Honolulu Board of Water Supply
Stakeholder Advisory Group
Meeting 33 Thursday, January 16, 2020 4:00 – 6:30 pm
Neal S. Blaisdell Center, Hawaii Suites
777 Ward Avenue, Honolulu, Hi.

Meeting Notes

PURPOSE AND ORGANIZATION OF MEETING NOTES

The purpose of these notes is to provide an overview of the Board of Water Supply (BWS) Stakeholder Advisory Group meeting. They are not intended as a transcript or as minutes. Major points of the presentations are summarized herein, primarily for context. Copies of presentation materials were provided to all participants and are available on the BWS website. Participants made many comments and asked many questions during the meeting. These are paraphrased to be more concise.

ATTENDEES

There were 13 stakeholders present, in addition to BWS and CDM Smith staff and members of the public. The stakeholders represent diverse interests and communities island-wide.

The following Stakeholders Advisory Group members attended:

Mark Fox	Environment
Bob Leinau	Resident of Council District 2
Helen Nakano	Resident of Council District 5
Robbie Nicholas	Resident of Council District 3
Dean Okimoto	Nalo Farms
Christine Olah	AARP
Dick Poirier	Resident of Council District 9
Elizabeth Reilly	Resident of Council District 4
John Reppun	KEY Project
Cynthia Rezentes	Resident of Council District 1
Chace Shigemasa	Resident of Council District 7
Walter Thoemmes	Kamehameha Schools
Guy Yamamoto	YHB Hawaii

WELCOME

Dave Ebersold, meeting facilitator and Vice President of CDM Smith, welcomed the group and outlined the meeting objectives:

- Receive updates regarding the BWS
- Accept notes from Stakeholder Advisory Group meetings #31 and #32
- Hear about coastal erosion from expert Dolan Eversole, especially in Waikiki
- Hear about lessons learned in Puerto Rico following Hurricanes Irma and Maria
- Reach a point of a consensus recommendation on the WSFC

Dave explained that he must change the order of presentations to accommodate schedules and thanked everyone for understanding.

PUBLIC COMMENT: None

BWS UPDATES

Dave invited Erwin Kawata, BWS Water Quality Program Administrator, to give the updates on recent BWS activities.

Erwin thanked the stakeholders and provided updates about recent activity related to the Navy's fuel storage tanks at Red Hill.

He reported that the US. Environmental Protection Agency (EPA) and Department of Health held a public meeting in November 2019 to receive comments on the Navy's selection of the single-wall storage tanks alternative. Erwin said that a decision will potentially be made by March 2020.

He also reported that the Navy has submitted its application to the Department of Health (DOH) for an Underground Storage Tank (UST) permit to operate the Red Hill tanks. The application is currently under review and public hearings were held in December 2019. BWS communicated its concerns about the tanks' ability to meet the requirements of the regulations and statutes. The DOH is also proposing changes to the state UST regulation that includes removing a provision that allows permit applications to be automatically approved 180 days after being submitted to DOH if DOH takes no action. That particular change has been approved by the DOH director and the provision has since been removed from the regulations. BWS will update the Stakeholder Advisory Group as soon more news becomes available.

Comment: Erwin should give presentations to people in AARP, the Honolulu Board of Realtors, people who run the hotels, the Chamber of Commerce, and other people who have power and influence. These leaders in our community will want to know how the situation at Red Hill may negatively impact their businesses and profits.

COASTAL EROSION OF WAIKIKI BEACH

Dave introduced Dolan Eversole to talk about coastal erosion in Waikiki. Dolan is a Coastal Process Specialist who currently serves as the Waikiki Beach Management Coordinator through the UH Sea Grant Program in partnership with the Waikiki Beach Special Improvement District Association (WBSIDA).

The WBSIDA is a nonprofit group that was set up five years ago with City Council approval. The district extends from Kahala to Pearl Harbor, where beaches are particularly vulnerable to sea level rise and coastal erosion. WBSIDA is a public/private partnership with a cost-share agreement to develop and facilitate beach improvement projects. Commercial properties in Waikiki pay a special assessment every 6 months, based on the assessed value of the commercial property. The University of Hawaii (UH), Department of Land and Natural Resources (DLNR), and the City and County of Honolulu are public partners in the cost-share agreement that generated nearly $1 million as of 2019.

The beautiful Waikiki beaches so highly appreciated by visitors are not natural but were created in the 1920s as a highly engineered and altered environment. WBSIDA is addressing issues of beach loss, inundation at high tide, and deterioration of 70-year old infrastructure by developing a Beach Management Plan for Waikiki. The first draft of this living document was released last year, and like the BWS's Water Master Plan, and will be updated over time.

According to a 2018 Waikiki Beach Economic Valuation Study, Waikiki Beach generates about $2 billion a year. When storm mitigation benefits, along with ecosystem and marine nearshore resources are included, that value is likely closer to $10 billion a year.

Dolan said a Waikiki Beach Community Advisory Committee is made up of 33 representatives with diverse perspectives. They coordinate and address education and outreach, future beach management projects, and help identify what is important to preserve and protect. He also talked about surveys to learn about visitors' perceptions of value and quality associated with beach infrastructure and environmental quality. The Advisory Committee ranked seven Waikiki Beach littoral cells to prioritize coastal erosion project efforts. The Royal Hawaiian Cell was top ranked, closely followed by the Halekulani and Kuhio cells. The committee identified erosion, infrastructure and public safety as top priorities. It does not want new structures in the beach and ocean and said Waikiki should remain an open beach environment with lots of recreational activities. The State legislature earmarked $10 million in CIP funding for four Waikiki Beach Improvements. WBSIDA will provide a $3 million match.

Beach nourishment in Waikiki in the future could have a barge offshore pumping sand into a basin on the beach. The sand would be dewatered and hauled by truck to wherever it is needed. A few years ago, 300,000 cubic yards of sand were placed on Waikiki Beach, but the current volume has dropped to about 150,000 cubic yards. Current thinking is that it will be necessary to continue putting sand back on the beach on a regular basis.

Two projects of particular importance are the $3.5 million Royal Hawaiian Groin Project and the $635,000 Kuhio Beach sandbag groin project, and the latter was completed in November 2019. These are the first construction projects to take place on Waikiki beaches in 47 years. The Royal Hawaiian groin interfaces between the Sheraton and Royal Hawaiian hotels. Different designs were considered, including L-shaped and T-Head groins, and keeping a concrete wall.

Dolan said that future beach nourishment efforts are expected to be smaller in scale, and that it may be possible to scale down to a catamaran-sized system that can extract sand closer to shore in shallower waters.

Projects have been identified for Fort DeRussy, Halekulani, Waikiki Beach maintenance with sand nourishment at the Royal Hawaiian, and Kuhio Beach swim basin improvements. Waikiki coastal

erosion efforts focus on what is important to the community. Retaining access along the shoreline is critically important, as well as maintaining access and avoiding negative impacts to surf sites.

Q: Is it fair to call it erosion when the sand moves? Could you elaborate on the different types of erosion?
A: Coastal erosion is what you see in the news, where palm trees are falling and the land itself is being eroded by the ocean and in a chronic process. Along the Windward side, this is happening a little each year. Or erosion can happen episodically, like Sunset Beach, which is generally stable except during these large events. Chronically eroding shorelines have been documented for at least 15 years but the rate of erosion is increasing. There are only a couple of places in the state that are not eroding. One of those is Kailua beach. Sand for our beaches in Hawaii comes entirely from the reef and ocean. Our reefs aren't as healthy as they used to be, so they're not producing as much sand as they have in the past.

We looked at Kuhio Beach to see if we could try to quantify how much sand is "walking across the street" (foot traffic), and it is a significant amount. We have 10 million visitors a year and about 6 million of them visit Waikiki. At least half of them go to the beach and leave with a bit of sand on their feet. One way to try to measure it is at the showers at Kuhio beach that have sump. Estimates were that 5,000 - 10,000 cubic yards a year were cleared out, just from Waikiki showers.

Sea level rise is the major driver of the increase in erosion that we're seeing.

Q: Is there a cumulative aspect of reduced pH?
A: If some of the worst case scenarios are accurate, we could be looking at the dissolution of coral reefs in the next hundred years. Increasing acidification, which will result in more challenging conditions for anything that precipitates a calcium carbonate shell. That does not mean that coral reefs are going to immediately die, but it's an added stressor and will be increasingly difficult for coral reefs to grow overtime. A research group on Coconut Island, the UH Hawaii Institute of Marine Biology, has been researching where native corals are most tolerant to high temperature and acidity. They've found a number of local species that are more tolerant, and they're trying to propagate those. Only the strongest will survive but research that shows that some corals can tolerate it.

Q: In the Kuhio cell, there's a barricade. How effective is having that type of barricade, and have we explored doing that same thing in the Royal Hawaiian cell but not affecting the channel? How effective is that compared to an L-shaped barrier?
A: The barricade is an example of a breakwater. One part sticks up and another part is about a foot underwater. Breakwaters are not perfect. Their design, which dates back to the 1950s, doesn't meet modern engineering standards.

Would another type of breakwater system work better in the Royal Hawaiian cell? Perhaps. One of the complications is there's a lot of recreational activity and ingress/egress through the channels is really critically important. Our advisory committee told us not to bring new structures.
T-Head groins are much less intrusive in that they're not taking as much real estate out in the ocean itself. We may look at structures in the Royal Hawaiian cell later on in the future if we desire to maintain a beach in Waikiki. At some point we won't be able to put enough sand on the beach to keep up with sea level rise. Dolan said he thinks that in 50 years we won't be able to maintain what we consider an open beach in Waikiki. Beaches will look a lot different and possibly heavily engineered "perched beaches," up and out of the reach of the waves.

Q: Can you say anything about submerged offshore structures in combination with an artificial reef? Or creating a structure that coral might settle on, particularly if you're getting super corals out of Coconut Island? Waikiki probably wouldn't be the right place, not wanting to affect surf breaks. But maybe at Hauula, where you're getting severe erosion, could there be places that those could be functional for addressing wave energy, and affecting movement of sand?
A: We focused on the beach, the shoreline, and engineering based solutions, but it's all interconnected. There is a much wider recognition and understanding of the value of preserving the connection between the beach and water quality and reef health. The Kapahulu groin is a storm drain so we are looking to see if we can treat that water before it enters that nearshore environment. We are looking at multipurpose benefits. The idea of promoting reef growth and health is essential, particularly in a place like Waikiki, but it has applications all over the world. The corals being produced at Coconut Island are not actually super corals in that they're not GMO'ed. They're naturally-occurring native species that being propagated as a coral nursery, growing the strongest coral. This could be a method to promote reef health in Waikiki. We are working with researchers at Coconut Island to see if they would be willing to try a pilot program, perhaps in partnership with the Waikiki Aquarium, because the area just in front of the aquarium is a marine life protected area.

Q: You indicated that steps to maintain the beach will be effective for another 50 years, but I didn't hear you mention approaching it from a land use standpoint, as in "retreat". Is retreat ever discussed amongst your team?
A: Yes. I recently entered a PhD program at the UH in the Department of Urban and Regional Planning and my dissertation will be on land use in Waikiki to adapt to climate change. Waikiki is a high value area. One of the key aspects of research is focused on the groundwater table and there are some analogies to what's happening in Miami Beach. Hawaii and Miami Beach share a similar geology of porous limestone material. We can keep building the sea walls and beach in attempt to keep the ocean out but it's still going to come up from underneath us. You can accommodate sea level rise through allowing places to flood or mitigate it by pumping down the water table but that will only work for so long. Managed retreat is when you slowly start to move away from these hazard prone areas, which is the long-term inevitable reality. I work very closely with the hotel industry in Waikiki, and there's a wide recognition of this problem but no seriously talk about managed retreat in Waikiki yet. It's a viable solution in more rural settings like North Shore or the Windward side. In Waikiki, we'll explore all those other options until it's not cost effective to do so.

Q: We discuss putting in more trees for climate change, reducing heat and everything else. Have you considered growing limu to hold the sand from going in and out? I'm just wondering whether or not that would be an option to look to help mitigate some of these concerns by putting in limu itself? It's a vegetative growth that you could propagate and put in that area to try to hold some of that down.
A: We haven't talked about restoring the limu beds in a place like Waikiki, but this is a great question. It has some merit as part of the broader ecosystem restoration concept. Corals and limu beds are part of it. There's actually a marine plant called a halimeda, which is a source of sand. Part of its leaf is a calcium carbonate leaf. There are whole halimeda beds located off Kaanapali on Maui. As part of a broader ecosystem restoration effort, exploring all those restoration ideas are worthy.

I don't know the merits about limu beds in stabilizing sand beaches and how they interact with sand beaches. I have come across records indicating that Waikiki used to be a thriving limu area. It's been completely decimated now for variety of reasons, but it might be worth exploring that in small steps.

We could do some pilot projects and see how that works. The Waikiki Aquarium might be a good partner in something like that.

ACCEPTANCE OF NOTES FROM MEETINGS 31 and 32

The group accepted notes from the prior two meetings.

WATER SYSTEMS FACILITIES CHARGE

Dave told stakeholders that BWS management and Board appreciate their input and that they pay attention to the feedback the group provides. He recognized the Chair of the Board, Bryan Andaya, who stepped in to listen to the discussion about the Water System Facilities Charge (WSFC).

Dave reviewed WSFC information provided to-date and presented a snapshot of the outcomes of analyses and impacts on different BWS customer classes on the BWS water system.

- The WSFC for single family residential would go up 18.4%.
- For multi-unit low-rise, it would go up 6 ½ %.
- For multi-unit high-rise, it would go up 7.8%.
- For non-residential customers that have fewer than 50 fixture units, the WSFC would actually go down 40%.
- For non-residential with greater than 50 fixture units, it would increase, and the percentage of increases vary by the number of fixture units.
- For Ag customers, we looked at a different approach in an attempt to reduce the impacts of potential increases in the WSFC.

Dave then reviewed scenarios for each of these WSFC categories in more detail.

For single family residential, the current WSFC for someone who has 20 fixture units (also the minimum charge) – typically this is a three bedroom, two bath house – is $3,707 and under the calculations we've done, it would increase to $4,389.

If the single family residence has more fixture units -- maybe it has a larger yard, an extra bathroom, and around 25 fixture units – the WSFC is currently $4,633 and that would go up to $5,486.

Q: After re-reviewing this, my concern is about all of the challenges regarding the costs of housing. There are so many families that have a difficult time even being able to get into housing. As we're increasing the cost of housing with this increased WSFC, I'm just having a little more difficult time especially for our lower income families trying to get into housing. Whether it's new or existing, slapping another 18% on top of everything is going to make housing costs even more difficult for people to get into. I know we can't necessarily separate out increases by affordable housing versus workforce housing versus guys with a gazillion dollar houses. But I'm just wondering if there is something that we need to re-look at here, considering the crisis that we're in?

A: When the water rates were adopted, the BWS also adopted a policy to waive the WSFC for up to 500 affordable housing units per year. They actually don't pay anything for the WSFC if they're building units that are qualified as affordable or low-income housing by DPP or others. There's also a waiver of the WSFC for development of homeless housing units. The BWS has granted a lot of waivers already.

Then we have the philosophical question about who covers the cost? We know we have to make improvements to the water system to accommodate new housing units. Should that cost be borne by the developer of those housing units, which as you point out, gets passed on to the buyer? Or is that a cost that we spread across the entire rate base and all the rate payers subsidize it? Those are the choices that we have to make and the issues around that.

Q: Let me just clarify what I heard: for low income, affordable income housing, there is no service fee charge (WSFC)?
A: That's correct. The Board adopted that policy to waive it for up to 500 hundred units a year.

Q: So, after BWS waives 500 units a year, the developers would get hit with this?
A: Yes. The number of 500 units was based on planning projections from DPP and reflected the number of anticipated units.

Q: Who knows about that waiver? DPP? Do the developers know about this 500 units a year waiver? I know I am asking this question a little late, but how did we communicate this information to make sure that waivers go to those projects that need it?
A: We've communicated about the waiver with DPP and the Small Business Regulatory Review Board for the State of Hawaii and to many others. 178 have already applied for it. We think we're going to get very close to the 500 waivers this year. We also let other developers know, including members of our Stakeholder Advisory Group, like Gladys Marrone. BWS met with Walter Thoemmes yesterday and shared the information with him and so Kamehameha Schools will definitely be taking advantage of it. The information is out there. People know about it and are starting to take advantage of it.

Comment: I would ask the BWS to consider raising that cap for waivers, mainly because of the sense of urgency being put on by the legislature and the city. Right now, the city requires 30% of a development to be affordable. If 500 units is supposed to reflect 30% of affordable housing, we're not going to be building the 25-30,000 new homes we need in five years. At the rate that affordable housing is being funded and that low-income tax credits are being funded and that the state is really pushing, we're not going to meet that by building 1,600 homes a year.

Just by simple math it would suggest that, if all of the considerable efforts of the community to build more housing is successful, we should be developing 5,000-6,000 units a year. So with affordable housing being about 30% of that, you will tap out waivers for the 500 units pretty quickly.

A: Our Board Chair had expressed that BWS wants to be as flexible as possible. The Manager also has some discretion to lift that cap just a bit. Dave said that suggestion will definitely be taken back to the BWS Board.

Barry added that BWS talked with DPP when we were trying to determine what number of waivers to recommend to the Board, and they said 500 units. In 2½ years, we haven't exceeded 500 yet. We'll monitor it. Dave asked if everyone felt that it's important to track the number of units and accommodate waivers for affordable housing? The group indicated it agreed.

Q: Shouldn't something be tagged on to that waiver for affordable housing so that in building that affordable housing, there are really significant steps taken towards water conservation using non-

potable water for the right purposes? Add some incentives so that we're building better water systems.
A: Great point. Affordable housing is generally minimalistic. Affordable units typically have one bath, one kitchen and something like 12 fixture units and typically they're high-rises. There aren't many affordable units of single family residential housing. The affordable units have to sell at a lower cost, so developers have to be aware of the economics. Affordable housing typically doesn't have too much outdoor irrigation, and it's built to meet the latest plumbing codes. They're generally smaller units and very efficient.

Barry added that BWS has a direct install conservation program to replace the shower heads and the faucets in low income housing free to help people at this income level afford the renovations. The program provides a water savings benefit. He said he will see if there are other opportunities to offer these incentives, probably building-by-building, project-by-project.

Q: Would BWS consider requiring some kind of rain catchments on the affordable housing, for lawns and toilets and that type of thing?
A: The City is working on forming a new stormwater utility which would incentivize more green infrastructure for high-rises and single family residential. Green roofs are a possibility. We have a rain barrel rebate. We want to see how these ideas actually mature. If you are going to capture stormwater and store it on site, the water can be used for irrigation through rain barrels. If we can combine the rain barrel rebate with these green infrastructure improvements, and if the City ends up adopting that new stormwater utility, there'll be more opportunities.

Q: The 500 units within the affordable housing program that are considered for waivers for the BWS WSFC are only the units that are for sale. So just 500 new homeowners get the benefit of the waived WSFC. But shouldn't we address the problem of high cost of living as it applies to people who rent homes? If they have to pay this 18.4% increase, will it be passed down from the owner of the unit to the renter? It is an increase to cost of living for our renting community if the owners opt to charge them the cost of the WSFC. What can renters do to recoup this cost or be part of this group of individuals that can get a waiver?
A: BWS extended the waivers just to homeless and affordable housing. This included having to meet a certain lower income as defined by DPP. Renters could be wealthy. So, we only looked at homeowners so we could offer something helpful.

Q: Is there a way to phase individual payments?
A: No. And the reason the answer is no is because of Hawaii Revised Statutes. It says that the payment has to be made all at one time at the time the connection is made.

Q: So, you pay to connect to the water system?
A: Yes, that is correct.

Dave asked the group, apart from revisiting the number of waivers, did everyone think the WSFC for single-family residential customers should be phased in over a period of 2-3 years or all at once?

Comment: I think phasing in should increase at 6% per year for three years, but not longer.

Comment: When we had that conversation about phasing in the Ag WSFC, that seemed to work and it was digestible, so I agree to phasing-in here.

Dave continued with the WSFC for multi-unit residential.

For multi-unit low-rises, which have up to three living stories, the WSFC would increase by 6.5%. If it's a development with 20 fixture units, they're currently paying $5,400 and that would go up to about %5,700. With a low-rise complex that has 500 fixture units, which is a lot of fixture units, they're currently paying $135,000 and that will go up to about $144,500. These are not big increases in comparison.

Comment: For these I wouldn't worry so much about phasing them. It would seem like doing this increase in the WSFC in one shot or two at the most would be fine.

A: Barry added that, with low flow and more efficient fixtures, the fixture unit curve goes down. If you want to reduce the impact fee, then don't put as many fixtures in and use high efficiency plumbing. You know you don't need to irrigate with potable water. If you can use non-potable water for irrigation, then you can reduce your impact fee. There are ways to minimize the amount of the impact fee.

Dave continued with the WSFC for multi-unit high-rises.

For the **WSFC for multi-unit high-rises**, which have more than three stories, the WSFC would increase 7.8%. If the building has 20 fixture units, the WSFC is currently $4,082 and that will go up to $4,400. At 1,000 fixture units, the WSFC is currently $204,000, which would go up to about $220,000 with the 7.8% increase.

Q: I'm looking at this on just a fixture basis. The WSFC for a single family residential with 20 or less fixtures units is $4,389. If I have a multi-unit high-rise with 20 or less fixture units, it's $4,399. I'm just wondering if that WSFC should not be a little bit higher because service lines are larger going into the area for a multi-unit high-rise?
A: A fixture unit is a measure of the amount of water that's used and so what you're seeing is the cost is about the same per fixture unit for each type of housing. A toilet is 1.5 fixture units and it doesn't matter if a toilet is in an apartment or a single family residence, it's getting used about the same way.

Q: I'm looking at the environment of a single family home and comparing the service feed for it to the service feed for a multi-unit high-rise, which would be larger even though the water usage may be the same. But we're taking care of that with the size of the meter, right?
A: This isn't about the size of the meter. This is about what is the capacity demand on the water system – meaning, how much water is getting used.

Comment: If I look at the multi-unit low-rise with 100 fixture units or 500 fixture units, the WSFC is $144,000, but for a multi-unit high-rise, it's $109,000. So we're $30,000 cheaper if it's a multi-unit high-rise.
A: Right. That reflects the outdoor irrigation that is generally associated with multi-unit low-rise as compared to high-rise, which is the reason for the difference.

Comment: The assumption is that a multi-unit low-rise will have more landscaping.
A: Yes. What we do is we look at all the multi-unit low- rise developments that are currently in BWS customer base, and we look at how much water they're using per fixture unit and then we look at the same thing for how much water per fixture unit is being used in multi-unit high-rise. By actually looking at BWS's billing data, we can see those differences. Barry added that another way to look at it is how much water you are using a day. A multi-unit low-rise uses about 300 gallons per unit per day. A multi-unit high-rise uses about 200 gallons per unit per day. So, per unit, they use less water the higher you go, so there is less impact on the system.

Q: Could the amount of low-rise units that you have in your sample and the amount of high-rise units you have in your sample affect the way you look at the numbers as well? We don't have as many high-rises as we do low-rises. In many of the high-rises, we have people who may not necessarily be in that unit 12 months out of the year. That may affect the water usage of that unit. Have we explored that because it is a big difference? Maybe we should also be looking at how low-rises that haven't retrofitted the high-efficiency type of fixtures could also be affecting or skewing the sample?
A: We actually looked at the entire dataset, not a sample. We looked at the entire billing records and we can't account for vacancy rates. The fact of that matter is that the building that's served by that service connection is using less water. If vacancy is a factor of that, then that's a function of the water used, and we still have the impact of that development on the water system.

Q: But shouldn't we keep those differences in mind when we're increasing rates – that water use could be affected and therefore now we have higher fees for low-rises compared to high-rises?
A: True. There may be some influence, but there's really no way for the BWS to take vacancies into account.

Comment: I wonder about that though. I agree about high-rises, but others are not fully occupied. Just like the office buildings downtown, they're not fully occupied. We did a whole sample of selected high-rise units in Kakaako and measured the water used. But we had no idea how many units are vacant, and vacancy fluctuates. Is it efficient to separate these two categories (low-rise, high-rise) rather than just having one category for all multi-unit?
A: They use water very differently in high-rises. They use less water per unit because there's less land area compared to townhouses. Our conservation efforts with the sub meters and rebates are focused on multi-unit low-rises because they have a lot of irrigation. If we can minimize the irrigation demand, we can bring their demand down. But understanding and breaking down all this data is difficult.

Dave continued with the WSFC for non-residential customers.

For the **WSFC for non-residential customers**, Dave showed examples of varying numbers of fixture units and said if you have 50 fixture units or less, the WSFC will have a 40% drop. The reason is that, back when BWS set this charge in 1993, it was believed that non-residential customers with 50 fixture units or less were using a lot more water per fixture unit than non-residential with more fixture units.

When we look at all the data now, 25 years later, we don't see that differentiation in usage so our recommendation, from a technical perspective, is: If you can't substantiate that differential with the data, then we shouldn't maintain it. In fact, it wouldn't be legal to charge somebody more than the impact they're putting on the system so the adjustment would be to take those charges with folks with 50 fixture units and less and decrease them; the charges would drop by 40%.

For comparisons, a fast food restaurant uses about 20 fixture units; a mid-sized industrial facility has about 112 fixture units; a large resort hotel has about 3,500 fixture units. You get the idea of the types of businesses that we're talking about with these different scales of fixture units. At 200 fixture units, let's say you're a medium sized shopping center, you currently would pay $64,000 to connect. That would go up to $74,000. At 1000 fixture units, it may be a mid-size hotel, they would pay $240,000 currently and that would go up to $370,000.

Dave confirmed the group was in concurrence with the WSFC for non-residential.

He then continued with the WSFC for Ag.

He said that we talked about the **WSFC for agriculture** last meeting. When we initially started looking at this, the WSFC for Ag was going to have really large increases. We've been working hard to figure out how to reduce those impacts to agricultural customers. As a reminder, about 10 new Ag customers connect to the BWS system every year. Dave said he would summarize what we talked about last meeting and then focus on the cost element.

Currently an Ag customer with a ¾ inch meter pays about 25% of the full charge. If that customer has a two-inch meter, they pay about 45% of the full charge. We thought that imbalance doesn't make a lot of sense. What does make sense is to pay the same percentage of the full charge regardless of meter size. Correcting that imbalance is one of the first steps of developing the WSFC for agriculture.

Another step is phasing in these changes over multiple years to minimize the impacts to new ag customers. Encouraging water conservation is another. For example, require someone connecting to the system for the first time to have a Water Use Plan so that we know – based on the acreage they have, the types of crops, where they're located on the island, the elevation of their land – that they are they getting the right size meter for their operations rather than buying the largest meter that they can afford. Some buy the largest meter they can afford and that has the potential consequence of setting up that farm for a lifetime of inefficient water use.

BWS is developing an agricultural water conservation plan and partnering with other ag organizations to encourage water conservation for its ag customers. And certainly, BWS will continue to pursue supplemental funding from the legislature or other sources to offset these costs.

In five years, BWS will reevaluate the effectiveness of these efforts related to the WSFC for agriculture customers.

Dave reviewed the costs of the WSFC to future ag customers at different rates of phasing in increases. He said that, at the last meeting, the general consensus was that a 3% annual increase to recover 60% of the Ag WSFC was too low. There was some suggestion that a 10% annual increase was more reasonable. There was not a quorum and we didn't request any recommendation.

Dave explained that since that time, BWS met with a couple of the stakeholders who are particularly involved in the agricultural community. They met with Elizabeth Reilly, Dean Okimoto, and Walter Thoemmes. He asked these stakeholders if they might have some comments about what was talked about in those discussions that they might want to share with the group.

Elizabeth Reilly: It was a good presentation at the meeting with BWS and we recognize that a phasing in over five years at 10% per year would be doable. But the thing that we had inquired about and asked for was the educational component. That is a very important piece. For current Ag customers and those who are still up and coming, there's got to be that connectivity in letting them know. A lot of land is sitting fallow right now and people are planning. So, it's important for the BWS to make sure that communication gets out there.

We talked about partners like the Soil Conservation Districts and NRCS and all those folks, and felt that it would be really important to start that communication piece. Regarding the Water Use Plan component that was going to be built in for the new Ag customers, not everybody knows what that is or how to do that. We talked little bit about developing a template, and hopefully getting some of these partners to help those in Ag learn how to put a document like that together.

Dean Okimoto: Since then, I met with the Farm Bureau and checked on the status of Ag. Overall, farmers are leaving the industry in droves. The guys who are my age, a lot of them have already left the industry. It's because they can't make a living. Climate change and food safety regulations are making it harder for smaller farmers to make ends meet. I couldn't.

Going forward, most of Ag will be bigger Ag. Those are things that you've got to think about. When you're going to put in a two-inch meter, that's for a bigger operation with a big area of land that it's going to irrigate.

What I see coming is a lot of new technology being used by Ag people. They're looking for the technology. I just had a meeting with a Korean company that wanted to do 20 acres of greenhouses, which is millions of dollars. Those are the types of operations that are looking to come to Hawaii. I don't really have that much of a problem with it (the Ag WSFC). Overall, the bigger companies will be able to really afford some of these costs. It's the smaller guys that are going to be getting the three-quarter inch meters that are probably going to be more affected.

You're not going to see as much new Ag unless they have help, like leasing land from Kamehameha Schools, or those types of things. That's the type of help they need.

The other part is that the State needs to really step up and pitch in to help Ag. I just gave an interview for *Honolulu Magazine* and they asked me whether I saw Ag increasing or decreasing. I told them when Governor Ige said that by 2020 we're going to double Ag, the State didn't know how much Ag there was. But I venture to guess that there is less Ag today than there was when Governor Ige made that statement. That's the sad part.

So, should we be looking at growing more? Absolutely. Can we? That's the question. We have to provide the support that's needed overall, including these types of water charges. If people want Ag and more Ag, then we have to go to the legislature, start putting some pressure on them to support it.

Dave thanked Dean and asked Walter if he has anything to add?

Walter Thoemmes: We recognize these rates have not changed in a very long time and they really apply to roughly about 10 new farmers per year. As Dean mentioned, there are people that can pay

and these are bigger folks coming in and so they should. We should try to help the smaller farmers that want to start up as part of what we try to do as well. So, we were supportive of the 10% per year WSFC increase, recognizing the support that the smaller farmers need. We're all for business plans, and Water Use Plans are part of it. I recognize it's a complex thing, but costs go up for everybody, even for the BWS. So, we can support it.

Dean Okimoto: To be a farmer you've got to have land and water and maybe a really good bank loan. That goes to my point of what would a banker say? If a guy says, I got a great idea; I want to grow X; the land is going to cost X; water development is going to cost X; etc. You turn the crank and either you're in business or aren't. So, cost of water could be one of the things that breaks your back. It's one of the critical features. I would hate to think that water was a reason why they couldn't go into business.

I don't think the water should be given away, but I do think that the legislature, if they really want to have Ag over here, they really need to come to the party.

Dave asked the group if there is any more information that it needed or would want to be able to make a recommendation to BWS's Board about the water system facilities charge or is the group at the point of being able to make some type of recommendation to them?

Q: Could you just clarify that the rollout would be 2021? Other than that, I think we've got plenty of information. We've had a good communication exchange.
A: It's a great question. If the group were to make a recommendation to BWS's Board tonight, then we would look at taking it to the Permitted Interaction Group, which is the same subset of their Board that we worked with during the water rates process; get their input; and prepare a draft report on the water system facilities charge. Then we would give an update to the BWS Board about the process at the February 2020 meeting. That might lead us into March and requesting the Board to authorize a public outreach process that would include all the elements that we've been talking about: the education program, the water use plans, the phasing in periods, all those things. We would start that customer outreach period in April and have it going all the way through the year.

We might look at going to the Small Business Regulatory Review Board in September. That's a requirement for any new regulation or rate that affects small businesses. We did it with the water rates as you may recall. That would give plenty of time to do a 30-day notice for a public hearing and BWS's Board to make a decision whether the proposed WSFC charges look good or not. Assuming that they approved those rates in October, then we can do the Small Business Regulatory Review Board follow up, begin staff training on the implementation of the new water system facilities charge. We could get all that done before the holidays so that we're not doing public meetings and public outreach through Thanksgiving and Christmas and New Years and they could be effective January 1st, 2021. That's a draft schedule subject to change, but that's a reasonable layout.

Comment: Just an FYI, I think you lose your audience in November.
A: That's why we are looking at trying to get the decision making ahead of that.

Q: Is there any way to address the small business in a recommendation now by creating some type of financial assistance or a waiver type program for smaller farmers rather than the larger farmers? Is there any way to work that into this recommendation as well?
A: On top of the 40% subsidy and the five-year phase in limitation to a per 10% increase per year?

Comment: I just don't want this to hinder new farming.

Dave asked Dean, Walter, and Elizabeth if they have any perceptions on the impact of the proposed Ag WSFC costs? Would they keep somebody from going into business?

Comment: This provides an "urgency factor". If you're sitting on the decision about starting up or expanding a farm, planning it but just not doing it, the increasing Ag WSFC may get you to go ahead and do it now. I don't think for one-inch or three-quarter inch Ag customers that the WSFC will prohibit them from going into business. It's my hope that these individuals that we're looking at and we care about, react to the urgency factor and recognize the need to do it now so that these fallow farmlands are put into production.

Comment: Overall these charges are not what are going to really hinder a small farmer in the long run. It is really the food safety issues and the processing costs that are going to hinder them to a certain extent. Those are the things that will inhibit a small farmer from surviving. Farmers have a reputation of being independent people. The farmers going forward, the younger people, I tell them, if you take that attitude and go into agriculture, you're not going to survive. I think the only way you're going to be able to survive going forward as a small farmer is in cooperatives with other farmers. Those are the things that have to be developed for the smaller farmers to survive because they're going to have to share facilities to process and clean their produce. That's why institutions like Kamehameha Schools are crucial for small farmers.

Comment: Based on everything I've heard, I'd like to put the motion on the floor that says we accept the proposal to do a 10% annual increase for the Ag systems.
A: Thank you, and we would add the notation about the other things we heard in this discussion about the WSFC.

Dave summarized what he heard the group recommend.

Summary of WSFC recommendations:
WSFC Single family residential — accept the proposed charge with the addition of looking at waiving more than 500 units of homeless and low income housing per year if the 500 unit cap is achieved before the end of the Fiscal Year. Consider requiring that those getting waivers for low income and homeless housing to incorporate water conservation measures such as the use of non-potable water if possible. Also, the recommendation is with consideration of phasing in an increase over three years (for all SFR).

WSFC Multi-unit residential low-rise — accept the proposed charge.

WSFC Multi-unit residential high-rise — accept the proposed charge.

WSFC Non-residential — accept the proposed charge.

WSFC for Ag — accept the proposed charge, phased in over 5 years with a limitation of 10% per year. There must be sufficient outreach and education to the agriculture community and involving other agencies (e.g. DOA, NRCS, CTAHR). There should be consideration of how to provide

assistance to smaller farmers that, financially, will have difficulty meeting the WSFC cost. Also to be included is the requirement of a Water Use Plan to help new farmers right-size their meters. There was consensus with the group on these recommendations.

Comment: I appreciate what others have said about with respect to Ag and I think we probably should look at small Ag parks being a really important thing. Small farmers will be living on their property. The water they use will be both for Ag and for their residents, and it's kind of a new phenomenon. It's worth noting that that this is something that BWS will be able to help promote. It'll be something that we can carry forward to the State. This is so important to have small rural family farming again.

Dave thanked the group and said that their input, particularly on the agricultural issue, has shaped the WSFC in a whole different direction than where it started. It reflects the input of the community and stakeholders and we know BWS's Board is listening very closely.

LESSONS LEARNED FROM HURRICANES IRMA AND MARIA

Dave invited Jose Valenzuela, Deputy Director of Mitigation for Tidal Basin Group, to present to the group lessons learned from Hurricanes Irma and Maria. Jose had been appointed as the State Hazard Mitigation Officer for Puerto Rico and after the hurricanes hit the island, he oversaw the biggest hazard mitigation grant program awarded by FEMA.

Jose began by posing the question: *What did Puerto Rico learn as a result of the hurricanes?* He said that he thinks about this question often because they are still working on recovering from what was lost to the hurricanes. After almost 2½ years, Puerto Rico is close to assessing 20% of the damage, but the process has been slow because the entire island was impacted.

Puerto Rico and Hawaii are 5,000 miles apart and very similar terms of latitude, landscape and topography. They are subject to natural disasters like hurricanes, earthquakes, tsunami, landslides, flooding.

Before the hurricanes, Puerto Rico was $70 billion dollars in debt and was deferring much of its infrastructure maintenance. In an attempt to catch up, permitting was changed to a fast-track process that allowed non-compliance with codes. Ultimately, non-compliance with codes turned into worst-case scenarios following the hurricanes.

More than 1,138,000 residential structures were damaged or destroyed but only 1,662 received funding from FEMA. Almost 12,000 people took shelter in churches and communities became isolated around the island. There were 64 fatalities in the first 24 hours.

Puerto Rico didn't have access to supplies for a week. Food was dropped from helicopters. Transportation and supply chains were damaged or destroyed. The Port Authority couldn't open ports and airports for the first 48 hours. Power was out all over the island for an entire year, causing a domino effect on people's lives. There were 2,975 fatalities over that course of time. Some people died simply because they lacked emergency services.

Communications systems were damaged. Only 4% of cell phone towers worked after Hurricane Irma. The lack of communication was bad, but so was getting bad information through crowdsource.

Without working communications systems, Puerto Ricans weren't sufficiently informed that a second storm, Maria, was heading towards the island.
Jose said that recovery on the mainland after a major hurricane usually happens quickly because people can be moved to housing in other states. Puerto Rico moved people who lost their homes into available hotels. However, when emergency workers arrived to help with the recovery efforts, there weren't any hotel rooms available for them.

Lines for food and gas were long. Without power and communications, banks couldn't see customers' records/balances. Some of the banks allowed people to take out about $100, just hoping they had that much money in their accounts.

Signs were blown off their posts. Puerto Rico is currently replacing them with signs that can withstand 155 mile per hour winds. Jose said that he had to locate old archived paper maps to help guide people, including emergency workers, to different places on the island.

Building codes were upgraded to meet 2018 standards. In 2017, Puerto Rico wrote a grant to increase staffing to 147 inspectors to support the reconstruction process and implement codes around the island.

Because of Puerto Rico's $70 billion debt before the hurricanes, the paperwork involved for recovery funding afterwards was daunting. In an environment that was already in distress and following one of the worst natural disasters in history, FEMA changed procedures and tried a new recovery approach with Puerto Rico.

It was challenging to manage multiple and competing requirements of the many agencies offering recovery funds. FEMA, HUD, U.S. Army Corps of Engineers and other agencies would provide funding over the same 6-year period. However, Puerto Rico didn't have the personnel, equipment, and other resources to meet the required short-term obligations. There is not enough labor to build the new housing and infrastructure in that time-period. This has made it difficult to rebuild, even though Puerto Rico will receive billions from FEMA.

Jose said that one recommendation for BWS is to implement standards systemwide. The Puerto Rico Power Authority used over 300 different types of transformers. Recovery teams didn't have the necessary inventory, so they had to build a "Frankenstein" system to restore power.

When the island didn't have power, pumps didn't work so there was no water service. Small generators were utilized and 400 of them were brought in to run the PRSA water supply system but service kept shutting down because people were stealing the generators. People started suffering and that led to community watch groups stepping up and taking a leadership role at the local level.

Jose said that taxes to pay for recovery also require careful forethought and pre-planning.

He then invited stakeholders to ask questions.

Questions and Answers

Q: How did you deal with water both from a municipal standpoint, and from a family standpoint? The pictures you showed makes it look like something similar could happen in Hawaii really easily and it is hard to imagine how people will cope with it.
A: The government of Puerto Rico set up portable water tanks and families started filling up jugs of water. That is how we typically handle water service during emergencies. We only had one warehouse which was on the north part of the island for emergency storage of food and water. So, everyone got clobbered trying to get there. We created logistical plans to move and supply water around the island as quickly as possible. But it was hard to get truck drivers to transport the goods, even though we had the trucks. It took at least three days for the truck driver to get from his house to the trucking company and then move the water. That is another lesson learned. We **now** have four warehouses spread around the island, but it was very harsh when there was one.

Puerto Rican people frequently prepare for natural emergencies by storing water for at least a week, so they didn't depend on anyone for water at first. There were a lot of community efforts to share supplies with neighbors until the government funds and assistance kicked in. We are seeing a similar response to the earthquakes; local communities took over that kind of effort and responded quickly. The municipalities do not own the water infrastructure, but they manage a lot of wells that are activated for emergency storage capacity. We started pumping water within 48 hours.

Everything began to move fairly quickly when the army took over the logistics. General Buchanan kept very strict order on how to manage things during the emergency and Jose assisted in setting the priorities. Everything was monitored by the federal government including transportation and nightly curfew was set for residents. The night hours enabled the trucks to transport goods very quickly with an army escort.

Q: Thank you to the Board of Water Supply for having you come. Are you meeting with anybody else at the County or at the State level to share?
A: This is my first presentation but I am very willing to give more. Right now, I'm a consultant for the HI-EMA, (Hawaii State Emergency office). I'm working with them on mitigation protocols and projects.

Q: How are you dealing with waste materials that have been generated by demolition?
A: We are establishing debris recycling process/plants around the island. We will store materials recycled from demolition and then reuse them during the reconstruction phase. Our landfill lifespans were cut in half and they will run out of capacity. We are trying to figure out where to put new landfills. We may reconsider building waste to energy facilities on the island; those projects were canceled previously because there wasn't support from the public.

Q: What are your major water sources, and are there aquifers like we have here?
A: We have aquifers and the impacts were harsh. We detected a lot of saline intrusion. Puerto Rico also has a lot of dams that provide flood control and/or water supply.

The big issue is maintenance because of the crisis. About 45% of the water that is produced for consumption by the people is lost through leakage or theft. Close to 500,000 people left the island and the population decreased from 2.8 million people to 2.3 million. So, ultimately, we have fewer

customers. The reduction of customers caused the power authority and the water authority to increase their rates because they are earning less money right now.

Q: A lot of the companies that I work with said that the residents had to wait 15 hours for gas to fill up their cars. How long did government workers have to wait to get gas for the 400 generators?
A: The police took over the gas station operations and prioritized the order of who got critical services and supplies like gas. Hospitals and emergency responders serving the community were the highest priority. Each gas station had a dedicated fast lane reserved for doctors, nurses, police, fire, or emergency responders. Other people were able to get gas if that gas station had anything left over.

Some private companies had contracts for the gas and they paid in advance, so we had to supply them. We found out that most entities didn't have emergency contracts in place. So, they started competing against each other for gas. Gangsters came into gas stations with better guns than the policemen. They filled up gas tanks and took whatever they needed. Some people paid everyone in line for gas to jump ahead. Some hostility developed over difficulties in getting gas, but luckily chaos did not. But yes, people stayed in the lines for hours and sometimes for days, waiting for additional supplies of fuel to arrive.

Q: How far you are with reconstruction?
A: There is zero construction. They have been developing emergency projects around the island but no permanent construction. The south part of the island was damaged less by these hurricanes but it has just been hit by earthquakes. This will be a difficult problem because we have to segregate the damages for FEMA. We don't know when the more permanent construction work will begin.

Q: Did you receive any help from the military on clean ups?
A: Yes. The National Guard was activated and provided potable water and showers. They built tent cities for people whose homes were damaged and unsafe. People mostly stayed in front of their houses during the day. But because they didn't want to sleep in their unsafe homes, the people stayed in the tent cities at night.

Q: You said that 500,000 people left Puerto Rico, so how long do you think it will take to get back to normal?
A: It will take at least 10 years to normalize.

Q: I wondered if you could comment on the adequacy of the Federal response overall?
A: The Federal response was complicated because it is not designed for major disasters of this scale, especially for more remote places like Puerto Rico and Hawaii. The government of Puerto Rico and Federal government were competing instead of coordinating appropriately together. For example, all response agencies moved into the convention center. The first floor was being used to shelter thousands of displaced people from the community. The second floor was where Puerto Rico's staff set up their command center. And the third floor was where FEMA and other federal agencies set up. Because of the lack of overall coordination, sometimes, supplies were sent to the same areas multiple times while less accessible areas did not receive anything. General Buchanan took over logistics and coordination got much better. The lack of communications made government missions very challenging and we would not hear if they were successful until the responding teams returned.

Next Steps

Dave thanked the stakeholders and presenters. The next meeting is on April 30, 2020 in the Hawaii Suites at Blaisdell. (Note, the April meeting was cancelled out of caution for COVID-19.)