San Francisco Bay Conservation and Development Commission
455 Golden Gate Avenue, Suite 10600, San Francisco, California 94102 tel 415 352 3600 fax 415 352 3606

September 14, 2018

TO: All Commissioners and Alternates

FROM: Lawrence J. Goldzband, Executive Director (415/352-3653; larry.goldzband@bcdc.ca.gov)
Peggy Atwell, Director, Administrative & Technology Services (415/352-3638; peggy.atwell@bcdc.ca.gov)

SUBJECT: Draft Minutes of July 19, 2018 Commission Meeting

1. **Call to Order.** The meeting was called to order by Chair Wasserman at the Bay Area Metro Center, 375 Beale Street, Yerba Buena Room, First Floor, San Francisco, California at 1:06 p.m.

2. **Roll Call.** Present were: Chair Wasserman, Vice Chair Halsted, Commissioners Addiego, Ahn, Alvarado, Butt, Chan (represented by Alternate Gilmore), Cortese (represented by Alternate Scharff), Davis (represented by Alternate McElhinney), Jahns, McGrath, Peskin, Pine, Ranchod, Randolph, Sears, Showalter, Spering (represented by Alternate Vasquez), Techel, Wagenknecht and Zwissler. Ex-Officio Commissioner Senator Skinner (represented by Alternate McCoy) was also present.

Chair Wasserman announced that a quorum was present.

Not present were Commissioners: U.S. Army Corps of Engineers (Bottoms), Santa Clara County, (Cortese), Department of Finance (Finn), Contra Costa County (Gioia), Sonoma County (Gorin), State Lands Commission (Lucchesi), Solano County, (Spering) and U.S. Environmental Protection Agency (Ziegler)

3. **Public Comment Period.** Chair Wasserman called for public comment on subjects that were not on the agenda.

Mr. David Lewis of Save the Bay addressed the Commission: I am the Executive Director at Save the Bay. I have a request that each of you endorse Proposition 3 on the November ballot. It is a statewide water bond of 8.8 billion dollars which contains the most funding for the environment of any bond ever put before the voters in the state. It would help Bay-Area communities with water supply and water use efficiency.

There is also 200 million dollars in the bond that goes directly to the San Francisco Bay Restoration Authority to augment the money that is being raised by Measure AA at a rate of 25 million dollars.

Because this bond money could be spent a lot faster it would actually help us get more tidal, marsh restoration started to keep ahead of sea level rise.

I have distributed information and I hope all of you will endorse that measure. It is endorsed by the Bay Area Council, the Silicon Valley Leadership Group, Save the Bay and many others including the San Francisco Bay Restoration Authority and some of your commissioners who are on that authority.

Save the Bay has released in the last couple of months a report which is a case statement for why our work in the future needs to be focused not just on the shoreline and in the Bay but upstream and inland from the Bay shoreline for the Bay to be healthy and for the Bay Area to be sustainable.

It is not enough for us to restore tidal marshes where that is possible along the shoreline, for us to adapt as a community to climate change because it is not just sea level rise that is going to be affecting our communities over the next several decades here in the Bay Area but also more extreme storms, more extreme weather, more frequent droughts and population growth.

We know we can accommodate that growth in our urban core in the Bay Area and do it in a way that creates less pollution and less pollution for the Bay, less water running off into the Bay and consuming less water. Save the Bay is committed to do more of that work and we have already begun.

We have endorsed measures to fund more transit, more equitable housing and more green infrastructures throughout the Bay Area.

And we will be working in local communities on particular projects and also on general plan updates and policy changes that can incorporate this.

The report that I have distributed to you which is also available online explains in comprehensive detail how we are going to do this. We created that report and those recommendations for ourselves with a lot of input from environmental justice and other community representatives, business representatives and others.

That is the direction that Save the Bay has been moving and is moving in the future. We look forward to working with each of you as individual, local, government representatives and also with the Commission to accomplish this agenda in the future. Thank you.

Executive Director Goldzband commented: I will be sending in my report summary tonight a link to the report electronically.

Mr. Dean Stanford was recognized: I am a former resident of Alviso and former Tesla engineer. My comments are regarding the South San Francisco Bay Shoreline Project, Phase 1 and the loss of the nine-mile, Bay-loop trail and mitigating that loss by allowing a trail on Pond 18 and the Multi-Use Park Project in San Jose.

The zero-emission, recreation demo and the Multi-Use Park Project at the San Jose/Santa Clara Water Treatment Plant is progressing through government. The Park will restore 800 acres of land reclaimed from the treatment plant operations. The Park will also prevent further Bay-side development.

The Shoreline Project does not adequately mitigate the loss of recreation and access to the nine-mile trail. The mitigation trails are currently part of the existing plans therefore the Shoreline Project is effectively not adding any recreation, trail mitigation or connectivity to the overall plans for the area.

There was inadequate public input and no recreation stakeholders for this part of the restoration plan. Only four private citizen commenters are listed in the plan. This was inadequate public input.

The procedure to change this plan is a supplemental EIR and for the Army Corps of Engineers to follow the post-authorization, change report process in the WIIN Act, Section 1132.

Mitigation for allowing a Pond A18 loop trail will be satisfied by creating habitat islands in Pond A18 and providing species and habitat stewardship with park staff and funding for the pond.

Chair Wasserman moved to Approval of the Minutes.

4. **Approval of Minutes of the June 21, 2018 Meeting.** Chair Wasserman asked for a motion and a second to adopt the minutes of June 21, 2018.

MOTION: Vice Chair Halsted moved approval of the Minutes, seconded by Commissioner McGrath. The motion carried by a voice vote with Commissioner Jahns abstaining.

5. **Report of the Chair.** Chair Wasserman reported on the following:

a. I want to provide an update on Commission membership. I would like to introduce Sherry McCoy who is the new Alternate for Senator Nancy Skinner and works on the senator's staff. We look forward to your attendance, comments and participation. Second, I am pleased to announce that former Commissioner Barry Nelson has been selected as Commissioner Sanjay Ranchod's Alternate. Barry will therefore retain his leadership of the Commissioner Working Group on Bay Fill. I can think of no better example of, "No good deed going unpunished." We welcome his participation and his continued leadership. I want to also let you know that Jeff Holzman, who is an active participant in the Financing the Future Working Group and who works for Google has been selected as Commissioner Zwissler's Alternate. I believe Jeff is here and waving in the far back.

b. I would like Commissioner Alvarado to update us on the most recent meeting of our Commissioner Working Group on Environmental Justice and Social Equity.

Commissioner Alvarado addressed the Commission: Staff has been incredibly busy looking at environmental justice as part of the Bay Plan Amendment. They have done quite a bit of outreach and learning about the environmental justice issue through discussions with other agencies, discussions with environmental justice groups and community, input sessions.

Some of the things that they are hearing are that public access and public improvements will lead to gentrification and a less-welcoming environment for some communities.

The themes of the feedback and considerations for us are early and sustained participation in our processes, accessiblty, engagement opportunities, strength of policies – how actionable and enforceable is environmental justice in our work? Equity and inclusion; again, this feeling of welcome and fear of security and formal settings now, particularly with immigration status being a heightened concern and also the concern about a lack of sustained and deep and trusting relationships with agencies like BCDC.

Another theme feedback was workplace culture. Do our job descriptions reflect that environmental justice matters to us? We also discussed job development in relation to environmental justice.

We are exploring what other agencies are doing. Other agencies that have done good work in this area have been very generous in sharing their learnings with us.

Is there a possibility to incorporate environmental justice into our permitting process? What is the regulatory framework that environmental justice would fit into?

Or perhaps this could be done through design review. Is that an appropriate lens where we can add environmental justice?

Ongoing outreach and engagement is important. Staff and Commissioner training could be a valuable piece of the puzzle. Workforce development is also important and we are exploring the composition of our committees.

The challenges and barriers that we identified were lack of funding to support increased access whether it is through child care or providing food or offsite locations or other things.

Trust building has been discussed and it takes time to build relationships.

We discussed the issue of; do we have an equitable, regulatory process? This is a bigger, conceptual question that we are trying to explore and determine.

At our next meeting we will be talking about some of the feedback from these sessions and what other investigations staff is doing as well as the possibility of delaying our Bay Plan Amendment from November to possibly, by six months, to May of next year to enable us to continue to do some of this deep-dive work.

Commissioner Ranchod was recognized: You mentioned potential training on environmental justice issues for staff and Commissioners. Have we ever done that at BCDC?

Chair Wasserman answered: No.

Commissioner Ranchod responded: I would support looking into it further.

Chief Deputy Director Goldbeck added: Some of the staff is participating in the GARE Program which is training on this topic. We did it last year and there is a cohort that is doing it this year as well. We are doing it in collaboration with the Bay Area Regional Collaborative (BARC).

We are also hoping to add in the fall a joint workshop of GARE with our Commission and the other BARC agencies.

Chair Wasserman continued: I would invite Commissioner Zwissler to give us an update on this morning's Financing the Future Working Group.

Commissioner Zwissler presented the following: We had an incredibly, well-attended meeting with nine Commissioners participating. It was very helpful. What was done is that there were nine or ten different, funding agencies or areas of interest like MTC and we did a speed-dating exercise where we got briefings. Also participating in the meeting were the nine RBD Projects.

This was an opportunity for each of the projects to do a deeper dive into potential funding. It was also a good opportunity for the agencies and governmental folks to hear about the projects. We can charter this as a great success and look forward to next steps.

Chair Wasserman continued: I want to note that this is a significant meeting. This is the last meeting in which Sharon Louie will be performing her services as Director of Administration. She is going into a well-deserved retirement. Sharon has done yeoman service for this agency and has been a fount of knowledge and history and has helped steer us through a number of transitions.

We welcome Peggy Atwell who is here (stood and was recognized). She will be the new Director of Administration and Technology. Times do move on and we are sure that Peggy will do a very good job but Sharon will be missed. (A round of applause was given to Ms. Louie and she was presented with a bouquet of flowers)

Ms. Louie responded: Thank you everybody and I will miss everyone here.

Chair Wasserman continued: I would echo David Lewis's comments and urge Commissioners as individuals and with their constituencies to very seriously consider endorsing and supporting Proposition 3. As we know, we are going to need many, many, many funding sources in order to deal with the adaptation necessary to address rising sea levels.

Both Resilient by Design as it moves forward and we figure out how to champion and sponsor and actually start to implement some of these projects that have been designed and use those as working models to figure out how we are going to finance these things and how many of them can be models and themselves adapted for other areas in addition to ones they are located in. So we will all keep an eye on that and look forward to further reports on that.

c. **Next BCDC Meeting.** We will not have a meeting in August. Our next meeting will be on September 6th. We'll announce the agenda for that meeting in a few weeks.

d. **Ex-Parte Communications.** This is the wonderful time when you can report ex-parte communications about adjudicatory matters. You do need to do it in writing also. Does anyone wish to do so? (No Commissioners reported ex-parte communications)

6. **Report of the Executive Director.** Executive Director Goldzband reported: I am very happy to be here today because I spent Monday and Tuesday in Washington, D.C. where, before the advent of air conditioning, foreign diplomats received the climate equivalent of hazardous duty pay due to the ridiculously horrid summers. I assure you that Monday, at 94 degrees and 78 percent humidity, was one of those days even with air conditioning. And, after sitting on a bench outside of the Raeburn Office Building for five minutes on Monday afternoon I was reminded of one of Washington, D.C.'s most well-used descriptions of the season that was penned by Walter Winchell. "It's a sure sign of summer," Winchell wrote, "if the chair gets up when you do."

a. **Budget and Staffing**. First, at that September meeting we shall provide you with a budget presentation wrapping up the previous fiscal year and the one that we have just started.

Second, Peggy Atwell will be stepping into Sharon's shoes and today is her first Commission meeting.

With regard to staff moving on, I have two sad notes to let you know of. First, Carey Batha of our Planning staff has returned to the Coastal Commission. We shall miss her and we wish her well as she helps lead their rising sea level efforts. Also, Lawlun Leung, our Human Resources staffer extraordinaire, has accepted a tremendous position by the City and County of San Francisco. Lawlun has thrived at BCDC because he's good at just about everything he does and is an exceptional team player. And, he roots hard for the Giants and the Warriors. We'll miss him and hope that he stays in touch and we shall begin the recruiting process shortly.

I would like to introduce you to BCDC's newest staff member. Jai Kalra is the legal team's newest member. (Stood and was recognized) Jai is our new legal secretary. Jai earned two Bachelors in Law degrees from University of Mumbai in India and University of Leicester in England. Prior to starting at BCDC Jai worked at several national law firms as a legal assistant.

I also want to let you know that we are actively seeking a replacement for Carey and our job announcement for the new enforcement staff attorney is out on the street as well.

In your folder this afternoon is a letter that our dredging coalition sent to senior congressional leaders asking them to make one more push for the U.S. Army Corps of Engineers to include the Bay Area in its soon-to-be-published list of the ten pilot projects to demonstrate the benefits of reusing dredged sediment. I am pleased to let you know that our congressional representatives have done an absolutely, outstanding job of advocating on the Bay's behalf. When I was there Monday I wanted to make sure that Minority Leader Pelosi's office knew of our thanks so I did that as well.

Commissioner McElhinney would like your attention for about 30 seconds.

Commissioner McElhinney addressed the meeting participants: Today I would like to highlight what we have done out on the Bay Bridge related to baseball. On the screen you can see the new Bridge Trophy. Last year at this time BCDC worked with all our permitting and resource-agency friends and Caltrans, MTC and CTC to say good-bye to the old Bay Bridge where we are lowering the 504-length trusses and the 288 trusses quite efficiently last spring. And during the fall we imploded 13 old Bay Bridge piers.

Later on the agenda we are going to say hello to new Bay Bridge public access. Major League Baseball and NBC came to us and they said that they have a group of artists that would like to use some of the old steel. The Giants and the A's joined in and the Bay Bridge Series which is ongoing last weekend and this weekend will be celebrating the old Bay Bridge.

Remember that in its 77 years of service until Labor Day in 2013 more than four billion travelers crossed the old Bay Bridge east span. Most them were Giants and A's fans. (Laughter)

I will be presenting the new Bridge Trophy on behalf of all of us to the winning team either Saturday or Sunday. So the old Bay Bridge lives on.

Executive Director Goldzband continued: That concludes my report, Chair Wasserman.

Chair Wasserman asked: Are there any questions for the Executive Director?

Commissioner Showalter commented: I see that on this letter it is addressed to our senators and Jeff Denham and John Garamendi. I wondered why it wasn't sent to –

Executive Director Goldzband interjected: Committee members. Both Representative Denham and Garamendi are members of the Transportation Infrastructure Committee which has jurisdiction over the U.S. Army Corps of Engineers' budget.

7. **Consideration of Administrative Matters.** Chair Wasserman announced: That brings us to Item 7, Consideration of Administrative Matters. Ethan Lavine is here to answer any questions you may have on the list that we have received. Questions? (No questions were voiced)

8. **Public Hearing and Possible Vote on the Construction of Public Access Piers at Retained Foundations of the Former San Francisco-Oakland Bay Bridge East Span by the California Department of Transportation; BCDC Permit Application No. 2001.008.44 (Material Amendment).** Chair Wasserman announced: Item 8 is a public hearing and possible vote on the construction of public access piers on foundations of the former East Span of the Bay Bridge. Rebecca Coates-Maldoon will introduce the project.

Principal Permit Analyst Coates-Maldoon presented the following: On July 6th you were mailed a summary of a request by Caltrans to materially amend the BCDC permit which authorized demolition and replacement of the original East Span of the San Francisco/Oakland Bay Bridge.

Caltrans requests to retain four of the foundations of the original East Span which their permit currently requires them to demolish and to reuse them as foundations for new public access piers.

Caltrans also requests to demolish another two of the remaining Bay Bridge foundations through controlled blasting rather than mechanical methods.

Many Commissioners will recall that the Caltrans permit has been amended to allow for use of controlled implosions to remove 16 piers already and they have periodically briefed the Commission on their progress with that effort.

This video will show you the location of the remaining six foundations of the demolished East Span.

The proposed project is located in the central San Francisco Bay on either end of the former East Span of the Bay Bridge.

At Yerba Buena Island the project would involve retaining Pier E2, which is located in the Bay approximately 120 feet off the shoreline as the foundation for a public-access observation area.

Caltrans also proposes to redevelop an approximately 1.4 acre area on land with improvements to provide access to the observation area.

The other location is on the Oakland shoreline at the site of the former Oakland Army Base. Here Caltrans proposes to demolish the two piers that you will see on the far left, side of the screen, called Piers E19 and E20, using controlled-blasting methods.

The two piers closer to the shoreline, called Piers E21 and E22, and the foundation on the shoreline, called Pier E23, would be reused as foundations for a public-access pier.

Caltrans also proposes to improve a one-acre area to provide access to the piers.

This slide shows existing conditions at Yerba Buena Island. Pier E2 is located offshore in the Bay. As Caltrans will further describe, a public observation area would be built on top of Pier E2 connected to land by a pedestrian bridge.

Caltrans would also construct landside improvements including a plaza, an accessible shared access path suitable for pedestrians and bicyclists, and seating and other site furnishings.

An interim parking lot would be constructed in the area that you see in the bottom photo. In the future an approximately 25-space, parking lot would be constructed. Prior to that there is landfill closure work that will be conducted to address historic contamination from former use of the site by the U.S. Navy.

This shows existing conditions of the former Oakland Army Base. In the top photo you will see the foundation on the shoreline and the four remaining foundations in the water; the last two of which are proposed for demolition. The bottom photo is taken from the pedestrian path on the new bridge looking back towards the shoreline.

Here Caltrans proposes to construct a 600-foot-long, public-access pier atop the retained foundations. It would also improve the area approaching the new pier with an accessible path for pedestrians and bicyclists, seating, a vault toilet and other site furnishings.

Eventually the public-access pier is anticipated to become a feature of the planned Gateway Park which the East Bay Regional Park District plans to construct in this location.

When the Commission authorized removal of the original East Span and construction of the replacement bridge in 2001 it did a careful analysis of the Bay fill impacts associated with the project. The bridge replacement resulted in more fill suspended over the Bay but far less volume of solid fill in the Bay.

That is because the new bridge has a wider roadway but requires fewer marine foundations to support the structure.

The Caltrans proposal before you today would result in additional fill in the Bay beyond what the Commission authorized when it originally considered the Bay Bridge Project, as it would retain structures that had previously been marked for removal and would involve construction of new, over-water structures.

In total, the project would result in 26,565 square feet and 12,650 cubic yards of additional fill compared to a scenario where no public-access piers were constructed and the foundations were removed.

The Commission should consider if the fill is consistent with its laws and policies on allowable fill of the Bay.

The structures can be considered water-oriented, recreational structures which are facilities for which the Commission can approve fill provided the public benefits outweigh the detriment.

If the Caltrans permit were amended as proposed, the overall Bay Bridge Project would still result in a reduction of solid fill of the Bay of roughly 8,500 cubic yards compared to the former East Span though the amount of fill cantilevered over the Bay would increase by about 0.61 additional acres for a total increase of 33.68 acres.

The proposed project would result in the construction of approximately 2.45 acres of new shoreline public access.

The Commission should consider whether the proposed improvements, which Caltrans will discuss in more detail, provide the maximum feasible public access, are adequately designed, and provide the appropriate sort of amenities for users of the site.

The public-access improvements have been designed to remain resilient to flooding for their anticipated life given anticipated changes in water level as a result of sea level rise.

In summary, in evaluating the proposed project the Commission should consider the following issues: whether the project would be consistent with the Commission's law and policies on allowable Bay fill including public benefit versus detriment, safety of fills, climate change and natural resources and whether maximum feasible public access is provided consistent with the project and if the project is otherwise consistent with Bay Plan policies on public access, recreation, and appearance design and scenic views.

That concludes my presentation and I would now like to introduce Stefan Galvez of Caltrans and the project team who will present additional information regarding the proposed project.

Mr. Stefan Galvez addressed the Commission: Thank you for having us here today. We have been coming to you quite a few times for the last several years. Today is a very special day and my name is Stefan Galvez and I am the Environmental Manager for the San Francisco Bay Bridge Project. With me to make the presentation today is Blake Sanborn with AECOM.

Not with us today is Dr. Brian Maroney who sends his best regards. Because of health reasons he could not be here but there is nothing more that he would have liked to do. We believe that this is going to be the last time that we will be here before you to talk about the Bay Bridge.

We have been working on this project since 2002. We always strive to do a better job. What we bring to you today we believe is an additional enhancement that you will support. It is something that we will be retaining for the region in addition to what you have already approved.

We have members of the East Bay Regional Park District here as well as the Treasure Island Development Authority who have worked with us very closely to help us develop this public access. They are going to be taking over the maintenance and operation of this public access. They are here in case you have any specific questions for them.

I would also like to acknowledge the help from our sister agencies at MTC, the Bay Area Toll Authority and the California Transportation Commission who have worked with us on this project and who will be providing some funding for these improvements.

I want to express my sincere gratitude on behalf of the Department and it is a privilege for me to be speaking on behalf of the Department here today. We wish to thank you for all the help the Commission and staff has given us over the years. The Commission approved this project back in 2001 so we have been in construction for 16 years non-stop.

There were two main components of the project. One was the construction of the new East Span. On the top slide you can see the completed product. The new East Span has exceeded the expectations of what the region was hoping to obtain. It is an icon for aesthetics, beauty and function. It is a really, great structure.

The previous bridge served the region really well. There have been approximately four billion users since 1936 that have crossed the Bridge. It is the spine for economic development in the San Francisco Bay.

As soon as we completed the first portion of the project we started working on the dismantling of the original East Span. In the next few slides you will see different vantage points looking in different directions over the Bay.

The original bridge was supported by 21 marine foundations. We are required by the existing permit to remove all of these marine foundations.

The Department has been very effective in removing the original East Span. We have accomplished this in a very environmentally efficient manner with minimum impacts.

We have used only a fraction of the piles that were authorized in the original permit. We always endeavor to minimize impacts on resources.

We came back to you in the last three years to seek authorization for the removal of the marine foundations from E3 to E18 with controlled-blasting techniques. We were able to do so in a very efficient and successful manner. It was better than we all anticipated. We have reported the results to this Commission and other agencies involved in this process.

We are left with the six remaining piers, one on the west side and five on the east side. We have asked ourselves; is there something better that we can do - can we save a piece of history for generations to come? And can we also add some more value to that? Can we provide some public-enhancement opportunities?

The discussions have been around what to do with these piers and the consensus after three years of discussions is that we should retain Pier E2 as well as Piers 21, 22 and 23 and include public-access observation decks and associated infrastructure and to remove Piers E19 and E20.

We are here to ask for your approval on this additional work. We do have a very short timeframe. Our work window to be in the water is only six months. We want to avoid the migratory season for listed salmonids. So June 1st through November 30th is when we get to do this work in the water. This leaves us about four months left to build observation decks, implode E19 and E20 and clean up the rubble.

I would like to make one last acknowledgement to all our state and regulatory agencies who have worked with us. We do have their permits and after we receive your approval today we will be getting the Army Corps permit but all other agencies have given us their support and their approvals for this work.

We will use the same controlled blasting techniques that we used for the previous 16 piers on Piers E19 and E20. We do have a contractor doing this work that is very experienced using these techniques. The results have been fantastic and they are much better than we expected.

The idea is to do a single blast for both piers. We are going to make sure that we have the same level of attention to these two piers as we had for the larger piers.

Mr. Blake Sanborn presented the following to the Commission: I have been very involved with the Resilient by Design process and the thinking that has been generated from that has influenced our team's efforts on this project.

Pier E2 is located on the tip of Yerba Buena Island. There are 8,000 new dwelling units expected on Treasure Island and throughout Yerba Buena Island that are pending. The idea of having public amenities for those island residents as well as visitors is something that is very much in the fore of our minds.

While we are providing a proposal for public access out to Pier E2 our proposal also calls for removing the top half of the structure. This will enable us to bridge out to a deck that is at a more reasonable height for public access.

We have been asked, who is going here, why are they going here and what would it be like to be here? The determination is that this is an incredibly unique spot and something to be celebrated.

Pier E2 happens to be located proximate to the historic, Torpedo Building on the National Register. In talking with TIDA, our partner and future operator for this project, there is interest in investigating opportunities for reuse of that building.

Additionally, this project is located at the foot of a landform on Yerba Buena Island and provides views out to the Bay that are quite unique. There are a number of other historic features including the Great Whites which are officers' housing which remain near this location. There is the view of the signature span of the Bay Bridge.

I will share with you a few images to help express what the experience might be like. These computer created pictures give you a feel for the ambience that will be created in this unique space.

The pathway leading from the parking will facilitate all types of access including disabled individuals. We have discussed what types of amenities will be appropriate on the pier platform itself. We have determined that there will be some site furnishings provided but we also leave a good amount of the surface open for flexible uses and different types of public events.

Remnant elements that have been salvaged from the old Bay Bridge will be a critical part of the design for this area.

The phasing for this project indicates that there will be a near-term phase for the parking and a long-term phase for the parking.

On the Oakland side there are a number of assets in the immediate proximity. There are the historic buildings associated with the key system. There are already projects that are ongoing by others for a proposed, public parking lot in the vicinity of this project.

The Bridge Yard Building is a fantastic example of historic reuse and that is located here. The master plan for Gateway Park has always envisioned a pier component to get people out onto the water that might not be otherwise able to do so.

If you visit the site and are at the location of the proposed Gateway Park you will find that it is fairly serene and calm environment. The noise that is stemming from the Bay Bridge seems to be directed up and out rather than down into the area. And so there is a surprising sense of calm and that makes it a hospitable place.

There will be an outdoor classroom on the pier because we feel it is important that we have opportunities for education to highlight the assets of the Bay.

In working with East Bay Regional Parks there has been a strong desire to allow for some larger zones for future programs. We have accommodated that as well with our design.

The structures on the pier are being planned for end-of-century sea level rise with a 100-year storm event as well. Staff has told us that this allows us to account for anticipated sea level rise.

With that I will turn it over to Stefan. Thank you very much.

Mr. Galvez continued: In terms of BCDC policies and how this project meets those policies this is meeting the allowable fill policy because there is a clear benefit that outweighs the detriment. We have recreational and educational opportunities planned for this space to entice the community to enjoy the Bay from this location.

We are asking you to let us retain the piers that are here and there are only 12 piles that we are including here and this allows us to keep a thinner deck.

In terms of maximum feasible public access, the Bay Bridge Project has provided such a tremendous, additional, public access it will create a whole, different experience for the public.

These enhancements could be a catalyst for future development of the area. I will close with that and that this is the frosting on the cake for this project and we invite you to help us blow out the candles. (Laughter)

Commissioner McGrath had questions for Mr. Galvez: I assume you have seen the email from Audubon. I have two questions for you. You have a final EIR and you have a mitigation, monitoring program. Is there any mitigation that you adopted in that program for birds that has not been completed?

Mr. Galvez replied: Yes we have seen the email. I also had a discussion with Ms. Margulis yesterday from the Audubon Society. We discussed this project in terms of including additional amenities and enhancements that could be used for wildlife.

Commissioner McGrath narrowed his inquiry: I have a more specific question. It is clear from the email that you were in discussions about possibly using these for roosting and I have a second question for that. As far as the existing commitments that Caltrans made in their EIR for bird mitigation is there anything that you have not yet done?

Mr. Galvez answered: Commissioner McGrath; yes, we do have an outstanding commitment for shorebird habitat which we have been in discussions with BCDC staff as well as the East Bay Regional Park District and other stakeholders in the area -

Commissioner McGrath interjected: And that would not be affected by this?

Mr. Galvez replied: We don't believe so. We still stand by that commitment.

Commissioner McGrath continued: The second point which is important. When this was first discussed before the Commission I rode up the Bay Bridge Toll Plaza Path for about every six weeks for the first two years that it was open. I gave input back to Brad McCrea about the idea of roosting. I had seen a grand total of one western gull and, of course, birds leave fairly distinctive markings on concrete. You can tell from the guano whether or not there is a heavy assemblage.

There didn't appear to be strong evidence of an existing habitat value. Did you notice any existing, habitat value from the piers that are proposed to be removed or made into public access?

Mr. Galvez explained: These were the piers that supported that portion of the Bay Bridge. They have been used mainly by sea gulls and cormorants and we have a large population out there. Our cormorant platforms are full of cormorants and the sea gulls are there. We haven't really observed a significant amount of shore birds at this location.

Commissioner Butt had questions: I did not see anyone fishing off of either one of those piers. Is that the plan to have no fishing?

Mr. Galvez responded: The specific programming is going to be developed by the operators, the East Bay Regional Park District and TIDA. We have had some discussions about the possibility of fishing. Right now that is not part of the plan. There are concerns about conflicting uses. There is not a proposal right now for that type of activity.

Commissioner Butt continued: So that is up in the air?

Mr. Galvez replied: Yes sir. The discussion concluded that at this point we are not proposing any fishing opportunities.

Commissioner Butt responded: Good luck on enforcing that. (Laughter)

The second question is that the Yerba Buena part of the pier is right next to that historic Torpedo Shop. Is there any plan about how all of this works in with that? I am looking at the site plan and it looks like there is no access to this building from the other direction. If that ever comes to have some adaptive reuse; how do you get to it, how does it tie in with the access to the pier?

Mr. Galvez answered: I believe Blake did talk a little bit about that. The Torpedo Building is something that Caltrans doesn't control. It would be managed and handled by TIDA. There are some visions out there but there is much discussion that needs to happen.

Commissioner Butt added: It just seems that it ought to be taken into consideration because it looks like from the plan it is 100 feet away or something.

Mr. Galvez explained: It has been a consideration and we believe that this is going to bring attention to that portion that will remain undeveloped.

Mr. Sanborn came to the podium: I just wanted to add a few things and if there are any further questions on this we may ask our TIDA representative if they want to add anything to the discussion. You are right that the Torpedo Building is fairly close to this location. From the beginning we have been meeting with TIDA to better understand what might be needed from their point of view.

What we have arrived at is that this pathway that is public along the shoreline and is part of the Bay Trail will lead out to this public amenity which is the pier. That is something that everyone is comfortable with.

We wanted this project to be a good neighbor. So that is why the landing plaza has those seating stairs and access points towards the Torpedo Building and out towards the front of the pier. At the end of the day no matter how the Torpedo Building is repurposed or used that it fits in as part of the composition in the long-term.

In terms of site grading we have been careful to respect the elevation of the Torpedo Building as well.

Mr. Galvez stated: TIDA owns the Torpedo Building. We are also providing the infrastructure for future utilities. That is something that TIDA requested and as part of this project we are going to provide that. That is going to be a big help for the future development of that site.

Chair Wasserman announced: We have no public speakers and I would entertain a motion to close the public hearing.

MOTION: Vice Chair Halsted moved to close the public hearing, seconded by Commissioner Gilmore. The motion carried by a voice vote with no abstentions or objections.

Commissioner Zwissler had questions: Is all the funding in place for this project? Is this going to be constructed so we will have an opening in 2019?

Commissioner McElhinney replied: The Program Oversight Committee voted the funds and so it is fully funded. Contractors are ready to go as soon as we get the Army Corps permit which is lined up for tomorrow. Depending on how we vote today the contract is ready to go with the permanent structure placement starting Monday to have us out on the new public access this time next year.

Ms. Coates-Maldoon presented the staff recommendation to the Commission: On July 13th you were mailed a copy of the staff recommendation for Material Amendment No. 44 to Permit No. 2001.008.00. The staff recommends that you approve the requested amendment as conditioned to ensure consistency with your law and policies on allowable Bay fill and public access.

On Bay fill staff, recommends that you authorize the overall increase in fill that would result from the project and to find that the public benefit clearly exceeds the public detriment from the loss of water area, that the proposed fill is for a water-oriented use with no upland alternative, and is properly designed to minimize the amount of fill, to ensure safety, and to protect Bay resources.

Staff recommends conditions to ensure Bay resources are adequately protected, including during construction of the public-access piers and demolition of Piers E19 and E20, and that proper consultation with other resource agencies shall occur prior to Caltrans undertaking work.

Staff also recommends that you include conditions related to the design and ongoing operation of the public-access improvements. Conditions are included that require Caltrans to submit final designs for review and approval on your behalf, including possibly additional review by your Design Review Board if substantive changes to the design occur.

Conditions are also included to ensure that the project provides the appropriate types of features and amenities to provide for visitors to these sites such as site furnishings, signage, feasible solar and/or wind protection measures, and at Yerba Buena Island, a temporary toilet until such time as a permanent facility is constructed in the nearby vicinity and additional parking to be provided in the future.

With these and other conditions outlined in the staff recommendation the staff believes that the project is consistent with the Commission's law and Bay Plan policies and recommends that you adopt the recommendation of approval.

Chair Wasserman asked: Is there a motion to approve the staff recommendation?

MOTION: Commissioner McGrath moved approval of the staff recommendation, seconded by Vice Chair Halsted.

Chair Wasserman continued: Does the applicant accept the staff recommendation?

Mr. Galvez replied: Yes Chair Wasserman we have read the conditions and we accept them.

Chair Wasserman acknowledged the comment: Thank you. Any comments on the motion?

Commissioner McGrath commented: Reuse is one of the higher forms of environmental protection and reuse of historical artifacts to create public space goes all the way back to at least to Michael Angelo. It is a grand tradition. That is the reason this is wonderful public access.

I did want to put a couple of things in the record about the letter, the email from the Audubon Society. I wanted to make it clear that there was not available evidence that suggests that retaining these structures would preserve a high-value, existing, roosting habitat.

To bolster that I want to call on my own experience in the design of the Middle Harbor which does have roosting structures which were developed in consultation with Arthur Feinstein and the Audubon Society. They are inter-tidal – they are at the water level which is where roosting should be.

I don't think we are sacrificing anything. In fact, I think the two outboard piers should come out. It is important to have that in the record that there is no habitat that is being damaged by this. We will hold Caltrans to their mitigation measures vigorously and I hope you would allow fishing. With the closing of Berkeley Pier it is important to have places to fish. Thank you.

Vice Chair Halsted commented: Before I came on to BCDC I was on TIDA and I got to look at that building they were talking about being preserved. I think this location is incredible. It is a very special place and something that we will regard as a great, public amenity.

In addition to that when we started talking about removing the old Bay Bridge there were a number of proposals for retaining it in full as an open space. While that was not practicable this does create a very creative use of an old structure and a great asset for the people on foot et cetera.

I would like to compliment Caltrans on pursuing this creatively and moving it to this point. I think it is going to be a great asset for the community. Thank you.

Chair Wasserman requested: Roll call please.

Ms. Sharon Louie completed the roll-call vote for this item.

VOTE: The motion carried with a vote of 19-0-0 with Commissioners Addiego, Ahn, Alvarado, Butt, Gilmore, McElhinney, Jahns, McGrath, Peskin, Pine, Ranchod, Randolph, Sears, Showalter, Techel, Wagenknecht, Zwissler, Vice Chair Halsted and Chair Wasserman voting "YES", no "NO" votes and no abstentions.

9. **Commission Consideration of Legislation.** Chair Wasserman announced: Item 9 is consideration of legislation. Chief Deputy Steve Goldbeck will make the presentation.

Chief Deputy Director Goldbeck presented the following: You have before you a staff report dated July 6th on pending legislation.

There are several bills pending in the state legislature of interest to the Commission.

The first is Senate Bill 1301 by Senator Jim Beall:

State permitting: environment: processing procedures: dam safety or flood risk reduction project. It provides for a process for advance consultation by state regulatory agencies regarding proposed dam and flood control projects that would affect state waters. If permit applicants want to use this advanced process they would pay the cost for the advance consultation.

Staff believes that this is a good, government bill and appreciates the provision of funding that it includes and recommends that the Commission support Senate Bill 1301.

The next is Assembly Bill 2864, Coastal resources: oil spills. Introduced by Assembly Member Monique Limon that would provide that in the case of a significant, oil spill BCDC or the Coastal Commission, depending on the spill location, would be invited to participate in the natural resource damage assessment, mitigation and restoration process that is provided for in the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act. This bill would allow BCDC to provide its expertise and help determine how to mitigate and restore impacted Bay shoreline areas by oil spills.

Staff recommends that the Commission support Assembly Bill 2864.

The last bill is Assembly Bill 2441, Sacramento-San Joaquin Delta Abandoned Vessel Removal Account: removal of abandoned commercial vessels. Introduced by Assembly Member Jim Frazier, Jr., would provide funds for the removal of derelict and abandoned vessels in the Sacramento-San Joaquin Delta, which is defined in the bill to include all of Solano and Contra Costa counties, so this bill would aid in the removal of derelict vessels from the Bay.

Staff recommends the Commission support Assembly Bill 2441.

In summary, staff recommends the Commission support Senate Bill 1301, Assembly Bill 2864 and Assembly Bill 2441.

I would be happy to answer any questions.

Chair Wasserman asked: Are there any questions?

Commissioner Ranchod inquired: Are any parties opposing any of these bills that are relevant to our consideration?

Mr. Goldbeck replied: Not to my knowledge.

Chair Wasserman continued: I would entertain a motion.

MOTION: Commissioner McGrath moved approval of the staff recommendation, seconded by Commissioner Alvarado.

VOTE: The motion carried with a vote of 18-0-1 with Commissioners Addiego, Ahn, Alvarado, Butt, Gilmore, McElhinney, McGrath, Peskin, Pine, Ranchod, Randolph, Sears, Showalter, Techel, Wagenknecht, Zwissler, Vice Chair Halsted and Chair Wasserman voting, “YES”, no “NO”, votes and Commissioner Jahns abstaining.

Executive Director Goldzband commented: I just want to give a shout out to Steve Goldbeck on this with respect to Senate Bill 1301 by Senator Beall; when we first heard about this we looked at each other in mock horror because it was fundamentally different than it is now.

And Steve immediately picked up the phone and was able to talk with the Sacramento staffer as well as the staff from the Santa Clara Valley Water District which proposed the first kind of bill. And it was within a day or two that he was able to convince them that they were literally barking up the wrong tree given what BCDC was doing with the other regulatory agencies with regard to multi-agency permitting.

As a result Steve worked very closely with them to reformat the bill in a way that all the resource agencies and regulatory agencies can live with.

So I just wanted to shout out for Steve because he really did a great job on that.

Commissioner Showalter had a question: Is this bill going to provide help with this extra streamlining for regulators?

Mr. Goldbeck answered: Yes. It is set up so that OPR, the Office of Planning and Research will work with the affected agencies to set up a protocol for recovering the staff costs doing the advanced consultation.

Commissioner Showalter stated: That is great because lack of resources has always been a big issue.

Commissioner Pine was recognized: While we are on the topic of legislation and supporting legislation would it be possible for us to agendize for our next meeting support of the water supply and water quality bond that we heard about earlier? This is so BCDC could take a position in support of that.

Chair Wasserman replied: You can certainly request that we agendize it. I am informed that BCDC as a matter of tradition and practice does not endorse state measures. We have endorsed regional measures. I do not think we are bound by law in this regard, however, part of the practice and sense is that we wish to be careful not to get out in front of some of the state politicians and in particular the governor.

You can certainly request it if you choose to. It will be an interesting policy debate; not over the merits of the measure.

Commissioner Pine stated: I would be inclined to ask that it be included on the agenda. I think it is thoroughly in interest of the Bay and supports our sea level rise work.

Chair Wasserman responded: It is so noted. We will agendize it. That brings us to Item 10.

10. **Panel Presentations and Discussions on Rising Sea Level Science, Guidance, Mapping and Adaptation.** Chair Wasserman announced: Item 10 is a series of panel presentations and discussions on rising sea level science, guidance, mapping and adaptation. Executive Director Goldzband will make the introduction and I just want to note that there is a lot of information that we are going to be shown and told.

This is not an attempt to go through all of this thoroughly. View this rather as teeing it up for future discussions; a teaser if you like. If there are elements of it that you think are in particular worthy of workshops or special presentations we want to hear that.

In the interest of time and fairness this is not the first time you've heard some of this and it certainly will not be the last time. It is an overview of what is going to happen.

Executive Director Goldzband addressed the Commission: Thank you Chair Wasserman. We scheduled this basically because I felt that so much has happened over the past six months with regard to rising sea level that I wanted you all to be brought up to date.

You are going to be drinking from a fire hose during the next hour and a half or two hours. And it is really, really interesting.

I want you to pretend that this is a tasting menu because a lot of this stuff is incredibly delicious but we can't serve you the whole thing because we don't have enough time.

We have put them in an order which we think will allow you to be able to make connections among the five, different presentations. One essentially leads into another.

We want you to write down, comment and ask questions about what it is you want to see in the future about all of this. We will then agendize as Chair Wasserman says for future discussion, future workshops and so on.

The order of the presentations will be; the first is Deborah Halberstadt who is the Executive Director of the Ocean Protection Council. Deborah will go over the semi-recently, approved science and guidance; science, the forecast and projection for rising sea level and the guidance behind the OPC directive and resources directive toward regulatory agencies about how to think and implement such science.

We have given everybody 15 minutes.

Ms. Halberstadt presented the following to the Commission: It is my pleasure this afternoon to be your appetizer. (Laughter) My name is Deborah Halberstadt and I am the Executive Director of the California Ocean Protection Council. I am also the Deputy Secretary for the California Natural Resources Agency for Ocean and Coastal Policy.

Today I want to provide a high-level briefing on the analytical approach of our sea level rise guidance document that was adopted in March by the California Ocean Protection Council.

I will discuss some of the tools and strategies that are contained within the Guidance. I will also describe some of the steps that we are taking to implement the Guidance.

I know that everyone here understands how important it is for the state to have a coordinated response and to be able to provide clear guidance about how to plan for and prepare for sea level rise.

California has already exhibited strong leadership on climate adaptation and climate mitigation. This guidance seeks to build on that leadership by providing a bold and scientifically-grounded way for state and local governments to analyze and assess the risks associated with sea level rise.

OPC commissioned a scientific synthesis of the state of sea level rise including advances in modeling and improved understanding of extreme sea level rise caused by the polar ice sheets melting. They provided us with probabilistic projections to understand and address potential sea level rise impacts.

We used that scientific guidance as the foundation for our policy guidance. Through this guidance we provide science-based, risk-assessment approach to help state and local agencies analyze the risks associated with sea level rise.

Within that framework we suggest evaluating a range of sea level rise projections as opposed to choosing a number and thinking through the impacts and consequences associated that full range of projections.

One component I would like to highlight is our recommendation to use adaptation pathways. These pathways provide opportunities for additional planning and for additional contingencies in the event that the projections are either over or under representative.

The call by the governor to update our projections represents the commitment of the state to incorporate climate change and adaptation into all of our planning at the state and local levels.

We have Executive Order B:30-15 from Governor Brown which requires state agencies to factor climate change into planning and investment decisions.

We have Senate Bill 379 by Senator Jackson which required local governments to incorporate adaptation and resiliency into their general plans.

And we have Senate Bill 264 by Senator Wieckowski which established the Integrated Climate Adaptation and Resiliency Program to address local and state climate adaptation strategies.

The Rising Seas in California was prepared by a working group of the California Ocean Protection Council Science Advisory Team. It provides the scientific basis for updating our sea level rise guidance document.

It really focuses on providing probabilistic projections that are tied to a range of greenhouse-gas emissions scenarios and it mentions this H++ extreme, sea level rise idea which is the result of melting, west, Antarctic, ice sheets.

The H++ scenario likelihood is uncertain but it was included in our analysis because the impacts would be catastrophic.

The Guidance is a risk-analysis, decision framework. The first step is that you identify the nearest, tide gauge. This will help you take into account your specific location. Our Guidance provides numbers and projections for each of the 12 tide gauges along the state. Step two is to think about your project lifespan and space and time constraints and requirements.

For the project lifespan we want folks to be realistic and not assume that a hotel that is built in 2030 will last for 20 years but to really think carefully about how long these are really going to last because you need to be taking into account the true sea level rise implications.

For step three for the nearest tide gauge and project lifespan identify the range of sea level rise projections. So depending on the location and the project lifespan you will evaluate the potential impacts and adaptive capacity across a spectrum of those projections.

And then for step five you will select the appropriate projections for the particular project while building in this notion of adaptation pathways and contingency plans.

This chart is difficult to read but it pertains to steps six and seven. This is the projected sea level rise in feet for San Francisco and this is one of the pages in the Guidance dealing directly with San Francisco.

You will note that from 2030 to 2050 we did not include a low-emission and high-emission set of projections because up to 2050 our trajectory is already baked in. We have already emitted and we are already at the high-emissions numbers.

Because near-term sea level rise has been locked in under past emissions we only use the high-emissions number. Post-2050 you can see we used the low-emissions and the high-emissions ranges and those correlate to our RCP 2.6 and RCP 8.5 from IPCC.

We also included the extreme scenario H++. That is not tied to specific, emission trajectory but it should be considered for projects with a lifespan beyond 2050 that have low tolerance for risks. So if you are thinking about something like a large power plant or a major airport taking into account the potential impacts of H++ could be important to the project.

With this evaluating impacts and adaptive capacity relates back to step four where we are asking folks to conduct a vulnerability assessment to understand the potential impacts of sea level rise on the project and the project, adaptive capacity.

Thinking through each types of questions; what are the consequences of the potential impacts, what is at stake, what is the capacity for adapting and what are the economic impacts? And these questions are near the questions that were raised in the Governor's Office of Planning and Research Risk Management Approach.

Evaluating each of these factors will help to understand the vulnerability of people, of assets, of the natural environment under as range of sea level rise possibilities and then determine their tolerance for risk.

That is the stepwise framework in the risk analysis. We also included a section on planning and adaptation strategies. The adaptation strategies that we have prioritized are listed here in this slide. I would note that we really do emphasize the disproportionate impact of sea level rise on vulnerable communities. So many of these bullet points do address environmental-justice issues that were raised earlier today.

The final part of our Guidance is the various tools that we recognize and alert people to the availability of. We have geo-spacial and visualization tools. Each one of those tools serves a different audience, has a different role, and has different strengths and weaknesses. We don't presume to choose which visualization tool someone should use. But we alert to the fact that they all exist.

We also are developing a library and database of additional resources to help visualize change and to help folks access funding opportunities, gather information about what other people are doing and that will be held on the state Adaptation Clearinghouse.

When we presented this in March the Ocean Protection Council said, this is wonderful, this is great; how are you going to implement it? What are the barriers? You really need to be thinking through what this means on the ground. And they are right. This is a difficult document to implement. It is a difficult problem to solve.

I want to emphasize first that the Guidance should be seen as a living document and that our work on sea level rise did not end just with the adoption of the Guidance. That was really the first step in a multi-step process.

We are now working very closely with our state and local partners to ensure the best possible uptake and implementation. We have been working particularly closely with folks at BCDC and other state agencies to understand how this document will be used and interpreted and where the challenges lie.

The second portion is the funding section. So we have at OPC some funding sources that we are looking to use to help with implementation.

In terms of our outreach we have been partnering with staff from BCDC and other coastal, state agencies on taking a coordinated approach to implementation. This means working together to develop consistent messaging, understanding the lessons learned from previous experiences with sea level rise, developing new ways of talking about it because each agency is at a different stage of incorporating sea level rise adaptation into their decision-making process. We want to take the knowledge that everyone has developed and come up with a unified approach for the state.

Once we have a more, unified approach for the state we will feel comfortable going to local governments to provide guidance. We didn't want to come to the local governments with a piecemeal, incoherent approach from different state agencies. We wanted everyone to be in lockstep.

We plan in the late summer and fall to conduct public outreach at the local level. We will be hosting a sea level rise workshop at the Third Climate Adaptation Forum at the end of August. We will also be doing regional workshops on the Guidance later in the fall.

We have also been talking with state agencies about how they would like to see the guidance information disseminated through outreach. BCDC has very generously offered to help host one of the Bay-Area workshops.

Another way that we are trying to achieve outreach is at the Global Climate Action Summit which the governor is hosting this September and we are bringing to the Ocean Protection Council next week this particular commitment. So it hasn't been adopted yet. You are getting a preview and I don't know if it will be adopted or if there might be a couple of wordsmithing changes but this is what we are bringing as our proposal to protect coastal habitat in the face of sea level rise.

I would ask BCDC to consider adopting a similar call that could be incorporated into a commitment at the Global Climate Action Summit.

I would be happy to share this language with Larry after the meeting and you can consider whether you would like to bring something similar at your next meeting.

As far as funding opportunities OPC has several different streams of funds. We have Prop 1. We have Prop 68. We have Prop 84 and we have some general-fund monies. Currently we have a couple of grant programs underway for Proposition 1 and Proposition 84. And we received several exciting and innovative proposals addressing sea level rise from a variety of angles for both of those buckets.

We also just recently received funds through Prop 68 and Prop 68 contains some really, specific requirements for targeting disadvantaged and severely, disadvantaged communities and allowing some of those funds to be used to assist local communities with building capacity and expertise.

Those are areas that we have heard are significant barriers to implementing any kind of sea level rise adaptation.

So we are excited to work on our guidelines and think through how we can use those provisions within Prop 68 to make a difference in assisting local communities on their vulnerability assessments and their sea level rise adaptation planning.

Finally, we were fortunate to receive some general-fund monies through the Environmental License Plate Fund which will be used primarily to address our climate change work including sea level rise.

One of the things that we would like to do with a portion of those funds is think through adaptation, financing opportunities that we could incubate at OPC and then we could grow those ideas geographically and financially to address additional climate threats beyond just sea level rise.

I would be happy to answer any questions and I appreciate the time you gave me to speak about this update.

Chair Wasserman commented: From my perspective the difficulty with your description is that it leaves out the built environment. For one-third of the California coastline, that is that third that exists within San Francisco Bay, the built environment is as significant as the natural and coastal habitats.

Similarly, I am a little concerned with the advanced descriptions I've heard of the Global Summit that is going to address some very important things; doesn't seem to do much about addressing adaptation.

Ms. Halberstadt replied: First of all it is true that this particular statement does focus just on habitat. It is broached in the context of a biodiversity report that the Nature Conservancy and the Coastal Conservancy developed talking about the risks specifically to the natural environment. It is taking one component of the Sea Level Rise Guidance Document; so the Sea Level Rise Guidance Document contains and addresses built environment, water-dependent infrastructure, environmental-justice communities, habitat, it kind of addresses all of those different components. This just plucks one issue out of that.

So it is intentionally limited and at the same time we are contemplating expanding the language to get at a little bit more than just coastal habitat. So the language that gets adopted may be a little different than what I am showing you.

As far as adaptation at the Global Climate Action Summit I actually don't know what is happening at the other four challenge areas. But I know that at OPC we are leading the development of the ocean programming that will occur on Friday because there is a Friday morning event and a Friday afternoon event that are tied specifically to oceans. And we will definitely be addressing adaptation there.

Executive Director Goldzband was recognized: I want to supplement what Deborah said a little bit earlier by giving you a BCDC flavor of how we are looking at this and what we're doing.

I saw a lot of eyebrows raised when you saw the numbers. BCDC staff has started an internal discussion on how we look at these numbers and what they mean for our permitting and regulatory function. Deborah and the OPC staff recognize that the regulatory structure needs to figure out how to use these numbers just like we had to figure out how to use the numbers from the 2012 Natural Research Council numbers.

So we are working on that now and we will come back to you in September with our rubric of how we will be using these numbers or how we think we should be using these numbers for your consideration and for your discussion.

These numbers are very different in the way they are presented than the NRC numbers were back in 2012.

Ms. Halberstadt added: Yes, that is correct. So the NRC Report was based on scenarios and it was not tied directly to emissions trajectories. These numbers are probabilistic projections and they are tied directly to the trajectory that we are on or the trajectory that we hope to be on as far as greenhouse gas emissions.

Executive Director Goldzband continued: The other thing that I wanted to mention is that when you looked at what OPC has characterized as stepwise, adaptation process; we took a look at that at BCDC and said, well – that is what we do.

A lot of what we do thankfully has been baked in already which we think is okay. That means that at least we have been on the right track.

Ms. Halberstadt added: There is a reason that it is a line and it is because we didn't make this in a vacuum. We engaged all our sister, coastal agencies throughout the entire development of this guidance. And we worked closely with BCDC on the front end before drafting the guidance. It shouldn't be too surprising.

Commissioner Ahns commented: I was excited to see the mention of social equity and disadvantaged communities in particular which is a term of art that is being developed at the state level to identify communities most in need particularly for anything from targeting of cap-and-trade funds to workforce development. It just depends on the state agency.

I am curious. Have you been working with the California E.P.A. on their disadvantaged, communities definition, particularly CalEnviroScreen? And are you also looking to incorporate rising sea level as an indicator in that tool which is currently not included?

Ms. Halberstadt replied: Those are excellent questions and certainly environmental justice is one of the issues that we are really concerned about and definitely want to integrate into planning decisions as possible.

Secretary Rodriguez is on our council. He is the Secretary of Cal E.P.A. I don't know if we referred to CalEnviroScreen in this document but that is a good question about getting guidance integrated into CalEnviroScreen.

Commissioner Ahns continued: As that tool gains greater prominence I would urge you to incorporate your findings into that tool if possible.

Ms. Halberstadt responded: Yes, that is a great suggestion. Thank you.

Executive Director Goldzband announced: That leads us to the Adapting to Rising Tides Bay Area Flood Explorer. You will remember that a couple of months ago you were provided with a trailer, a teaser, a glimpse of the online tool that BCDC is developing. We have brought back Eliza and Todd to give you the almost-post-data maybe is the best way to put it as a description of the Bay Area Flood Explorer.

Coastal Planner Eliza Berry addressed the Commission: I am Eliza Berry with the Adapting to Rising Tides Team. Thanks for having us back to give you an update on the Adapting to Rising Tides Bay Area Flood Explorer. This is a website hosting the sea level rise and flood maps that were finalized by the Adapting to Rising Tides Team last year.

We have been working hard with our colleagues at the San Francisco Estuary Institute (SFEI) on developing the site. I would like to acknowledge our wonderful sea grant fellow Jaclyn Mandoske who has been doing the design work for the site.

It is very appropriate that we are following on Deborah's presentation because this website that we developed provides a great opportunity to visualize the sea level rise projections.

We will be ready to launch the site in just a couple of weeks. So you will soon be receiving an email from us with the live link.

What we wanted to do today is review the origins of the maps, the goals of the website that we are developing and then really focus on the demonstration of the site. We are really excited to share it with all of you.

The origins of these ART sea level rise maps; the methodology came about through the original Adapting to Rising Tides Sea Level Rise Vulnerability Assessment in Alameda County. From there through work with many partners around the region the mapping method has spread across all nine Bay Area counties through many different collaborations.

And now that we have the maps for the whole Bay we are really excited to get the maps online into an interactive website and make the maps very easily accessible.

As we get the maps online we are highlighting the fact that these sea level rise maps are uniquely suited to support adaptation planning in our region.

This is for three key reasons. The first one is that our maps went through an intensive, stakeholder, review process where we had experts from around the region review the maps and make sure that we had incorporated important details of our shoreline topography.

The maps are also unique because of our one-map, many-futures approach to visualizing the maps. This allows us to look at future, permanent, sea level rise as well as near-term, temporary, storm impacts at the same time. We can begin planning for both of those impacts together.

The third reason the maps are unique is because we have included our shoreline, overtopping analysis which allows us to look for and identify low points along the shoreline that are allowing water to flow inland and cause flooding.

This allows us to start identifying targeted locations to focus our attention.

With our website we are targeting a really, wide range of audiences. This includes the general public. We see a lot of opportunities to integrate the website into high-school, science curriculums. As we get all these different audiences to the website we are hoping that they will not only explore and interact with the maps but also learn about key concepts of sea level rise and storms so that they can fully understand what they are looking at. With that in mind we have developed a whole, learning component to teach the key concepts and also provide some context around related, state science and state, sea level rise guidance from the Ocean Protection Council.

We are being very clear about intended uses and limitations of the maps and providing data download for technical users to do additional analysis if they so choose.

We are also providing opportunities for the public to connect to existing adaptation efforts around the region.

With that background in mind I would like to hand it over to Todd to do a demonstration of the website.

GIS Team Member Todd Hallenbeck presented the following to the Commission: I am really excited to be able to share this first iteration of the website with you all because we think it is really, cool asset that we can bring to the region.

I will now walk you through a live demo that will navigate the website for you. (Mr. Hallenbeck accessed the website and guided the audience through the website step by step.)

Ms. Berry continued: We will now go to next steps. We have been iterating on this website for quite a few months now and we are excited that it will be going live in just a couple of weeks.

We will also be letting you know about a series of trainings that we will be scheduling to invite stakeholders and the public to learn about how this tool can be applied to various planning efforts.

We will also be working on targeted, media outreach led by our leadership at BCDC and SFEI. Also in the course of 2019 we should note that we will be working on an ongoing collection of refined, topographic data working with researchers in the region to make sure we are up to date on the latest science around sea level rise modelling and mapping so that we can be working towards an update of these maps over the next year or so.

We will also be working on site expansion to integrate some of the outputs of ART Bay Area Regional Sea Level Rise Vulnerability work which our colleague Heather will be giving you an update on in just a little bit.

Expect to hear more from us on this and we invite any questions you might have.

Chair Wasserman continued: There is one public speaker on this item and that is Warner Chabot.

Mr. Chabot addressed the Commission: My name is Warner Chabot and I am the Executive Director of the San Francisco Estuary Institute. On behalf of my colleagues at the San Francisco Estuary Institute I wanted to share their appreciation for your staff and the collaboration on this effort especially to Eliza and Todd for their professionalism, their curtesy, their responsiveness and just how well they worked with us on producing this tool. Thank you.

Executive Director Goldzband chimed in: I want to note before anybody else says anything that in your packets you have a couple of draft, two-pagers that we would like you to certainly take a look at. They are drafts, please don't hand them out. That will give you a pretty good idea of how we plan to talk through the outreach program.

We do know that there will be more and more public interest in these maps as more and more people get trained. Warner and I have discussed with Todd and Eliza how we reach out to the press especially to educate members of the press about how these can and should be used.

We will be working through that over the next couple of weeks.

Commissioner Jahns commented: You mentioned that this will be translated for non-native, English speakers. Can you talk a little bit more about that?

Mr. Hallenbeck replied: We recognize that there is a wide variety of communities in the Bay Area that would benefit from this information. We are utilizing Google Translate function that we can build into the site to do some of the basic translation of the maps, the data and provide that in a number of different languages similar to the learning module.

Commissioner Jahns continued: The use is so simple and also intuitive for so many people. I think it is going to be really helpful to have this reach as many stakeholders as possible.

I remember when we did brainstorming, sticker-based exercise a couple of years ago. One of the themes or needs that came up was grade school or youth education on this issue. I am wondering if there is a kind of junior module or something that is going to be developed.

Mr. Hallenbeck explained: One of the first steps that we have taken has been to engage with the Exploratorium as part of some of the educational exhibits that they have in their Bay observatory. The ART Program contributed a while back to some of the sea level rise components of that curriculum.

They actually helped us through their docent program review an early version of this site and start thinking about the way that we are communicating this for the high school category of students.

We are hopeful that is a relationship that we can continue to pursue and see if there are future improvements we can make to this for it to be successful.

Commissioner Jahns had more questions: Is the data available to be used on mobile devices?

Mr. Hallenbeck replied: It is certainly available for mobile use to be able to go to the shoreline and find the location that you are going to. It will still be in this 2-D view at this time point but we have been hearing a lot of interest around like Google Street View. We will be exploring that at future updates to the site.

Chair Wasserman commented: Thank you very much for the question about elementary schools. The fourth wave of our workshops is the education piece. One of the absolute, four elements of that is going to be how we reach out throughout the school systems but very significantly on elementary and middle schools because those are the voices that will get people of the generations around this table to actually to start moving and making the changes that we need to make.

Commissioner Alvarado commented: This is an incredible resource. Thank you so much. I'd hate to see it not get widely distributed. In one of the future workshops I'd really love to see is how to think about your outreach especially with regard to our EJ Committee and ensuring that vulnerable communities along coastal areas are adequately informed.

Executive Director Goldzband continued: So now we have moved from projections on paper to projections on maps and we move now to something that is actually more tangible. And Jeremy Lowe will spend about 12 to 15 minutes talking about operational, landscape units or OLUs as a way to think about different sections of the Bay shoreline.

Mr. Jeremy Lowe addressed the Commission: My name is Jeremy Lowe and I am the Senior Scientist of the San Francisco Estuary Institute. I am very glad that you invited us to talk about a project that was very close to our hearts; the Operational Landscape Units, the San Francisco Bay Project. It is a collaboration between the people who are interested in the physical processes in the Bay and the built environment which is SPUR. This is a great collaboration and it is also supported by the Regional Water Quality Control Board. And it is also supported by the County of Marin through their BayWave Project and also by the County of San Mateo through their Sea Change Project. And we have funding from Marin Community Foundation, the Moore Foundation.

You have heard a lot about the vulnerabilities in the sea level rise. We are interested in the adaptation. We are interested in that larger issue of how are we going to change the Bay? How can we modify it to accommodate these vulnerabilities?

The first thing is to acknowledge that the Bay is different around the Bay. The North Bay is quite different from the South Bay. The topography, the infrastructure that is there and also the people who live there are different. We need to acknowledge this.

We also need to acknowledge that a lot is determined by what Nature does. Maybe it is out of our control and we have to react to it. So these are Nature's jurisdictions that we are interested in.

We also need to be aware that there are a lot of ideas out there. And some of them are more appropriate than others in certain locations.

What we are trying to do is funnel people to put their energies and their creative thinking into the right way and get them a leg up to put the right things in the right places and avoid making the wrong mistakes.

And we have a lot of wrong mistakes in the Bay. We have done great jobs in restoration but we have also learned a lot of other times. We are trying to package that learning into one place.

Everything happens at the Bay scale. We have the Delta attached to the ocean. That runs through the middle of the Bay so we have those influences on us. We have the local watersheds bringing sediment and water in. And we have the tide going up and down. We have a lot of things happening at once.

We can't manage on the Bay scale. We have to think about something smaller. We got to think about something more manageable.

We have a number of different boundaries that we could use. We could use city boundaries as one. When we look at the vulnerabilities that BCDC is looking at those boundaries go outside of individual cities. We have to think collectively to address some of these vulnerabilities.

The county boundaries might be something else. That is where the ART Project based its boundaries upon. ART split some of the physical elements which we are trying to manage. They split in particular the creeks. Sonoma and Marin are separated by the Petaluma River. We can't have one side managing the other.

The watersheds are great and that is a good way to manage the natural landscapes but they sort of disappear when we get to the Baylands. We need to think about how they would fit into the shoreline.

We have the Baylands goal segments but they were based on the history. They were based on the past landscapes. We are interested in what is going to happen in the future.

That is part of the project rationale. The other part of the project rationale is making sure that we are benefitting; making the maximum benefits we can from all of our adaptation strategies. We have to make sure that those nature-based solutions which are using the marshes, which are using the rivers and so on will actually benefit for protection but also provide the habitats and provide the water-quality benefits.

Those multiple benefits are very important to us. When we are looking at the issues that are facing us they vary around the Bay. When we are looking at the habitats that we have they vary around the Bay. We have to incorporate that variation into our thinking.

How can this be used? If it could give people some guidance on this; well certainly the Regional Water Quality Control Board are using that in looking at terms of their environmental review, of permits and so on.

The vulnerability analysis has been done by BCDC, San Mateo and by Marin. They are using this as part of their guidance. They have finished their vulnerability studies and now are thinking about; how would we adapt? And so what is the most appropriate way to adapt?

How do we define these boundaries? Well we went to look at the Bay. And it is interesting when you look at the Bay; you keep seeing these maps of where the high-grounds which are in red and the Baylands in blue; this is all defined by the faults, by the largest, scale of shapes of the Bay. So we have parts of the Bay which vary along this general access. So we have on the steep, headlands the small valleys of Marin. They are set by the topography and by the geology. But the vulnerabilities that we have here and how we built these areas is set by those errors. So the adaptation is going to be different than if we looked at the alluvial plains of the East Bay where sediment has come down from the watersheds and created fans which are built some topography. But that is where places like Foster City, Redwood Shores and so on have built up relatively, narrow, constrained areas but large, flat, Baylands areas which have provided opportunities for creating cities but they also create opportunities for vulnerabilities that we have.

And when we looked at the North Bay and the South Bay we have these wide, alluvial plains of the South Bay which we have taken advantage of by building all these salt ponds which a lot are now in public ownership. This is a great opportunity for restoration as well as for adaptation. But they do have their unique vulnerabilities which we need to deal with.

Those vulnerabilities and the possibilities are set by the amount of space. And Nature requires space to work. We could build a concrete wall to stop a wave very quickly. If we need a marsh, if we need a beach; it's going to be a lot wider. So looking for space is one of the key aspects of these hunks of landscape works.

We have to acknowledge that we have built environment. We have San Francisco. We have Oakland to incorporate into this manmade landscape that we have in these areas.

So we try to bring all these pieces together and think about how would we connect the watershed to through the Baylands to the Bay. Just as David Lewis was mentioning earlier on in this meeting; how do we bring those pieces together? And that is why we are trying to draw out these maps. What you see here are the 30 types of areas that we have developed around the Bay which represent the physical processes of these areas. They connect to the watersheds. They connect to the Bay. But in the middle we have this vulnerable area to sea level rise; the marshes and the cities and so on. They are characterized within those areas where the physical processes are representative and where you manage those areas to reduce your vulnerability.

We looked further up. We heard variations of how much sea level rise to expect. But we felt if we go H+++ which is five meters of sea level rise plus the transition zone which has become a very important topic in the vanishing of the Baylands, the wetland, upland areas.

Looking at the size we have looked at headlands, the drainage divides the tidal sheds to represent those side areas and we have gone far offshore; we've gone into where the waves just start feeding the bottom of the Bay. So we tried to incorporate those sediment, movement areas that provide sediment for the marshes.

We mapped the areas. We drew lines on the map and then we characterized them because there is no point in just giving the map. We are trying to provide information to project proponents about what those areas are. Each of these 30 OLUs we have characterized as sediment load, the amount of fresh water – those things coming from the watersheds.

We've also leveraged all this great work that is being done on mapping the marshes and understanding how they changed historically and how they will change into the future. We've taken the work from FEMA about wave heights and tide datum all the way around the Bay. We have put all into what is going to be a rather, super-cool website. It will provide that information to the project proponents so that it allows us to step up and moving forward with these projects.

We've taken all that work looking at the different infrastructure that is being built to keep us dry and the shoreline inventory which was part of the work with the San Francisco Estuary Institute.

And with SPUR that is a great advantage we have is we looked at the built environment in equal detail. So they have looked at the different types of urban areas that we have and the vulnerabilities they have and have tried to characterize those areas as well as we have been characterizing the physical processes because our vulnerabilities are set by those physical processes but also by how resilient those urban areas are. So we have different topologies for those types of areas.

And they have done some great work looking at where people are living and where their jobs are in relation to these OLUs. One really, interesting finding immediately was that these OLUs don't really have many people living in them but an awful lot of jobs are dependent upon those vulnerable areas close to the shoreline. Defending those communities is defending those jobs.

We have also leveraged all the work that was being done by Marin and by San Mateo in their vulnerability studies. So we haven't gone back to square one to figure out what is vulnerable. We've used that information; we just recast it – instead of by city or by county, we recast it into these OLUs to identify hot spots where Nature adaptation could work in concert with these vulnerable areas so that we maximize the uses of resources.

That understanding has led us to some ideas about different typologies. There are similar areas in the Bay that might be separated geographically but they have similar landscapes, they have similar processes but they also have similar vulnerabilities. We are hoping that an understanding of the adaptation experiments that have been done in one area may be used to educate or to inform other people in similar typologies around the Bay.

We are trying to get that understanding of the similar types of urban areas and similar types of physical areas which could be provided.

We have done all of this mapping. We have done all of these places. It is all in GIS and you can play around with it. The next and most exciting and important step is that we are pairing these OLUs with adaptation measures. We are not just saying the usual cookbook; oh, there's a whole list of things that you can do in our tool kit or cookbook and you just two or three of those. We are saying that some of these are much more relevant to certain places in the Bay than others. And we are trying to avoid making mistakes and putting the wrong thing in the wrong place.

We have started off by saying, well, why would you build the measure in the first place? What is the problem that you are trying to address? Quite often we think, well, that would be quite cool to build a wall or do that. We are actually trying to focus on, what is the problem and what is the cause of that problem? And then, how would we address that cause? We are trying to reduce the vulnerability in that way using Nature-based features wherever possible.

You hear a lot of talk about horizontal levees and they are scattered throughout the Bay but what we are looking for here is how wide, how high, how long would they need to be in a particular location within the Bay? So providing that information for not just horizontal levees but for oyster reefs, beaches, mud flats and fine and coarse beaches; we are showing where they would work and how big and how wide and so on they would have to be to do the job you are asking them to do.

We are also indicating the different types of strategies or different types of measures which are more appropriate in those areas. Again, we are not trying to tell people what to do, we are just trying to say, okay – focus on these and we think you will have the best success with these. It may not be appropriate to have other types of measures here. We are trying to focus people in onto great adaptation measures and strategies. It is then for individual projects to figure out how they will join together. We are trying to do this in the context of an OLU so they are trying to solve the problems of the OLU not just their particular shoreline.

We are trying to give them a timeline as well. There is a lot of uncertainty. We need to think through how this would work. Of course, everything takes a long time to get designed, constructed and permitted and so on. So we need to think ahead of the curve to make sure we got things in place in a good time.

We have a lot of input from scientists and a lot of input from the Advisory Committee which includes BCDC on making this appropriate work that we are doing and we have a website (resilientatlassfei.org) and it is cool.

I'd like to thank you for listening and we would be very happy to take questions.

Acting Chair Halsted commented: It is complicated but it is terrific.

Executive Director Goldzband commented: The real importance here from our standpoint as a staff is how BCDC has shifted but more accurately wanting now to encompass the use of OLUs as part of the Adapting to Rising Tides Program. That is a shift on the way BCDC has viewed OLUs in the past and we are pretty happy about it.

Thank you Jeremy. So now we go from the sublime to the ridiculous. (Laughter) That is not at all a characterization of Mark Stacey whom you have heard from before but just when you thought it was safe to go looking at the Bay we are bringing up Mark to demonstrate a new version of "how" to look at the Bay.

Some of you have seen this before in other forms and we are only limiting him to 15 minutes to scare the heck out of people. We think it is important for you to see this and then we will wrap it up with Heather after that.

Mr. Stacey addressed the Commission: I am Mark Stacey from U.C. Berkeley. Important in the early introductions is the fact that we are going to try to do teasers here. And the tasting menu is an appropriate one. In my position in the sequence here that would make me some kind of a palate cleanser. (Laughter)

I fear the slides are too dense for that but I will try to dance across the top of them. I spoke to you two and a half years ago when we were starting our project. That was the very early days kind of feeling out what we would focus on. And we were trying to get some feedback as to where the work would go. Today is an opportunity for me to update you on the work that we have been doing.

The theme that we have been developing is really focused on the interplay between local actions and regional conditions or regional response.

The theme that David Lewis kicked us off with two hours ago in his public comment about thinking about the landside to the Bayside that Jeremy just echoed is a key part of what I am going to talk about as well.

We can't be just focused on what is happening on the Bayside, we have to be focused on the human and social systems that abut with the Bay, what functions we rely on near the Bay and how those can co-exist.

As those shorelines change in the coming century our behavior will have to respond as well or if it doesn't it creates other vulnerabilities.

Update number one is that the seas are still rising. Nuisance flooding is becoming increasingly frequent, higher magnitude, longer duration and I don't need to introduce that to this audience.

It is a combination of forces that create those events. Whether it is tides plus a storm, tides plus El Nino, tides of the extreme type for King tides, tides plus sea level rise; you can see I'm saying tides, tides, tides.

In San Francisco Bay we always have to come back to the tides. The tides are the things that shape our high-water events. It is sea level rise plus the surge, plus rainfall and runoff, plus high-tide events. The tides are very dominant in San Francisco Bay.

Another way that we are trying to schematically think about the land/water transition zone is to place our coastal communities at this interface between rising sea levels on the right, terrestrial runoff and flooding from the left and at the center is this community. This community is made up of a number of different systems that interact. Our project is meant to look at those interacting systems.

We have some kind of protective infrastructure that protects from storm events, from flooding, from sea level rise.

We have transportation infrastructure that moves people, freight and goods around.

And then we have a governance infrastructure. That is our decision-making networks. We are calling it governance but it is more broadly defined than that. It is any actor that through their decisions or investments or activities influences the shoreline, protective infrastructure or the transportation infrastructure.

I am going to focus primarily on the interplay between what we do on the shorelines and what happens in response in the transportation system. My colleague at U.C. Davis, Mark LaBelle is building out the network as part of this work by reaching out to those of you involved in this area. I am going to focus on these physical-infrastructure interactions today.

I am going to give you a quick sketch of how we are doing the work and then provide you with a few, illustrative examples of the regional connections that we have identified.

We take a future water level and we create a scenario for that future water level. It is really a total, water level that we are specifying. It is one scenario, many futures.

We usually make the mistake of simply talking about a future sea level. But it could be some sea level plus storm surge or plus an El Nino event which can add 25 centimeters as well.

We take a sea level scenario and combine that with a specified scenario for what we do with the shorelines. This is my chance to talk about the range of options available to us in thinking about the shoreline.

Jeremy just talked through a wide menu of different features that can be built into these shorelines. Here I am focusing on where we put the shorelines. Where do we define the edge of the "wet" area?

The two limiting values of this would be an approach that I have called "accommodation." We say as water levels rise from dark blue to light blue we allow the waters to go where they go. And they spread out and they inundate new areas.

The other extreme is a strategy of "containment." We say we are going to contain the shoreline. We are going to contain the waters where they are today by placing infrastructure at existing shorelines.

That infrastructure could be grey, green or a hybrid using any of the strategies that Jeremy spoke about. In this accommodation it doesn't necessarily have to be marsh habitat. There are opportunities for urban accommodation that are very appropriate to be thought about in many areas of the region.

The difference between accommodation and containment is not Nature-based restoration versus hardscape. It is where we put the shorelines. There can be other factors that determine the type of shorelines that exist at those locations. The OLU is a great framework for thinking about that.

Once we have the shorelines specified which we can now do this on a segment-by-segment basis saying, we accommodate here, we contain there and kind of go around the Bay doing that. We combine that with water levels that we specify plus the tides, that creates inundation maps.

We take those inundation maps and we start to look for regional impacts and regional responses.

The first example of this is built from demographic, census data. In this analysis we took future projections for inundated areas and over-laid that with census data and then formerly defined clusters of communities that had similar vulnerabilities in the sense of who or what was being inundated. Where is the critical infrastructure being inundated as identified by schools and emergency response et cetera? Where are demographic conditions similar? Where are socio-economic conditions similar? Where are there a lot of jobs versus residences?

These different features that separate communities are important. These colors on this slide represent different, clusters of communities based on demographic data.

This is not inter-dependence in the sense that Menlo Park influences San Rafael. What it represents is kind of sister cities in a sense. These are communities that because of the types of vulnerabilities that the communities face maybe they can learn from one another, maybe they can partner on outreach efforts.

It is a way of thinking about how near we are to other communities. It is not necessarily a geographic proximity. It is similarity of vulnerability. We have coined that “shared experiences”. It is a similarity in the community.

The second, regional impact is where we layer in our transportation model. As part of this project we are taking hydro-dynamics work from my group and the U.S. Geological Survey and their COSMOS modelling. And then we take our inundation maps and we use that to disrupt the transportation network. And then a travel-demand model diverts how people move around the Bay Area based on those disruptions.

This shoreline scenario on this slide says, suppose that every, single, shoreline segment around the Bay Area protected itself through some kind of containment strategy except for the City of Berkeley and the City of Berkeley did nothing.

That makes I 80 along the waterfront very vulnerable, disrupts the traffic flow along I 80 and the resulting congestion map shows percentage increase of travel time along those segments.

It really shines the light on the fact that now Walnut Creek should care about what Berkeley does with its waterfront. In this scenario San Pablo Dam Road takes it on the chin. And this is a key bypass.

This allows us to start to look at different scenarios where shoreline vulnerability influences the region. It creates a real cost. It is a real cost for commuters coming out of Walnut Creek or coming out of the North Bay and certainly out of Marin.

It suggests a mechanism or leverage by which communities that are directly on the Bayfront should be willing to invest in the Bayfront. It is an opportunity to think about regional cooperation and coordination.

The third example is one in which I need to talk about physics. This is about the tides. The tides shape high-water events in San Francisco Bay. If in the future the tides change the high-water events will also change.

If we have one meter of sea level rise but in the process the tidal range is reduced then inside the Bay we don't necessarily experience a full meter of sea level rise. It might be 80 centimeters or 90 centimeters. So changes in the tides will change those high-water events.

Now, why might the tides change? In San Francisco Bay the tides are strongly shaped by the interplay of the tides themselves moving into the Bay and interacting with the Bay shorelines and the shape of the Bay.

At the mouth of San Francisco Bay there is about an eight-foot tidal range. As that wave propagates to the north it gradually dissipates. And about the time it enters the Delta it is reduced to about a five-foot range. It is kind of what you would expect; as the tides go the energy gets used up in those broad shallows and the tides gradually dissipate.

As the tides move to the south the Bay narrows funneling that energy into a narrower and narrower cross section. And the nature of the shorelines reflect that wave back causing an interaction that can amplify the wave. And the result is that at the head of South Bay, at Alviso – the tides are amplified by about 60 percent. That is about an eleven-foot range.

That is specifically a result of the tides interacting with the shorelines. If the shorelines change those tides are very likely to respond; upwards, downwards – that is what we have to explore.

As you can see in the next couple of slides we have illustrated for you a graphical depiction of high-water level under a couple of different scenarios. (Mr. Stacey explained the nuances and details of these scenarios via slides.)

One of things that we are trying to do is understand how do different, shoreline segments interact with one another? If a particular segment chooses between containment or accommodation what happens elsewhere?

We have started at a county-by-county level simply because 10 was a good number; do nothing plus nine different switches on and off.

We have looked county-by-county and said, okay, if Marin contains versus accommodates Sonoma et cetera – what is the response? These sketches show the influence of action in one place on conditions in another.

It is not that you are offsetting sea level rise in its entirety. But there is this somewhat, protective effect created by accommodation and it starts to get at those interactions.

If we have all of these regional interactions and regional inter-dependencies why don't we all just act together in concert and fix the problem? One is that different communities face the challenge at different times. The second is a highly-heterogeneous ability to invest. The socio-economic differences also create differences in investment.

We have kind of two axes. What is the urgency of the problem and what is the availability of the resources? Different communities sit in different places in that space. That leads to communities when they face that urgency and have the resources to act individually.

What is the threat of acting individually? When you are thinking locally and kind of near-term – I've got this vulnerability and I've got to fix it; placing a hard barrier is a very, rational decision to make. Keep the shorelines where they are and put a barrier there. Keep everything else where it is. So you build levees. You build walls and this could be Nature-based.

Over time those water levels rise and the lands behind are now below water level. Eventually you get to a point where you need pumping stations to keep your streets dry. And then at some point you risk catastrophic failure.

That all starts with a local decision that is very rational which is to say, I have a point of vulnerability and I need to block it and keep all the rest of my infrastructure where it is.

The challenge we face as a region is building into these near-term decisions, some future adaptation, some future flexibility so that we can rethink the infrastructure system to sit behind them so that they become more resilient to the future and that is where I will finish.

Acting Chair Sears continued: I am the ultimate, pinch hitter when we don't have a Chair or Vice Chair. Does anyone have any questions for Mark at this point?

Commissioner Showalter had a question: Mark, has there been any look at how to include this accommodation value into the cost/benefit analysis for these projects? I know that when we are doing a cost/benefit analysis for habitat it is hard to monetize these things.

Mr. Stacey agreed: Yes, it is. We are separate from the NSF Project partnering with the National Capital Project that is trying to do exactly that. The hard part of that is defining the base case you are comparing to. Is it existing shorelines with waters going where they go or is it keeping shorelines where they are today regardless of sea level rise?

How you calculate the cost depends on what you are comparing it against.

The Natural Capital Project is coming out of Stanford primarily. It is looking for a way to put a financial value on exactly that using the results of our work. It is in the works but I don't the answers yet.

Commissioner McGrath commented: From Berkeley I appreciated the isolation of the interstate there. What is ironic about this and reinforces the question of regional analysis is that freeway gives Berkeley a high degree of resilience right now. Water cannot get through the culverts fast enough to flood very much of Berkeley until the highway is overtopped and then everything is toast.

It also prevents the water from getting out. So Berkeley is now in that situation where you begin to think about pumping without thinking about over what period of time do you have to amortize those improvements? At some point they are going to become valueless.

That is the point that I really wanted to make that the pathway question is – are you creating something that will give you 30 years and that makes sense for 30 years but don't plan on being able to fix it at the end of that time.

Mr. Stacey added: And how can you make investments during those 30 years to prepare you for an alternate path after that point? It is very easy during those 30 years to ignore the fact that you got to do something completely different.

Executive Director Goldzband added: That is why the Financing the Future Working Group has worked on the term "inter-generational finance." You have to make sure that what you pay for works and that you are not paying for something in the future that isn't working anymore and you have to make sure that the payment schedule for whatever it is you are fixing or whatever you are building equates with and is aligned with the useful value of whatever that improvement is.

And that is really hard when you are looking at 150 years. It is a lot easier when you are looking at 30 years. That is why you have to think about it in trounces.

Commissioner Zwissler had a question: I get the idea that if everything goes one way it is going to have an impact. Are you going to be able to measure if 25 miles of something is done one way the impact everywhere and is that a material impact?

Mr. Stacey replied: That is exactly what we are exploring at the county-by-county level. We are now refining that to go to the OLU scale and looking at from OLU-to-OLU what is the impact? We've also previously done an analysis on particular, special locations. We've looked at the region south of the Dumbarton, South Bay Salt Ponds. We've looked at the Highway 37 corridor and looked at what the regional impact is of different approaches on those particular, sub-segments of the Bay.

These are the kinds of things we can start to put some numbers on. What is the threshold at which we start to see sub-regional or regional impacts?

We are starting to do it. The real limit is you can't do it to as fine of a scale as what you want. That is why we started at the county level and OLUs are a really, intermediate scale where we will see some response but it is not trying to do a thousand shorelines.

Commissioner McElhinney commented: I really appreciate the comment about Route 37. Whatever we do we can't freeze. We have to get to where we make a decision, if it is a 30-year decision or if it is a 50 to a 150-year decision that will be part of the equation that we don't just study, study, study; we are going to have to make some decisions across the region over the next couple of decades for sure.

Acting Chair Sears continued: And now I think we are at the after-dinner mint section. (Laughter)

Executive Director Goldzband chimed in: So Heather Dennis will now finish the series of presentations by talking about how BCDC through the Adapting to Rising Tides Program is doing its best and shifting in some respects to take advantage of everything that you have heard of before.

Ms. Dennis addressed the Commission: I am a member of the Adapting to Rising Tides Team at BCDC and I am here to update you on the status of the ART Bay Area Project and how we are working to bring all of the information that you just heard about today happening around the region together through the ART Project.

The ART Bay Area Project is a Caltrans and MTC-funded project. It is being conducted by an inter-agency team and a consultant team. We rely heavily on input and support from our Regional Working Group and the public.

The project is a regional-scale, vulnerability, assessment and adaptation plan. It focusses on four main topics.

The topics are transportation infrastructure, vulnerable communities, priority-development areas and priority-conservation areas as defined in Plan Bay Area.

Our method relies heavily on pulling together information that has already been generated by our many partners around the Bay. Our intent is not to reinvent the wheel. We have been using information generated through all the projects you see listed here including previous ART projects at the county sector and local scale and efforts in Marin and San Mateo and other counties, the Resilient by Design findings and many other projects.

By the end of the project we hope to have a vulnerability assessment with a regional-scale perspective that illustrates the large systems that could be impacted by sea level rise. We also hope to have a prioritized set of adaptation strategies that address the region's most critical problems.

We want to establish a framework and method for updating this work moving forward. And additionally we hope to increase coordination and public participation.

Finally, we hope that our results inform and synergize with related efforts.

At our third, Regional Working Group meeting in February we presented the specific vulnerability assessment methods we proposed to use for each of the four main asset categories.

We heard from our Working Group members that those four methodologies should be more aligned. So after that meeting we went back and implemented a more, consistent method for selecting which individual assets to include in the project.

We went back and used 66 inches of sea level rise as a consistent screening tool to decide which assets to focus on. Sixty-six inches was chosen based on the science you heard from Deborah about moments ago and is roughly equivalent to 2050 sea level rise estimates for the Bay Area with a 50-year storm.

We then used an additional screening process for each individual asset category to further hone the list and, recognizing that data-driven lists like this can only get you so far, we incorporated suggestions from the Regional Working Group if there was a good, defensible reason for looping an asset back into the analysis.

Also, even though we used 66 inches as a screening tool to identify assets to evaluate, when we do the vulnerability assessments we assess vulnerability to every level of flooding.

For transportation we selected individual assets from all major categories of transportation infrastructure landing at about 30 individual assets to research.

Our work on this asset category is being coordinated with other relevant efforts like the work from Mark Stacey that you just heard about; work being done by Caltrans District 4, and the MTC/ABAG Travel Model as well.

For priority conservation areas, we heard feedback from the Working Group that the current PCA network while important may not necessarily include all of the important open spaces in the region. Therefore we are working with the Natural Capital Project on work that Mark Stacey alluded to earlier. So we are working with the Natural Capital Project to run four ecosystems services models including coastal protection which they are collaborating closely with Mark Stacey to look at flood accommodation throughout the region and how that could work with priority conservation areas. We are also coordinating closely with Laura Thompson to see how this work could inform the future of the priority conservation area network.

We worked with MTC staff to find the PDAs (priority development areas) that are most likely to be successful urban growth areas that help achieve the goals of the PDA network, to concentrate growth around transit and reduce vehicle miles travelled in the region.

The overall goal of this component of ART Bay Area is to illustrate the vulnerability of PDAs that are important for our region to achieve greenhouse-gas reduction targets that are laid out in stature through AB 32 and SB 375 and to prioritize adaptation strategies for those PDAs.

Our fourth asset category is vulnerable communities and for this one we used a pre-existing methodology developed through a project called Stronger Housing, Safer Communities to identify communities that have characteristics that make it particularly difficult to recover from flood events.

That summarizes how we identified our assets. And for the past several months our team has been conducting in-depth research on each of them.

What our team quickly realized in doing this research is that it was almost impossible to talk about the vulnerability of an asset on its own. All of our assets were inextricably linked to one another.

We are often finding that the vulnerability of transportation infrastructure affected the PDAs that relied on it. Likewise, certain PCAs may stay dry but the only road leading to it was flooded. We also found that PDAs overlapped with our vulnerable communities and that PCAs constituted important, recreational spaces for those communities.

Basically there was a complete web of relationships between our assets. Assets shared physical exposure to sea level rise and the same kinds of informational or governance vulnerabilities. And the consequences of flooding of one asset would affect the functioning of another asset.

This led us to ask, how can we organize our research to best illustrate the inter-connected nature of assets and the significance of potential flood impacts to the region?

In thinking about this we found that it made sense to, rather than doing a series of individual case studies like this; bin our results by geographic units so that we could more conveniently discuss the relationships and inter-dependencies between the assets.

There are several benefits to organizing our results this way including it allows us to highlight connections between assets and avoid doing siloed vulnerability assessments. It illustrates the various parties that need to come together to implement solutions like landowners, managers and jurisdictions.

Thinking about the end product of this project we didn't want to end up with adaptation strategies only tailored to individual assets.

We also want to identify multi-benefit strategies for the region. With this approach we are set up to find adaptation solutions that solve multiple vulnerabilities which is in keeping with the regional nature of the project.

This also allows us to go beyond the original list of assets we planned to analyze in the project and draw connections to other assets of regional importance within the geographic units.

In considering what geographic unit we could use as an organizing principle for this we considered the operational landscape units developed by SFEI and SPUR. As Jeremy just explained, OLUs are units of land with similar geophysical and land use characteristics that make each one suitable for a particular set of potential sea level rise adaptation strategies.

We concluded that OLUs provide a good organizing framework for us for several reasons. First there are convenient geographic unit with a size somewhere between the county scale and site scale. Also they lend themselves to adaptation planning because the OLU project will essentially produce a list of adaptation strategies that are feasible within each OLU. And we can use that information as a launching point for the detailed adaptation planning work that will do in ART Bay Area.

Furthermore organizing our work this way will mean that ART Bay Area will be consistent with some of the other projects going on currently throughout the Bay Area that organize adaptation planning by OLU including work in San Mateo County, Marin County as well as the work being done by Mark Stacey.

Finally, I want to note that this isn't actually much of a substantive change in our research; rather, it is a change in how we are organizing it to better accomplish our project goals and set ourselves up for adaptation planning at the regional level.

We are starting by focusing on the 13 OLUs shown in yellow on this map. We identified these OLUs because they contain individual assets in each of the four, asset categories that we identified as important in the earlier stage of our project.

We also wanted to see a good geographic spread which you can see here. And moving forward our team is going to be synthesizing our vulnerability assessments at this scale.

We will be working on a set of indicators. We are working on a set of indicators withour consultant AECOM that helps systematically rank and prioritize the vulnerabilities that are most critical to the region and thereby give that regional-scale perspective to the project.

We are also working with the Bay Area Health Inequities Initiative and Co-Urbanize to launch public-engagement efforts throughout the region.

We continue to collaborate with project partners including everyone you heard from today, the Natural Capital Project and many more.

In late fall we will be transitioning to the adaptation, planning phase of the project. And by summer 2019 we will have our list of adaptation strategies prioritized for implementation.

With that thank you for listening and I will take any questions.

Acting Chair Sears continued: Great job on the presentation of bringing together other information we heard. Any questions or comments from Commissioners?

Executive Director Golzband commented: The reason I wanted Heather to wrap this up is because every now and then you hear from the public about how government agencies are stuck in their ways. It is really important to give credit to Carey Batha and to the other folks in the planning area and to Steve for really looking at what was going on around us and figuring out the best way for us to take advantage of it so that what we do works with what everybody else is doing.

I would also say that while we are excited about using the OLU framework, while we are excited about looking at the way we are looking at it now; it is going to come down to ultimately people-first planning.

You can talk about OLUs all you want. And you can talk about the different things that happen in OLUs but the really important thing is that people live and work and go to school and go to church or synagogue or mosque and visit their relatives and have Thanksgivings in places along the Bay.

It is going to require the Adapting to Rising Tides Program and all of our partners to work together to do people-first planning over the next few years to ensure that this regional, adaptation plan is realistic.

I want to thank you for your patience. It was a lot and I want you to think about what you have heard and what you want to hear more of and we are more than happy to set that up.

Commissioner Sears added: Nicely said, Larry. These presentations have been information only and not a public hearing but if there is anyone from the public who would like to comment on what we just heard you are welcomed to come forward now and do that. (No public speakers commented)

11. **Adjournment.** Upon motion by Commissioner Ahns, seconded by Commissioner Showalter, the Commission meeting was adjourned at 4:16 p.m.