



Honolulu Board of Water Supply Stakeholder Advisory Group

Meeting 9 – Wednesday September 14, 2016 4:00 to 6:30 pm
Capital, House Conference Room 309, Honolulu

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 22 stakeholders and BWS and CDM Smith staff present. The stakeholders represent diverse interests and communities island-wide.

The following Stakeholders Advisory Group members attended:

Jackie Boland	AARP Hawai'i
Pono Chong	Chamber of Commerce Hawai'i
Bill Clark	Resident of Council District 6
Mark Fox	The Nature Conservancy of Hawai'i
Neil Hannahs	Hawai'i Commission on Water Resources Management
Shari Ishikawa	Hawaiian Electric Co.
Micah Kāne	Hawai'i Community Foundation
Will Kane	Mililani Town Association
Gladys Marrone	Building Industry Association, Hawai'i
Helen Nakano	Resident of City Council District 5
Robbie Nicholas	Resident of Council District 3
Dean Okimoto	Nalo Farms
Alison Omura	Coca-Cola Bottling Co.
Bob Leinau	Resident of Council District 2
Dick Poirier	Resident of Council District 9
Elizabeth Reilly	Resident of County District 4

John Reppun	Key Project
Cynthia Rezentes	Resident of Council District 1
Cruz Vina Jr.	Resident of Council District 8
Josh Stanbro	Hawai'i Community Foundation
Christopher Wong	Resident of Council District 7
Susanne Young	Honolulu Board of Realtors

MEETING AGENDA

- Welcome
- Public Comment on Agenda Items
- BWS Updates (For possible action)
- Accept Notes from Meeting 8 (For possible action)
- Overview of the Water Master Plan (Information only)
- Draft Water Master Plan Discussion (For possible action)
- Summary and Next Steps (Information only)

WELCOME

Dave Ebersold, meeting facilitator and Vice President of CDM Smith, welcomed the group. He welcomed new stakeholders Gladys Marrone with the BIA-Hawai'i and Bob Leinau with Council District 2. He also thanked Jill Kuramoto for hosting the meeting at the State Capital.

Dave said the group would discuss the Water Master Plan outreach activities and comments received by the public before turning to the stakeholders' comments. The group would learn about a recommended scorecard to track the health of the water system, and then consider making a recommendation about the WMP to the BWS Board.

PUBLIC COMMENT ON AGENDA ITEMS

None.

REVIEW and ACCEPTANCE OF NOTES FROM MEETING 8

Accepted.

BWS UPDATE

Ernest Lau, BWS Manager and Chief Engineer, updated stakeholders on BWS activities. He also thanked Jill Kuramoto for hosting this meeting.

Ernest introduced the new Board member, Kay Matsui, whose background is in finance. He thanked stakeholders for the support they showed in helping to set presentations about the WMP to their respective groups. He mentioned that Micah Kāne helped gather a group of golf course representatives for a presentation. He also

thanked the stakeholders for their support in the proposed charter amendment issues, which did not get moved forward to the general election ballot.

Ernest briefed stakeholders about an upcoming public meeting regarding the Red Hill fuel storage tanks with the EPA, DOH, and the Navy on October 6th. He also told the group that, if they have heard about reports of problems with drinking water, related to recent heavy rainfall and flash floods on O‘ahu, those reports are erroneous. Those reports are relevant to Maui.

OVERVIEW OF WMP OUTREACH AND PUBLIC COMMENTS

Dave described the public outreach conducted about the Draft WMP. The public was broadly notified and invited to review the Draft WMP and/or request a presentation to their organizations. The BWS encouraged the public to send in comments for consideration during the 60-day public review period. The major outreach components included:

- All of the Neighborhood Boards were notified of the opportunities for presentations and where to find the WMP documents.
- The 200-page document was placed in all of the public libraries across O‘ahu and documents were available at the BWS.
- A water bill insert of the “Top 10 Things to Know About the Water Master Plan” was sent to all customers, along with a letter from the Manager.
- The “Top 10 Things to Know About the Water Master Plan” fact sheet was mailed along with a letter to Native Hawaiian Organizations and various community groups (75 letters total).
- “Top 10 Things to Know About the Water Master Plan” fact sheets were distributed at Ready-2-React Emergency Preparedness Fair at Pearl Ridge Shopping Center.
- The Draft WMP and related documents were available on the BWS website.

To-date, 17 presentations had been given and three more were calendared. An estimated 420+ people have attended presentations. Thirty-five members of the public sent in comments on the Draft WMP to-date. Of those, eight identified their affiliations:

- | | |
|------------------------------|--------------------------|
| • Trust for Public Lands | • Malama Mānoa |
| • ‘Ewa Beach NB | • Kapolei Rotary |
| • North Shore NB | • East O‘ahu Farm Bureau |
| • Diamond Head – Kapahulu NB | • Poamoho Camp |

Most of the comments received had multiple parts. All together, the BWS had received 83 total comments and questions about the Draft WMP.

Of these,

- 20 were technical in nature

- *main breaks (7)*
- *energy and recycled water (3 each)*
- *seawater desalination (2)*
- *seawater intrusion and water pressure (1 each)*
- 20 were about policies
- 14 were about conservation and/or watersheds
- 8 were about water bills or rates
- 7 were requests for more information
- 5 were about implementation
- 5 were about costs not being included in WMP
- 4 were about Red Hill

Dave said that comments also fell into five themes, as follows:

1. Do more.
2. Water is limited, so limit development.
3. Mandate more conservation.
4. Interest in power for the water system and the use of renewable energy.
5. Provide water for agriculture.

He said many people applauded the WMP and only a very few voiced skepticism. A summary table of public comments and BWS responses will be prepared and posted on BWS website. All commenters will receive individual responses.

Stakeholder Advisory Group Members' Impressions About the WMP and Outreach Activities (summarized, not verbatim):

- Credibility sells and Barry and the BWS does this very well. They are credible.
- Barry made it very comfortable and answered all of our [Neighborhood] Board members questions so they passed the motion to support the Plan.
- It was a great presentation and the comments are being collected and sent in. The [Neighborhood] Board was impressed!
- Barry came on a "dark and stormy" night. There were questions about considering the use of solar power and more. People in the audience were listening attentively and liked the presentation.
- Barry's hard work goes back for years. It is these kinds of presentations that make the public feel it is essential to be part of the WMP process. I like that the BWS always come to the Neighborhood Board meetings.
- Will you attend another Neighborhood Board meeting to give the presentation to my group?
- Thank you for coming to Hawaiian Electric. As utilities, we have paths that cross, like asset management and watershed management. This was an important presentation. The 4-5 executives in attendance asked a lot of hard questions. Barry and everyone from the BWS did a great job of answering them.

- BWS was wise in this stakeholder group together. We have been part of it (the WMP program) for some time and now feel very committed to spreading the word about the WMP. Congratulations BWS!

Discussion, Questions, Comments, and Responses

Question: Were there any negative comments about the WMP? What were they about?

Response: Only a couple of comments were negative. They recognized that the WMP was very thorough and that BWS promised to accept public comments, yet the individual expressed concerns/skepticism that comments would not be considered before adoption of the WMP.

Question: Does the BWS have a response mechanism for the public comments and will there be additional follow up with the individuals who wrote comments?

Response: Yes, and this is a great question. We are preparing a table of all the comments and the Board's responses to them. Once completed, the table will be posted on the BWS website. There might be some minor changes to the Water Master Plan as a result of those comments, but we're not seeing anything overwhelming at this point or that can't readily be dealt with. The BWS will send responses individually to each person who commented on the Draft WMP, except to the few who were anonymous.

Question: How are the comments being treated, as a whole?

Response: Great question. The comments are categorized and the most appropriate staff at BWS will respond or consider them accordingly. For example, we received questions seeking information, such as: *"I'm looking for more information about 'x'"* or *"Was this included in the Water Master Plan?"* Other comments made specific suggestions like: *"The BWS should implement policies that limit development because we don't have enough water."* Those types of policy decisions are outside the realm of the BWS. Very specific responses will be provided for each of the comments.

Question: Comments about the cost of this project are pertinent, because that is what really gets people's attention. Our challenge is to address and ameliorate that in some way. I think we're going to be dealing with billions of dollars in costs.

Response: Good comment. When we get into the discussion about water rates, the issue of cost will certainly become front-and-center. We will begin discussing rates at our next meeting and this group will be very involved.

Question: What were the comments on storm water capture? Was it a big issue?

Response: More people brought up storm water capture than any other single idea. The general theme was that much more should be done with storm water capture than is currently being done.

Question: There's a lot of support for the ideas to "do more different things". At the end of the day, this is about how we spend money. Does that support cause you to rethink the plan for spending money, to shift things around to put more funding into certain categories or hold back in other categories? Or are we looking at this in an engineering way and is there an order to doing this?

Response: The next step is a 30-year capital improvement program. We're already exploring some of the public's ideas, like storm water capture, and leveraging some of the assets that we control. After that, the next step is the rate study and a financial plan – looking at funding over a longer term. We will plan long-range funding strategies for the needs identified in the WMP like more storage capacity, more source capacity, developing more wells, redistributing how we pump from some of our larger wells in Honolulu because of the impact on the aquifer. We had a lot of interest in storm water capture, but we still have the fundamental need to take care of the watershed with our partners, the source of our water, and the infrastructure necessary to convey water to our customers.

Comment: With storm water capture, it's other people's investments that are really affecting that issue. Maybe the BWS can take advantage of the public's support and advocate for how the state uses its money on roads, and how private developers design projects – to ameliorate or to minimize the amount of storm water running off.

Response: A recent green infrastructure conference discussed low impact development with multiple state and city agencies. Storm water capture may not be just a dam holding back the water; with low impact development, it could also be capturing the storm water on-site; using rain barrels; rain catchment systems; pervious pavements on roadways so that there's less running off into the ocean; and retaining more water on site, recharging the aquifer. This is going to take a collaborative effort. Many private and public entities are going to need to work together. Kathleen Pahinui is setting up meetings with the Department of Facilities Maintenance, which has responsibility for storm water for the City and County of Honolulu, to discuss how we can collaborate.

We continue to work with DLNR and the watershed partnerships on watersheds. We've identified the need for greater collaboration, going forward. We appreciate the Water Commission supporting us on Red Hill. Together, we're protecting the resources from further contamination. If there are things that we can do that are in our control then we should try to prevent any more degradation of our high quality water resources.

Question: Is it fair to assume that at some point in the process, this document will go to the Water Commission for consideration and adoption?

Response: We anticipate that the Water Master Plan will be adopted by the BWS Board. It might be a good idea to brief the Water Commission on our Water Master Plan for informational purposes, explain what we've done, where we're headed and look for greater opportunities to collaborate.

Question: Wouldn't it bring the connectivity between the rate issues to the WMP to have that adoption be formalized? My apology, I meant adopted by the BWS Board, not the State Water Commission. Do you anticipate your Board adopting the Water Master Plan?

Response: Yes. By the BWS Board adopting the WMP as policy, we can accomplish:

- Ensuring the continuity of a long-term planning direction and implementation of the WMP.
- Providing flexibility to make non-substantive adjustments to the WMP.
- Maintaining this consistency of direction. The WMP is supposed to be the road map for the next 30 years with periodic adjustments as necessary.

Having the Board adopt the WMP will institutionalize this effort, and embed it in the organization by utility.

TRACKING HEALTH OF THE WATER SYSTEM

Dave introduced Barry Usagawa, BWS Water Resources Program Administrator, to discuss the WMP recommendation of using a scorecard for tracking the health of the water system. Tracking metrics is an important aspect of the WMP and helps determine prioritization of projects.

Barry explained that a large part of understanding how much to invest in the water system is based on its condition, or "its health." The scorecard, found in Section 13 of the Draft WMP, is the tool being developed to monitor, evaluate, and measure the health of the system. The scorecard is organized around the functions of the BWS with regard to water:

- Sustain
- Capture
- Treat
- Move
- Store
- Deliver

Barry said that the BWS set certain goals in the WMP. In order to achieve them, we will work towards these metrics (shown below). Tracking metrics helps the BWS to identify the progress on the health of the system, the amount of investment that we need to make, and where we can improve. The scorecard keeps us accountable. This annual reporting shows our progress and will be included in updates to our Board of Directors.

Dave explained that the scorecard is extensive and has many different components, just like the water system. He said the group has time to discuss about five of the metrics during the meeting. He pointed to the scorecard posted on the back wall of the meeting room. He then asked everyone to use their set of 5 voting dots, found inside the meeting packets, and place them on the scorecard topics that they would like to discuss. The group’s “Top 5” would be discussed during the meeting. Dave also explained that he would be happy to follow up with stakeholders via email or phone on any of the topics that the group did not have time to discuss during the meeting.

This is what the scorecard looks like. The number of stakeholder votes received in the exercise just described is shown in the last column, next to the metric rating (green, yellow, red).

Indicator	Metric	Goal	Actual (2016)	Meeting goal?
Legend	<ul style="list-style-type: none"> ● (met/on track to meet, +1) ● (miss by < 10% of goal, 0) ● (miss by > 10% of goal, -1) 			
Sustain				
Supply from nonpotable source	% of supply served from nonpotable water system	> 12% (Fresh Water Initiative, by 2030)	6%	● (8 votes)
Annual water resource capacity	% of available water resource capacity used	< 90%	80%	● (3 votes)
Funding for watershed management	\$ spent for watershed management	4% of CIP \$3.35 million (M)	\$1.4M	● (14 votes)
Funding for conservation	\$ spent for conservation	4% of CIP \$3.35M	\$0.89M	● (14 votes)
	Per capita consumption	< 145 gpcd (by 2040)	155 gpcd	● (2 votes)
Capture				
Standby source capacity	% of source capacity used at MDD	< 50%	44%	● (3 votes)
Head levels at index wells	% of wells stable	100%	93%	●

Indicator	Metric	Goal	Actual (2016)	Meeting goal?
Permitted or assessed yield	Number of sources greater than permitted use or assessed yield (12 month moving avg)	0	0	● (1 vote)

Treat				
Regulatory compliance	Number of regulatory violations	0	0 →	● (4 votes)
Treatment on-line	% of chlorination systems on-line	100%	100%	● (1 vote)

Move				
Sufficient pump capacity	Number of zones where firm capacity < MDD	< 5%	2.6%	●
Pumps available for use	Number of pumps that are available to be put in-service	> 90%	82%	● (2 votes)
Emergency power	% of population served essential demand in the event of loss of power	> 85%	75%	● (11 votes)
SCADA reliability	% of sources, pump stations, water treatment plants, and reservoirs on microwave backbone	> 95%	13%	● (11 votes)

Store				
Reservoir restrictions	Number of reservoirs with use restrictions (structural)	< 2%	1% ↓	●
Storage deficient pressure zones	Pressure zones with less than standard storage	< 10%	9%	●

Deliver				
Main breaks	Breaks per 100 miles per year (3-year average)	< 30 (AWWA)	15.2 ↓	● (1 vote)
	Main breaks per year (3-year average)	< 300	312 ↓	● (2 votes)
Transmission main breaks	Number of main breaks for ≥ 16 inches in diameter (3-year average)	< 15	10.7 →	● (1 vote)
Non-revenue water	% of water produced but not sold	< 8.1% (AWWA)	10% (5-year average)	● (2 votes)
High risk pipelines	Portion of pipelines with risk score > 400	< 5%	8%	● (6 votes)
Pipeline R&R	% of system pipeline renewed, 3-year running average	≥ 1%	0.5% ↓	● (2 votes)
Fire hydrant supply	Hydrants that meet fire flow standards	> 99%	98%	● (1 vote)

Tools and Planning				
WMP update		Update every 10 years	On-schedule (last 2016)	●

Hydraulic models and CapPlan updated		Update every 5 years	On-schedule (last 2016)	●
GIS update		Annually	On-schedule (last 2016)	● (4 votes)
Treatment condition assessment	Perform condition assessment	Update every 10 years	On-schedule (last 2014)	●
Pump station condition assessment	Perform condition assessment	Update every 10 years	On-schedule (last 2015)	● (1 vote)
Reservoir condition assessment	Perform condition assessment	Update every 10 years	On-schedule (last 2015)	● (3 votes)
Pipeline leak detection	% of pipes checked for leaks per year	50%	18%	● (8 votes)
PWA pipeline condition assessment	Of pipelines recommended for PWA by CapPlan framework, % assessed per year	> 10%	19%	●

Stakeholders placed their voting dots on the scorecard components. The “Top 5” were:

- Funding for watershed management
- Funding for conservation
- Emergency power
- SCADA reliability
- Pipeline leak detection and Supply from non-potable source (tie)

Discussion, Questions, Comments and Answers

1. Funding for Watershed Management

Comment: It is going to be important for the BWS to really define and show your commitment to watersheds, especially in light of some of the comments you received with people sharing concerns about limited water and future development. How is all of that going to interrelate? From a future standpoint, with climate change and the fact that things are getting drier, how do we accommodate all of this?

- Not just sustaining, but also improving and growing our water resources through better watershed management?
- Not just on the BWS’s land, but in general?

I think it is important to advocate for this at the State level or with CWRM.

Comment: I helped draft The Nature Conservancy’s comments in support of the Water Master Plan and we’re most involved and interested in watershed management. The BWS has been a long-term partner and supporter of watershed partnerships on O’ahu. I’m really appreciative that the BWS is thinking about and talking about putting more funding investment into those watershed partnerships and the actual work that they do, including fencing, animal and weed control work – healthier watersheds. Having a greater investment puts the BWS in the position of being able to put more pressure on

the DLNR. Everyone looks for ways to incrementally leverage that investment further upwards. I just want to say thank you. I know you've got a lot of things to spend money on, particularly in your capital plan, but I'm really grateful that you're also looking at ways you may be able to increase your actual financial investment in watershed partnerships.

Comment: The urban core, domestic runoff, agricultural runoff – this is all part of the watershed. If you look at aerial photographs, it looks like 50% of the ground is broken all the time out there and it's all part of the watershed. My big concern is what kind of chemicals might still be in our watersheds. Pesticides and chemicals from growing sugarcane and pineapple affected the soil on the North Shore for 100 years. I'm glad that we have some activated charcoal to try and suck some of that stuff out of there before we drink it. We are using the word "health" of the system for this scorecard but are we evaluating the water in terms of "health" of the human body? One of the things on the scorecard checklist really has to be: "What kind of chemicals are coming out of the ground in the water?"

Comment: It looks like BWS did not make their goal with regards to the Funding for Watersheds metric. Is that the case and can you help me understand this better?

Comment: This metric is about funding, so did you miss the goal for watersheds because it wasn't budgeted for? Or was it because you did budget for watersheds and then not spend it? Why and what are you doing to adjust for that?

Response: Barry explained the scorecard to clarify the metrics and goals for everyone.

- The *indicator* represents part of the water system.
- The *metric* shows what we are measuring.
- Next to that is the *goal* that is being recommended in the WMP, looking forward.
- Next to that is the *actual amount* that was accomplished for that metric in the previous fiscal year (before the goal was set).
- The score in the last column represents whether or not we are *meeting the proposed goal*.

In the case of this metric, the scorecard compares the actual amount of budget spent for watershed management in the fiscal year that just ended (\$1.4M) to the amount of budget indicated by the goal in the WMP (\$3.35 M or 4% of the CIP). We didn't meet the goal because it was only just established and we haven't gone through an applicable budget cycle.

Barry discussed related, recent activities in watershed management and conservation. Highlights of that discussion:

- \$1.4 million is what the BWS currently spends on staffing of the hydrogeology branch in water resources. They monitor the resource, do the reporting, find new sources of water, and also work directly with our watershed partners.
- Through Ernest's guidance, the BWS has just recently begun utilizing agency-to-agency agreements to provide funding for the Ko'olau and Waianae Mountain Partnerships, the O'ahu Invasive Species Committee, and the Department of Land and Natural Resources. Through these agreements, BWS funds are disbursed to these four groups.
- The goal for watershed management funding is 4 percent of the CIP. This is comparable to what Maui allocates for their watershed partnerships, using a grants process. Watershed management funding there is treated just like budgeting for a source well. We set our goal to dedicate 4% percent of the CIP or \$3.3 million a year, which is even more than what Maui is spending.
- Meeting that goal will depend on the capacity of the partnerships to effectively utilize and manage the funding. Once we start to establish a steady funding structure, the partnerships will then build their staff to implement more projects.
- We are focusing on the BWS watersheds/sources, as there needs to be a nexus between the rates that we charge our customers and the source water that serves those customers. Hopefully we can work together with The Nature Conservancy to develop more discrete metrics on actual forest health or ability to actually capture that water and recharge it.
- A vulnerability assessment for climate change at the University of Hawai'i is looking at sea level rising, coastal erosion, and global climate models and what's happening with the rainfall, temperatures, and recharge. Projections are very sobering for 2100. We need to do as much as we can in the watersheds now to retain what we have.
- We anticipate decreasing sustainable yields in the aquifers, over time, because of a reduction in rainfall. This effort should have a direct goal of trying to maintain what we have.
- With the Nu'uaniu storm water capture project, we can probably inject more water into the aquifer and pull out more water at the pump station. We don't have the opportunity to do this kind of project in every area.

Comment: The goal for watershed management funding is 4 percent of the CIP. The Fresh Water Initiative recommended 5 percent of the CIP. You might want to consider increasing that metric to 5 percent of the CIP.

Response: Barry said that the BWS is interested in hearing how other stakeholders feel about that. This is actually using a ratepayers' money, and investing it into enhancing and preserving the watershed. Is everybody okay with that concept of trying to allocate more toward watersheds? It is something that we're going to have to go out into

communities and talk to our customers. We would explain that a portion of their water rates is going to fund more of the watershed effort.

Comment: We'll support more funding for watershed protection with achievable metrics and strategies to do so. You need to show people what it is that we're trying to accomplish and to what degree. Watershed partnerships can provide the BWS with their financial metrics; BWS can figure out which of those metrics apply. People will readily see the nexus that there's a cost to this. But there is a much higher cost of not doing it. The BWS is leveraging its dollars by working with private landowners, federal government, state government, and many others. The BWS needs to educate our ratepayers on the positive results of leveraging.

Comment: Related to that excellent point, I recommend that the BWS talk with Kim Burnett at University of Hawai'i Economic Research Organization (UHERO). They recently did a study for The Nature Conservancy on our two preserves on Hawai'i Island and will do another on Maui, assessing for the amount invested at our preserves in fencing animal control, weed control, basic forest management, and how much water is being saved as a result of that. Estimates have been made about how much water would be lost if forests got converted to strawberry guava, for example. Using their economic analysis, depending on the location, UH has estimated the *value of that water*. We have determined the return on investment for our watershed work in Kapahulu where there's plenty of water, and in Kona. We need to convey how much water is being saved and its value.

Comment: A healthier watershed includes plants to enhance the sponge effect, and enhance some of the cultural practices and the uses of some of the plants. There's a larger nexus here that we're talking about. We're talking about conservation, we're talking about water, we're talking about watershed health, but we're talking about people's mental health also. We're talking about the connection of people back to the land. For example, when you take people with mental health or substance abuse problems and put them back into a more culturally based program, their recovery is higher and recidivism rate is lower. If we can put all of that together by working with this, I think there are other avenues and other things that we can start pulling in as positives in addition to improving watershed health.

Response: There may be opportunities for us to look at lands that we control, possibly provide a basis for sustainability, and integrate cultural practices trying to connect people back to the land, to the environment, to the watershed. It's a very good point.

Comment: My concern as a ratepayer is about having multiple levels of government providing similar services. We all pay taxes and we all pay water rates. Part of my income tax and my general excise tax goes to the Department of Land and Natural Resources. From a practical standpoint, DLNR does not get a lot of funding for conservation or watersheds. But, now, if the BWS is increasing its role and funding for

watersheds, ratepayers will be paying two agencies for watershed protection. We need to make sure we take care of the water sources *and* be mindful about how we are spending our funds, and ensure that the momentum of one agency's work doesn't back off because another agency has gotten involved.

Response: Ernest said that he worked for DLNR at one time; that agency has a *lot* of responsibilities. The BWS is not trying to replace them. The BWS can help by advocating for DLNR in the legislature to get more resources. They are still the lead and we're looking for the opportunities to collaborate and to make each dollar go even further.

Comment: The BWS's straws are in DLNR's cup. Every time we drill for water, or tap the Ko'olaus for water for municipal use, we are using the state's resources. It's very appropriate for the BWS to be investing in watersheds.

Comment: We need to better understand the grades of water. We're pumping water up into a reservoir system and supplying farmers with potable water for agriculture. We really need dual systems separating potable and non-potable water, far more than ever before. We can actually cut back on drawing really high quality waters by more appropriately providing the right grade of water in the right place.

Comment: I think the plan is outstanding. The one thing I didn't see is a commitment to research; a knowledge acquisition "to do things better". I know that we are doing it and we ought to be really transparent. You don't have to do the research by yourself, as there are many who you could partner with. It's accessing the intellectual capital where it is and leveraging our relationships to get that intellectual capital to apply on the issues that matter to us.

Comment: The WMP rationalizes 1/3 of my water bill. It is silent on 2/3 of my bill (sewer service). I know the difference in departments, but is there a nexus to this treatment of sewage to our overall water cycle? Where do we draw that in to the WMP? At some point, you've got to make a commitment to figure out:

- Are those resources being well used?
- Are they being optimized to really impact the other goals of the system, not just to clean it up, but to be able to reuse it and create this dual system that was mentioned?

Response: Recycled water is addressed in the WMP. The Watershed Management Plans talk about all water within the watershed, including recycled water and wastewater.

Comment: Considering this discussion, does the BWS see a way to look at this metric and do some additional thinking about it?

Response: Yes. Please give me your top five metrics, and then maybe we can incorporate more.

Stakeholders indicated general support for budgeting 4% of the CIP for watershed management.

2. Funding for Conservation

Barry introduced Funding for Conservation as the next metric that the group voted to discuss. He said that the BWS is just scratching the surface on conservation. Like watershed management, the BWS has a conservation branch and their budget is the \$0.89 million indicated on the scorecard. This provides funding for approximately six staff for recycled water, internal and an external conservation, reducing water losses in the system, and extending the life of our pipelines through a Conservation Initiative. This budget doesn't include funding for the public education component.

Barry said the BWS doesn't currently have the capacity to spend \$3 million. It's an aspirational goal. Three million dollars will more than triple the current budget. We are building our programmatic implementation process starting with a contract with Honeywell. They do a lot of the conservation rebate programs for the Hawai'i Energy Efficiency program and are well versed in conservation rebates, incentives, and discounts.

Comment: Conservation education can make a really big difference, especially if you start teaching kids when they are young.

Comment: I'd like to propose something to this group and to the BWS. A couple of years ago the Mililani Town Association, as a Board and the full organization, decided to make Mililani the model green community for Hawai'i. The Mililani Town Association oversees almost 16,000 homes with 50,000 people – all of Mililani. We maintain hundreds of acres of land, including city and county land, free of charge. Funding for water – irrigation of all landscaping – comes from the Association. We set goals to reduce our use of resources including energy and water. We would like to propose a private/public partnership with the BWS to make Mililani the model green community. We have the resources and are willing to commit them to this project, in partnership with the BWS, to do a community wide program, starting in Mililani and then hopefully expanding that program island-wide.

Response: Thank you for that. Josh has introduced us to a program called Water Smart. This is a web based system where you can go to a website and look at your own water use versus the average of all your neighbors. In so doing, it sets up a little competition on who can use less. We're talking about trying a pilot program for Water Smart in one community so why not Mililani? Also, we are interested in trying out a program with smart irrigation. These are small, weather-based irrigation controllers, and we could try these out in some of the large irrigated parcels in Mililani.

Comment: When we talk about conservation, it's usually in reference to reduction in use but I am proposing that we find a way to save water for multiple uses. If buildings in

downtown Honolulu had dual water systems, people could recover shower water for water for irrigation, rather than dump it down the sewer. That's the model of conservation I want to see. This is taking it a step further than just "limiting your time in the shower and feeling really good about it". We would be providing a secondary use of water for other purposes, not to the detriment of anything else. Water *reduction* has limits in terms of savings that pay off at a certain point, while *secondary use* of the same water has potential to provide extra benefits.

Comment: The Department of Environmental Services and the BWS need to find more ways to cooperate.

Response: Water recycling and multiple usage is one of those areas that is so beneficial and requires collaboration. Are there any recommended changes to the metric or to the goal?

Comment: The more water you conserve, the more revenues come out of your bottom line. Hawaiian Electric bills include a charge that funds conservation. Could the BWS do something like that as a way to increase your conservation budget? The funds could be taken from an additional charge on top of the water bill rather than as part of your budget.

Response: Great comment. When we get into the rates, we will be looking at ideas or feedback on a possible sustainability fee that would fund watersheds and conservation. We will have that discussion next year.

Question: How does the \$3.35 million compare to major programs on the mainland?

Response: Dave said that Southern California has been using methods that are different than Hawai'i because of their drought's extensive impact on the availability of water. About 2 years ago, the California Governor implemented mandatory conservation levels on all water agencies in the state to reduce water use by about 35 percent. Different agencies ramped up their conservation spending. One of the most notable was the Metropolitan Water District of Southern California that started offering really high rebates for taking out turf, on the order of \$2 a square foot. Then the Los Angeles Department of Water and Power offered an additional \$1.65-\$1.75 per square foot removal of turf for residents of the City of Los Angeles. Residents could get reimbursed up to \$3.75 per square foot of turf that you removed. Hundreds of millions of dollars in rebates were given out.

The LA regional area far exceeded the Governor's goals for turf removal programs throughout the entire state. Those investments lasted for about a year and were recently cut back. There's been a lot of public pressure to relax some of those mandatory conservation levels and also to give water agencies the flexibility to recognize the benefit of investments they've made in recycling, like local resource development. Southern California's water recycling programs count those "multiple uses of water" as part of their conservation efforts.

Because of the drought, the levels of conservation spending in California have been enormous compared to what you're talking about here.

Question: Is the BWS staffed and funded enough to have a good interface with a huge community association that has potential for a great pilot project? Would a proposed pilot project involve the Department of Planning and Permitting (DPP)? That could be necessary if we're looking at new building with dual water systems. Conservation is very effective with community-size rainwater catchments and reusing water. In funding for conservation, does that include funding for the BWS to have the appropriate interface with agencies that can change policy to impact conservation?

Response: Barry said this question is about conservation planning and getting the best results for the investment. It comes down to how we implement the rating in the development plans and sustainable community plans for the primary urban center. These plans include language on conservation and dual water lines, and that sets the overall policy of the City.

The BWS is collaborating on joint projects. An example is the Ala Wai Golf Course with the Department of Environmental Services for an onsite satellite reuse project. The DPP is encouraging low impact development standards. One challenge is, if we require green infrastructure for new development, grey water reuse, rain water capture, AC and air handling condensate recovery for irrigation, will plumbers know how to install that infrastructure, and are they willing? We need to implement a plan and make it happen.

Question: Will's offer of a pilot program goes to that important point.

Response: Ernest said Will's offer of a pilot program is actually a great opportunity. He described the resources necessary to actually implement conservation. In the BWS, we have a Water Resources conservation branch headed by Barry, with engineers and technicians working on the many aspects of conserving water.

We also have our Communications branch headed by Kathleen. They offer tours and hands-on public education opportunities 3 times a week, 52 weeks a year. They reach out to students of all ages. We also have our poster and poetry contest each year working from K through 12. To implement more programs, we have to think outside of the box, which Barry is doing. We're looking at our consultant, Honeywell, to actually help us identify opportunities and programs, and possibly the administration of those programs to actually get out into the community.

3. Emergency Power

Barry introduced the emergency power metric as "percent of population served essential demand in the event of a loss of power". Our goal is to serve greater than 85 percent. The BWS has six portable emergency generators that we can deploy, along with a deployment plan for them. We're working on installing permanent

generators at locations that will serve a good part of the Metro Low system and 'Ewa.

Our emergency generator plan focuses on areas where the population is bigger. All the essential facilities are in O'ahu's lower elevations: hospitals, the communication centers, emergency shelters, transportation, and our economic base. People who live on ridge will have come down to get water.

Question: Do we have plans to use solar panels with battery backups for emergency power?

Comment: Emergency power goes hand-in-hand with Hawaiian Electric Co. During catastrophic conditions, such as the two, island-wide blackouts we had in 2006 and 2008. It takes us (Hawaiian Electric) from 14 to 48 hours to get power back to everybody. A lot of infrastructure is above ground, and would be exposed to hurricanes. Hawaiian Electric is investing in making that infrastructure resilient. So many things rely upon electricity; it's good to spread out emergency power.

Question: You have reservoirs around the island so why don't we have emergency power access off of the pumps? Or off the reservoirs as the water comes out of them? Why do we not have a method to put in turbines and generate emergency power so BWS can use that water from reservoirs to drive their own pumps?

Response: There're only a couple of places where this is economically feasible. Micro-turbines don't generate enough power to operate a pump. The BWS's energy savings performance contractor, Noresco, evaluated the opportunities for hydroelectric generation and found only a few places with potential. The PUC would also have to pass tariffs that would make it attractive financially.

Our concept to provide emergency power is to address major catastrophic events, like a Category-4 hurricane. Hawaiian Electric's above-ground infrastructure may come down when we have cyclone winds that are 100 plus miles an hour. A great deal of debris would result all over the island and roads would be blocked. It would take a while to restore commercial power to our facilities. We rely on commercial power to pump water, either out of the ground or up the hill. Our idea is to gradually phase in a combination of back-up systems. Right now we have 6 mobile generators. We're finishing up a very large generator (1.5 megawatts) at our Beretania pump station, and we have another project that will construct three more fixed-in-place generators at other locations.

Our plan is to gradually create at least a "watering hole" in every water system, where people can go to get water, to drink and for sanitation. They will have to bring their containers.

In the meantime, how do we supply enough water for 1 million people on this island to survive, short of shipping in bottled water? The best way seems to be to create backup power through a combination of fixed-in-place generators and mobile units that can be towed to those sites, pre-deployed and moved around the system to pump water where necessary. The first priority is major critical infrastructure; hospitals are a very big component. We've identified some opportunities for federal grant funding – pre-disaster mitigation funds. We would use the grants to purchase mobile generators or to put in more fixed-in-place generators.

Comment: The metric makes sense, but 85 percent is not 100 percent. Our customers expect a 100 percent to be served in an emergency. The 15 percent of customers who will not be served will be concerned. The fact that we aren't meeting the 85 percent goal is concerning to me. I think the BWS needs to make it a priority to get the infrastructure in place to be able to meet this goal. We should at least be in the yellow zone and moving to the green for this metric.

Comment: It's difficult for an agency to plan metrics for Armageddon. This can equate to wasted money. After a large natural disaster – if we have a total island-wide power outage – you can still provide 85 percent of the population with water into their homes. That metric seems right.

Response: If we were to encounter a catastrophic event, getting back to normalcy may take a month or longer maybe, especially considering the age of structures. This metric addresses “lifeline”, not normal, water consumption – enough for survival. We already encourage everybody to keep at 5 to 7 days emergency supply of water, one gallon per person per day.

Question: Are the mobile generators designed so that they can be airlifted, too?

Response: Probably the smaller ones could. Our current practice is to pre-deploy them.

Comment: As part of this metric, it would be good to restore gravity feed to places where we pump now but gravity feed is feasible. That would eliminate the need to provide emergency power there, and that mobile generator could be sent somewhere else.

Response: The area you're thinking of experienced so many main breaks, we ended up abandoning it. But your point to extend our gravity system is well taken.

4. SCADA Reliability

Barry explained that the SCADA metric calculated by the number of core facilities utilizing the microwave system, divided by the total number of core facilities. Our microwave system is new and we are in the process of connecting our existing SCADA system to it.

Comment: It seemed like the score of this metric was the furthest off the goal and I wanted to know more about it.

Comment: From a utility perspective, it's better to have more "visibility" of your system and more control because that's what customers want. The goal of 95 percent is good. The *actual* needs to catch up soon or you might fall too far behind. There are wireless technologies that can help. Maybe the 2 utilities (Hawaiian Electric and the BWS) can work together on similar infrastructure that can get the communication to where you need it to be.

Response: Thank you! Our IT group is installing a secure wireless network across the island. Our current SCADA system is on copper wire, which depends on Hawaiian Telcom. We are upgrading the system to give us greater reliability and resiliency during storms. The scorecard shows a large discrepancy between the actual and the goal. This looks like it might be an error and we will review it.

5. Leak Detection

Comment: Leak detection should help reduce some of the costs and allows you to prioritize where you need to go, so is checking 50 percent of the system enough?

Response: The metric is actually 50% *per year*. That's half of 2,100 miles of pipeline. Our leak detection crews use state-of-the-art technology to try to identify leaks in the whole system – not only in the main lines but also in the service laterals, and fire hydrant connections. In 2015, we detected around 500 leaks in the system because of the work by the leak detection crew.

Question: Do you do repair leaks on the spot when your crew detects them?

Response: If it's possible for the leak detection crew to make the repair themselves, they do, but most repairs follow. Many leaks are at couplings at the meter. But if the leak is in the roadway, the detection crew can't dig up the road.

The idea of leak detection is to reduce water loss, which is currently around 10 percent of the amount we pump. At 145 million gallons per day, that's 14.5 million gallons a day lost. Our goal is 8.1 million gallons per day or less, around the national average. We have a ways to go, but that's tied to leak detection.

Question: What is the difference a pipeline and a main line? How big is a main line?

Response: Barry said a main line is also a pipe. The distribution system has different sizes of pipe. The larger ones are called transmission pipes. Main breaks are usually on larger pipes in the system and cause disruption of service. Main lines are 4 inches in diameter and larger. Fire hydrants require at least a 6 inch pipe, but we try to use an 8 inch diameter pipe or larger to provide adequate flow for the fire department.

Comment: Does water loss occur other ways than through leaks? Can you measure the actual amount of water loss? What is the correct metric(s) to use?

Response: There are multiple metrics for water loss. As Barry was saying, there's also a metric in here for water that's not measured in the system, the nonrevenue water.

Dave said some clarification is needed about whether detecting for leaks in half of the system in a year is too aggressive a goal.

DRAFT WATER MASTER PLAN DISCUSSION AND RECOMMENDATIONS

Dave asked the Stakeholder Advisory Group about how they felt about the WMP as it stands, recognizing that the BWS is considering putting it in front of their Board to consider for adoption in October.

Comment: The WMP is a living document so it will evolve and change over time and things will come along. Even if every last thing is not included right now, at some point it will be, if it's important.

Question: Will the people who provided comments receive a reply before you take it to the Board?

Response: We will send out response letters to the people who wrote in.

Question: Does the BWS plan any general publicity? What you shared about the public comment topics was really interesting. It would be good to do an editorial or something similar before the WMP goes before the Board.

Response: Good suggestion. We will consider it.

Comment: I thought it was a really amazing document. You can tell a lot of really smart engineers were working on this thing. The fuzzy number for me was the DPP figure used for population projections. I don't think it's correct. To the point that the WMP is a living document and gets modified occasionally, how often does that happen and what's the mechanism for it?

Response: The Water Master Plan will be officially updated every ten years. But we do not need to wait for the plan to be updated before we react to something as it comes up. That's why we included the adaptive management component of the plan. Where we would invest, we will monitor. We also regularly evaluate our CIP, and if we need to make changes, we can do that. Adaptive management offers flexibility. The WMP provides us context and a guide. It is not so restrictive that we cannot be flexible.

Stakeholder Recommendation to Adopt the Plan

Question: Would it be appropriate for this group to make a recommendation that you forward the WMP to the Board for their review and consideration. If so, it is my motion that we recommend the adoption of the WMP.

Response: Dave said a recommendation from this group would be completely appropriate, if that's your pleasure.

Comment: I'll second that, with the caveat that we try very hard to acknowledge those who wrote in and try to get a statement of some sort publicized.

Comment: Our recommendation is to submit the WMP with support of the Advisory Group to the BWS Board for adoption, and to ensure that the people who commented on the Draft WMP get a response from the BWS prior to the Board meeting.

Question: What was envisioned for the Stakeholder Advisory Group's overall role? Was it to be advisory, or was it required? Was the original goal to have the WMP adopted by the Board?

Response: Ernest said the role of the group is advisory; it was not required. We recognized the need to improve our customer engagement and education effort. When the Board adopts it, the WMP becomes a policy. That has been our intent from a while back, and Ernest said he hopes that's been clear.

Dave asked if anyone else had thoughts on the recommendation. He asked if anyone thought the recommendation to adopt was not a good idea. Everyone agreed with the recommendation to submit the WMP with support of the Advisory Group to the BWS Board for adoption, and to ensure that the people who commented on the Draft WMP get a response from the BWS prior to the Board meeting.

SUMMARY AND NEXT STEPS

Dave told the group that the BWS is considering offering a tour of the Honouliuli Water Recycling Facility for interested stakeholders in October. The majority of the group said that they would prefer to attend on a Saturday in October.

The next meeting is Tuesday, November 15th from 4 to 6:30 pm in Hawaiian Electric's conference room the Honolulu Club. Dave thanked Sherri Ishikawa for hosting that meeting.

He closed by encouraging the stakeholders to review the 2017 meeting schedule. These will be monthly meetings, as we will be discussing rates. He thanked everyone very much for their participation tonight, with an especially fantastic turnout and outcome.