



**Honolulu Board of Water Supply
Stakeholder Advisory Group**

Meeting 20 Tuesday October 17, 2017 4:00 to 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 14 stakeholders present in addition to BWS and CDM Smith staff. The stakeholders represent diverse interests and communities island-wide.

The following Stakeholders Advisory Group members attended:

- | | |
|-----------------------|---|
| Matt Bailey | Aqua-Aston Hospitality |
| Pono Chong | Chamber of Commerce, Hawaii |
| Shari Ishikawa | Hawaiian Electric Co. |
| Micah Kāne | Hawaii Community Foundation |
| Will Kane | Mililani Town Association |
| Bob Leinau | Resident of Council District 2 |
| Gladys Quinto Marrone | Building Industry Association of Hawaii |
| Helen Nakano | Resident of City Council District 5 |
| Dean Okimoto | Nalo Farms |
| Dick Poirier | Resident of Council District 9 |
| Elizabeth Reilly | Resident of Council District 8 |
| Brian Uemori | Bank of Hawaii |
| Cruz Vina Jr. | Resident of Council District 8 |
| Guy Yamamoto | YHB Hawaii |

MEETING AGENDA

- Welcome
- Public Comment on Agenda Items
- BWS Updates
- Accept Notes from Meeting 19
- Financial Plan and Water Rates Study, Progress to-Date
- Rates Discussion Items
 - Non-residential Water Rates
 - Subsidies for Agricultural, Non-Potable, and Recycled Water Rates
 - Fixed Monthly Charges
 - Fire Protection Charges
- Summary and Next Steps

WELCOME

Dave Ebersold, meeting facilitator and Vice President of CDM Smith, welcomed the group and outlined the meeting objectives. Dave explained this meeting had a very full agenda; whatever items were not reached tonight would be carried forwarded to the Stakeholder Advisory Group's November meeting.

PUBLIC COMMENT ON AGENDA ITEMS

None.

ACCEPTANCE OF NOTES FROM MEETING 19

The group accepted notes from the prior meeting.

WELCOME NEW STAKEHOLDER

Dave welcomed new stakeholder Brian Uemori, an Executive Vice President with Bank of Hawaii. Brian offered thanks for his invitation to participate in the Stakeholder Advisory Group. He explained he is in the bank's commercial group. Brian indicated he realizes there is much to know about water, and he looks forward to expanding his knowledge.

Dave then welcomed back Pono Chong on his return to the Stakeholder Advisory Group, continuing his representation for the Chamber of Commerce Hawaii.

Dave explained that as part of the meeting's agenda, members of the Stakeholder Group would be asked to provide recommendations on agricultural subsidies, non-potable water rates, recycled water rates, monthly charges, and more. He then turned to Ernest Lau for the Manager's Update.

BWS UPDATES

Ernest began by explaining that following every Stakeholder Group meeting, an update is provided to the BWS Board about the concepts presented and the feedback and ideas from the group. For example, at the upcoming regularly scheduled board meeting on Monday, the Board will receive an update on the topics and input from tonight's Stakeholder Group meeting. Ernest extended a personal invitation to SAG members to attend public meetings of the BWS Board, held on the fourth

Monday of each month at 2 o'clock in the afternoon. The Board has approved televising of their meetings on Olelo. Ernest promised to share the Olelo schedule when it becomes available. He commented that televising BWS Board meetings is another step for transparency, which is especially important as rates and charges are under consideration.

The Board has approved creation of a Permitted Interaction Group, or PIG, associated with the Water Rates Process. Under HRS Section 92-2.5b, a PIG enables board members of public agencies to legally investigate and discuss important matters outside regularly scheduled board meetings. A PIG can increase transparency in exploring important governance issues and can enrich the diversity of perspectives brought to the discussion. Ernest explained that the Permitted Interaction Group will be an important part of the Board getting more directly involved in discussion of water rates and charges. The PIG comprises three board members: Bryan Andaya, Kapua Sproat, and Kay Matsui.

Ernest announced that BWS has launched a web survey focused on the financial plan and water rates. BWS is using multiple media to inform people of this opportunity to share their ideas about water rates and charges. Information has been sent to the Neighborhood Boards, and employees are making announcements as they attend meetings throughout the community. Ernest encouraged members of the Stakeholder Group to access the survey at www.boardofwatersupply.com, and to encourage friends and family to take part. BWS Information Officer, Kathleen Elliott-Pahinui, distributed a flyer promoting survey participation.

Questions and Answers

Q: Can you elaborate on the survey a little more, including what kind of numbers you're looking for and how you're going to weight the results?

A: BWS Information Officer Kathleen Elliott-Pahinui came forward to explain the goal is 1,000 responses. As of the meeting date, there were close to 200. The flyer was sent out to the neighborhood boards, and BWS intends to do another mailing. Kathleen stressed the importance of encouraging family and friends to participate.

She explained that the survey is a way for BWS to capture community ideas at a very basic level, so BWS can consider community sentiment and concerns. Findings from the on-line survey will feed into focus groups next year. There are a lot of subsidies and other rate details that people are asking for, so it's important that BWS get an unfiltered sense of what the public really feels. Currently, the survey is slated to go until the end of October, but it probably will continue beyond that.

Dave then provide information requested at the September Stakeholder Meeting regarding delinquent accounts. A question came up about how much money BWS writes off as non-collectable. Dave showed a chart providing numbers for each of the past five years, 2013 to 2017, ranging from \$331,000 to \$524,000 annually. Dave explained that these numbers are really good for the water industry. It represents less than 0.2% of total BWS revenues. This reflects the same ethic that Shari Ishikawa has seen at Hawaiian Electric. People on Oahu try hard to pay their bills; even when payment is delinquent, they tend to catch up. The numbers at BWS bear out those observations.

Q: When you have dead accounts, do you push them off to a collection agency?

A: Not at this time, but BWS is looking to procure a contract with a collection agency in the coming year.

FINANCIAL PLAN AND RATES PROCESS UPDATE

Dave provided an overview of the Stakeholder Advisory Group's progress to date in framing the Financial Plan and Rates Study. A lot has happened, including substantial and significant input from the Stakeholder Group.

The Water Master Plan was approved by the BWS Board in October 2016. From there, the Stakeholder Group started the process of developing the Long Range (30-year) Financial Plan. This has taken a little longer than was initially scheduled, but it now is moving along and the expectation is that BWS's Board will consider adoption of the Long Range Financial Plan this December.

The Stakeholder Advisory Group spent considerable time updating BWS's financial policies, which the BWS Board adopted in May of this year. Then, the Group discussed and provided input related to updating the structure of BWS water rates. Initially, this was expected to be completed around the end of the year. However, with much still to review and the continued need for significant input from the Stakeholder Advisory Group, the current schedule projects discussion of water rates to wrap up around next March.

The public engagement process for financial planning and rates has gotten underway, including the online survey mentioned by Ernest. Anticipating adoption of new rates in July of 2018, the timeline includes a six-month window for public education about the adjusted rates, as well as time to update the billing system and test the changes to make certain it all works. Revised rates may become effective as early as January of 2019.

Dave then reviewed the three primary steps of ratemaking:

1. *Revenue Requirement*- determine how much money the board needs to fund its operations and capital programs going forward
2. *Cost of Service* - identify how different classes of customer contribute to those costs
3. *Rate design* – consider the level and structure of rates for each class of service.

REVENUE REQUIREMENT is calculated as part of the Financial Plan, with multiple analyses and considerations, primarily:

- **Anticipated Water Sales** are pulled from the demand forecast in the Water Master Plan, using about half of the amount projected. This comes to 0.1% increase per year. It is common practice for a water master plan to be conservative on the high end, to assure that facilities are adequate and provide sufficient capacity. This is balanced by erring on the side of caution during financial planning and rate development.
- **Operations and Maintenance** is reviewed and approved by BWS's Board, as part of their annual budget process. BWS Division Managers developed bottom-up estimates for each of their operating divisions for the next six years. These numbers are projected to increase an average of about 4% per year.

- **Reserves and Working Capital** also are considered. The Stakeholder Advisory Group spent quite a bit of time on this topic, ultimately proposing updates to four key components of the financial policy framework.
 - *Fund balance and working capital* (essentially the amount of cash on hand) was modified to target 180 days of working capital, but never less than 60. These levels are to be reached gradually over a 10-year period, to minimize rate impacts.
 - *Purposes of and uses of debt* (when and why to borrow) continues to require selection of most economical financing source, with additional language indicating the term of debt must be limited to the life of the facility. For example, if you're buying vehicles, you're not going to issue 30-year bonds for their purchase, because vehicles don't last that long. The update also stipulates that BWS cannot fund operations and maintenance expenses using debt, and no more than 20% of the portfolio should be variable rate debt.
 - *Debt to net assets ratio* (how much can be borrowed) now has been set at no more than a 50% debt to net assets ratio.
 - *Debt service coverage ratio* (ability to make loan payments) is a key metrics for bond rating agencies, and now is set at a 1.7 factor on senior annual debt and 1.6 on the combined debt.

These recommendations of the Stakeholder Advisory Group came before the BWS Board in May; all were adopted. The thought, time, and ideas provided by the Stakeholder Advisory Group were very helpful and instructive.

- **Capital Improvement Program** scenarios (7 of them) were reviewed and discussed extensively by the Stakeholder Advisory Group over the course of several months. The resulting feedback contributed to the BWS Board providing guidance to incorporate a scenario that provides a gradual ramp up over 13 years to finally replace 1% (21 miles) of BWS's pipelines annually. It is anticipated that more than 4,000 main breaks will be prevented through this strategy.

To achieve this ramp up, the compounded, anticipated increase in the revenue requirement over the next decade is projected to be 23%, with annual increases ranging from 1% to about 3.5%, and it is dependent upon the financing strategy. These are not water rate increases; these are increases in the amount of revenue BWS needs if nothing else changes in the water rate structure. It does not include other possible rate structure modifications, like shifting tiers, creating an affordability program, and other possible revisions in rate structure.

- **Trends and Risks** analysis and discussion is still underway. This involves diverse scenarios and assessment of their impact on financial planning, for example conservation and how to address the possibility of a significant decline in water use if all BWS customers take conservation to heart. This would mean lower water sales and, as a result, reduced revenues. How should BWS plan for that? Similarly, what if growth happens faster than anticipated and there's greater demand to increase the size of the water system? What about a major natural disaster or possibility of water source contamination, like at Red Hill? What are the long-term impacts of climate change, and how can BWS anticipate and address this?

The Stakeholder Advisory Group is slated to look at these types of risks from a financial planning perspective, anticipating the financial implications for the BWS and its customers.

COST-OF-SERVICE is the second major step in rate-making. Different classes of customer have differing water use patterns. As an example, single-family residential customers produce a very high peak in water usage from about 6:00 a.m. to 9:00 a.m., when everybody's getting ready for work and taking showers, making breakfast, etc. Water use then drops off in the middle of the day. When people return home in the evening, water use spikes up again. Then, after people go to bed, water use drops to almost nothing in the middle of the night. These fluctuations have a large impact on the operations and size of the water system. The system needs to be designed to be able to reliably provide sufficient water for the period of greatest demand. This is called the peak hour, defined as highest peak in water use on the hottest day of the year. In contrast, non-residential customers (businesses) use water more evenly throughout the day. Overall, this means it doesn't cost as much to serve them.

Dave displayed a chart (below) summarizing the Cost of Service analysis conducted this year. The information on this chart was the basis for the Zero Sum Game stakeholders engaged in at the July Stakeholder Advisory Group meeting.

Customer Class	Revenue (\$ Millions)	Cost of Service (\$ Millions)	Differential (\$ Millions)	Differential (Percentage)
 Single	\$96.6	\$107.2	-\$10.6	- 11%
 Multi-Family	\$45.4	\$40.0	\$5.4	12%
 Non-Residential	\$82.2	\$67.4	\$14.8	18%
 Agriculture	\$2.4	\$3.8	-\$1.4	- 58%
 Non-Potable	\$1.6	\$2.4	-\$0.8	- 46%
 Recycled	\$5.8	\$12.3	-\$6.5	- 112%

Single-family residential, the first line across, shows a differential of -11%. What this means is the \$96 million that BWS collects from single-family residential customers is not enough to cover the cost to serve them, which is about \$107 million. As a result, over \$10 million is being subsidized by other customer classes. In this case, it's primarily the non-residential customers that are paying the additional money to subsidize single-family residential customers.

At the bottom of the chart, there are negative differentials for agricultural customers and non-potable customers, which are also subsidized by non-residential and multi-family residential customers.

When the Stakeholder Group explored this in the Zero Sum Game, they voiced three conclusions:

- All customers benefit from having local agriculture, so all types of customers should contribute to that subsidy

- Reduce the subsidy for single-family residential customers, especially the portion coming from multi-family customers
- Continue the non-potable and recycled water subsidies.

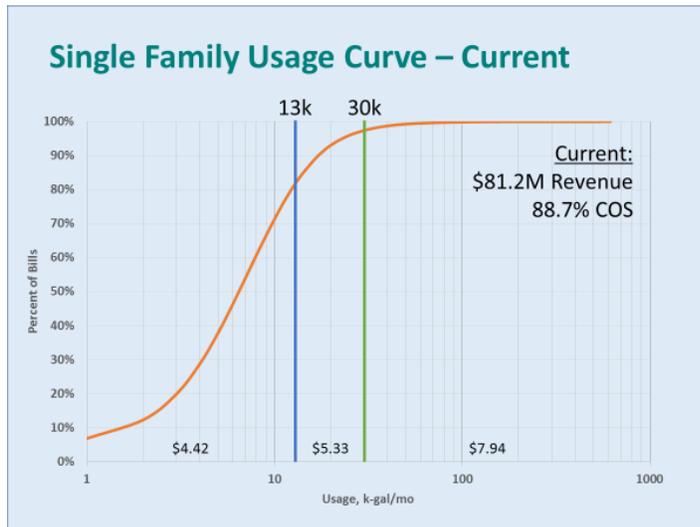
RATE DESIGN is the third primary step in rate-making and has been the topic for the last few meetings of the Stakeholder Advisory Group. At September’s meeting, the group discussed the current BWS rate structure. Residential customers are charged according to an inclined block structure or tiered water rates. For single-family residential customers on O’ahu, the first tier is 13,000 gallons of usage. Customers pay \$4.42 for each 1,000 gallons used in that tier. If usage goes above 13,000, the rate goes to \$5.33 per 1,000 gallons used, up to the third tier that starts at 30,000 gallons, where the charge goes to \$7.94 per 1,000 gallons. For multi-family residential customers, the rates in each tier are the same, but the tiers are shifted down a bit. In general, multifamily residences have less outdoor water use, so the tiers are not set as high.

QUESTIONS AND ANSWERS

Q: Just so I understand it, the single-family rate is progressive, meaning you don't pay \$7.94 till you hit the 30,000 gallon-rate.

A: That is correct.

Dave displayed a graph of current single-family water usage for BWS customers with percentage of BWS customers as the y-axis (vertical) and water usage in 1000 gallons (kgals) per month on the x-axis (horizontal). As shown on the graph (see below), more than 90% of customers’ water use falls within the first two tiers. If the tiers are shifted downward (30 kgals to 21 kgals, 13 kgals to 8 kgals) more revenue is generated, so more of the single-family residential cost of service is covered: the current 88.7% coverage moves up to 92.4% with the shifted tiers. If the lower tier is shifted further down to 6 kgals, 94% of the cost of service would be covered.



Considering the overall impact of these changes on customers, the bill would not change for a customer using 2,000 gallons a month or less. The most common usage amount for BWS single-family residential customers is 5,000 gallons or less. These bills too would not change. The average

BWS customer using an average of 9,000 gallons a month or less would see a slight increase in their bills. However, for the top 1% of water consumers who each use more than 45,000 gallons per month there would be a substantial bill hike, increasing from about \$276 a month up to about \$306.

QUESTIONS, ANSWERS, AND COMMENTS

Q. Is there a correlation between water use and income, for example lower income and lower use?

A. We do not know if there's a correlation between water use and income.

Q. Could property values be used to make that correlation?

A. BWS does not track this type of data. It would be tough.

Comment: There is city and county real property tax information, so BWS could possibly do a sample to see if it's possible to correlate water use with property value.

Comment: If there is a correlation, then it makes sense that customers with higher-income/higher property value could perhaps afford more.

Comment: Actually, when we looked at that, high water users were spread out all over the island.

A. We created a map, looking generally at the highest users to see where they lie on the island. There were clearly some areas that you would look at and say those are wealthier areas and there are some large users there. But there also were plenty of other areas that didn't fit that model.

Comment: Looking from a different perspective, perhaps high water use is not because the customer has a bigger lawn, but because their home is multi-generational. Perhaps it's not your average family of four in a household; it's a household with the garage turned into a living space. There might be three generations living in one household, so the water use is for ten people instead of four.

Q. Related to this, my next question is, "what is the cost structure of a single family unit?" Is the expense (cost) in just bringing water to the house, whether there's one person living in it or ten? How does that work?

A. So I think you're asking how do you figure out cost of service for a single-family residence?

Q. Yes, how do you figure it out?

A. The way the cost-of-service analysis works is you look at the total depreciated value of BWS's assets, then you assign those values across the functions that the BWS does: sustain, capture, treat, move, store, deliver. Then you take those costs and allocate them by customer class. We take all the operations and maintenance expenses, all the assets in the entire system, and we allocate those out, so it's an "all-in" number.

Q. If we're talking about affordability and if the high-end users are multi-generational families, then that's who's going to take the hit. Not the higher income customers with only one child.

A. You should take a look at the maps from last meeting that showed locations of the top 1% of users, then the lowest 1% as well. They're in the presentation online and also may be in the meeting notes.

Comment: There were articles in the newspaper about homes with maybe 15 bedrooms going up in single-family residential neighborhoods. I don't know if there's some correlation there, or if these are multi-generational or some other type of residence.

Comment: We all know someone in multi-generation housing, where it's been turned from 3 bedrooms, 2 baths to 7 bedrooms, 4 baths.

Comment: There are tons of homes with multi-family generations. Kids can't afford to leave. The city is promoting that. Don't just assume that with more usage we're talking about high-end homes.

Comment: There also are residential care facilities, where they have multiple bedrooms and bathrooms, and located in residential areas.

Comment: For people with incomes in the top 1%, the increase for using more than 45,000 gallons is not quite 10%, which could be quite reasonable. Consider that if you have seven family members in a home, hopefully you get multiple incomes too. Hopefully higher rates for higher use could promote some degree of trying to conserve water.

Dave explained that the presentation was a response to feedback at prior meetings, where members of the Stakeholder Advisory Group sought ideas for how to capture a higher percentage of the cost of service for single-family residential customers.

One method would be to leave the tiers where they are and raise the cost in each tier. Ultimately, you cannot capture more of the cost of service for single-family residential customers without charging more within that customer class. If that's a goal that you want to accomplish, then we've got to figure out how to go about doing it. Somebody's going to pay more. That's why we call it a Zero Sum Game. But, it's not a game; it's everybody's water rate. That's the hard part.

Q. What is the basis for the definition of a single-family residence?

A. It's based on the City's permitting policies for what's a single-family residential lot. If it's a single-family home or a duplex, it's counted as a single-family residential customer. If it's a triplex or more, it's generally considered multi-family.

NON-RESIDENTIAL RATES

Dave introduced Brian Thomas, who is with Public Financial Management. Brian focused on non-residential (AKA commercial or industrial) rates. Currently, customers in this class all pay the same unit rate of \$4.96 per 1,000 gallons. Brian said that a majority of the many water utilities he's familiar with have a very similar rate design for non-residential customers. Still, there are some utilities that have tiered commercial rates and/or rates that vary by meter size. The counties of Maui, Kauai and Hawaii all have tiered commercial rates. Kauai and Hawaii have the same rates for non-residential and residential customers, which are based on meter size. Both the fixed monthly charges and the amount of water in each tier increase as meter size increases.

There are many different kinds of rate structures:

- **Inclining block rates** – The customer gets a certain amount of water at a lower rate; once they exceed that, the next tier is more expensive. This is a very common rate structure and is how BWS residential rates are structured.
- **Declining block rate** – A first tier is established to cover all fixed costs. For water use above the first tier, customers pay a lower rate that covers the incremental or marginal costs. This once was more popular, and it still exists in some locations, for example Louisville, KY.
- **Base plus excess** – This starts with establishing a set amount of usage for each customer based on their average use for a year. Once that level is exceeded, higher rates are charged for the excess.
- **Budget-based rates** – These are growing in popularity, particularly in dry regions. This rate option literally develops a specific rate for every individual customer based on specific factors, for example number of permanent residents in a household. Irvine Ranch Water District in California has implemented this structure for its residential customers, and it has taken about a decade to work out the details. Each household gets 55 gallons per capita, per day. The rate is initially set based on four persons in the household. Those with larger households can appeal. Once the water budget is exceeded, customers pay based on tiers of increasing prices.

Irvine has moved on to build a similar budget-based structure for their non-residential customer class. They don't have nearly as many different businesses as there are on Oahu. Representatives of the utility go into each business and record specific characteristics, for example: number of employees, type of business, level of investment in water conservation, efficiency in water use, and types of functions. This information is used to set individual (customized) budgets for the amount of water each business will get at a certain charge. For use beyond the water budget, charges escalate.

- **Irrigation budgets** – These are similar. The water utility looks at the amount of property to be irrigated and may also take into account the type and efficiency of irrigation, type of plantings, micro-climates, etc. With recent droughts, this has become popular in California, Nevada, and areas with desert climates.

We have talked about lots of changes for the BWS emerging from the Water Master Plan, Long Term Financial Plan, and Rates Study. Brian said that, maybe, modifications to the non-residential rate structure are not necessary at this time, particularly given the vast diversity of non-residential customers on Oahu. Budget-based rates could address this diversity of customers and could be considered more equitable and defensible. But going down that path is data-intensive. It takes time, it is costly, it doesn't happen overnight. That's a long-term path.

Based on the analysis performed, the BWS prefers to keep uniform non-residential rates at this time because:

- They address the BWS's wide diversity of customer types and usage characteristics.
- Cost and usage data by customer type is not available; it would be expensive and time consuming to develop.
- Uniform rates provide a usage-based price signal.
- They do not penalize large, efficient users.

- Uniform rates are easy to understand and administer.
- Additional conservation can be more effectively achieved through tailored programs.

Members of the Stakeholder Advisory Group added:

- Flat, uniform rates are easy to understand. I know in advance what I'm going to be paying per 1,000 gallons.
- Uniform rates make sense for non-residential.
- Don't fix what isn't broken.

QUESTIONS, ANSWERS, AND COMMENTS

Q. If you were going to collect the data necessary for budget-based rates, wouldn't it add costs?

A. Absolutely.

Q. Would each non-residential customer be assessed on an individual basis?

A. Yes. One of the things that we see around the country is, in order to encourage conservation in the non-residential customer class, you actually go out and meet with customers to implement programs. In Southern California there are people who go out and look at different technologies. These are vetted, and steps are taken that encourage people to develop different technologies to save water, targeting specific businesses. These are more targeted and tailored conservation programs, rather than trying to do it through a budget-based rate.

Q. You mentioned people that go out into the community to observe different conservation initiatives and to encourage these businesses. Is that done by the entity that runs the water supply or is that done as a private matter?

A. It's a little bit of both. The Metropolitan Water District, which manages a program of this type, is a large wholesaler that provides water throughout Southern California. They have members of their conservation staff who work directly with different businesses. In Las Vegas, there's a WaterStart program that works with the private sector and helps them to develop conservation technologies.

Q. It seems to me that if you use more water, you should have to pay more. This might be measured in terms of what you're producing. Say you have a big factory that uses 1,000 gallons to produce one unit, and there's another factory using 500 gallons of water to create the same unit of the same product (e.g., a car).

A. If I'm in the same business, and I'm producing the same amount of widgets, and I use half the water, I'm going to have half the water bill. As a result, I'm going to have a cost advantage that I could either reflect in my profits or in my pricing, and then build a larger market share. So, one of the things about the uniform rate is it kind of encourages that kind of behavior. You reward more efficient usage.

Q. As a percentage of total water use, how much is the non-residential piece?

A. 32%

Dave encouraged members of the group to provide additional ideas and input. He stressed that there are a lot of people in the group, representing different types of businesses that use water at different scales. He prompted additional thoughts from the business perspective.

Dave explained that the Board's preference at this point – barring a strong recommendation to the contrary – is to continue with a uniform non-residential rate.

Comment: That makes sense.

Comment: Because budgeting is complex and time consuming.

Q. Has it been shown that it makes a difference in conservation by going house by house? Is it worth it overall?

A. In the residential sector, the experience in Southern California has been pretty positive in terms of water use efficiency and conservation. In terms of reception from the community, once it's clear this is for residential customers and once people understand how it works, there is receptivity about the equity and fairness. It has been successful in Eastern Municipal Water District, which is in Riverside County, outside of Los Angeles. They saw water usage in the residential customers reduced by about 20% about three years into adopting this rate structure. Rates also went up a little bit. That's the other thing you're going to be seeing on Oahu. Everybody's rates are going to go up.

SUBSIDIES FOR AG, NON-POTABLE AND RECYCLED WATER RATES

The next topics discussed were subsidies for agricultural, non-potable and recycled water customers.

Agricultural Water Rates and Subsidies – Dave began with agricultural customers, and noted that they pay a lower rate than other BWS customers. The ag rate has a declining block structure. The first 13,000 gallons of usage matches the first tier in the single-family residential class. A lot of agricultural customers have a house on their property and so the first tier is to cover the water usage for the single-family residence. The next tier, for all water usage above 13,000 gallons, is charged at a much lower rate: \$1.89 per thousand gallons. 94% of the water usage by agricultural customers is charged at the lower rate of \$1.89.

Several steps are required to make sure that the people who get the benefit of this reduced rate are truly engaged in agricultural practices. These include:

- Apply annually.
- Be actively engaged in commercial crop production, stock raising or dairy farming,
- Submit to a field inspection for verification.
- Provide a copy of the general excise tax (GET) license and show GET returns.
- Meet certain cross connection and backflow prevention requirements, to keep water that's used outside from flowing back into the system.

BWS has about 500 agricultural customers that purchase potable water. Their water use amounts to about 2.5% of the total water that the BWS provides. Agricultural customers get about a 60% subsidy, compared to the cost of service. That amounts to about \$1.4 million per year, relatively small compared to total revenues of over \$230 million a year. But the subsidized amount is very important if you're a farmer and struggling through the financial situation of being in that business.

Dave showed agricultural rates for Kauai, Maui and Hawaii (see below).

**Comparison to Other Islands' Ag Rates
(Usage in k-gal/month)**

Maui	Kauai	Hawaii
>15 = \$1.10/k-gal (~20% of the charge for other customers usage in that range)	\$2.20/k-gal (~60% of first block)	0-5 = \$0.92/k-gal 5-15 = \$2.01/k-gal >15 = \$1.27/k-gal
5/8" = \$19.25	5/8" = \$17.75	5/8" = \$18.30
3/4" = \$31.00	3/4" = \$24.75	--
1" = \$46.00	1" = \$36.50	1" = \$39.00
1.5" = \$88.00	1.5" = \$65.50	1.5" = \$73.00
2" = \$137.00	2" = \$100.00	2" = \$113.00
3" = \$242.00	3" = \$181.00	3" = \$207.00
4" = \$420.00	4" = \$297.00	4" = \$342.00
6" = \$770.00	6" = \$587.00	6" = \$678.00
8" = \$1,215.00	8" = \$934.00	8" = \$1,081.00
		10" = \$1,560.00
		12" = \$2,720.00

Agricultural customers on these different islands not only pay a rate for the amount of water they use, which is shown above in the medium-orange row at top of the chart, but they also pay a monthly meter charge that varies by the size of the meter (shown in the light-orange rows). So unlike BWS, where agricultural customers pay the same monthly billing charge of \$9.26 cents as all other customers, on the other islands they pay a meter charge that varies by the size of meter.

Dave asked stakeholders to break into groups and discuss the following questions:

- Should the same declining block structure and subsidized rate be maintained?
- Why or why not?
- If not, how would you recommend changing it?
- What would be the intended purpose of any change(s)?

The report outs were as follows:

GROUP 1

Group 1 selected the simplest approach. Do not fix it, if it is not broken.

GROUP 2

Group 2 also agreed not to complicate things, but we would like to support small farmers who need the subsidy, rather than large farmers. We should do all we can to support the small farmers, even though agricultural customers are already being subsidized by 60%.

Perhaps instead of 13,000 gallons as the cutoff for the first tier, bring the cutoff down to 9,000 gallons, and then start the very low rate even lower. And even that turned out to be a 75% subsidy, given our circumstances, we need to do all we can to help those small farmers.

GROUP 3

Dean Okimoto told the group that most of the large farms on Oahu don't use potable water. They use irrigation water. Ditches that carry water from the windward side are not part of the BWS potable water system. Large farms use some potable water in their processing facilities.

Dean noted that BWS's agricultural water customers are mostly small farms. As an example, a small farm may use about 40,000 gallons a month during summer. In the future, some of the large food-producing farms may begin going to the BWS for potable water, or they're going to have to treat their irrigation water. Large farms may want to buy recycled water.

He said Hawaii's farmers have to prepare for the impacts of new food safety rules and regulations. A lot of farms, if they're growing food crops, are not going to be able to use non-potable irrigation water, unless they clean it. So the "why or why not" is mainly that, the more food safety regulations are pushed, we're talking about an increase in food costs, and that most farmers are not going to survive. The Department of Agriculture will tell you that 30% of our farms are going to quit as a result of the Food Safety and Modernization Act. He said that either the farms will get bigger or they will die because they cannot meet these rules. They require too much labor for a small operation. Small farms cannot find people willing to work on a farm at \$12 an hour, when they can work at a hotel at \$18.

Non-Potable and Recycled Water Rates and Subsidies – Dave then talked BWS's non-potable water rate -- \$2.40 per 1,000 gallons. Some non-potable customers and all of BWS's recycled water customers have contractual rates. Those are negotiated agreements, and in aggregate, they account for about 3% of the BWS's total revenues.

BWS has about 2 million gallons per day of non-potable supplies for irrigation uses. There are three non-potable sources on the island:

1. Glover Tunnel in Makaha, which primarily serves the Makaha East Golf Course
2. Barbers Point non-potable well, which primarily serves the Ko Olina resort
3. Kaluaao Spring in Pearlridge, which serves Aloha Stadium, Hawaiian Cement and some Department of Transportation usage.

Non-potable systems provide brackish water. BWS has about 90 customers using about 655 million gallons of water per year – about 1% of the total water usage in the system. These customers receive a 43% subsidy compared to cost of service, which is less than a million dollars per year.

Recycled water comes out of the Honouliuli Wastewater Treatment Plant and then goes into the Honouliuli Water Recycling Facility, which is owned by the Board of Water Supply. There are different types of recycled water. R-1 is used for irrigation and by industry. Honouliuli has a capacity of up to 10 million gallons per day. BWS has 25 customers that buy R-1 recycled water. It is used for irrigation throughout Ewa to irrigate most of the area's golf courses, and in some of the City of Kapolei's parks and schools.

Rates differ between the different types of contracts.

- Golf -- \$0.55 per 1,000 gallons.
- Other types of irrigation customer -- \$1.75 per 1,000 gallons.

Together, recycled water accounts for about 5.5% of BWS's total water usage. These customers are receiving a 211% subsidy, compared to the cost of service of about \$7 million per year.

RO (reverse osmosis) water is R-1 water that's demineralized, and it's used for specialized industrial purposes. Capacity of the RO system is about 2 million gallons per day. BWS has seven contracts for RO water. The terms and conditions vary from contract to contract, but most of them are priced in the range of \$5 to \$6 per 1,000 gallons. The reason those prices are higher is because it costs a lot more money to demineralize the water through the required treatment processes. RO water costs more to produce than R-1 water. These customers are charged more than their cost to service, yielding about a half a million dollars per year subsidy for other customer classes.

Dave asked Brian to compare recycled water rates at different cities, and explain why customers generally pay less for recycled water. Brian showed a summary of data from 18 utilities. Most of these utilities charge less than potable rates, because they're trying to encourage use of recycled water. Recycled water users also incur higher costs. For example, they must install dual plumbing systems and comply with a number of other requirements.

QUESTIONS, ANSWERS AND COMMENTS

Q. Do we use recycled water only for golf and industry, and not for agriculture? When I toured the Honouliuli Water Recycling facility, the manager drank the recycled water to demonstrate how pure it is. Why can't we use the water for agriculture? Does it have diseases in it?

A. Barry Usagawa responded that BWS doesn't currently sell recycled water to farmers, but would have no objections. In the Ewa Watershed Management Plan, several hundred acres of agriculture are planned that will be irrigated with recycled water and other non-potable water.

Dave added that where recycled water is used is limited somewhat by location. The source of recycled water is at a wastewater treatment plant. To get recycled water to where the demands are can oftentimes require a long distance of piping. The cost to install pipelines is in the range of \$6 to \$8 million per mile, so if there isn't a demand for the recycled water very close to where the treatment is, it becomes cost-prohibitive to expand that recycled system.

Comment: if people want to use recycled water, the cost can be a huge variable, depending on the piping, the disinfectant level, and pumping. It would be nice if there were a formula for recapturing

the amount of expense that the Board of Water incurs for providing the service. If BWS wants to underwrite recycled water at some percentage, they really need to know the cost before they set the rates.

Q. I'm all for recycling and reusing water, but the dollar-amount of subsidy for these 25 customers of R-1 water is near the dollar-amount of subsidy for single-family homes. Is that equitable?

A. Ernest Lau responded that for every gallon of recycled water used, there's a gallon of high-quality potable water saved. The use of recycled water extends our potable supply to meet growth requirements for our community. The use of recycled water is also mandated under a consent decree with the City. The Water Master Plan projects out to 30 years out, and it indicates that we have to develop more water sources. We can extend our supply by looking at all qualities of water and trying to match the quality with the end use. Developing potable wells is quite expensive too. Then we have to add piping, water tanks and pump stations. So there is a cost on both sides, but the comparison made is very good point.

Q. If the water is safe enough to drink theoretically, why all these precautions for its use?

A. R-1 water is not approved for drinking purposes. Nowhere in the country do health departments allow the direct consumption of recycled water (called "direct potable reuse"). Health laws in certain states, e.g. California, allow the spreading of R-1 water on top of the ground to percolate into aquifers, as well as injecting disinfected RO water into the ground to replenish aquifers. But those assume additional treatment processes and a lot of additional monitoring, and are quite expensive. In general, the trajectory that we see most locations taking with recycled water is to start off with the equivalent of BWS's R-1, use it for irrigation and add the additional treatment so it meets the requirements for like RO, for specialized industrial processes.

Q. Are both RO and R-1 sewer water?

A. Yes.

Q. Do you try to recover runoff (storm water)? Shouldn't that be easier?

A. Ernest responded, good question! We've done a study of using the Nu'uuanu Reservoir #4 to capture storm water and recharge the aquifer by injection into the ground. A few miles down the road, we will pump it out from our wells after it's filtered through the lava rock. Capturing storm water is something we have to look at, in addition to recycled water and all the other options, including desalination, and be prepared to have a variety of approaches to deal with our water needs for the future.

Comment: Regarding the 211% subsidy for golf courses, it's because of the expense and infrastructure that is being spent to support those uses. So what I'm hearing then, is infrastructure for these uses are a priority for the City, but infrastructure to build housing is not. As a rate-payer, I'm subsidizing golf and if I were to buy a new house, the cost of infrastructure goes into that.

Ernest responded that, if we look at the size of our capital improvement program (CIP), the majority of BWS's CIP projects are for the potable system to support our drinking water customers. We're

looking at a CIP growing over time to around \$200 million dollar per year. The vast majority of investment is going to be in the potable system with some investment in recycled water to help extend our water supply.

Q. Are the contracts public records?

A. Yes.

Q. What percentage of recycled water that is produced do we actually use?

A. About 2/3.

Dave said that a goal in the Water Master Plan is to double the amount of recycled water use. This is consistent with recommendations of the Fresh Water Initiative, and it takes a carrot and stick approach.

Carrot:

- Lower rates.
- Recycled water connections aren't subject to the water system facilities charge.
- Drought proof supply.

Stick:

- If an existing customer fails to use recycled water when it's available, that can result in discontinuation of water service and or penalties.
- If a new customer fails to agree to use recycled water when it's available, BWS can deny issuance of a permit.

Dave asked stakeholders to break into groups and discuss the following questions:

- How should non-potable and R-1 be priced compared to potable water? Why?
- Should there be "published rates" for R-1 and RO water instead of negotiated contracts?
- Should golf courses be charged less than other R-1 customers?
- RO costs more to produce than potable. Should there be a "premium" charged for this specialized water? Why or why not?
- Any additional thoughts?

Report outs included the following points:

- R-1 should be cheaper than non-potable. The lower price encourages more use of R-1, which in turn helps with the cost of potable water.
- The more we can use R-1, the less potable goes to these kinds of efforts (uses that don't require potable water), so overall, it's a good thing. We agreed that the rate should be published for our R-1 and RO water. You can negotiate contracts; just report it.
- If you want to increase the percentage of recycled water users, BWS should share the information with the general public. In the spirit of fairness and perception you're better off

going that way.

- Our group compromised a little bit. I'd be fine with going the way it is now, but others in the group want to raise the golf rate a little bit so that there's not such a gap between golf and other recycled water users.
- With decreasing Ag lands, we have to have a way to recharge a water system. Golf courses provide large areas of land that are being watered, and recharge aquifers in the long run.
- We wanted to add that we thought it was interesting that those golf courses (using recycled water) are within a specific geographic region, because you have to be close to the source, right? So the general public might think that we're talking about all golf courses using recycled water and that's not the case. We're talking about one section of the island.
- We also talked about the benefit to the aquifer by discharging the water on the golf courses, so figured there should be a break there. We discussed but didn't come to a conclusion that maybe the discount was a little bit too deep for the golf courses and that there might be some benefit and in adjusting that.
- Golf courses are built around homes, not only to increase their value, but also as basins where runoff water is captured. This prevents flooding in homes. For most golf courses built in the last 20 years, flood control was one of the main reasons to get a permit to build.
- R-1 was not forced on golf courses but was a kind of compromise with the government, that we can't discharge all of this treated water out into the ocean. Golf courses were asked if they'd be willing to take this on. They had to build lakes that are lined specifically for this purpose; install different lines for irrigation, signage/markings, and so forth.
- The rate that golf courses pay is subsidized, but there was a tremendous investment in infrastructure. From the industry or operator standpoint, I'm not opposed to a raise (in rates for golf). Everybody's going to get a raise and I think we are more than willing to contribute our fair share.
- If it rains, golf courses still have to take the contracted amount of recycled water.
- We agreed that it should be priced lower as an incentive, but if there are additional costs to dealing with R-1 water that should be included in the rate. There are a lot of things that can go wrong where you're using wastewater and it's important that no shortcuts get taken or we might pollute our ground water.
- I think that the rates that are negotiated should reflect the cost and not be a flat, published rate. We all didn't agree on that. We had a range of opinions.
- Regarding lower rates for golf courses, I don't know what percentage of the population plays golf, but it seems like the majority shouldn't necessarily subsidize the minority, nor should they be punished.
- RO is a special use and if something costs more, then you got to pay more.

Dave closed the meeting by summing up what will be discussed in November: fire meter standby charges, the water system facilities charge, connection fees, emergency interconnections and other subsidies.

The next meeting will be at the Blaisdell Center, upstairs in the Maui Suites, on November 14th. Dave thanked everyone for coming and participating.