



Honolulu Board of Water Supply

Stakeholder Advisory Group Meeting 62

Thursday, September 17, 2026, 4:00 – 6:00 pm

Online via Zoom

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

This was an in-person meeting in which 13 stakeholders participated, in addition to BWS staff, consultants and members of the public. The stakeholders represent diverse interests and communities island wide.

The following Stakeholders Advisory Group members attended:

Bob Leinau	Resident of Council District 2
Brady Jencks	Resident of Council District 7
Cynthia Rezentes	Resident of Council District 1
Helen Nakano	Resident of Council District 5
Jicky Ferrer	AARP Hawaii
Kaleo Manuel	Kamehameha Schools
Mark Fox	Environmental
Mary Kishimoto	Chamber of Commerce Hawaii
Pono Chong	Resident of Council District 7
Ryan Obrero	Honolulu Board of Realtors
Shari Ishikawa	Hawaiian Electric Company
Wayne Tanaka	Sierra Club
William Clark	Resident of Council District 6

WELCOME

Facilitator Dave Ebersold welcomed everyone to the 62nd meeting of the BWS Stakeholder Advisory Group.

Meeting objectives were identified as:

- Provide BWS updates
- Pipeline Renewal Progress and Planning

- Accept notes from meeting #61
- Water System Facilities Charge Introduction

Dave briefly reviewed the roadmap to Water Master Plan adoption, noting that the group had covered significant ground since January and thanking members for their input throughout the process. He highlighted the importance of upcoming discussions, particularly feedback on potential changes to the Water System Facilities Charge, with initial recommendations anticipated to go before the BWS Board in January.

PUBLIC COMMENTS: None.

BWS UPDATES

Dave invited Ernest Lau, BWS Manager and Chief Engineer, to share BWS updates. Ernest discussed BWS's response to recent hurricanes and the challenges that widespread power outages pose to the water system. He explained that BWS normally produces approximately 145 million gallons of water per day through a system that includes 194 groundwater wells and source pumps, 192 booster pumps, 172 reservoirs, and 100 pressure zones. Because most water must be pumped from underground aquifers and to higher elevations, the system is heavily dependent on electricity.

Ernest said Tropical Storm Lala demonstrated this vulnerability when widespread power outages affected BWS facilities across O'ahu. During recent Kona Low storms, BWS lost power at more than 60 sites. He emphasized the importance of conserving water during extended outages and recognized Hawaiian Electric for coordinating closely with BWS to prioritize restoration at critical facilities. BWS has approximately 20 fixed and mobile emergency generators, but Ernest noted that this is not enough to provide backup power across the entire system. Under backup power, BWS could produce approximately 75 to 80 million gallons per day. Some areas supplied by gravity-fed tunnel sources may be less affected by electrical outages.

QUESTION: Bob Leinau asked whether BWS treatment facilities address the same contaminants or are customized based on individual water sources. Ernest explained that treatment is tailored to the water quality at each well. Common contaminants requiring treatment include TCP and PFAS. BWS recently placed a temporary treatment system into operation at Ka'amilo Wells using granular activated carbon, the same technology used to treat TCP.

QUESTION: Dave Ebersold asked how BWS is approaching emergency power needs going forward, particularly given recent experiences on O'ahu and neighboring islands. Ernest said BWS will need to expand its emergency power capabilities through a combination of permanent and mobile generators. Three sites are currently being designed for fixed generators, including two on the Wai'anae Coast in response to the potential for Hawaiian Electric Public Safety Power Shutoffs, with BWS pursuing FEMA funding that could cover up to 75% of the cost. BWS is also considering a fixed generator at Punanani Wells to support water service from urban Honolulu through East Honolulu. Ernest noted that FEMA has approximately 24 large generators on O'ahu but deploying them requires specialized transportation. He thanked Matson for offering the use of up to eight trailers at no cost through the end of hurricane season to help BWS transport FEMA generators to pumping facilities.

QUESTION: Jickey Ferrer asked how BWS determines where emergency generators should be deployed and whether placement is based on historical information or conditions during a particular emergency. Ernest explained that the primary consideration is maintaining water service to major hospitals and other critical medical facilities. BWS has identified the wells and pumping stations that support these facilities and consider them priorities for generator deployment. BWS also seeks to

maximize the number of customers served, with an emergency target of approximately 85 gallons per person per day under ideal conditions. Ernest emphasized that conservation is essential because reducing nonessential use allows limited water supplies to serve more customers during an emergency.

QUESTION: Bob Leinau asked whether existing pipelines sometimes lack sufficient capacity to move water where it is needed and commented on the importance of coordinating water system planning with land use zoning. Ernest confirmed that BWS evaluates pipeline capacity and noted that the Water System Facilities Charge, which would be discussed later in the meeting, helps fund larger infrastructure needed to accommodate anticipated growth. He also explained that before major storms, BWS attempts to keep its 172 reservoirs as full as possible without creating excessive pressure that could contribute to main breaks. When completely full, the reservoirs provide approximately 200 million gallons of storage. Compared with normal consumption of approximately 145 million gallons per day, stored water could sustain the system for roughly two to three days depending on conservation and damage to the system.

Ernest stressed that conservation following a disaster can extend stored supplies and delay the onset of low pressure or loss of service as reservoir levels decline. He also noted that major storms can result in boil water advisories when damage creates potential contamination concerns. BWS recently issued an advisory on the North Shore until microbiological testing confirmed that the water was safe.

Ernest concluded by saying these recent storms provide important lessons for BWS as it strengthens O'ahu's preparedness. While BWS continues improving its emergency response capabilities, Ernest cautioned that following a major direct hurricane impact, BWS would not be able to maintain normal water service throughout O'ahu.

PIPELINE RENEWAL PROGRESS AND PLANNING

Dave invited Carl Lundin, an Environmental Engineer with CDM Smith, to provide an update on BWS's pipeline renewal program and discuss how pipeline planning as part of the Water Master Plan update. Carl began by reviewing the approach used in the 2016 Water Master Plan, which assessed existing system condition and performance, forecasted future needs, and used those findings to develop and prioritize projects for the Infrastructure Investment Program. He noted that hydraulic modeling was used to determine whether pipelines had sufficient capacity to meet peak-day demands, while forecasting considered factors such as aging infrastructure, changing water demands, and future development.

Carl explained that the 2016 pipeline analysis began with an assumed average pipeline lifespan of approximately 100 years. Applied across BWS's roughly 2,100 miles of pipeline, this resulted in the goal of replacing approximately 1% or 21 miles each year. BWS then refined the analysis by considering the age and material of its pipelines, recognizing that different materials have different expected service lives. A third level of analysis evaluated individual pipe segments using factors such as location, soil conditions, pipe size and material, pressure, proximity to pump stations, and previous breaks to statistically estimate the likelihood of failure.

The 2016 analysis compared several replacement scenarios. Maintaining the previous pace of approximately six miles per year was projected to result in increasing main breaks, while gradually increasing replacement to 21 miles per year was projected to reduce the break rate. Stakeholders ultimately recommended the 21-mile-per-year scenario, which was then adopted by the BWS Board. Carl noted that actual pipeline replacement initially began moving toward the planned trajectory but declined after approximately 2022-2023. He attributed this to changing priorities following the Red Hill

fuel contamination and closure of Hālawā Shaft and other sources, as well as project delivery constraints involving BWS staffing, contractor capacity, and permitting. The Water Master Plan update now includes an evaluation of these implementation challenges and potential solutions for improving project delivery.

Carl reviewed BWS's historical goal of approximately 300 pipeline breaks annually, noting that this was generally consistent with national utility benchmarks for a system of BWS's size. He explained that BWS historically counted both proactive leak repairs and emergency main breaks together. BWS recently began tracking these separately because proactive leak repairs are beneficial, allowing crews to address problems before they become disruptive emergency breaks. However, with only two years of separated data available, BWS does not yet have enough information to project future leaks and emergency breaks independently.

Carl then presented updated pipeline projections using improved statistical modeling and additional data collected since 2016. Maintaining replacement at approximately six miles per year could result in roughly 500 combined leaks and breaks annually by the 2050s. Reaching 21 miles per year by 2028 would stabilize the total near current levels of approximately 350 annually, while a slower ramp-up reaching 21 miles per year around 2036 would result in somewhat more breaks before eventually stabilizing.

QUESTION: Dave Ebersold asked whether reaching 21 miles of pipeline replacement annually by 2028 was realistic given current staffing, permitting, and construction constraints, or whether the scenario was primarily instructional for discussion today. Carl said the scenario was useful for discussion but achieving it would require a significant effort. Ernest agreed and explained that BWS must balance pipeline renewal with other growing priorities, including PFAS treatment, development of new water sources to support growth and transit-oriented development, and resiliency projects such as backup power and facility hardening. He said reaching 21 miles annually by 2028 is likely unrealistic, while reaching that level sometime in the 2030s may be more achievable.

Carl emphasized that BWS evaluates pipeline renewal based on reducing system risk rather than simply achieving a certain number of miles. Statistical models estimate the likelihood that individual pipes will fail, while consequence-of-failure evaluations consider factors such as roadway impacts, communities served, and whether a pipeline supplies critical facilities such as hospitals. These factors are combined to identify high-risk pipelines, which are then grouped into practical construction projects. Carl noted that between 2016 and 2021, BWS renewed approximately eight miles of pipelines previously classified as extreme risk. Updated data and modeling also caused some pipelines to move into or out of the extreme-risk category, leaving approximately 20 miles classified as extreme risk in 2021. BWS is updating that analysis for 2025.

Carl explained that improved software now allows BWS to integrate pipeline inventory, break history, GIS records, predicted service life, failure probability, and consequences of failure within a common platform. This allows BWS to more efficiently identify high-risk pipelines, package them into projects, and incorporate them into the Capital Improvement Program.

Carl then discussed the increasing cost of pipeline construction. Based on actual BWS bid data, pipeline costs have increased by approximately 8% annually since the early 2000s, compared with average inflation of approximately 4.5%. Ernest noted that external economic factors contribute to these increases, but BWS has also intentionally increased upfront construction costs by adopting corrosion-control standards and using more ductile iron pipe with protective coatings and cathodic protection. He explained that the goal is to extend pipeline life and reduce costs over the full life of the asset.

rather than focusing on initial construction costs.

Carl illustrated the financial impact of these increases. In 2016, replacing 21 miles of pipeline annually was estimated to require approximately \$133 million per year. Using current costs, the same level of replacement would require approximately \$220 million annually. He noted that pipeline renewal must compete with other infrastructure needs within the overall CIP, making it increasingly important to determine an appropriate pace of replacement.

QUESTION: Pono Chong asked whether BWS can extend pipeline life through operational changes or other mitigation measures rather than relying solely on replacement, and whether allowing pipelines to fail could be more economical than proactively replacing them. Carl explained that pipeline failures generally involve both a long-term cause and a trigger. Corrosion or fatigue gradually reduces pipe strength, while pressure fluctuations, high flows, pump cycling, and similar conditions can trigger failure. BWS already uses operational measures such as variable-frequency drives and adjustments to pump operations to reduce these stresses, while corrosion-control measures are intended to slow the long-term deterioration of the pipe. Carl said BWS previously evaluated the economic tradeoff between replacement and repairing failures and found that the financial break-even point would occur at more than approximately 1,500 main breaks annually, far beyond a level the community would consider acceptable.

QUESTION: Pono asked whether additional water storage closer to areas of demand could sometimes be more economical than replacing major pipelines, using East Honolulu as an example. Carl said these decisions are evaluated case by case and can involve combinations of storage, source development, and pipelines. Ernest explained that additional reservoirs can provide short-term storage for daily peaks and fire protection, but water must still be conveyed to those reservoirs from wells or booster pumps. He added that reducing pressure can also help limit main breaks, particularly in areas such as East Honolulu where static pressures can be high. BWS has evaluated pressure-reducing valves in areas such as Kalama Valley, although Marc Chun noted that acquiring land for the necessary facilities remains a challenge.

QUESTION: Bob Leinaw asked Carl to explain the differences among the various pipeline materials referenced in the presentation. Carl explained that older cast-iron pipe was originally produced by pouring molten iron into molds and later through “spun cast” manufacturing. Ductile iron eventually replaced traditional cast iron and uses similar materials but is manufactured to be less brittle and more durable. He also noted that BWS uses concrete and various plastic pipes, including PVC and HDPE, each of which has different advantages and vulnerabilities depending on operating conditions and the surrounding environment.

QUESTION: Dave asked whether the earlier analysis showing an economic break-even point of approximately 1,500 main breaks per year considered broader societal costs such as traffic delays, police traffic control, and lost work time. Carl confirmed that the analysis considered direct BWS costs, including repairs and damage claims, but did not account for broader societal impacts that are difficult to quantify.

Carl continued his presentation by discussing how pipeline renewal could fit within BWS’s future infrastructure program. He noted that several major needs have emerged since the 2016 Water Master Plan, including PFAS treatment, replacement water sources following the shutdown of Hālawā Shaft, and a potential granular activated carbon reactivation facility. Given these competing priorities, BWS could maintain its current pipeline replacement pace in the near term, gradually increase replacement to stabilize risk, or eventually accelerate replacement to catch up before settling into the long-term

goal of replacing approximately 1% of pipelines annually. Carl emphasized that these approaches could be phased over time as other critical infrastructure needs are addressed.

COMMENT: Bob Leinau recommended developing contingency plans, including a downside scenario that considers unexpected events or conditions that could significantly affect BWS's ability to implement its planned program.

COMMENT: Mark Fox supported keeping accelerated pipeline risk reduction as a priority even if BWS cannot immediately achieve the 21-mile annual replacement target. He encouraged BWS to continue to look for opportunities to accelerate renewal.

QUESTION: Pono Chong asked how current CIP spending compares with the pipeline-heavy investment program envisioned in 2016. Megan Muramatsu calculated that the FY2027 CIP totals approximately \$266.8 million, with approximately \$70.6 million, or 26.5%, devoted to pipeline projects. Dave noted that this is essentially the reverse of the longer-term allocation shown in the 2016 plan, with roughly one-third currently going toward pipelines and two-thirds toward other infrastructure needs. Ernest explained that source development has become a much larger component of the current CIP than originally anticipated.

QUESTION: Pono Chong asked how non-potable and seawater desalination projects are categorized within the CIP. Dave explained that the non-potable category primarily includes the recycled water system along with some supply wells. Ernest clarified that seawater desalination would be considered a potable water source and included under source development as part of efforts to diversify BWS's drinking water supply.

COMMENT: Pono Chong agreed with Mark that BWS should seek opportunities to catch up on pipeline renewal. He noted that pipeline projects may be more predictable than source development in terms of construction requirements and costs. Carl confirmed that the group will conduct a comprehensive review of the overall CIP at a future meeting and said the current discussion is intended to begin considering how pipeline investment should fit within BWS's competing infrastructure priorities.

COMMENT: Ernest noted that resiliency may become a growing category of future BWS investment, including backup generators, facility hardening, and redundant pipelines to maintain water service if critical infrastructure or transportation corridors are damaged during a major disaster.

QUESTION: Bob asked what contractual measures BWS uses to encourage contractors to complete projects on schedule. Dave explained that public works construction contracts generally establish completion deadline and include liquidated damages when contractors exceed those deadlines.

ACCEPTING MEETING 61 NOTES

Meeting 61 notes were approved.

WATER SYSTEM FACILITIES CHARGE INTRODUCTION

Dave began his presentation on Water System Facilities Charge (WSFC), noting that stakeholder input will be particularly important as BWS considers future policy and implementation decisions. He asked members to consider several questions throughout the discussion

- Should growth-related capital projects be paid for entirely by the development creating the growth?
- What types of developments, if any, should be discounted or exempt?

- Should a particular customer class be discounted or exempt?
- Should changes to the charge be phased in over a period of years?

Dave explained that the WSFC is a one-time charge assessed when new development connects to the BWS system or when an existing property requires additional water capacity. It is paid by the developer or property owner before issuance of a building permit and does not appear on customers' monthly water bills. The charge helps pay for growth-related expansion of shared water system infrastructure and reimburses existing customers for previous investments in infrastructure that was oversized to accommodate future growth. It applies to major system components such as water sources, treatment, transmission and storage, but not individual service connections, watershed protection, or conservation programs.

Dave noted that the WSFC has not been updated since 1993, despite significant changes in water use, development patterns, available system capacity, and construction costs. Most importantly, current WSFC revenues do not cover BWS's growth-related capital costs. From 2015 to 2020, BWS collected an average of approximately \$10.3 million annually through the WSFC, while recent growth-related expenditures have averaged \$41.8 million annually. The resulting gap of roughly is currently funded by all BWS ratepayers through water rates.

Dave outlined the process for updating the charge. BWS will determine the value of existing capacity previously funded by customers, conducting a 10-year review of the CIP to identify projects needed to accommodate future growth, estimate each customer type's share, calculate the updated charge then evaluate policy and implementation. He noted that growth-related projects occur throughout the island and include sources, treatment facilities, pumps, reservoirs, and water mains, with future needs expected to become increasingly concentrated in urban areas as transit-oriented development shifts water demand.

COMMENT: Mark Fox said the approximately \$30 million annual funding gap indicates that development is generally not paying the full cost associated with providing additional water system capacity. He supported phasing in higher charges for commercial and market-rate residential development while considering discounts or exemptions for affordable housing and agricultural uses that support local food production.

COMMENT: Kaleo Manuel suggested that if BWS considers discounts or exemptions, public trust uses should also be part of the discussion. He also encouraged BWS to consider whether source resiliency, watershed protection, monitoring, and other source-related investments should be more closely connected to the WSFC rather than viewing the charge solely in terms of constructed infrastructure. Dave explained that the WSFC is governed by legal requirements tying the charge to a development's proportionate share of infrastructure costs and the impacts created by that development. He added that BWS also follows industry guidance for establishing rates, fees, and charges. Kaleo asked that the relationship between infrastructure and protection of the underlying water source be flagged for future discussion.

Ernest added that BWS already dedicates a portion of its overall CIP toward water conservation and watershed protection. He also explained that BWS currently provides WSFC and meter-cost waivers for up to 500 affordable housing and homeless units annually, totaling more than \$6 million in waivers over the past five years. Ernest said future discussions should consider how affordable housing is defined for purposes of these waivers.

QUESTION: Cynthia Rezentes asked whether BWS knows the available capacity of its existing pipelines

and whether the cost of expanding infrastructure should be attributed to developments that cause existing systems to exceed capacity. Using Waiʻanae as an example, she asked whether a large new subdivision requiring an additional transmission main should be responsible for that added infrastructure rather than having the cost spread among all customers. Dave confirmed that BWS uses hydraulic modeling to understand existing pipeline capacity and determine whether additional infrastructure is needed. Barry Usagawa added that the specific responsibility depends on the development and infrastructure involved. Large master-planned developments may be required to construct both their internal water systems and improvements to BWS transmission infrastructure when hydraulic analysis identifies additional capacity needs. He cited past development in ʻEwa as an example where wells, reservoirs, and a major transmission pipeline were constructed in anticipation of growth.

QUESTION: Pono Chong asked whether the shortfall represents the direct cost of individual pipelines or the broader infrastructure expansion necessary to accommodate development. Dave clarified that the comparison is between WSFC revenue and the cost of BWS infrastructure projects required to provide additional system capacity for growth.

COMMENT: Pono cautioned against assuming that shifting more infrastructure costs to developers means those costs are being borne by someone outside the community. He noted that developers ultimately pass these costs on to homebuyers and that multiple impact fees imposed for water, schools, health, and other public needs can collectively increase the cost of development and housing. He also noted that private financing may be more expensive and occur over shorter periods than government financing. Dave agreed that these considerations go directly to the central policy question of who should pay for growth-related infrastructure.

NEXT STEPS

Dave shared the list of stakeholder advisory group meetings for 2026:

- October 15, in person meeting to discuss draft reports and obtain policy feedback.
- November 19, virtual meeting to obtain feedback on the overall Water Master Plan and recommendations to the BWS Board.

Dave thanked the attendees for their attention and participation and concluded the meeting.