



Honolulu Board of Water Supply Stakeholder Advisory Group

Meeting 10 – Tues. November 15, 2016 4:00 to 6:30 pm
Hawaiian Electric Co. Training Rooms at the Honolulu Club

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

The following Stakeholders Advisory Group members attended:

Pono Chong	Chamber of Commerce Hawai'i
Mark Fox	The Nature Conservancy of Hawai'i
Shari Ishikawa	Hawaiian Electric Co.
Will Kane	Mililani Town Association
Bob Leinau	Resident of Council District 2
Gladys Marrone	BIA – 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.
Elizabeth Reilly	Resident of Council District 4
Jon Reppun	KEY Project
Dick Poirier	Resident of City Council District 9
Francois Rogers	Blue Planet Foundation
Cruz Vina Jr.	Resident of Council District 8
Christopher Wong	Resident of City Council District 7

MEETING AGENDA

- Welcome
- Public Comment on Agenda Items
- BWS Updates (Information only)
- Accept Notes from Meeting 9 (For possible action)
- Introduction to Financial Planning and Water Rates Process (For possible action)
- Overview of the 30-Year Capital Improvement Plan (For possible action)
- Summary and Next Steps (Information only)

WELCOME

Dave Ebersold, meeting facilitator and Vice President of CDM Smith, welcomed the group. He thanked Shari Ishikawa for hosting the meeting at Hawaiian Electric's training rooms at the Honolulu Club.

PUBLIC COMMENT ON AGENDA ITEMS

None.

BWS UPDATE

Ernest Lau, BWS Manager and Chief Engineer, updated stakeholders on BWS activities. He reported that the BWS Board adopted the Water Master Plan in October, and thanked Helen Nakano for providing testimony. He said that the BWS received 106 comments from 48 people. Prior to Board adoption, the BWS responded to the 45 commenters who gave their email or mailing addresses.

Ernest added that on October 6, 2016, a community meeting was held regarding the Navy's Red Hill fuel storage tanks. The meeting was with the regulators and the Navy, and not hosted by the BWS. He said the community expressed concerns and impatience with lack of progress.

INTRODUCTION TO FINANCIAL PLANNING AND WATER RATES PROCESS

Dave gave an overview of the financial planning and water rates process that the BWS and the Stakeholder Advisory Group will work on together over the next year.

Dave said the process of establishing water rates is referred to as *cost-based rate making*. The primary guidance document in the US is the American Water Works Association's M-1 Manual. It establishes three key objectives in the rate making process:

1. Provide sufficient funding to build, operate, maintain and reinvest in the water system.
2. Provide safe and reliable drinking water and fire protection.
3. Allow for economic development and community sustainability.

The financial plan identifies revenue requirements. Elements of the financial plan include:

- Anticipated water sales
- Operations and maintenance
- Reserves
- Debt service
- Capital expenses paid in cash
- Trends and risks

The BWS's 2017 revenue requirement is expressed in its 2017 budget: \$285 million. It's divided into standard categories:

- Materials, supplies, and services
- Equipment
- Debt service
- Fixed charges
- Cash portion of CIP
- Personnel

QUESTION AND ANSWERS

Q. Why aren't medical charges included in the human resources budget?

A. Most of these are post-employment benefits and tend to be relatively fixed costs.

Q. How much solar power is included in the power portfolio?

A. Most of the BWS's renewable energy efforts focus on photovoltaics (PV). The BWS has a project to install PV at over 30 sites to generate about 3 MW. This is part of an Energy Savings Performance Contract (ESPC) project. We're the first county water department in Hawaii to undertake an ESPC and we hope the other three counties will consider the opportunity.

Q. Has the BWS looked at generating energy from flowing water?

A. Yes, BWS's consultant, Noresco, considered in-line hydro/micro hydro opportunities and found that there is potential in the Honouliuli area. That isn't being pursued at this time because there is no tariff in place. The BWS, along with Hawaiian Electric and Ulupono, is also studying the feasibility of piping water from Nu'uuanu Reservoir 4 to Reservoir 1, where there was once an operating hydrogenation plant. Included in this study is examining the feasibility to inject stormwater into wells to recharge the aquifer.

C: In the 20% of the FY 2017 budget that is shown as fixed costs, it seems to me that electricity is not a fixed cost. You could always reduce it. Retirement costs don't seem fixed either. It is interesting how a utility puts these costs into a "fixed cost" bucket, because that is different than how we might think about it running our businesses.

Q. In the 3 MW PV project, project underway or something the BWS is looking into?

A. The BWS has executed a contract with Noresco to design and construct the 3 MW PV project. Another opportunity that was identified is to examine the potential to build PV on 20 acres of Federal land that was given to us when Barber's Point Naval Station closed. This would be in association with a small seawater desalination plant that could potentially be powered by some of this renewable energy.

Q. What is the maximum load the BWS needs?

A. The BWS's total energy consumption is approximately 90 million-kilowatt hours per year. Detailed information can be found in the Board's annual budget documents.

Dave continued the presentation by explaining that we have greater certainty in financial planning for the first 10 years compared to the subsequent 20 years. He said that the BWS will consult with University of Hawai'i Economic Research Organization (UHRO) and will look at different risk scenarios.

C. We've been dealing with cost projections related to rapid transit, and the credibility of engineers is pretty low right now. It's really important for the BWS to have projections that increase the veracity, or credibility, of what you're saying things will cost and how those costs impact water rates.

A. Great point. The BWS and Stakeholder Advisory Group will work on 30-year financial planning, but we are looking at setting rates only for five years at the most. We will also bring information to the group about how other water agencies of comparable size and caliber are handling some of these same issues.

Dave then discussed cost of service, which varies by different types of BWS customers. He showed diagrams of typical water use patterns, with peaking factors for residential and commercial customers. He said that different customers have different needs, like direct fire protection, and that these needs impact the cost of providing them with service. There is also a cost to conservation and sustainability, and this is particularly important given the group's recommendation to provide minimum levels of funding in each of these areas, as included in the Water Master Plan.

Q. Will we be able to see examples of multi-family and agriculture costs of service and consumption diagrams?

A. Yes.

Dave said that rate design is like a zero-sum game. Once the revenue requirement is established and we know how much money is needed., rate design is a matter of finding a fair and equitable way of distributing the costs among the different types of customers. There are different ways of setting objectives for rates. One is from the utility's perspective and another is from the customer's perspective. Dave said that in our early meetings next year, we are going to work together to come up with the list of objectives to recommend for the BWS's rate structure.

Dave said that the Stakeholder Advisory Group and the BWS will look at different ways to structure a rate. The first step is to evaluate the current rate structure. A computer model will be used, and results will be presented. We will comprehensively look at all the existing charges in the rate structure, and examine how to tailor rates to meet the objectives. We will also look at the impact of water rates on typical customers – residential, multi-family, commercial and agricultural. This may include using tiered water rates to encourage conservation.

Dave said that the Stakeholder Advisory Group will be asked to identify specific examples of a hotel, restaurant, and other customer groups to make the modeling process very real. We can model what the rate impact for those particular businesses would be.

Q. Are we thinking about modeling in the context of water utilization only? For example, what if a hotel recycled its wastewater? That's a variable beyond just water utilization to be considered.

A. Good point. If that hotel were recycling its wastewater, then its consumption of potable water would be reduced. This is an example of advanced conservation and there are other opportunities for consideration of advanced conservation that Barry is hoping to move forward with in the coming year.

C: Another point is that when customers use water in different ways, it impacts the system in different ways. High peaks put more stress on the water system. In terms of cost of service, residential customers tend to put more stress on the system. If so, an important question is "Should not the rate be more commensurate to the stress you put on the system?"

Q. What factors of residential use put more stress on the system?

A. In some places, the high fluctuation of water peaks requires the BWS to pump from reservoirs for short periods of time. The BWS tries to keep reservoir water levels at least halfway full. In certain places, where there isn't enough storage, pumping from the reservoir to meet peak demands can result in a water shortage. Peaks and demands affect system capacity and the BWS's ability to meet those demands in those timeframes. The cost of electricity is also higher at the peak water use times. If we can smooth out the peaks, it reduces our cost of operating the system, and in turn, the need to recover those costs through rates.

C. Hawaiian Electric Co. doesn't have time-of-use rates at this time but it does have a KW (kilowatt) demand-charge that could push the user into a higher tier. If we can offset with renewable energy, and offset peak demand, being moved into the higher tier can be avoided. The BWS and Hawaiian Electric are working together to conserve energy and costs.

C. During the day, there's a tremendous amount of PV power in the system, so if the BWS can pump more during the day, the power we use is from more renewable sources, rather than from petroleum fuel. Working together makes a lot of sense.

Dave concluded the presentation on financial planning and the water rates study by reviewing the schedule. For the first few months of 2017, the focus will be on developing a 30-Year Financial Plan. In the Spring of 2017, the water rates evaluation process will begin and will overlap with the end of the financial planning process. Public engagement will begin in approximately mid-2018, and the earliest time that new rates would be implemented is January 2019. The 2017 year, with stakeholders' engagement, participation and input, is critically important.

Dave said that in anticipation of the financial planning process, the BWS team will evaluate a number of different scenarios. In the next presentation, three scenarios will be discussed and the Stakeholder Advisory Group will be asked for feedback. Before we start the rates development process, the BWS and the group will identify a preferred scenario to use to develop the new rate structure.

OVERVIEW OF THE 30-YEAR CAPITAL IMPROVEMENT PLAN

Dave introduced Carl Lundin, Consultant Project Engineer for the Water Master Plan, to talk about the 30-Year Capital Improvement Plan (CIP). Carl told the group that the assumptions in the Water Master Plan were to initially continue budgeting for CIP projects at \$80 million per year. This level of spending is adequate to address all high priority projects in all asset categories except for pipelines. He presented a series of graphics showing the distribution of \$80 million per year, varying the funding for the different system assets (pipes, pumps, treatment facilities, etc.). In previous Stakeholder Advisory Group meetings, the WMP team discussed the critical importance and high priority of pump stations, reservoirs, and treatment plants.

Carl told the group that a significant finding of the Water Master Plan was that very quickly replacing 10% of the highest priority pipelines could result in an approximate 50% reduction in main breaks. However, replacing these 10% of pipelines in a short time can't be fit into a CIP budget of \$80 million per year. This raises questions:

- Is deferring the replacement of high-risk pipelines beyond a 10-year horizon acceptable?
- Should the BWS consider increasing the CIP budget to allow more high-risk pipelines to be replaced sooner? If so, how quickly should it be increased? The longer we wait, the more it costs later.

Carl said that pipeline projects that expand the capacity of the water system are relatively fixed in time in the CIP. That is, they will be built when and where needed based on water demands. On the other hand, pipeline renewal and replacement projects can be pushed out into the future. As such, decisions about when and how much replacement to do can impact the CIP budget more than other types of improvements.

He presented several points about infrastructure:

- Nothing lasts forever.
- Without renewal and replacement, an asset is guaranteed to fail at some time.
- In the short term, focus funding where the needs are greatest.
- We can accommodate year-to-year fluctuations.
- Over the lifespan of the system, we must replace the entire value.

He talked about different values:

- The total value of the system is just under \$16 billion.
- The majority of that is for pipelines: \$12.3 billion.
- Over the full lifespan of the system, replacement and renewal (R&R) investments must average at least \$167 million per year.
- The R&R annual investments in pipelines must average about \$120 million per year.
- \$120 million per year for pipelines represents an average 1% replacement rate (20.6 miles of pipeline replaced per year). The current rate of replacement is about 0.3%.

- By increasing CIP requirements to \$167 million, that makes a revenue requirement difference of about 32%.

QUESTION AND ANSWERS

Q. What is the industry standard on debt or cash financing the CIP? Does it vary by type of water system asset?

A. There is quite a bit of latitude in deciding how much to use debt to finance the CIP vs. paying cash. The more you debt finance, the more you'll need to also set aside reserves to cover that increased amount of debt. Several water agencies have the philosophy that, if it is a really long-term asset (e.g., pipeline), it should be financed with debt rather than cash. Then it would be paid for not just by today's customers but by future customers who will benefit also.

Some utilities pay for projects using a combination of both cash and borrowing. An important question to answer is "What is the right combination for us while we try to keep rates affordable for customers over time?"

Q. What are your assumptions regarding inflation?

A. We will get into those specifics when we present the financial planning model.

Q. Does the financial model go into investing in renewable energy to reduce the cost of electricity?

A. The Energy Savings Performance Contract is where the BWS is looking at energy efficiencies. One project is replacing existing pumps with more efficient pumps. Capital costs for this \$33-34 million project are being paid by the BWS, financed by State Revolving Loan funds. The efficiencies we achieve should offset the debt service payments for the project.

Q. What happens to reserve funds? Do you invest them? Who sits on them?

A. Debt reserve funds are invested mostly in treasury bonds of varying length, and varying rates, up to five years. The BWS has to have 50% of our maximum debt service in a reserve fund to assure bond investors that we can meet our obligations and pay our debt. That also helps increase the BWS's bond rating (our credit rating) so that we can borrow at lower interest rates.

Q. Are your revenue bonds guaranteed by the County?

A. No. The guarantee is from the BWS and that doesn't obligate the City and County.

Q. Do you pay around \$30 million per year for outstanding debt? How much is your outstanding debt?

A. We pay approximately \$20 million per year for outstanding debt. The BWS's outstanding debt is \$225 million.

Carl told the group that the pipes in the BWS water system are about average:

- Average age is about 40 years.

- Breaks are currently about 300 per year, lower than the national average.
- The current rate of replacement, 6 miles per year, is appropriate given the downward trend of main breaks and younger lifespan.
- The downward trend can't last forever.
- System monitoring and metrics scoring included in the WMP enable us to keep an eye on the system health and understand how the system is behaving.

He said that important questions to discuss:

- How soon does the BWS need to ramp up pipeline replacement?
- Is 300 breaks per year too many?
- Is more than 300 breaks per year acceptable?
- Do we need to invest in reducing breaks below 300?
- What if that costs an extra (say) \$100 million per year? Would it still be worth that reduction in break count?

Q. How much water is lost, on average, with a water main break? If the number of main breaks is declining, is the amount of water loss decreasing too?

A. That information has been estimated. We will follow up with the answer to your question.

Q. You've just shown us that the number of water main breaks is declining and we now average around 300 breaks per year. Are these small pipe breaks, or large pipe breaks, and are they clustered? At what point – what number of breaks – does the BWS's capacity to respond become crippled?

A. Even when the number of breaks was as high as 500 per year, the BWS's capacity to respond to them was adequate.

Q. Is "two large main breaks" equivalent to having "many small ones"? Again, my concern is about overloading the BWS's capacity to respond to main break emergencies.

A. A bigger main break has potential consequences for more damage, including road repairs. It's hard to predict, but another aspect to this question is that, if we allow breaks to climb up, then we have to have adequate staffing capacity and equipment to actually respond.

C. It's good that we have a downward trend on water main breaks, but we're not showing the vital mains that serve vital areas. We could be overlooking a potentially serious issue by focusing on the number of breaks rather than the large mains.

A. That is an important point. Sometimes it goes beyond just the main break; it can affect our pumps, reservoirs, get air in the system. It can be complicated. The WMP included graphs that showed the trend rising for large diameter (16" diameter or larger) main breaks. These are still few – about 10 per year. In the risk analysis, we considered two factors: consequence of failure and likelihood of failure. The consequence of failure is vastly different depending upon the type of pipe, the road it's in, buildings nearby, size, pressure, and more.

Q. What do you attribute the downward trend to, and are you anticipating it starting to rise up? I feel like we're heading in a direction where we're paving the way to change the CIP budget.

A. We can attribute the downward trend of main breaks to some changes that the BWS made on how they operate the system, decrease in pressures, replacing some pumps that were producing surges, and changing the way some valves were operated. There was also a significant amount of pipe replacement in the 1990s to mid-2000s. The demand for water in the system has also reduced since 1990 as well. How long those things are going to work going forward is the really big question. We won't be able to answer that with certainty but can make educated projections of what that might look like.

Q. Could you explain why the BWS current rate of main replacement is so low compared to the national average?

A. The average is over the lifespan of the system – 100 years. Currently, one reason the rate of replacement is lower is because of the previous relatively high period of pipeline replacement, in addition to operational changes. The average age of pipelines in the system is still relatively young. The BWS has some time before it needs to ramp up pipeline replacement, but it's coming.

Q. Are you asking us how much you think the public will tolerate re: number of main breaks before they get angry at the BWS?

A. We know we need to increase pipeline replacements, because 6 miles per year is not adequate for the long-term. Over time, that replacement rate just pushes problems to the future. So the questions are:

- How quickly do we ramp up in terms of increasing the pipe replacement miles, e.g over a 5-year, 10-year or 15-year period?
- How do we balance that need with the impact on water rates for our customers?
- How much of this should be paid for with cash vs. debt financed, for example with special purpose revenue bonds.

Dave told the group that pipeline renewal and replacement is the biggest single lever in future rate increases, and that is important to financial planning. We have developed a financial planning scenario that assumes spending \$80 million annually on CIP projects, and two scenarios with higher budgets and higher rates of pipeline renewal and replacements. All three scenarios replace the full 2,100 miles of pipe in the next 100 years, but at different rates. Thus they result in different pipe ages, different main break rates, and different impacts to customers.

Carl asked stakeholders to give feedback and tell us if the three scenarios (below) represent an appropriate range of cost and approach strategies. He said the scenarios would be the basis for developing financial analyses and main break projections. He will present that information to the group early in 2017.

Scenario 1 – “Base” 30-year CIP, status quo

The CIP remains at \$80 million per year for 30 years, resulting in the replacement of approximately 6 miles of pipeline per year. At the end of 30 years, pipeline replacement

would ramp up by 10% per year – to 30 miles per year – to replace all 2,100 miles of pipe by the end of the 100-year block. In this scenario, the average pipeline age peaks at about 70 years in the 2050s. It’s difficult to say without further analysis, but the number of pipeline breaks based on past trends would be around 500 per year.

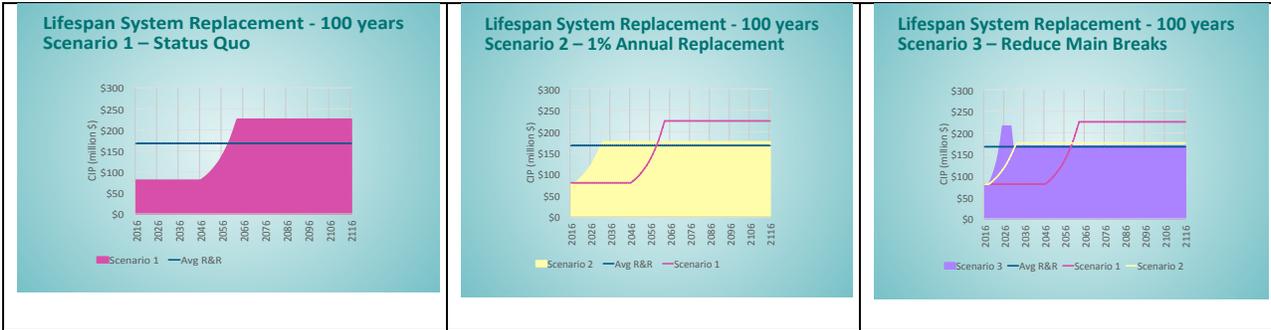
Scenario 2 – Moderate ramp-up to 1% annual replacement rate

The CIP would ramp up moderately to enable replacing 1% of all pipelines per year average over 100 years. We would begin by replacing six miles per year, then ramp up at 10% per year over the next 10 years, and settle out at just a little over 1%. The average age of pipelines would level off at about 50 years. Again, while it’s difficult to say, this scenario would likely result in a slight increase in main breaks initially, but would probably level out around today’s break rate (300 per year).

Scenario 3 – Reduce main breaks by replacing highest risk pipes as soon as possible

This is the most aggressive scenario. From the current rate of replacing six miles per year, we would ramp up aggressively at 25% per year – replacing up to 29 miles of pipeline per year – and hold at that replacement rate for a few years. That would replace the 10% of high priority pipelines in the first 10 years. After that, the rate of replacement would decrease to the long-term average. This scenario has the potential, based on past trends, of a 30-40% reduction in the number of main breaks.

The slides shown as thumbnails below compared the costs of each of the three scenarios:



Q. For Scenario 3, is it possible to pull data as it relates to the location of those highest risk pipes, and having a layer of understanding from DOT, County, and State of where there might be cross-over with planned roadwork?

A. Great idea. The BWS has a great geographic information system and we also know where these highest risk pipelines are located.

C. Using debt to finance pipeline projects is theoretically more equitable because it’s paid for over a longer period of time. People living today aren’t paying the full amount for what their grandchildren will use in their lifetime. The hard part is: how do we then correctly portion that slope to match what others before us have invested decades ago? Who paid for the existing infrastructure that we use? It’s complicated.

C. When you’re taking money from people, that’s psychologically based. There are price sensitivity studies where you find out how much it takes for everybody to say “no”, and

where you might maximize your income (revenues). It's good to have an asset-based approach, but at some point, there also needs to be a psychologically-based sensitivity study for actual customers. People need to really understand the value of what they're spending money on. The education element is going to be really critical.

C. The three scenarios are really interesting. Scenario 1 looks like we, as a generation, want to be selfish. Scenario 2 looks like we're all going to pay a big amount at some point. Scenario 3 looks like it's skewed to make Scenario 2 seem the fairest of them all. It's a slower ramp up, and a more consistent cost that even the next generation could buy into.

Q. Are you trying to steer us?

A. No, we're not. We're totally up-front about conversations around these scenarios. They're difficult to come up with because they're difficult to implement. The significance of including Scenario 3 was that it grew out of a finding of the WMP: if you could instantly take the top 10% of the highest risk pipes out of the system (renew/replace them), it would have a dramatic influence on reducing the number of main breaks. We felt we couldn't ignore that scenario. The benefit of examining the three scenarios is to present the extremes (Scenario 1 / status quo and Scenario 3/ reduce main breaks) and show another scenario in the middle.

Q. What level of detail are you going to give us before you ask us to make a policy recommendation?

A. Great question. The question we're asking today is this: Is this the appropriate range of scenarios? Should we have another scenario that is more extreme than this for an upper bracket? On the other end, should we look at a scenario that is different from the status quo/selfish Scenario 1? That's what we're asking today so we can come back early next year with more detailed information.

C. Yes, the range appears to be appropriate. I'm assuming the process is going to be based in part on value. For example, I know I *want* to paint my house, but instead I'm going to install something else now because I *have to*. We've talked about pumps, and we've also talked about conservation resources. It's both public policy as well as economics. Make your big purchases when the construction industry is down; not now when you're competing with everyone else.

C. Coordinating with agencies like DOT speaks to the psychological aspect of the process of setting water rates and educating the public. Let's say we recommend Scenario 3 and we come up with our reasons for it, and want the public to understand and appreciate them. The public may ask: Why are we doing these projects now? One of the things we want to say is: DOT is going to be working in these roads, and we want to jump in with our water system construction. That speaks to why BWS wants to do more improvements now. We want to hear positive willingness, that coordination is an important priority for us.

Q. Is there a looming deadline that we should be aware of for the need for a rate increase?

A. The last increase we had in water rates occurred on July 1, 2015. We need to start to ramp up our capital program. You can see that rate of pipe replacement is well below where we

should be for the long run. All of this comes back to what is the effect on our customers vs. the value they perceive from the improvements.

Q. Are we looking at the mix of debt service and cash financing for the CIP?

A. Yes, but we're not evaluating that issue right now.

C. The difference in scenarios is mainly what part of the population you're willing to upset – older people or younger people. The only scenario that I don't like is the first one, but it's a good one to evaluate. Scenario 3 is pretty extreme, but the difference between it and Scenario 2 is that you're fixing pipes earlier.

C. In Scenario 3, the peak is how much BWS is paying, not how much the rate payers will pay. The money will actually be spread out over future generations.

C. Do we have a plot plan that shows where all of the electrical lines are, all of the water lines, and other utilities? When we put in new pipelines, let's see if the different organizations can work together a little better on combining those projects. Yes, we have the right range of scenarios.

C. I like Scenario 3 and don't think it needs to be more extreme.

C. If you front-load pipeline renewal and replacement – do a lot in the early years – that will cost less in labor and supplies. The costs of construction don't go down much over the course of time.

The Stakeholder Advisory Group agreed that the three scenarios reflect an appropriate range for further analysis.

SUMMARY AND NEXT STEPS

Dave reminded the group of the next Stakeholder Advisory Group meeting, Tuesday, January 10, 2017 from 4 to 6:30pm, at the Blaisdell Center, in the Hawaii Suites.

He said that the BWS is planning a field trip to the Honouliuli Water Recycling Facility on December 3rd. More details will follow.

Dave thanked the group for their continuing input and we'll see everyone next year.