



**San Francisco Bay Regional CHARG: Coastal Hazards Adaptation Resiliency Group  
 May 18, 2016 Adaptation Strategies Working Group Action Items + Meeting Minutes  
 Hayward Executive Airport, Hayward**

---

**Participants:**

Andy Gunther	Bay Area Ecosystems Climate Change Consortium
Chuck Anderson	Schaaf & Wheeler
Dale Kerper	DHI Water & Environment
Dan Matthies	Wood Rodgers, Inc.
David Behar	SF Public Utilities Commission
Elizabeth Murray	USACE
Gina Blus	Climate Ready Solutions
Hank Ackerman	Alameda County Flood Control and Water Conservation District
Hilary Papendick	San Mateo County Office of Sustainability
Jeff Carson	City of Hayward - Water Pollution Control Facility
Jim Allison	Capitol Corridor Joint Powers Authority
Kathy Schaefer	UC Berkeley
Lauma (Jurkevics) Willis	California Department of Water Resources
Marriah Abellora	USACE
Michael Barber	San Mateo County
Michelle Iblings	Alameda County Flood Control and Water Conservation District
Michelle Selmon	DWR
Rachael Marzion	USACE
Rohin Saleh	Alameda County Flood Control and Water Conservation District
Rosalyn Yu	San Francisco International Airport
Sybil Hatch	Convey, Inc.
Ani Thompkins	Convey, Inc.

**Action Items:**

- Rohin Saleh and Lauma Willis to discuss SGMA
- Kathy Schaefer to research possible WebEx presentation about efforts in Catalonia, Spain
- Lauma Willis to send information about and contact at California State DWR modeling library
- ACFCDD to update needs inventory with categories / domains and distribute to group

- Next meeting Wednesday, June 22, 10am-12pm: prioritize needs inventory and review overall process

## Discussion

- Introductions
- Recap of presentations from March 16<sup>th</sup> meeting (available as a download [here](#))
- Objective of today's meeting is to brainstorm and make a casual assessment of ideas for studies prior to development of strategy and a basis for moving forward; determine dimensions and nature of extent of impact of SRL on the Bay Area
- Overview of Needs Inventory (18 Items, attached): a summary of potential adaptation and/or resilience projects and studies around the Bay.
  - Item #1: What is the do-nothing alternative; and what happens if everybody acts without regional cooperation, e.g. building walls to meet FEMA (or other City/County) criteria around the Bay
    - Alameda County / SFEI / BCDC effort to study the extent of SLR
    - A regularly updated (curated) inventory or master list of current Bay-wide models, studies, and projects should be made available in a central location – is this a CHARG initiative?
    - SFEI compiled shoreline inventory and USACE website possible connections
    - BCDC meeting May 19: possible depository, more involvement in regional permitting; staff report circulated reflecting ideas put forward during SLR workshop series
  - Item #2: Understand the impact of a levee or wall solution around the Bay
    - Geophysical consideration: Where would a wall be built?
    - Mark Stacey's (UC Berkeley) RISER study about impacts of hard walls/levees on local communities addresses some but not all SLR adaptation strategies/impacts - emphasis on transportation
    - DWR Central Valley levee feasibility study – use as a potential model for Bay Area (“frequently-loaded levees”)
  - Item #3: Assess range of flood protection from restoration projects
    - BAECCC (Andy Gunther) and UC Berkeley (Mark Stacey) working with CRI to put together a fall workshop on “realistic” wetlands restoration, hoping CHARG will co-sponsor
    - Suggested that CHARG get land owners involved, starting in South Bay where there are fewer involved than in other parts of the Bay Area; Mark Stacey believes the effectiveness of the work will depend on specific geographic locations, greatest effects will be in South Bay
    - Need a modeling platform that allows us to look at different scenarios
    - Timing of restoration is important, considering subsistence; effectiveness of different solutions will change over time with sediment
    - Brenda Goedan at BCDC looking at sediment (oversees dredging) as part of a long-term management strategy team; SFEI also involved; putting proposal together for EPA WQ Improvement Grant
  - Item #4: Recalibrate SF Bay hydrodynamic model

- Bay will reach tops of existing dikes and grow outward; current model based on presence of dikes that exist today but might be removed; models need to be recalibrated to current restoration. Original FEMA study shows elevations as much as 2-1/2 feet lower than current levels
- Item #5: Evaluate sediment supply and demand
  - FEMA grants for planning scenarios for post-disaster recovery including debris from an earthquake (see minutes from March 16 funding working group conference call at <http://www.acfloodcontrol.org/SFBayCHARG/>); architect with a thoughtful idea about planning for the debris in order to be intentional about where it goes, e.g. cover with material for wetlands; conversation now will hopefully result in new ideas
  - BCDC reexamining fill policy –latitude in face of SLR to provide fill that supports health and safety
- Item #6: Delineate boundary of areas that fall within [Executive Order 13690](#)
  - Advocates approval for federal investment in infrastructure, particularly buildings, should require an 8-step “thoughtful process”; doesn’t prohibit construction
- Item #7: Evaluate SLR impact to Bay morphology/bathymetry
  - Patrick Bernard's model is of interest (see March 16<sup>th</sup> adaptive strategy meeting notes [here](#))
- Item #8: SLR impacts to riverine flooding
  - DWR (Lauma Willis): Sustainable Groundwater Management Act ([SGMA](#)) providing for development of two new SLR models that will create a boundary to the Delta, focus on runoff for each watershed. Locals need to generate capacity to use tools provided by SGMA – a task for CHARG – Rohin will connect with Lauma
- Item #9: Evaluate pros/cons of modeling approaches
  - Email from Liang Lee – Treatment of non-engineered infrastructure (e.g. salt pond berm) is different between FEMA, USACE, and DHI models. Need to justify modeling approach and consider other relevant issues such as maintenance and associated restoration policies.
- Item #10: Best practices from other regions
  - Critical to learn from others' lessons including SLR impact on other regions – identify “sister regions” with similar geography and issues
    - Catalonia, Spain has similar size and population – Kathy may arrange a WebEx presentation from \_\_\_\_\_ to discuss his PhD work under Matt Gandolff
  - Possibility to learn from DWR flood protection planning in Central Valley and Delta
  - Need a place to park information about the studies happening all over the country and world so that it's accessible to all projects
- Item #11: Evaluate control strategies for coincidental storm/tide events
  - Take into consideration more extreme storms as global warming worsens
- Item #12: Evaluate increased wave heights in the bay
- Item #13: Evaluate impacts from large scale infrastructure
- Item #14: Evaluate groundwater impacts to aquifers and hard/soft infrastructure

- Groundwater issues already impacting some areas, creating water quality issues in aquifers; sea wall not going to resolve that problem
- David Gutierrez overseeing SIGMA effort: technology available soon to make saline water potable at a reasonable cost, making slightly saline groundwater a valuable resource in the near future
- City of Miami issues with saltwater forcing contaminated groundwater to surface, creating bacterial crisis as it flows into bay
  - San Francisco Bay Area infrastructure built during the war or pre-war when sewer pipes were hard to come by; Richmond's sewer pipes were made from tar-covered cardboard in 1940, a potential public health concern
- Item #15: SLR impacts on closed landfills
  - Costly to remove – is there an economy of scale?
  - Daly City and Half Moon Bay are currently looking at removal/decontamination
  - White paper for Central Valley
- Item #16: Evaluate local rates of vertical land motion
  - Natural Estuary Research Reserve maintains monitoring stations in a couple of marshes including San Leandro, China Camp
  - San Rafael and Corte Madera hotspots
  - Multiple stations on Seal Beach, partnering with Fish & Wildlife
  - A more systematic approach would be beneficial
  - In Southern California, higher groundwater and oil removal issues result from SLR because ground is going down as the sea is going up
- Item #17: Quantify reduction in SLR due to green infrastructure
  - Clarification on green infrastructure = detention, rain swales, porous pavement, etc...
  - Cities and Counties mandated to create “Green Infrastructure Plans”
  - Would be beneficial to prioritize these activities for planning and funding (multi-benefit)
- Item #18: Social vulnerability and environmental justice
  - In San Mateo County a culturally vulnerable population is already being flooded or is prone to flooding, with significant impacts to housing
  - ART study of subset of BAY of impact of combination of SLR, flooding, and seismic events on at-risk communities, including kind of housing typical for those areas
  - Strong Housing Safer Communities has a lot of great data, including an exercise looking at access to emergency services in the event of liquefaction
  - BCDC's public access requirements look at grey or green infrastructure and physical requirements to maintain public access
  - Possible to integrate efforts with CHARG initiatives?
  - Planning and implementation of projects enhanced when energy has been put into understanding the issues faced by less-advantaged communities and working with those communities on

solutions; effort involved should not be underestimated, from building trust and communication with organizations to facing opposition and lack of understanding

- CHARG organization wrestles with boundaries and focus of CHARG; this direction is being pursued by BCDC; CHARG can support their effort and stay focused on technical benefits, which prevents competition for funding and duplicative efforts
- Additional Ideas and Discussion
- Modeling
  - Establish central repository of SLR models and studies/data/LiDAR to reduce ambiguity and allow for more consistent comparison of impacts of different restoration projects
  - DWR Division of Flood Management modeling library – Lauma will send information including main contact
- Suggestion to group Items into Categories for consolidated education & outreach (“elevator speech”)
  - Planning (Best Practices/ Social Justice)
  - Modeling (Sediment/Groundwater/Recalibrate/New)
  - Coincidence of SLR/Riverine/Tidal
  - Monitoring
  - Overlap of Categories reflects the nature of climate change and SLR; Unique issue that brings together many entities that typically do not interact; Collaboration = Opportunity!
- Funding working group discussing elevator speech as a priority
- Discussion of CHARG governance and structure; relationship/interaction with other agencies
- Policy working group has taken an action item to have a workshop to examine regulatory issues
- ACFCO to categorize items in needs inventory and send out updated version – suggested categories:
  - Planning: #1, 6, 10, 18
  - Recalibrated models: #4,7
  - New models: #2, 3, 5, 9
  - Combining fluvial and coastal models: #8, 11
  - - Sedimentation models
  - - Joint probability models, future and present models
  - - Data needs that might feed a model, e.g. sedimentation: vertical monitoring is not modeling
- Science versus engineering: SLR Science group will inform CHARG; adaptation strategies will come up with strategies based on that foundation
  - Impacts of SLR to different domains: surface water, groundwater, aquifers, ecosystems, built environment – important to recognize impacts of climate change on fluvial system
  - CHARG’s strength is in bringing people around a table who don't normally meet; important not to compartmentalize between groups; overlap between groups reflects nature of the problem

- Watersheds covering multiple counties where only one has jurisdiction is an obstacle – communication between counties and between engineers and environmental groups is crucial
- Incorporating restoration into planning requires understanding that ecology will be changing and that will effect habitat and decrease wave energy above the marsh plane; need a simplistic model that can change over time as restoration and trajectory scenarios are added
- USACE actively researching restoration and building in mid-restoration berms or islands, building wave models to see what shapes work the best; Fish & Wildlife research on wetlands; BCDC research in Corte Madera
- Prior meeting minutes available for review: <http://www.acfloodcontrol.org/SFBayCHARG/>
- Next meeting - Wednesday, June 22 10:00am, location TBD