

Bay Area Ecosystems Climate Change Consortium
Thursday, September 27th, 2012, 1:30 pm – 4:30 pm
Conference room, 26th Floor, Bay Conservation and Development Commission
50 California St, San Francisco, California 94111

Meeting Summary

Attendees:

Leslie Abramson, *Gulf of the Farallones National Marine Sanctuary*
Bill Brostoff, *US Army Corps of Engineers* (via teleconference)
Ellie Cohen, *PRBO Conservation Science*
Caitlin Cornwall, *Sonoma Ecology Center*
Benét Duncan, *Gulf of the Farallones National Marine Sanctuary*
Julie Ekstrom, *NRDC*
Lindsey Fransen, *BCDC*
Matt Gerhart, *CA State Coastal Conservancy*
Steve Goldbeck, *BCDC*
Wendy Goodfriend, *BCDC*
Andrew Gunther, *BAECCC*
Alison Hanke, *Bay Nature Institute*
Amy Hutzler, *CA State Coastal Conservancy*
Tom Kimball, *USGS*
Jaime Kooser, *SF Bay National Estuarine Research Reserve*
Sara Moore, *Sonoma State University*
Carl Morrison (via teleconference)
Heidi Nutters, *SF Bay NERR*
Nadine Peterson, *CA State Coastal Conservancy*
Marina Psaros, *SF Bay National Estuarine Research Reserve* (via teleconference)
Sarah Richmond, *BCDC*
Bruce Riordan, *Joint Policy Committee* (via teleconference)
Laura Sasso, *Climate Corps, JPC*
Nat Seavy (standing in for Ellie Cohen), *PRBO Conservation Science*
Katherine Smetak, *Center for Ecosystem Management and Restoration*
Caitlin Sweeny, *SFEP*
Caroline Warner, *San Francisco Bay Joint Venture*

1. Introduction of participants and their BAECCC-related projects.

Participants introduced themselves and the interests of their organization in BAECCC.

2. Review agenda

Nadine Peterson added to the agenda an update on the passage of SB 1066.

3. Project update: Our Coast Our Future

Marina Psaros reported on the status of the outer coast and San Francisco Bay elements of the Our Coast Our Future (OCOF) project. The outer coast tool is nearly complete and a final

version will be available in December or January, at which point an impact report for the outer coast will be developed. OCOF staff will work with land managers to use the tool and provide technical assistance. Training workshops and further outreach will take place in January or February.

An advisory committee for the San Francisco Bay tool has been assembled and will have its first meeting in mid-October. The committee will refine the San Francisco Bay tool so that it is easy to use and applicable to management decisions. The first version of the tool is expected to be released in 2014, possibly prior to August. The project is currently funded through August, 2014.

Marina noted that feedback on the project was welcome. Comments can be sent to Marina Psaros, Kelley Higgason, or Patrick Barnard.

4. Climate change impacts, vulnerabilities, and adaptation in the San Francisco Bay Area.

[Julie Ekstrom](#) provided an introduction and overview of the July 2012 report [Climate Change Impacts, Vulnerabilities, and Adaptation in the San Francisco Bay Area: A Synthesis of PIER Program Reports and Other Relevant Research](#), the third California Climate Change Assessment from the California Energy Commission's Public Interest Energy Research (PIER) program. The first two reports had a statewide focus and assessed potential climate change impacts. The third assessment also provides downscaled projections for the state and several statewide-related studies. This third assessment focuses on the vulnerabilities and adaptation options for dealing with projected climate change impacts. Recognizing the need for regional-based information to support adaptation processes, the third assessment also includes a set of studies focused on the San Francisco Bay Area. Findings from these regional-focused studies (and others) were synthesized. Ekstrom presented a summary of the synthesis, which was based on the 11 studies conducted in the region under the California Energy Commission's 2010–2012 Vulnerability and Adaptation study as well as findings from other recent regional studies. The synthesis report uses previously conducted impacts research to draw conclusions about vulnerability and adaptation options across multiple sectors, including water, agriculture, energy supply and demand, transportation, ecosystems, public health, wildfire, and coastal resources. Andy noted that David Ackerly would present on the ecosystem section of this report at a future BAECCC meeting.

A common set of climate [projections](#), downscaled to a 12 km regional scale grid, were developed by Dan Cayan and colleagues at the University of San Diego for use by all PIER research teams when possible to allow for comparability among studies. Julie noted that probability-based projections by Pierce *et al.* (2012) were useful in the evaluation of precipitation projections, as these tend to be more consistent between models than temperature projections. Julie provided a brief summary of regional projections for temperature, precipitation, and sea level rise:

- Extreme heat events are expected to increase throughout the Bay Area, with the number of days reaching temperatures above the local-based historical thresholds greater in coastal locations like San Francisco than for already hot interior locations like Livermore.

- The region will continue to have dry summers and wet winters. The statewide big pattern – and concern – about precipitation is that more precipitation is falling as rain instead of snow, which has implications for water supply systems and energy production.
- Sea level at San Francisco near the Golden Gate has been rising for more than a century and is expected to rise 16 inches by mid-century and 55-inches by 2100. By 2100, today's 100- year flood events are expected to occur for 60 days in winter.

Julie provided an overview of regional impacts research conducted for different sectors:

- **Land Use-** [Bryant and Westerling \(2012\)](#) evaluated wildfire risk for the San Francisco Bay Area under smart growth and standard (sprawl) growth scenarios. The standard growth scenario shows San Francisco at a greater risk of fire damage than the rest of the state.
- **Water-** [Sicke et al. \(2012\)](#) conducted an evaluation of the sensitivity of urban water supply, finding that the region's water demands could be met using existing water systems but would involve substantial costs associated with purchasing water, water use reduction, and operational flexibility. [Langridge et al \(2012\)](#) evaluated management of groundwater reserves to increase water supply capacity as an adaptation strategy. [Null and Viers \(2012\)](#) evaluated water allocation frameworks, finding that if the current water-year classification scheme is maintained, more years will be classified as dry and less water will be allocated to ecosystems.
- **Energy-** Increase in energy demand was evaluated based on behavior during past events by zip code in the Bay Area. Over the next decade more extreme heat events and new residential growth could increase demand by up to 1 gigawatt during the summer and will necessitate major changes to our energy system.
- **Transportation-** [Biging et al. \(2012\)](#) assessed impacts of coastal flooding on transportation infrastructure and found an increased risk of flooding at airports, ports, and roads as sea level rises because much of the Bay Area's infrastructure and residential areas are built on low lying land or fill. The study also provides an updated assessment of the extent of flooding from sea level rise by incorporating flood protection structure height (LIDAR) and modeling hydrologic flow of bay water inland (around flood protection structures). The updated maps of sea level rise for the Bay Area, when compared to the previous elevation-based mapping provided by BCDC and the Pacific Institute, indicate areas where maintaining flood protection structures are especially critical.
- **Public Health-** [Garzón et al.\(2012\)](#) conducted a study for the City of Oakland and found the highest proportion of the population to be impacted by sea level rise (exposed to the 100-year flood) was socially vulnerable (low income). Julie noted that low-income neighborhoods are also more vulnerable to urban heat-island effects because they generally have less tree coverage and more impervious ground surfaces.

Julie collaborated with Sea Grant, Coastal Conservancy, OPC, NOAA, and others to conduct a statewide survey of coastal communities to assess how far along they think they are in the climate change adaptation process. They found that 40% of respondents were in the understanding phase, 41% were in the planning phase, and 9% in implementation phase. Only 10% of respondents indicated that they had not yet started the adaptation process. The survey can be viewed on Julie's [website](#).

Julie summarized her and Susi Moser's study's findings on barriers to adaptation:

- **Governance-** Institutional and governance issues were the most prevalent barriers identified in the studies. These included impediments relating to policies or practices that make it difficult to coordinate across agencies, legal barriers, and limited spatial and functional extent of jurisdictions. Julie gave the example of a failed attempt to raise a levee in Hayward due to federal and state permit requirements.
- **Attitudes-** The second top barriers identified were attitudes, values and motivations that often originated from organizational leadership.
- **Resources-** Lack of resources, funding, and information were also common barriers

Julie presented strategies for overcoming barriers. One common strategy involved changes to existing policy, planning processes and programs or management, including efforts to build new or change existing governance structures. She gave the following example of a leader overcoming a jurisdictional-based barrier: Because BCDC does not have jurisdiction over much of the Bay, its Executive Director shifted his efforts to a broader jurisdiction to work with the Bay Area Joint Policy Committee to develop a region-wide adaptation planning process and possibly a new governance structure to support this effort.

The second most frequent type of strategy employed related to communication. Julie provided the example of Santa Clara, where climate protection efforts were framed as “resilience” rather than “adaptation” actions because the “resilience” was associated with strength whereas “adaptation” was associated with reactivity.

5. BAECCC Strategic Plan

Andy Gunther presented four desired outcomes of BAECCC's work developed by the BAECCC steering committee:

1. Natural resource managers, scientists, non-governmental organizations and regulators collaborate as an integrated community to identify climate change challenges to ecosystems and develop shared solutions
2. A collaborative monitoring network identifies and measures indicators of environmental change and provides a regular accounting of ecosystem response to climate change.
3. Policy makers and the public support maintaining healthy ecosystems to address the impacts of climate change.
4. BAECCC shares and obtains lessons learned with communities addressing climate change worldwide.

Meeting participants shared specific objectives that their organizations were pursuing that would contribute to these outcomes. Organizations with such objectives are natural partners for BAECCC, and Andy requested that people email with other ideas.

6. Policy Updates

a. The Golden Gate proposed for inclusion in the Monterey Bay National Marine Sanctuary

Leslie Abramson of the Gulf of the Farallones National Marine Sanctuary (GFNMS) gave a presentation on the proposed expansion of the Monterey Bay National Marine Sanctuary (MBNMS) to include the San Francisco-Pacifica exclusion area. The MBNMS is a federally protected marine area offshore of the California coast between Marin and Cambria. The GFNMS administers the portion of the MBNMS north of the Santa Cruz County line. When the MBNMS was designated in 1992, an area of approximately 71 square nautical miles off the north coast of San Mateo County and the City and County of San Francisco, starting at Point Bonita in the north and terminating at Point San Pedro in the South, was excluded from MBNMS designation area for three reasons: 1) pollution from the combined sewer outflow from the City and County of San Francisco's sewage treatment program; 2) high vessel traffic; and 3) potential pollution from dredged material disposal sites. A 2008 Joint Management Plan Review process determined that GFNMS would facilitate a public process in the next five years to consider incorporation of the exclusion area into the MBNMS.

Leslie summarized findings for each of the three initial reasons for exclusion of the area:

- 1) Sewer overflow: Leslie noted that SFPUC was an award-winning wastewater treatment facility that has not violated its EPA permits and 17 years. Between 1992 and the present, secondary sewage treatment capacity at the facility increased from 0 to 43 million gallons per day and wet-weather storage capacity increased by 21 million gallons per day. Long-term biomonitoring and water quality sampling indicates little to no impact on the surrounding environment. Because of the uniqueness of SFPUC's discharge system, outflow of primary-treated sewage may occur during extreme weather events.
- 2) Vessel traffic: Shipping lanes have been separated in to three main lanes. Vessel traffic is not in itself a valid reason for exclusion as it already occurs in GFNMS and MBNMS.
- 3) Dredged material disposal sites: NOAA is in the process of evaluating what impact dredging has on the area and what impact sanctuary designation would have on existing uses. Leslie noted that the Army Corps of Engineers is looking into getting permitting for a temporary disposal site right off of Ocean Beach that would help replenish sand along the shoreline.

Leslie summarized how the exclusion area might be of "special national significance" under the National Marine Sanctuaries Act. She noted that the region is extremely productive and provides critical habitat for a number of species of interest. In addition, it possesses archaeological and maritime values, including many historic shipwrecks. Designating the area a marine sanctuary would protect it against gas, oil and mineral development and production, discharge, and wildlife disturbance.

A notice of intent to revise the boundaries of the MBNMS was published in the [Federal Register](#) on August 7, 2012 and allowed for public comment on the draft EIS through October 10, 2012.

Public scoping meetings were held in August and September. Leslie noted that the project was on a very aggressive timeline and a record of decision was expected in 2013.

Leslie briefly discussed the issue of whale strikes. In 2010 there were five fatal ship strikes of whales in the Bay. GFNMS and Cordell Bank NMS staff are working with the coast guard to recommend new lanes that are funneled on an established path over the shelf break and have begun a large, multistep process to create three dynamic management areas around the Bay. In these management areas, whales would be tracked in real time with voluntary reporting to one central site. If whale numbers were to exceed a certain threshold in a particular area, a whale advisory zone requiring vessel speed reduction to 10 knots or less would be created and would stay in effect for weeks (as opposed to hours). The objective would be to avoid co-occurrence of ships and whales by dis-incentivizing ships from using particular lanes. Leslie noted that many climate change factors make whales more susceptible to ship strike.

7. Project updates

a. Ocean Climate Indicators for the Gulf of the Farallones

[Benét Duncan](#) reported on the status of the Ocean Climate Indicators project. The goals of this project are to develop a set of physical and biological climate change indicators for the North-central California coast, from Bodega Head to Año Nuevo; define monitoring goals for the region; and incorporate indicators into a collaborative monitoring inventory and plan. The project will be completed in four phases and is currently in its second phase. In Phase I, indicator selection criteria were determined and a comprehensive review of literature, indicator reports, and monitoring plans was conducted to develop a list of candidate indicators.

Benét worked with a team of project mentors to refine the list of indicators developed in Phase I to 10 physical and 13 biological candidate indicators. An indicator survey was administered to 51 regional scientists and managers to assign scores to candidate indicators. Survey respondents were able to suggest additional indicators, with answers based on their areas of expertise and backgrounds. A workshop was convened in which 36 survey participants discussed survey results, determined a set of finalist indicators, and considered data sources available for the finalist indicators.

Priority physical indicators identified at the workshop included: ocean water properties (SST, sea surface salinity, pH, dissolved oxygen); sea level; wave height; and atmospheric measurements (air temperature and wind speed). Priority biological indicators included: primary productivity; seabird diet and the timing and success of seabird breeding; extent of biogenic habitat; and abundance of mid-trophic level species (macroinvertebrates and zooplankton). The workshop summary is available on the project [website](#).

The project's next steps are to: 1) evaluate the relative importance of finalist indicators by analyzing available observations and performing downscaling experiments from climate models; 2) finalize indicators; and 3) develop an indicator monitoring and inventory plan.

b. BAEECC workshop: Climate Smart Actions for Natural Resource Managers

Andy Gunther provided an update on a [workshop](#) entitled “Climate Smart Actions for Natural Resource Managers” to be held Thursday, November 29 at the State Building. The workshop is part of BAECCC’s larger effort to develop a “Climate Change BMP toolbox” for practitioners.

A Save the Date email was sent on September 18 to the BAECCC, BAOSC/Critical Linkages and SF NERR Coastal Training Program lists, reaching at least 500 natural resource managers, planners, and funders. The email included a link to a survey to help determine what workshop participants want to see on the agenda.

A committee has been established to help develop the content of the workshop. The workshop will include regional climate adaptation case studies that will illustrate the planning process that was used, how vulnerability was assessed, and what actions are planned or have been implemented. Andy requested that people email him with suggestions for local case studies to be presented at the workshop. The workshop will also include the first public presentation of the climate portfolio tool under development by TBC3. Ryan Branciforte at the Open Space Council is working with TBC3 to add this feature to their [Explorer tool](#).

A list of resources and online decision support tools that are available for vulnerability assessments, principles for climate smart planning and action, and relevant research papers is being developed. Andy noted that the California LCC will be holding a 3-day [Climate Change Vulnerability Assessment Training](#) November 6-8.

A draft agenda will be included on the workshop invitation, which will be sent out in early November.

c. Adapting to Rising Tides (W. Goodfriend)

Adapting to Rising Tides (ART) has completed a vulnerability and risk assessment for the ART project area (the Alameda County shoreline from Emeryville to Union City). The first two chapters of the report are available on the ART [website](#). Two additional chapters will be produced after a working group meeting on October 10, 2012. The final phase of the project will use the vulnerability and risk assessment to identify adaptation strategies. A new coastal fellow will be hired to look at shoreline park vulnerabilities and adaptation possibilities in the East Bay.

Wendy also noted that the NOAA Coastal Services Center Sea Level Rise Viewer has been launched. The viewer includes sea level rise maps from Tijuana to Canada.

d. JPC Climate and Energy Resilience Project

Bruce Riordan reported on the activity of the Bay Area Climate and Resilience project:

- The Kresge Foundation awarded the project a 6-month grant to produce a briefing paper on Bay Area climate change for government officials/opinion leaders based on the recent CEC climate report.

- Workplans will be developed for the following four topics: 1) Turning data and research into action; 2) Community engagement; 3) Governance and decision making; 4) Win-win strategies for greenhouse gas reduction.
- A series of 25 stakeholder meetings with adaptation leaders and key non-climate Bay Area leaders will be held to obtain input on their needs and build support for planning and action. This information will be put together in a report for the Kresge Foundation.
- The JPC is in discussions with senior administrative leaders at UC Berkeley and other academic leaders in the region to create a “do-tank” that will bring academic experts together with Bay Area policy makers for problem-solving and joint projects
- The Governor’s office is interested in working with collaboratives. The CoCoCAL alliance (recently renamed the Alliance of California Collaboratives for Climate Adaptation [ARCCA]) spent two days in Sacramento discussing how to coordinate research, developing a new Climate Adaptation Strategy for the state, and how cities and policies will incorporate the plan.
- Project information for the Climate and Resilience project will be reorganized and put up on the CAKE website

e. Senate Bill 1066

Nadine Peterson provided an update on [Senate Bill 1066](#), which was signed into law on September 27, 2012. The new legislation gives the Coastal Conservancy authority to address climate change and is the first of its kind in granting this authority to an agency. The bill contains specific language to address greenhouse gas emissions, sea level rise, wetlands and biodiversity, and gives priority to projects that maximize public benefit. The legislation will take effect January 1, 2013.

Nadine noted that the Conservancy will dedicate money to being proactive and will likely conduct a grant round to get ideas. She noted that project ideas were welcome. A Sea Grant fellow (to be selected) will begin work in January to evaluate adaptation needs for California’s coastal areas.

f. North Bay Climate Adaptation Initiative

Caitlin Sweeney noted that the North Bay Climate Adaptation Initiative is producing a series of climate change adaptation messaging pieces—short guidance documents—for people who affect disproportionate amounts of land in Sonoma County. Messaging pieces about streamside property, rural land, policy, and predicted climate change impacts in Sonoma County will be developed. The documents will be available by Spring 2013 and will be posted as PDFs on the NBCAI [website](#).

8. Relevant pending proposals and opportunities

No proposals or opportunities were discussed.

9. Review of action items, other business

The meeting was adjourned at 4:30 PM.