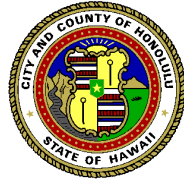


CLIMATE CHANGE COMMISSION
CITY AND COUNTY OF HONOLULU

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VICTORIA KEENER, PH.D.
BETTINA MEHNERT, FAIA, LEED AP O+M

Climate Change Commission
Thursday, April 19, 2018
Mayor's Conference Room, 3rd Floor
Honolulu Hale
530 South King Street
Honolulu, HI 96813
Meeting Minutes

Members present: Rosie Alegado, Makena Coffman, Charles Fletcher, Victoria Keener, and Bettina Mehnert.

Members Absent: None.

Public: Executive Director Josh Stanbro, Deputy Director Justin Gruenstein, and Uyen Vong (Office of Climate Change, Sustainability and Resiliency); Courtney Sue-Ako (Corporation Counsel); Catherine Courtney; Director Ross Sasamura (Department of Facility Maintenance); Colby Stanton; Jodi Malinoski, David Raney, and Randy Ching (Sierra Club of Hawai'i); Nami Ohtomo; Trevor Fitzpatrick; Susan Mukai and Dean Nakano (Brown and Caldwell); Henry Curtis (Life of the Land); Teresa Dawson; Kirsten Turner (Congresswoman Tulsi Gabbard's Office); Nick Hicks; Julius Fischer (Hawai'i Green Growth).

Call to order: Chair Makena Coffman called the meeting to order at 3:09 p.m.

Roll Call: Four commissioners were present. Quorum was established.

At 3:10 p.m., Alegado arrived at the meeting. Five commissioners were present.

Approval of the Meeting Minutes of March 13, 2018: The minutes were adopted as presented (**AYE:** Alegado, Fletcher, Keener, Mehnert; **NAY:** None; **ABSTAIN:** Coffman).

Report on the Activities of the Office of Climate Change, Sustainability and Resiliency (CCSR):

Executive Director Josh Stanbro presented the following report:

- The outreach phase of the Resilience Strategy has concluded. CCSR has engaged with over 200 various organizations and individuals via meetings and presentations, and collected the perceptions of over 2,300 individuals which will become part of the Resilience Strategy.
- CCSR has been looking to incorporate sustainability practices into the Integrated Solid Waste Management Plan, which is a 10-year plan that the Department of Environmental Services (ENV) is responsible for putting together for the State Department of Health (DOH).
- On Saturday, April 21, 2018 CCSR will partner with the Blue Planet Foundation to engage the youth in drawing a blue line in places that the ocean will reach with 3.2 feet of sea level rise. The Blue Line Project will be demonstrated in various communities.
- Through the Rockefeller Foundation's 100 Resilient Cities network, CCSR hopes to secure pro bono services to better plan the Transit Oriented-Development (TOD) areas near Iwilei, given sea level rise estimation and flood information.
- Office staff attended the North American Carbon World Conference in San Francisco recently. CCSR hopes to participate in the carbon market in California and potentially get economic awards by doing carbon sequestration.

- The City recently submitted a report that details the City's energy usage to City Council. The City spent approximately \$61 million in energy cost in the last fiscal year. CCSR is currently working on a report on water usage.
- The City has been invited to participate in a data and technology forum. CCSR recently met with staff from Shift7, a company that helps governments manage new data in technology. CCSR hopes to utilize their knowledge in optimizing data in the Resilience Strategy.

Questions and comments that followed:

- Fletcher asked who the partners are for the TOD/sea level rise project. Stanbro replied Arcadis, Deltares, and Perkins Eastman. Fletcher asked CCSR to arrange presentations and meetings for the partners to leverage their presence in Honolulu.
- Coffman asked about the status of the Climate Action Plan. Stanbro commented that the proposed budget from the administration was originally cut by the Council Budget Committee, including the City audit, Climate Action Plan, and continued research from the University of Hawai'i Coastal Data Center. The funds were later restored after the Budget Committee meeting on the Fiscal Year (FY) 2019 operating bill. CCSR will be able to start on the Climate Action Plan if the project is funded in FY 2019. Stanbro noted that the Climate Action Plan will be released at the same time as the Resilience Strategy which is in the first quarter of 2019.
- Coffman asked if the City's energy and water usage information is public. Stanbro replied that the energy usage report is currently available for the public to view, and the water usage report will be available at a later time.
- Coffman asked about a combined meeting with the City Resilience Team. Stanbro replied that the meeting could be arranged in June 2018.
- Fletcher clarified that the Blue Line Project asks participants to draw the boundary line of the exposure areas with 3.2 feet of sea level rise.

Presentation by Commissioner Charles Fletcher on Sea Level Rise: Commissioner Fletcher provided an overview of what sea level rise means for O'ahu. Highlights of the presentation:

- Key questions include: What should the sea level guidance for Honolulu look like? What is the purpose? What are the goals? What would success look like?
- The *Hawai'i Sea Level Rise Vulnerability and Adaptation Report* adopted modeling by IPCC-AR5 (2013) which projected that sea level rise will rise by one foot by mid-21st century and 3.2 feet by the end of the century. These projections do not include the potential for rapid decay of the Antarctic or Greenland ice sheets and so may under estimate potential sea level rise by the end of the century. The purpose of the report is to quantify the potential area and assets exposed to sea level rise impacts, map vulnerability zones, formulate comprehensive adaptation strategies, and plan for development outside of the sea level rise exposure area. Sea level rise will not stop at 3.2 feet so flexibility in planning is important as global warming intensifies. Modeling revealed that a critical point between 2 and 3 feet of sea level rise exists on the Oahu coast where the area impacted increases nonlinearly. A key recommendation of the report is to recognize the 3.2SLR-XA (3.2 ft sea level rise exposure area) as a hazardous area deserving special planning.
- In 2017, the National Oceanic and Atmospheric Administration (NOAA) released a report called *Global and Regional Sea Level Rise Scenarios for the United States*. The report proposes six scenarios of global mean sea level rise to the end of the century, primarily for the purpose of planning. For projects with low risk tolerance, NOAA recommends using scenarios depicting higher sea level rise.
- In 2018, NOAA released another report that presents a model of high tide flooding "Patterns and projections of high tide flooding along the U.S. coastline using a common impact threshold". A key finding is that high tide flooding will occur decades before long term permanent inundation related to global mean sea level rise.
- Using high tide flooding in Miami Beach as a guide, Fletcher applied the NOAA 2018 model to the Honolulu Tide Station. At Miami Beach, the rate of sea level rise today is 9 millimeters per year, which is a 3x increase over the rate prior to 2006. In recent years high tide flooding occurs an

average of 6 times per year; rain-induced flooding has increased by 33% and tide-induced flooding has increased by more than 400%. In 2014, the City of Miami Beach committed to spending \$400 million to replace low-lying sections of their gravity-based drainage system with a pump-based system. The change to pump-based drainage system resulted in reduced flooding events in the City of Miami Beach.

- Using the NOAA high tide flood model at the Honolulu Tide Station, flooding occurs 6 days per year by 2052 in the intermediate-low scenario, by 2038 in the intermediate scenario, by 2030 in the intermediate-high scenario, by 2026 in the high scenario, and by 2024 in the extreme scenario.
- There are three different types of high tide flooding: coastal, drainage, and groundwater. All three types of flooding could occur in different areas on O'ahu.

Questions and comments followed:

- Alegado asked if the high tide flooding scenarios were completed separately for rural areas on O'ahu since the windward area tend to be affected differently from other regions. Fletcher replied that the scenarios were completed mainly in urban Honolulu.
- Mehnert commented that strategic planning should be done with city sewer infrastructure and water mains with these scenario maps.
- Coffman commented that historic and high tide events should be linked to brown water days which will address economic and health effects.
- David Raney from the Sierra Club asked if the real question is to ascertain how much caution we should use in terms of which projection should be used. Fletcher explained that a simple guidance will not be very useful and a decision must be made based on choices, funding, and practicality.
- Kirsten Turner from Congresswoman Tulsi Gabbard's Office asked if there is coordination with emergency management agencies to evacuate or shore up important structures. Fletcher acknowledged that coordination is a huge need and that there is currently some level of coordination in post-disaster events.
- Henry Curtis from Life of the Land asked if there are monitoring devices to check contamination levels on the coastlines from current or former landfills. Fletcher replied that coastlines are monitored during specific events.

Discussion with the Department of Budget and Fiscal Services (BFS) on Matters Relating to the Activities of the Climate Change Commission: BFS Deputy Director Manuel Valbuena introduced himself and commented that sea level rise will impact operations of the City which will reflect on the City's budget.

- Coffman asked how the City's budget will be impacted and if sea level rise will affect the City's bond rating. Valbuena commented that the tax base will be affected if properties along the shoreline are impacted by flooding.
- Coffman asked about the planning cycle of capital improvement projects and Valbuena stated that capital improvement projects changes annually thus bonds are issued on an annual basis.
- Fletcher asked how BFS plans for climate change. Valbuena stated that the BFS budget reflects what the departments need in both operating and capital funds. Valbuena acknowledged that the City must begin to consider climate change impacts in its budget. When asked about bond ratings, Valbuena replied that the credit agencies rate the City's bonds, but that he personally has not had any discussions regarding climate change impacts with bond rating agencies.

Discussion Regarding the 2017 Sea Level Rise Vulnerability & Adaptation Report and Matters Relating to the Activities of the Climate Change Commission:

Board of Water Supply (BWS): Manager and Chief-Engineer Ernest Lau introduced himself and Barry Usagawa, the program administrator for the Water Resources Division of BWS. Lau gave an overview of the BWS, which is a semi-autonomous agency of the City and County of Honolulu and is sustained by ratepayers.

Usagawa gave an in-depth presentation. Highlights of the presentation:

- Long range water resource planning must account for a changing climate in addition to historical weather patterns and population growth.
- The BWS Water System serves 145 million gallons of water per day to approximately 1 million people. There is 2,100 miles of pipelines, much of which are along the coastline. There are 24 low elevation/coastal pipeline bridge crossings in the BWS' system that may be subject to coastal erosion impacts. BWS will need advice in prioritizing pipeline crossings that may be subject to climate change.
- The goal is to develop policy guidance or actions that encourage "no regrets" strategies, which means erring on the side of caution.
- Increased temperatures, which will lead to declining rainfalls, will reduce recharge to O'ahu's aquifers and that will impact future water use permit allocations. BWS may have to introduce conservation efforts to decrease water demands.
- In the most conservative statistical downscaled model, recharge could decrease by as much as 34% including 7% in Honolulu, or 38% in Pearl Harbor. Some adaptation strategies include storm water capture, water reuse in Honouliuli, Mililani, Wahiawa or Schofield, or desalination in Ewa and possibly for Honolulu.
- 76 miles of pipeline will be inundated between 2050 and 2100 based on the projected sea level rise of 3.2 feet. Most of the pipelines affected are 8-inch and 12-inch pipelines. Those pipelines need to be replaced and the bridge crossings will need to be hardened or relocated. Coastal roadways will have to be hardened or relocated.

Questions or comments that followed:

- Coffman asked how the Climate Change Commission may help BWS. Lau replied that education and creating a common understanding and objectives for everyone is an important step. Lau added that coordination with state agencies is also important. Lau also commented that action must be taken now because the process to start implementing plans may take several years.

Department of Environmental Services (ENV): Director Lori Kahikina and Deputy Director Tim Houghton introduced themselves.

- Kahikina commented that Miami should be an example for Honolulu to follow in terms of their storm water system. Houghton added that Honolulu has 2,100 miles of pipelines, nine treatment plants at various levels of elevation and 70 pump stations that are generally close to the shoreline.
- Houghton commented that the bond raters have been satisfied with ENV's responses to how ENV has planned regarding climate change impacts, and that ENV is rated separately from the City because they have their own revenue source. The BWS is also rated separately because they have their own revenue source.
- Alegado asked about onsite disposal system in the Koolauloa and Koolaupoko areas. Houghton responded that ENV is not averse to onsite disposal systems but that it depends on what is best for the community and each individual household.
- Coffman asked about moving away from gravity-based systems to pump-based systems. Kahikina responded that ENV do not prefer pump-based systems because the vulnerability of the system is the pump stations. The 2016 sewage overflow by Beachwalk was caused by failure of a pump station force main system.
- Fletcher asked if there is a well on site at Sand Island that could be used to check the level of groundwater table. Houghton will follow up.
- Kahikina commented that there are parts of the consent decree that ENV must follow that contradicts with each other. For example, implementation of an improvement may have a small positive effect on the environment regarding wastewater, but a bigger adverse impact on greenhouse gas.

Department of Facility Maintenance (DFM): Director Ross Sasamura introduced himself.

- Sasamura commented that DFM is responsible for a majority of city facilities, excluding Department of Parks and Recreation (DPR) properties. Sasamura added that the City does not construct the drainage system, rather they are constructed or dedicated by developers.
- Fletcher commented that Miami Beach do not have watersheds whereas Honolulu does. Sasamura agreed and added that the current drainage system could be capped and used to temporarily store non-potable storm water. Lau commented that there are many uses for non-potable water such as irrigation and landscaping.
- Alegado suggested using canal systems. Sasamura commented that it would be difficult to use canal systems because parts of the canal may be owned privately or by the state.

University of Hawai'i Sea Grant College Program (UH Sea Grant): Bradley Romine introduced himself.

- Romine stated that UH Sea Grant was invited to Hawaii Department of Transportation's (HDOT) transportation advisory committee as part of an effort to share about the sea level rise report. UH Sea Grant was also asked to provide a white paper on potential sea level rise impacts, which will closely be aligned with the sea level rise report. UH Sea Grant will also develop a guidance on post-disaster rebuilding.

Questions and comments that followed:

- Fletcher asked which areas the white paper will focus on, and Romine replied the white paper will focus on the primary urban center which is from Diamond Head to the middle of Pearl Harbor area.
- Fletcher commented that he has been getting comments about the effects of sea level rise in Kaka'ako where a lot of residential development is happening. Fletcher commented that the Climate Change Commission should ask the Hawai'i Community Development Authority (HCDA) to present before the Climate Change Commission.

Discussion and Action on the Adoption of Rules of Practice and Procedure of the Climate Change Commission: Courtney Sue-Ako, the Commission's Deputy Corporation Counsel, stated that a copy of the rules and practice was provided at the last meeting.

Alegado moved and Keener seconded the motion to adopt the Rules of Practice and Procedures of the Climate Change Commission (**AYE:** Alegado, Coffman, Fletcher, Keener, Mehnert; **NAY:** None; **ABSTAIN:** None).

Public Input for Matters Not on the Agenda:

- Nick Hicks commented that the City should look at the cost estimate of mitigation efforts and the damage estimate of not implementing the mitigation efforts.
- Henry Curtis noted that the king tide impacts should also be taken into consideration. Fletcher replied that high tide flooding is king tide flooding which is already included in what is considered the exposure area.
- Julius Fischer from Hawai'i Green Growth commented that the Ala Wai Watershed is a good pilot project for resilience planning. Alegado commented that stakeholder-driven planning is important for community engagement.

Next Meeting: The next meeting is tentatively scheduled for Tuesday, May 8, 2018.

Announcements: Coffman commented that ground transportation was a major topic at the last State Climate Commission meeting and recommended that the Climate Change Commission also discuss this at their next meeting.

Adjournment: The meeting is adjourned at 5:45 p.m.