criteria, the JPC consultants and agency staff will bring proposed projects/initiatives to the agency chairs and executive directors for discussion. To aid this process, the JPC consultants will prepare a brief report on each potential project,

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describing the roles the JPC and the four agencies could play. Selected projects will be advanced to the JPC for endorsement.

4. Under the direction of the chairs and executive directors, the JPC staff and agency staff will prepare a work plan for a selected project.

JPC Engagement with the Business Community. The JPC: (1) endorsed the practice of holding quarterly meetings of the JPC agency directors and the Bay Area Business Coalition; (2) agreed to make full use of the Bay Area Council Economic Institute's advisory committee on the regional economic development framework study as an opportunity for JPC members to directly interact with the business community; and (3) endorsed adding an early community consultation process to the JPC's adopted coordination and collaboration process.

Joint Policy Committee and ABAG's Regional Planning Committee Roles and Responsibilities. Based on an analysis by the JPC consultants, the JPC concluded there is no compelling rationale for either merging the JPC and the RPC or for significantly restructuring the two committees so that one entity could accomplish the markedly different responsibilities of the two.

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ATTACHMENT B

Preliminary Work Plan for Developing a Regional Sea Level Rise Adaptation Strategy

Climate Adaptation Strategy Fundamentals. In dealing with climate change, it has long been recognized that climate change *mitigation* (i.e., reducing greenhouse gas emissions) requires a global approach to be truly effective. Any accomplishments California achieves in reducing emissions can be negated by increased emissions in other states or nations. In contrast, climate change *adaptation* (i.e., responding to the impacts brought about by unavoidable greenhouse gas emissions) often requires a highly localized, usually site specific approach. The impacts of *global* climate change––including sea level rise, increased temperatures, more extreme storms, and shifts in precipitation––may have widely different *local* effects depending on local metrological conditions, development patterns, topography, water sources and other factors.

While adaptation actions are largely localized and jurisdiction-specific, regional climate planning is needed to augment local climate adaptation measures. A regional strategy can ensure the ongoing health and ecological viability of regional natural resources, such as San Francisco Bay; coordinate adaptation mechanisms that transcend local jurisdictional boundaries; and share the costs of adaptation responses at a regional level, especially when regional resources are involved. But regional solutions are best developed as they emerge from local government recognition of a need for inter-jurisdictional cooperation rather than from a "top-down" regional strategy.

Just as is the case with climate change mitigation, where regions are responsible under SB 375 for developing Sustainable Community Strategies aimed at reducing greenhouse gas emissions, the best roles for regions in climate change adaptation are to assist and encourage local governments to work cooperatively to achieve regional and state objectives. However, some current regional objectives may be unachievable under projected future climate conditions absent effective adaptation responses. Ultimately, effective adaptation will require partnerships and collaboration among local governments, property owners and facility operators with regional, state, and federal agencies. Local governments and special districts with permitting authority are best suited to guide the formulation of adaptation strategies in their communities and, therefore, must be the leaders in this effort. However, it is too early for a clear consensus to emerge regarding the respective roles of the different levels of government in both formulating and financing a comprehensive climate adaptation strategy that addresses sea level rise.

At this early stage, the sea level rise adaption strategy work plan focuses on providing enough background information and support to develop a "bottom-up" regional strategy where the regional agencies would work with local entities to assess vulnerabilities and risks, identify critical assets, explore adaptation options, and use a balanced approach to identify costs, benefits and adaptation strategies for the natural resources/ecosystem services provided by the Bay and its watersheds. The rationale for this local/regional approach includes the following:

- Climate change impacts are felt at regional and local levels.
- Climate change impacts in populated areas require local land use planning and local responses.
- Some costs of adapting to climate change can be shared among local jurisdictions.

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- Climate change impacts to regional resources that transcend jurisdictional boundaries (e.g., ecosystem services, international airports, state highways and regional transportation facilities) require regional planning and responses.
- Assessments of risks will need to be undertaken at different scales but with a uniform methodology.

The formulation of a regional sea level rise adaption strategy should be integrated with ABAG's work on mitigation and response planning for earthquakes and other hazards. Identical resources and capabilities can often deal with different sorts of disasters. Just as regional goals for sustainability, growth, and quality of life can be compromised by sea level rise, they are also compromised by the threat of earthquakes, floods, fire, mudslides and other climate-related events. Land use and infrastructure investment decisions must consider multiple hazards, not just sea level rise. Additionally, many areas of the Bay Area face multiple hazards due to their geologic composition. For example, low lying filled land that is vulnerable to sea level rise may also be susceptible to liquefaction from earthquakes, and so both must be considered together.

While this integrated preparation and response planning is valuable, it is important to recognize that there is a fundamental difference between anticipating and adapting to sea level rise and planning for other hazards.

Storm flooding, earthquakes, poor air quality conditions, heat waves, energy shortages and wildfires are serious but temporary events. We prepare for them to minimize their impacts; we endure them when they occur; and we then do our best to recover from them as quickly as possible. They can be considered short-term events with an expected "return to normalcy" at the end of their cycle. At the next level, these hazards can become recurring events that demand a more rigorous set of planning and mitigation strategies. For example, as sea level rises there will more days in which storm events can produce damage to shoreline assets. We will likely invest more to protect infrastructure that it is flooded and damaged monthly rather than once every few years, particularly when the infrastructure serves communities upland of the flood zones. Similarly, new actions will be required to deal with windstorms that cause power outages if severe storms occur more frequently. In these cases, the consequences may be more frequent or more severe, but they still follow the same cycle of prepare, endure, and recover.

Sea level rise, however, will eventually add one additional danger level to these one-time and recurring events when it causes permanent changes to shoreline lands. Areas that are now always above water levels or subject only to occasional flooding will always be below water levels and permanently flooded––and over time the water will get ever deeper. In this case, the consequences are long-term and will create a permanently altered state. While current sea level rise scenarios indicate this permanent flooding may not happen for a few decades, we must consider low-probability/high impact scenarios in which permanent flooding from sea level rise may take place during our current land use planning horizons. This will require fundamentally rethinking how we plan long-term for these low-lying areas.

A similar rethinking took place half a century ago. From 1850 until the early 1960s, the shallow waters of San Francisco Bay were regarded as vacant real estate that was inconveniently covered with water. The State of California encouraged underwater property to be reclaimed by allowing it to be sold, filled and used for development. In the 1960s, society changed its mind about how it thought of San Francisco Bay. Rather than allow more of the Bay

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to be filled, state legislation was enacted to largely prevent new fill and to treat the Bay as a valuable natural resource that is largely off-limits to real estate development.

We are now faced with having to decide how we want to plan for areas that will be permanently flooded in the future just as we had to decide how to plan for areas that were permanently flooded in the past. Ultimately, we will likely decide we want to protect most areas that are now dry for as long as we can, whatever the cost. There are engineering solutions to accomplish this. Large areas in Sacramento are below sea level and protected from flooding by levees. Similar conditions exist in New Orleans. Vast parts of the Netherlands have been protected from flooding for centuries by a complex system of dikes, canals, levees and pumps. But as a 1953 flood in the Netherlands and Hurricane Katrina in New Orleans demonstrated, these protection systems can fail. They are also enormously expensive to build and maintain. In addition, the Bay as a natural resource provides myriad ecosystem services that are at risk from sea level rise and other impacts of climate change. Protecting and enhancing these services may mean allowing for areas of the Bay to migrate inland. An effective regional sea level rise adaptation strategy will allow us to make these tough decisions and to determine how to pay to carry out our conclusions.

Sea level rise adaptation planning should make use of the lessons learned from ongoing projects, including the ART (Adapting to Rising Tides) Project, which is focused on the portion of the Alameda County shoreline from Emeryville to Union City; ABAG' Regional Disaster Resilience Initiative; the North Bay Watershed Association project, Adapting to Sea Level Rise along the North Bay Shoreline; the San Francisquito Creek Joint Powers Authority effort; and Santa Clara County's project called *Silicon Valley 2.0: A Regional Plan for Climate Mitigation, Adaptation and Resiliency*, in which nine of the 15 cities of Santa Clara County have joined as participating municipalities, along with the collaboration of the Santa Clara Valley Water District, and other civic, academic, and institutional entities. Development of another Silicon Valley subregional adaptation strategy is getting underway in the form of a public/private partnership which aims to raise over $1 billion over the next decade to build engineered levees from Redwood City around the south end of the Bay up to Hayward and to contribute to the South Bay Salt Pond Restoration Project. Determining where and how to implement adaptation strategies and options will require vulnerability assessments, risk analyses, and adaptation response option identification similar to the approaches being undertaken in each of the adaptation planning projects underway. The lessons learned from these collaborative efforts should be used to inform the second iteration of the Sustainable Community Strategy (SCS) in evaluating potential adaptation strategies.

The region's sea level rise adaptation planning should be integrated with the region's climate mitigation planning by incorporating the adaptation planning into the SCS that is being developed pursuant to SB 375. This preliminary work plan envisions accomplishing this integration through an iterative process where local governments and special districts will work with the regional agencies in assessing vulnerabilities and risks in each community and exploring adaptation options. As a final phase, the work plan calls for integrating local adaptation plans into a comprehensive regional strategy. Regional scale integration is necessary because it is unrealistic to assume either that all local governments will complete local adaptation plans or that a composite of local plans will result in a coherent regional strategy that advances state and regional objectives. In addition, some local governments' preferred responses to dealing with sea level rise may endeavor to protect all existing shoreline development and assets in their communities, even if their value is less than the cost of

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protecting them. While this approach has immediate political appeal, it may not be economically viable in the long run. At the same time, relying exclusively on a cost-benefit analysis can be equally unsound because environmental justice concerns may make it unacceptable to abandon or relocate some communities having low economic value. A regional sea level rise strategy allows for some discussions of cost-benefits to be elevated to a larger scale to avoid parochialism and disenfranchisement. Similarly, a regional focus is important when evaluating the vulnerabilities and risks to important environmental assets (e.g., parks, trails and wetlands) that are routinely undervalued using traditional economic measures. Finally, protecting valuable ecosystem services provided by the Bay will require a regional analysis of risks to habitats and to identify potential opportunities for wetlands to migrate inland and upland in the face of rising water levels.

It is inevitable there will be political tensions between the interests of the region in maintaining a vibrant estuarine ecosystem and the interests of local governments that want to protect local property owners and businesses. There will also be tension between immediate and local business desires to generate profits and jobs from new development in the near future and the long-term regional economic goal of having a cost-effective regional sea level rise adaptation strategy. These tensions are inevitable, unavoidable and should be recognized in the formulation of sea level rise adaptation plans.

At the same time, the innovative Bay Area can apply its creative problem-solving capacity to the issue of sea level rise. By working collaboratively and employing the progressive spirit that has put the Bay Area in he forefront in dealing with so many important issues, we can aggressively address the difficulties inherent in a matter as complex as sea level rise planning.

Sea Level Rise Work Plan. ABAG and BCDC staffs propose that the regional sea level rise adaptation strategy be pursued initially in three phases: (1) considering sea level rise exposure in the current SCS and its Environmental Impact Report; (2) convening and supporting subregional and local sea level rise adaptation planning efforts, and incorporating lessons learned in the region's second SCS; and (3) developing a regional sea level rise adaptation strategy that integrates tasks one and two and incorporates protection of regionally important environmental and recreational resources. Sea level rise adaptation planning is an ongoing, iterative process based on the concept of adaptive management. Because sea level will continue rising over time, new and different adaptation strategies will need to be conceived, tested, funded and implemented on an ongoing basis to adapt to these changing circumstances and to the lessons learned from earlier efforts. It is important to note that while the sea level rise work is underway, regional and local stakeholders will also be moving forward with adaptation planning for heat waves, energy shortages, drought and other climate impacts. These two tracks need to be closely coordinated and eventually brought together in the second and third iterations of the SCS. The logistics and timelines for developing these other strategies will be coordinated through the Bay Area Climate and Energy Resilience Project, which is being managed by the Joint Policy Committee consultants.

The implementation of the sea level rise work plan should be undertaken in consultation with the staffs of MTC, BAAQMD, and the Coastal Conservancy, which, in partnership with ABAG, administers the San Francisco Bay Restoration Authority, a potential source of revenue for flood protection and wetland restoration. The work plan should be carried out in coordination with the Bay Area Flood Protection Agencies Association and integrated into the

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Bay Area Integrated Regional Water Management Plan (IRWMP), which coordinates the work of the many organizations and agencies that deal with water management and habitat protection. The Coastal Conservancy plays a key role in the management of the IRWMP.

The entire effort is expected to take between five and ten years, depending on available funding and other resources. Funding for the project would come from a variety of sources, including grants and in-kind resources from federal agencies, foundations, state and regional agencies, and local governments.

Task 1. Incorporate sea level rise considerations in the current SCS. ABAG, MTC and BCDC staffs are already collaborating on characterizing the exposure from sea level rise in the current SCS. MTC has retained a consultant to analyze the exposure of transportation investments and land use proposals in the SCS to near term inundation risks from sea level rise. The next step would be to formulate mitigation measures, project alternatives and any policies for the SCS that address this exposure. This task would be carried out using currently available funds, and can be completed by mid-2013.

The specific components in Task #1 include:

- Include the latest sea level rise science in SCS and assess how climate change will impact the Bay Area through 2040. Assess risk levels to Bay Area communities, including any estimates of potential loss of life, permanent infrastructure damage, uninsured property loss. Ensure that the risk assessment is shared with local governments, special districts and the regional agencies.
- Identify actions already taken by local and regional entities in considering how future sea level rise may impact future projects and plans to protect existing populations, infrastructure, and economic assets.
- Demonstrate for the region that the potential harm of sea level rise, other climate change impacts, and natural hazards (such as earthquakes) in the Bay Area can be addressed with planning to assess risk over time, and identify strategies to protect the Bay Area from catastrophic impacts. Consider how a sea level rise strategy can work with and complement a multi-hazards approach to long-term land use planning.
- Provide both assurances that adaptation planning does not diminish land use authority of local governments and educational opportunities to raise awareness and capacity in local governments for adaptation planning.
- Commit the regional entities to initiate the planning necessary in accordance with risk assessment to identify in Task #3 standards/guidelines and infrastructure financing alternatives to protect significant Bay Area infrastructure and economic assets.
- Identify conceptual mitigation measures or policies that could address sea level rise in the future with the adoption of a regional/local adaptation strategy.
- Develop and coordinate pilot scale demonstration projects of engineered natural approaches to sea level rise impacts with monitoring to provide design guidelines to the engineering design community.

Task 2. Convene and collaborate with local governments to conduct subregional and local sea level rise adaptation planning in order to integrate lessons learned into the next

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iteration of the SCS. This task would involve applying the lessons learned from the ART Project and other subregional sea level rise planning efforts underway. The staffs would use the lessons learned from these collaborative efforts to inform the second iteration of the SCS in evaluating potential adaptation strategies. This task would be completed in mid-2017.

The specific components in Task #2 include:

- Working with local, state and federal agency partners, develop a detailed work plan for the task that outlines the stakeholder process and the substantive planning work.
- Identify the appropriate roles for local and regional entities (lead, support, facilitate) and the resources available to undertake the task.
- Assemble sub-regional partners to study risk assessment and conduct sub-regional and local adaptation planning. Sub-regional partners would include water agencies, ports, flood control agencies, cities, and others. These partners, supported by the regional agencies, would assess vulnerabilities and risks, consider a variety of adaptation strategies, propose appropriate adaptation measures, and provide preliminary cost estimates.
- Develop adaptation planning for flood control channels and incorporate these new approaches into community design and redesign options.
- Develop appropriate engineering models that can test various scenarios against proposed adaptation performance measures.
- Track sea level rise measurements and estimate needed lead time to prepare, using science partners, such as NASA, NOAA and the national laboratories.
- Identify mechanisms to integrate regional planning for natural resources with local adaptation planning in preparation for Task #3.
- Integrate regional planning for natural resources with local adaptation planning.
- Coordinate and align sea level rise planning with parallel projects on heat waves, extreme storms, wildfires, drought and other Bay Area climate impacts.
- Coordinate and align with Bay Area earthquake response and recovery planning.
- Identify and pursue needed research to address uncertainties discovered during the planning process.

Task 3. Convene and assist local partners to collaboratively develop a regional sea level rise strategy that is coordinated with both planning for multiple hazard risks and planning that addresses the regional objectives of economic prosperity, environmental protection, equity enhancement and improved governance. This strategy would be informed by the work done at the subregional and local scales and should be completed no later than mid-2019 to mid-2021 during the preparation of the region's third SCS so that the strategy can guide the selection of transportation investments and land use policies, and incorporate necessary adaptation investments.

The specific components in Task #3 include:

- Develop a regional sea level rise strategy that is coordinated with planning for multiple hazard risks (floods, seismic risks, air quality deficiencies, heat, drought and fire) and with planning that addresses the regional objectives of economic

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prosperity, environmental protection, equity enhancement and improved governance. The regional strategy should include integrated engineering and biological adaptation measures that can be executed in stages that meet both public safety and ecosystem service protection goals, and should be based on the lessons learned from local adaptation planning.

- Evaluate the costs and benefits of engineering and biological adaptation strategies to mitigate impacts from expected flooding. Much of the land in the Bay Area is subject to natural hazards and the strategy will provide a better understanding of the exposure along the Bay and cost effective options to mitigate the impacts from expected flooding.
- Evaluate various adaptation measures including: a) the development of sea-level rise thresholds that trigger adaptation responses; b) analyses of performance objectives for sea walls/bulkheads, including flexibility to be built taller as needed; c) planned locations where a seawall/water diversion system can be executed in stages corresponding to milestones; d) the evaluation of the costs/benefits of different sea level rise protection systems, including the lifecycles of flood protection structures, the energy and greenhouse budgets of flood pumping and the identification of thresholds beyond which additional flood protection investments may not be cost effective; e) identification of viable wetland/habitat projects to help protect adjacent development, protection measures for existing wetlands, and wetland migration areas; and f) study other measures such as those identified in Task #2.
- Develop robust integrated governance and financing strategies that address vulnerabilities and meet performance targets for equity, economy and environment. Examine several options for a regional adaptation infrastructure financing plan. A combination of financing from multiple levels of government is likely to emerge in coming decades as the impacts of climate change and sea level rise become more prevalent. In particular, the global experience of other populated regions much more susceptible to sea level rise and at an earlier time period the Bay Area should raise local and regional awareness of the need to take protective actions here. Develop collaborative governance structures that can fund and implement adaptive management strategies for climate adaptation. Identify the partnerships needed between local, regional, state and federal entities necessary for success.
- Complete the adaptation plan during the preparation of the region's third SCS so that the strategy can guide the selection of transportation investments and land use policies, and incorporate necessary adaptation investments.

Cost and Schedule. Throughout the United States, federal, state, regional and local agencies are conducting adaptation planning at varying levels of detail, using a variety of approaches, models, and analytical tools and practices that are appropriate to their goals and objectives. In the Bay Area, the ART Project provides an excellent basis for determining the cost of developing a regional sea level rise adaptation strategy. The actual cost will depend on the level of detail in the analysis, the number of partners, the complexity of the process, the availability of accurate information and a host of other considerations.

It has cost approximately $1.2 million to complete the first two phases of the ART Project, which involved defining project goals and objectives, selecting a study area, developing

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communications strategies, identifying important assets, conducting a separate study and analysis of the vulnerability and risk of ground transportation infrastructure with MTC, and assessing vulnerability and risk of twelve asset categories, including seaport, airport and community facilities and services. These costs do not include the many in-kind contributions of subregional agency, federal and non-governmental agency partners, which were significant. The final phase, which involves identifying and evaluating possible adaptation strategies, will cost an additional $300,000 to $500,000. Completing the first two phases and the preliminary work on adaptation strategies will take 28 months at a cost between $1.5 and $1.7 million. BCDC's staff will continue to work in the ART Project subregion beyond the completion of the first three phases to assist project partners to assess and refine vulnerabilities, risks and adaptation strategies for parks, as well as ongoing support for integration of ART Project work into partner agency policies and practices.

The ART Project is focusing on a portion of the Alameda County shoreline that extends 26 miles as the crow flies. However, encompassed within this stretch of shoreline are 126 miles of waterfront that front inland areas vulnerable to flooding. The ART Project has invested some of its funding in developing planning approaches and analyses that could potentially be replicated at lower cost. While the exact approach used in the ART Project in Alameda County might not be applicable everywhere along the Bay shoreline, its costs are applicable on a regional basis. Based on the ART Project's cost, geographic scope and duration, we estimate that replicating something along the lines of the ART Project process along the entire Bay shoreline would cost approximately $15 to $20 million and take as long as ten years to complete––if the work is done sequentially along only one portion of the shoreline at a time. The availability of additional financial resources could speed the work, and the lessons from the ART Project and subsequent subregional efforts could generate efficiencies that could be incorporated into later work. However, additional funding will be needed to address regional issues, such as ecosystem planning, sediment management and implementation cost analysis, and to incorporate the adaptation strategy into the SCS. Therefore, at this preliminary stage we estimate that it could cost up to $20 million and take as long as ten years to develop a regional sea level rise strategy.

Budget and Potential Funding Sources. Funding at a level of about $2 million a year would be needed to develop a regional sea level rise strategy over the next decade. However, it would be highly advantageous if this funding stream could be increased to $4 million a year so Tasks #2 and #3 in the work plan could be accomplished simultaneously. This would allow the regional sea level adaptation strategy to be incorporated in the second SCS, which will be completed in 2017, rather than into the third SCS, which will be completed in 2021.

At least initially, the continued entrepreneurial effectiveness of the four regional agencies in securing grants and special funding support will be necessary provide the bulk of the funding needed to carry out the work plan. Over the past five years, the agencies have received about $2 million a year in special funding. However, it would not be prudent to assume this pace can be maintained or that all grants and special funds could be allocated in the development of a regional sea level rise adaptation strategy.

Additional funding could come from the regional agencies themselves, but because they do not have equal access to financial resources, MTC has borne the lion's share of the cost of developing the SCS. While continuing this approach to fund the development of a sea level rise strategy might seem inequitable, of the four regional agencies MTC has the most to lose if a

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regional sea level rise adaptation strategy is not put in place. The shoreline of the Bay is largely surrounded by transportation infrastructure, including freeways, highways, railroads, ports and airports. Therefore, if none of the other three regional agencies existed, in order to protect MTC's investments and keep the regional transportation network viable, it would likely be necessary for MTC to engage in the same sort of vulnerability and risk assessment that is envisioned in the preliminary work plan.

If MTC were to undertake such planning, rather than carry out a vulnerability and risk assessment that focuses exclusively on transportation assets, it would be more cost-effective to employ the approach being used in the ART Project, which is evaluating risks to both transportation and other community assets. A multi-faceted response approach would be equally advantageous: retrofitting transportation facilities to protect them from flooding presents an opportunity to design the retrofit projects so they will protect both the transportation infrastructure and low-lying inland areas. This symbiotic relationship presents an opportunity for transportation facility operators, local governments, property owners and others to share both the costs and benefits of flood protection projects.

Because MTC will have to play a critical role in planning the entire regional flood protection system, it is reasonable for MTC to play an important role in financing the formulation of a regional sea level rise adaptation strategy of which a flood protection system will be a large part. However, MTC's capacity to provide a significant level of financial support for sea level rise planning may be limited. As noted, MTC has provided most of the funds for the development of the first SCS. SB 375 requires each region to update its SCS every four years so there is likely to be an expectation that MTC will continue to underwrite the Bay Area's updates. This financial obligation will limit the amount of discretionary funding MTC could allocate to sea level rise planning. MTC has also recently agreed to increase its financial support to ABAG for activities the two agencies carry out jointly. At the same time, there is increased scrutiny on MTC, acting in its capacity as the Bay Area Toll Authority, to ensure that it continues to use bridge toll revenues only for activities that are clearly related to bridge operations.

Eventually, federal or state climate change legislation may be enacted and additional funding for climate adaption planning may become available. Until this comes about, funding for the formulation of a regional sea level adaptation strategy will have to come from grants, special funds and, to some degree, MTC. It would be ideal if Task #1 could be completed by 2013 and Tasks #2 and #3 by 2017; it would be acceptable for Task #1 to be completed by 2013, Task #2 to be completed by 2017, and Task #3 to be completed by 2020. But given the uncertainty of the availability and level of funding at this point in time, the actual pace of sea level rise adaptation planning will likely reflect the flow of grant and special funds the staffs can generate rather than be driven by a fixed schedule.

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Date: September 14, 2012

To: Joint Policy Committee

From: Will Travis and Bruce Riordan, Joint Policy Committee Consultants

Subject: **Recommendation for Discussion with Senator Mark DeSaulnier (for consideration on September 21, 2012)**

Recommendation. Senator Mark DeSaulnier intends to attend the September 21, 2012 Joint Policy Committee meeting to discuss matters of mutual concern to the Senator and the JPC. We recommend that in its discussion with Senator DeSaulnier the JPC should focus on what role the JPC can most productively play in advancing the formulation of a regional economic development strategy for the Bay Area.

Background. In the coming decades, the nine-county Bay Area will face serious impacts from climate change, including sea level rise and storm surge, higher temperatures, precipitation shifts, ocean acidification, and an increase in extreme storm events. These impacts pose a significant threat to the Bay Area's economy, public health and ecosystems. They will eventually present a serious challenge to maintaining the Bay Area's renowned quality of life, a key attractor for the talented individuals and new businesses that have made the region a worldwide innovation leader. In addition, climate change will have a significant impact on vulnerable communities, exacerbating existing negative conditions for many residents, and making it even harder to reduce regional inequities.

The JPC is coordinating the work of four regional agencies to advance regional economic prosperity and integrate climate change mitigation and adaptation into long-range planning for the region. Recognizing the linkage between climate change and economic prosperity, the JPC is sponsoring two major initiatives: the Bay Area Climate and Energy Resilience Project, which is building a nine-county collaboration, and a Regional Economic Development Strategy Framework, which is being undertaken by the Bay Area Council Economic Institute to assess employment, business demographics, venture capital, business dynamics, labor pool and economic futures in the region.

Senator DeSaulnier has stressed the importance of a 20-year regional economic strategy by incorporating such a strategy into SB 1149, his statement of principles underlying SB 1149, and SB 878. The JPC has acknowledged the importance of such as strategy, and the JPC Executive Committee discussed the issue in detail on July 9, 2012. The Executive Committee noted that with the rapid changes in the economy, a 20-year plan might encompass too long a period of time though this concern might be addressed by making strategy broad rather than detailed and updating it regularly to adapt to changing conditions. Also, any long-term strategy would be more effective if it

focuses on eliminating obstacles to economic development rather than being prescriptive in advancing certain types of economic activity.

On July 20, 2012, the JPC unanimously adopted a motion to accept a recommendation from its Executive Committee that the JPC consultants and agency staff should work with the business community in drafting an action plan that assesses what elements should be included in a regional economic development strategy, the likely costs of developing such a strategy, and the potential sources of funding for such work. This scoping work will use the Regional Economic Development Strategy Framework as a foundation for the consultant's analysis, which should be aimed at determining the scope, content, cost and funding for a regional economic development strategy. The JPC intends to continue to work closely with the business community on all aspects of a regional economic development strategy, and particularly on the question of whether the responsibility for formulating and implementing such a strategy best belongs at the JPC, another government agency, a different entity or a public/private partnership.