CHARG
Coastal Hazards Adaptation Resiliency Group

San Francisco Bay Regional CHARG: Coastal Hazards Adaptation Resiliency Group
January 28, 2016 Technical Working Group Action Items + Meeting Minutes
Location: Kleinfelder Offices, Oakland CA

Participants

Name	Organization
Andy Gunther	BAECCC
Ani Thompkins	Convey
Chris Choo	Marin County
Chuck Anderson	Schaaf & Wheeler
Craig Hall	Kleinfelder
Craig Conner	USACE
Dale Kerper	DHI
Dan Matthies	Wood Rodgers
David Behar	SFPUC
Ed Curtis	FEMA
Elizabeth Murray	USACE
Gina Blus	Climate Ready Solutions
Jeff Carson	City of Hayward
Justin Vandever	AECOM
Kathy Schaefer	
Lauma Jurkevics	CDWR
Laurie Kozisek	City of Alameda, PWD

Name	Organization
Lee Frederiksen	HDR
Lindy Lowe	BCDC
Mark Stacey	UC Berkeley
Maya Hayden	SF Bay and Outer Coast Sentinel Site Coop.
Max Loewenstein	Nasa Ames Research Center
Michael Barber	San Mateo County
Michelle Iblings	ACPWA
Monaiza Humayun	State Assembly
Patrick O'Brien	USACE
Peter Wijsman	Arcadis
Rachael Marzion	USACE
Randy Brandt	Geosyntec Consultants
Raymond Wong	City of Mountain View PWD
Rohin Saleh	ACFCD
Rosalyn Yu	SFO
Wendy Goodfriend	BCDC

Action Items:

- Send any comments on the Sea Level Science Project outreach survey to David Behar or Ani Thompkins by Wednesday, February 3.
- Sea Level Science Project outreach survey will be completed by June 2016.
- Next meeting on Thursday, March 24, from 1:30-3:00pm at San Francisco Public Utilities Commission headquarters: 525 Golden Gate Avenue, 13th Floor, Hetch Hetchy Conference Room, San Francisco (RSVPs will be required for this meeting due to building security.)
- Send future meeting space availability to Ani Thompkins

General Discussion:

- Introductions
- Three priority areas:

1. Sea level rise Science – David Behar
    - Determine what sea level rise projections are being used by Bay shoreline jurisdictions, how they are working with uncertainty, and other basic questions related to sea level rise
2. Adaptation Strategies – Rohin Saleh
    - Learn and understand the outcomes of sea level rise and its impact on ecosystems and infrastructure
    - Develop framework to develop regional and subregional adaptation strategies to increase resiliency
    - Explore and evaluate the variety of adaptation options available to Bay shoreline jurisdictions
3. Groundwater – Craig Conner
    - Determine the potential impact of sea level rise on aquifers, ground water systems, and underground infrastructure

- Goal for meeting is to introduce three priorities areas, and form three active subgroups. Attendees sign up for one or more subgroups.
- Sea Level Science Project
    - David Behar gave a presentation at the July 24, 2014 CHARG Stakeholder Meeting entitled "Incorporating Sea Level Rise into Capital Planning, Overview of Draft Guidance City and County of San Francisco. Taking advantage of the San Francisco City Hall Fellows program, Behar will be managing four volunteers to conduct a survey of Bay Area jurisdictions (some outside the Bay Area) who may be using sea level rise data to better understand some of the following questions:
        - What sea level rise projections are they using?
        - How are uncertainties being addressed?
        - What adaptation strategies are being considered?

      The survey will be designed to determine current knowledge and practices, not dictating or telling other agencies what they should be doing. The survey is scheduled to be completed by June 2016, with the desired outcome of a more unified vision of various agencies' sea level rise projections, and a determination of any next steps to align jurisdictions to the extent desirable. The CHARG assumption is that it will be advantageous to have consistency across the region.
    - Discussion:
        - Encourage thinking beyond mean sea level and about other factors influencing sea level. Consider long-term tide trends and other variabilities (e.g. El Nino causing a 12" elevation increase every 2 to 7 years *on top* of sea level rise, King Tides, etc.). Inundation in the Bay is what our oceanic boundary condition will be. Reemphasize change in tides. Growing sea level becomes slightly larger as the geometry of the basin changes. It's a small trend but comparable to mean sea level rise.
        - Suggest technical experts write a preamble about the science of what's happening in the ocean and then survey end users of the science on what they know about the science of the ocean. From there, determine where they need to be educated.
        - Suggest developing and conducting the survey with both long-term and short-term data collection goals. Some technical questions can be set aside for later iteration. For example, may not have all the info on tide studies, but keep it on the list for a different timeframe.

- Technical working group will vet the survey questions so that when the fellows start outreach they're asking the right technical questions.
- Survey should include questions about which data streams people are using: vertical datum, tide charts, underground weather, NOAA, Coast Guard, land motion assumptions, etc. All use different data sources. Eventually CHARG should offer guidance on data sources.
- Different people may come to same projections using different data points.
- USACE uses total water levels. USACE is publishing a file review technical letter on water level projections, being developed by a diverse team of international academics and practitioners. Total water elevation concept is important because it could be a way to tie together a lot of information that people need. Component-based approach has a lot of uncertainty. The guide will stipulate 3 rates, high to low, using a 100-year look ahead. The guide will not preclude using other rates. USACE working on tools, base policy guides on actionable signs. Rather, suggest not reacting; the objective is to let the science get vetted.

- Adaptation Strategies
  - Many efforts are being conducted around the Bay Area to consider local adaptation strategies, for example BCDC's "Adapting to Rising Tides", FEMA's San Francisco Bay study, etc. People will be reacting, thinking of how to deal with sea level rise. There is urgency in some areas. The adaptation strategies subgroup will be considering what people are doing and what tools they're using and will explore strategies available, weighing individual vulnerability vs. overall assessment.
  - Value in thinking regionally due to various physics and geographical breakup of different areas, and opportunities for collaboration in shared regions. There is a regional optimization problem: what one region does affects others. What gets built, in what sequence; opportunities to optimize; scale of regional configurations affecting local flood control. Consider what groupings make sense.
  - Given the scale of looking at adaptation, suggest taking an incremental approach with respect to level of detail. Streamline vulnerability assessments – how will group approach that?
  - Regarding local vulnerability assessments, San Mateo, Marin, Contra Costa County, and San Francisco are in process; Alameda is complete; Santa Clara did SV1.0; Solano, Napa, and Sonoma have not started. Some localities are already implementing local solutions. Need to conduct adaptation strategies study to encompass those approaches, so that they won't be questioned after they're built. Consider what capacity they build to? Foster City will be a good example because they're building a hard structure for shoreline protection.
  - Will need to consider what-if scenarios to evaluate impact of location solutions on neighbors, ends of borders. Include ultimate project life and sequence.
  - Consider building in more adaptive capacity to accommodate future changes.If it's not adaptable, it's a sunk cost when you have to pull the whole thing out.
  - In January, President signed Executive Order 13690 which limits Federal investment in infrastructure and buildings flood prone areas. While each Federal agency is currently in the process of developing implementation guidelines and the ultimate impacts are not known.
  - Suggest developing standard terminology to address the efficacy and impactfullness of some strategies, something that non-science people can relate to.

- Groundwater

- Sub-basin studies indicate that groundwater is becoming an issue. CHARG conducted a mini focus group discussion in August 2015. Now, need to determine whether this priority area has enough interest to make it productive.
- Discussions thus far have considered the impacts of sea level rise on the subsurface; for example salinity intrusion, groundwater contamination, impact on storm drains and other subsurface infrastructures, impacts to aquifers, landfills leaking into groundwater, pipelines, corrosion, buoyancy, etc.
- The Center for Catastrophic Risk Management at UC Berkeley has just finished a study of PFC lines around the Bay Area including subsurface impacts of buoyancy and other major concerns.
- Need to determine what the subgroup will focus on that would be valuable to all CHARG members. Looking for members who are interested in two major areas: first step would be data collection about groundwater vulnerability in the Bay Area, then possible pilot study sites for more intense modeling. Need to reach out to impacted stakeholders, for example oil companies, PG&E, etc. Suggest developing a purpose paragraph to define the scope of work: to get a qualitative understanding of the impact, define what that is, how to analyze it, and how it feeds back to the adaption strategies subgroup. Cannot complete the adaptation strategies work without a groundwater study.
- Groundwater is underestimated in sea level rise studies. Looking at impacts around the whole Bay Area is an important aspect. Suggest identifying and cataloging a matrix of possible impacts, direct and indirect effects on groundwater from sea level rise. Then engage people who have already performed modeling studies and use that to feed into our analysis.

- Regarding funding for these projects, now that FEMA flood maps are wrapping up, there may be FEMA funding available for a non-regulatory product, for example, total water levels to measure flood risk.
- New meeting schedule will be every two months in-person, rotating locations around the Bay, with subgroups meeting separately sometime in the next month.