

# Expanded AMI Deployment for Water and Energy Conservation Phase 2 (Funding Group III)

ALAMEDA AND CONTRA COSTA COUNTIES

July 28, 2022



Submitted by:  
**East Bay Municipal Utility District**

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R23AS00008

**Energy WaterSMART:  
Water and Fiscal Efficiency Grants  
for Year 2023**

United States Bureau of Reclamation Bureau of Reclamation

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# 1 Executive Summary

## 1.1 Date and Applicant Information

Date: July 28, 2022  
Applicant Name: East Bay Municipal Utility District (EBMUD)  
Applicant City, County, and State: Oakland, Alameda County, California. EBMUD serves communities in Alameda and Contra Costa Counties in California.  
Category: Category A, Funding Group III

## 1.2 Project Summary

EBMUD is applying under Category A, Funding Group III, under Section C.4.1 Water Conservation Projects of the (Funding Opportunity Application) FOA. The primary goal of this project is to obtain water and energy savings by expanding EBMUD’s existing Advanced Metering Infrastructure (AMI) network and installing additional AMI meter endpoints. The project will cover most of EBMUD’s service area in Alameda and Contra Costa Counties. AMI allows EBMUD to read water meters and other sensors on a real time basis. AMI systems provide the following benefits: a) provide customers with real time granular water consumption information available through customized reports and mobile and web based applications; b) provide additional tools to identify water conservation opportunities including leaks and excessive irrigation patterns; c) allow commercial and industrial customers to obtain valuable data they can use to facilitate energy and water conservation projects at their facilities; and d) reduce EBMUD energy use by reducing the amount of water that is pumped and treated. Grant funds will be used to install additional collection network infrastructure and meter endpoints throughout the service area in order to provide immediate and long-term water and energy savings.

This project will provide water conservation benefits for current and future drought response by identifying customer water leaks and unintentional or wasteful customer water usage. Long-term benefits include providing tools for customers to develop long-term water and energy savings strategies based on better understanding of water volume and time of use demands.

## 1.3 Schedule

EBMUD is finalizing its AMI business case and is considering a large-scale deployment over the next several years in consideration of the significant financial investment required. Once the EBMUD Board approves a project for large-scale deployment, this grant would accelerate the schedule for AMI deployment. Based on the information in the FOA, EBMUD plans to start the project on or around May 2023. Planning and installation of the additional network collectors would begin immediately on grant award and is estimated to take 18 months. Upon grant award, EBMUD would also begin the installation of AMI endpoints as part of routine meter changeouts and for select business needs. In total, installation of the additional network equipment would take approximately 36 months to complete.

EBMUD already has a partial AMI collector infrastructure in place and a customer portal designed to display hourly data from AMI data which will enable newly installed AMI meters to be immediately available for use. Water conservation outreach and work with customers with new AMI capability will begin as soon as meters are installed in areas with network coverage, and

work with customers who already have AMI endpoints will be improved by better coverage with an expanded network.

No work is proposed on a federal facility. Meters to be upgraded are owned by EBMUD and additional network towers are planned only on EBMUD-owned facilities.

### 1.4 Project Location

The project location will include meters in most parts of EBMUD's service area, shown in Figure 1. The EBMUD headquarters' latitude and longitude is 37° 48' 7.0848" N and -122° 16' 13.8426" W.



Figure 1. Project location covering all of EBMUD's service area

## 2 Background

EBMUD is a publicly owned utility formed under California's Municipal Utility District Act of 1921 and headquartered in Oakland, California. EBMUD, a retail water supplier, provides domestic water service to approximately 1.4 million customers and also provides municipal wastewater service to 740,000 customers. Located in the East Bay region of the San Francisco Bay Area, EBMUD's service area covers 20 incorporated cities and 15 unincorporated communities in Alameda and Contra Costa counties (see Figure 1). EBMUD captures pristine snowmelt from the Mokelumne River in the Sierra Nevada at Pardee Reservoir. Generally, in water years with normal and above average runoff, EBMUD's primary water supply from the Mokelumne River is sufficient to meet the needs of EBMUD's service area. During droughts and emergencies, water supply reliability is diminished, and there is a greater burden placed upon the people and the environment.

EBMUD has water rights that allow for delivery of up to a maximum of 325 million gallons per day (MGD) from the Mokelumne River, subject to the availability of Mokelumne River runoff and to the senior water rights of other users, downstream fishery flow requirements, and other Mokelumne River water uses.

During dry years, EBMUD has the ability to take supplemental supplies through its Freeport facilities. Completed in 2010, the Freeport facilities include intakes and pumps on the Sacramento River and a system of pipes and canals to move the water to EBMUD's aqueducts. EBMUD has a contract with United States Bureau of Reclamation (USBR) for dry year supplies from the Central Valley Project (CVP) and has also purchased water transfers in the past.

EBMUD's long term water supply planning also includes recycled water, groundwater banking, and possible participation in the Los Vaqueros Reservoir expansion project.

### 2.1 Applicant's Average Annual Water Supply (In Acre Feet)

EBMUD's average annual water production for the five calendar years from 2017-2021 was approximately 60 billion gallons or approximately 184,000 acre-feet (AF). Total production of 178,000 AF in 2021 was influenced by decreased demand due to EBMUD's implementation of voluntary 10 percent rationing between April 2021 and early April 2022 as part of a drought management program. EBMUD Board of Directors declared a Stage 2 Drought with a 10 percent mandatory District-wide water use reduction goal on April 26, 2022.

### 2.2 Describe Water Use (e.g., Municipal, Irrigation, Etc.)

EBMUD is an urban and suburban water agency and serves approximately 1.4 million customers. The 46 U.S. Census cities, towns, and Census Designated Places that are entirely or partially within EBMUD's service area are divided into Alameda and Contra Costa Counties (See Figure 1). All customers are metered. Residential customers' meters are read bimonthly; commercial and most industrial customers' meters are read monthly. Figure 2 from the 2020 EBMUD Urban Water Management Plan (UWMP) shows how EBMUD's total metered water consumption is distributed among different customer categories. The single-family residential category has the

largest consumption, followed by multi-family residential, commercial, industrial (which includes petroleum), irrigation, and institutional uses. In 2020, approximately 8 percent of EBMUD’s water demand was for dedicated irrigation accounts for users such as parks, golf courses, greenbelts, and common-area landscaping.

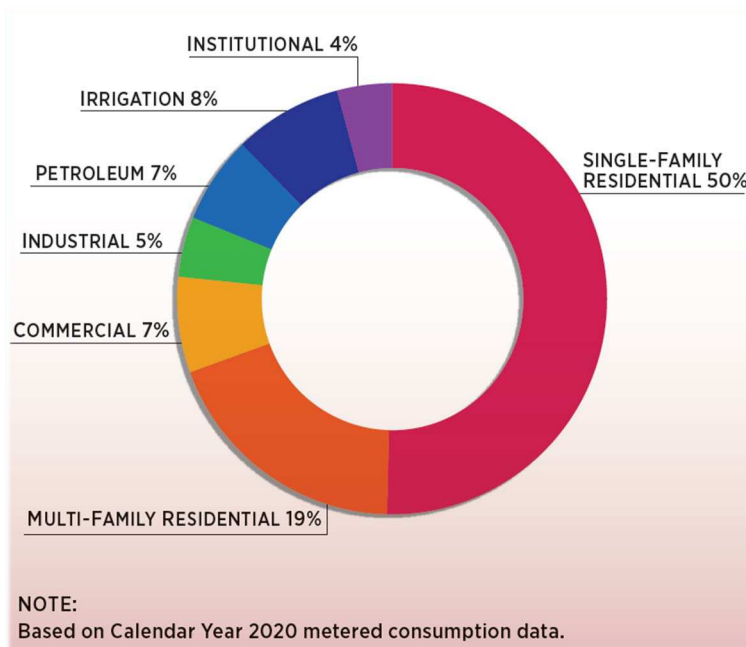


Figure 2. Water use by customer category

2021 demand was at 159 MGD, which takes into consideration ongoing record drought conditions, aggressive conservation efforts, and approximately 9.8 MGD of water recycling. This demand is depressed due to the current drought, calling for a District-wide 10 percent mandatory reduction in water use and ongoing recovery from the 2020-2022 Covid Pandemic. Planning level demand is projected to increase to 201 MGD in the year 2040 based on EBMUD’s 2020 UWMP. For more information, please refer to Subsection 4.6.1.1.

### 2.3 Water Delivery System

EBMUD has six water treatment plants within its service area (of which one is currently out of service on standby), approximately 4,200 miles of distribution pipeline, 131 pumping plants, 167 water distribution reservoirs (treated water storage tanks), and 125 different potable water pressure zones. EBMUD also operates a regional wastewater treatment plant and three wet weather facilities – plants which are used to handle surges in wastewater levels due to infiltration of stormwater during storm events - that discharge to the San Francisco Bay. The Freeport Regional Water Facility in Freeport, California provides dry-year water supply.

### 2.4 Greenhouse Gas Reduction Goals

EBMUD has been tracking and reporting on greenhouse gas (GHG) emissions since 2005. EBMUD completes an annual greenhouse gas (GHG) emissions inventory and continually works to reduce GHG emissions; both of these efforts are consistent with EBMUD’s Energy Policy. EBMUD’s goal for the water system is to eliminate GHG emissions for indirect and direct GHG

emissions by 2030. EBMUD's goal for the wastewater system is to eliminate indirect GHG emissions and reduce direct GHG emissions by 50 percent compared to 2020 levels by 2040.

Estimates of reduced GHG from this project are provided in Subsection 4.3.2.3.

## 2.5 Past Working Relationship with Reclamation

EBMUD holds a water service contract with USBR to receive water from the CVP through the Freeport Regional Water Project in years when EBMUD's water supplies are relatively low. Specifically, EBMUD's contract allows it to receive CVP water in years when EBMUD's March 1 projection, as updated monthly through May 1, of its October 1 total stored water is forecast to be below 500 TAF. The contract enables EBMUD to receive up to 133,000 AF of CVP water in a single qualifying year, not to exceed a total of 165,000 AF over three consecutive qualifying years.

EBMUD is currently evaluating participation in a regional effort to expand the Los Vaqueros Reservoir Reservoir to, among other purposes, promote regional reliability. USBR is an important partner in this project, which would provide an important supply of water for Central Valley Project Improvement Act (CVPIA) wildlife refuges.

### 2.5.1 Past Relationship with USBR Grant Programs

EBMUD has received grants from the USBR including several grants funding previous AMR and AMI projects. The most recent WaterSMART AMI grant in 2016 was for \$1 million entitled Water and Energy Conservation through Advanced Metering Infrastructure (Grant Agreement R16AP00126). The 2016 grant promoted the highly successful large customer AMI program and helped EBMUD build its existing partial AMI network which this project would help to significantly expand. It also served to support the AMI business case evaluation currently underway. The final project report was completed in October 2021 and is discussed more in Section 3.1 below.

## 3 Technical Project Description

Please note: Information presented in this section is intended to supplement the evaluation criteria in Section 4.0.

The proposed work for this project includes installing up to seven additional AMI collector network towers and completing approximately 40,000 meter upgrades. This expanded AMI network will be used to support EBMUD and its customers to achieve water and energy savings. This project, which expands the AMI network that was partially funded by a previous WaterSMART grant, is ready to begin.

EBMUD staff will begin installing additional AMI meters in areas covered by the existing network where meter replacements and maintenance are planned. These customers will be immediately added to the online interface after the meters are installed and. EBMUD's staff will work with these customers to obtain immediate water savings.



At the same time, EBMUD will begin work on the additional seven collectors. As these collectors come online and provide additional AMI network coverage, meters in these newly covered areas will also be installed. One particular area in Danville will be the focus of additional meter installations as AMI installation in this area will have both meter reading and water conservation benefits. EBMUD may also install AMI meters for one of its recycled water projects in order to help manage peak summer demands.

### 3.1 Project Background

Using funds from a 2016 USBR WaterSMART grant, EBMUD built an AMI network consisting of seven collectors covering a portion of EBMUD’s service area and installed approximately 3,000 AMI meters on its largest customers within this coverage area. An additional 15,000 AMI meters were added to this network for other specific conservation projects and operational needs. Of these additional meters, 10,000 AMI meters were installed for a research project in conjunction with the natural gas and electricity provider in the EBMUD service area Pacific Gas and Electric. EBMUD continues to work with these customers to save water and energy. Figure 3 below is a map of the showing the 3,000 customers in the previous grant project along with the seven existing collectors used. The meters are color coded by average daily consumption.

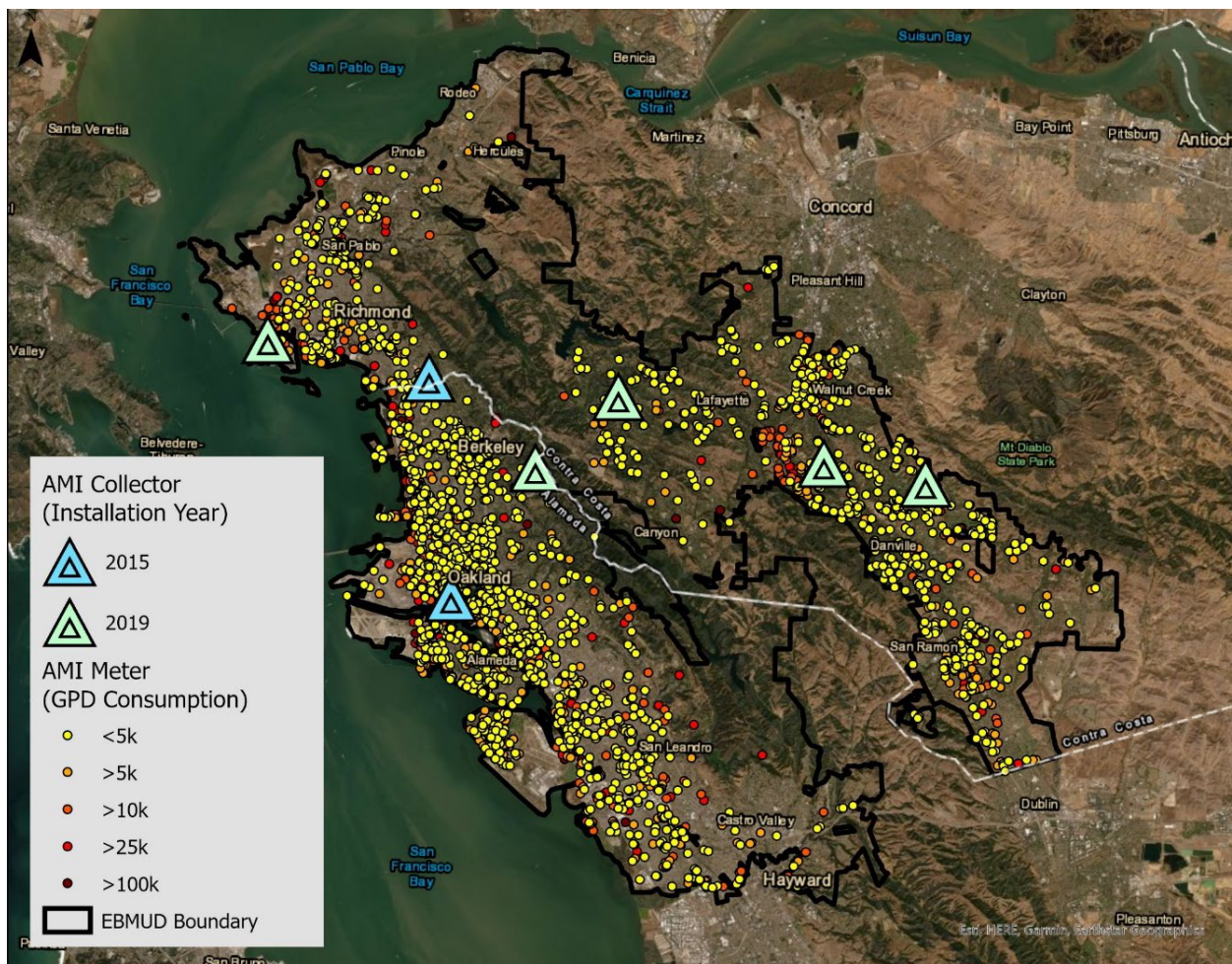


Figure 3. Map of large meters installed as part of the previous grant project

EBMUD staff has made several presentations about the challenges and success of this USBR AMI project at various venues including the Cal Nev AWWA Spring Conference. Copies of the presentation slides were shared with USBR staff. A final report was submitted in 2021 to USBR staff.

EBMUD currently has seven AMI collectors. Five collectors were constructed for the 2016 grant project: Gwin, Los Aromas, Hill Mutual, NicholKnobb, and Roundhill. Two existing collectors were also utilized at EBMUD headquarters and at San Pablo Water Treatment Plant and were partially funded by a 2014 USBR grant project for AMI pipeline leak detection.

Figure 4 below is one of the collectors at our Gwin Reservoir which is able to see meters up to eight miles away. Figure 5 is an example of the inside of the collector cabinet. Figure 6 and 7 illustrates typical small and large AMI meter installation



Figure 4. Collector at Gwin



Figure 5. Typical inside of collector cabinet



Figures 6 and 7 Examples of small and large AMI meter installations.

In total, EBMUD installed approximately 18,000 meters which include 19,000 radio endpoints (compound meters have two radios), most of which are under the coverage area of the AMI network installed for the previous grant project. However, approximately 1,000 of these existing AMI endpoints are not consistently read through the network and must be read via mobile network at

least part of the time. Having additional network coverage would allow for these endpoints to have AMI tools available as well. Figure 8 below is a map of the existing network and the existing endpoints.

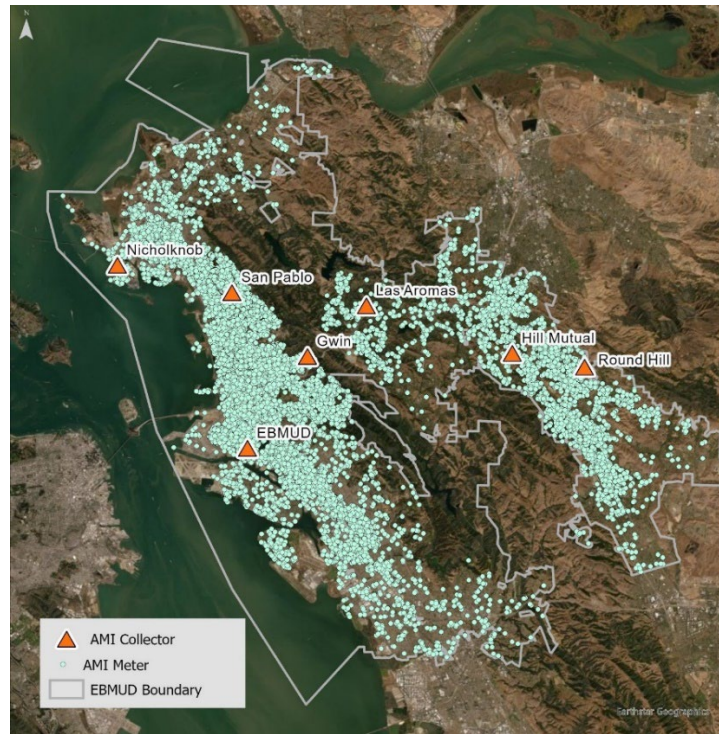


Figure 8. EBMUD existing network of seven collectors and 19,000 meters

### 3.2 Purpose

AMI technology allows for near real time collection and presentation of water meter consumption data, leak detection, and data from other instrumentation. Where this technology is available, EBMUD provides the AMI data to its customers and uses the data to drive water and energy savings. When working with residential customers, EBMUD staff focusing on assisting customers identify leaks and excessive irrigation and look for other opportunities to save water and energy such as appliance and plumbing upgrades. When working with large commercial and industrial customers, EBMUD staff focus on processes that use significant quantities of water and energy to see where operational changes can improve efficiency. EBMUD also uses consumption data, leak detection, and pressure data to target water and energy conservation and greenhouse gas production in its distribution networks.

Project objectives include:

- Expand EBMUD’s AMI Collection network to enable more of EBMUD’s customers to benefit from AMI.
- Facilitate customer’s immediate water and energy conservation by identifying leaks, excess irrigation, high water consumption devices, hot vs. cold water usage patterns, etc. Customers energy savings come from reducing hot water usage and promoting the installation of more energy and water savings devices and processes.

- Provide data to assist customers in evaluating longer term energy and water conservation strategies such as identifying total water use of existing equipment and processes.
- Improving customer and staff understanding of water consumption patterns and peak use and strategic conservation services outreach to reduce peak water use and pumping.
- Provide timely and cost-effective customer notifications of leaks and high uses.
- Synchronize water, energy, and GHG management efforts.
- Explore new potential benefits of AMI technology such as improvements to water quality, water storage management, and facility sizing.
- Improve metering accuracy by utilization of AMI-ready static meter technology on larger meters.
- Obtain energy savings by reducing energy used in pumping and treating water, and at end uses by customers.

### 3.3 Previous Savings Examples

EBMUD’s previous AMI deployments have identified significant water conservation opportunities including residential indoor and outdoor plumbing leaks, customers over-irrigating, and leaks in commercial and industrial facilities. EBMUD’s AMI web portal sent automated leak alerts and high usage notifications to customers and allowed EBMUD staff to engage customers and make recommendations on reducing their water use. The data presentation helped customers understand how much water they could conserve, and many continue to closely monitor their usage data on their own computers.

While previous EBMUD studies have delivered greater water savings rates; for this project, EBMUD is assuming a conservative seven percent water conservation savings rate. In its previous pilots, EBMUD has observed that one-fourth of its customers have continuous usage indicating leaks. These leaks accounted for between 15 and 20 percent of total water usage. The new meters to be used will be much more accurate at lower levels and will identify leaks that were previously undetectable by older meter technology.

In previous studies, EBMUD has seen averages as high as 20 percent reduction in water use amongst customers provided granular data and working with EBMUD to address the issue. This calculation is based on consumption the year before and after the real-time granular consumption data is presented to the customers compared with a control group of similar customers that only received bi-monthly billing data. For some large customers, the identified savings have been much higher.

### 3.4 Proposed Phase 2 work

The proposed work includes adding seven additional collectors for a total of fourteen– which will expand EBMUD’s AMI network coverage area so that it could reach approximately 84 percent of EBMUD’s meters – and installing AMI endpoints on approximately 40,000 meters. The additional network collectors will allow EBMUD to expand the geographic range where AMI meters can be installed. EBMUD staff can then work with customers who received AMI meter upgrades to obtain water and energy savings.

EBMUD developed a propagation study to identify the most cost effective collector network to increase radio network coverage. As part of this effort, over 600 of EBMUD assets were evaluated for placement of collector towers that would be best suited to read EBMUD's 395,470 meters. Three collectors were selected to read a portion of EBMUD most challenging geographic area in Danville as well as areas servicing its recycled water meters. The end result was a selection of seven new collectors which, in combination with the existing seven collectors, can reliably read almost 84 percent of EBMUD's meters. The remaining 16 percent of the meters would require an additional 34 collectors which are not planned for this project.

Figure 9 below identifies the existing and the new planned collector towers. Meter locations are identified by gray circles. The areas shown in green are within the reliable radio coverage area of the expanded network. Because the collector network relies on line-of-sight, being close to a collector tower does not guarantee reliable readings as hills, valleys and other obstructions can limit radio range. The relative signal strength at each meter has been calculated for this network. Only meters that are in the reliable radio range will be selected for AMI upgrades as part of this project.

EBMUD plans to upgrade the meters within the coverage area during meter changeout and maintenance activities during the grant period. EBMUD typically replaces between 15,000 to 20,000 small and medium meters per year and performs testing and calibration on approximately 1,000 to 2,000 medium and larger meters per year. However, if some of the meters are not in the coverage area yet, EBMUD may elect to postpone AMI installation. Furthermore, if AMI installation is particularly challenging for one reason or another, EBMUD may also skip or postpone AMI installation. Aside from scheduled maintenance areas, EBMUD will also target meter replacements in the geographically difficult areas of Danville where high demand and limited access make AMI a higher priority. EBMUD may also install AMI meters on one of its recycled water projects in order to help manage use during peak summer months when recycled water supply is limited.

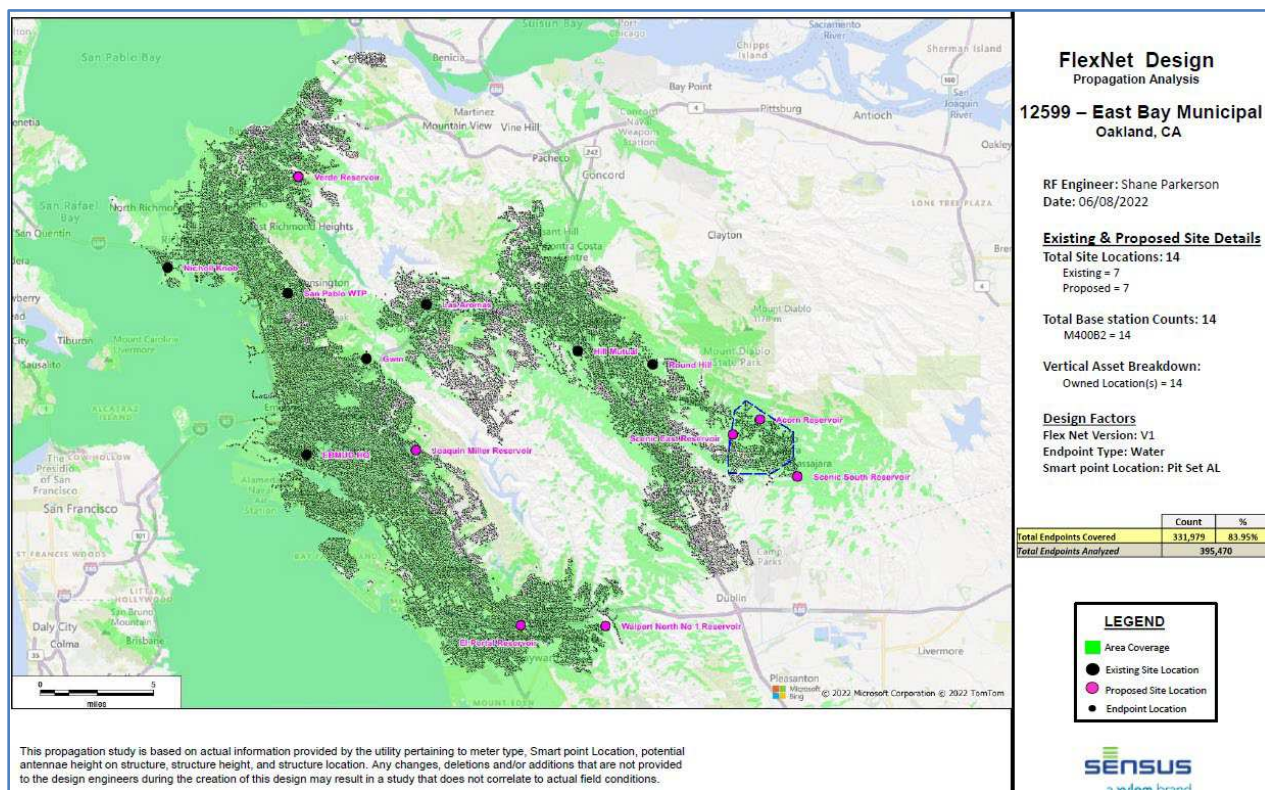


Figure 9. EBMUD expanded AMI propagation map showing all meters in coverage area

### 3.5 Water Conservation Services

One of the primary goals of AMI for EBMUD is to help its customers obtain water and energy conservation. Aside from the actual AMI equipment, the most important tool used is the web portal that allows customers to see their water use and lets them know when there is a potential leak, higher than normal use, otherwise unexpected water use, or conservation opportunities that may yield significant water and/or energy savings. EBMUD will conduct outreach to customers who receive AMI endpoints as part of this project to encourage them to sign up for the web portal.

The AMI web portal uses an engagement and data analytics platform to provide the online portal, generate content, deliver efficiency reports, send automated alerts, and engage with customers. The software allows EBMUD to send targeted customer emails, texts, and phone calls, which can also be used for time-sensitive communications such as neighborhood updates on emergencies, main breaks, or construction projects.

Automated leak alerts, detected by machine learning and configurable settings, are one of the most impactful services, especially when near real-time AMI data is available. Leak alerts by email, text, or phone direct customers to a leak resolution tool, an interactive guide that allows them to investigate unusually high-water use, identify potential reasons for such high usage, and report back to EBMUD on findings. The alert system helps EBMUD target services and resources accordingly. Currently, most leak alerts are generated based on bi-monthly billing reads, meaning that there may be a delay in detecting the leak and notifying the customer. As AMI data becomes available, leaks can be detected more quickly.

In the figures below, consumption which is consistent every hour is colored orange to indicate it is a possible leak. The criterion for a leak is based on the lowest consumption in 69 hours out of a 72-hour period.

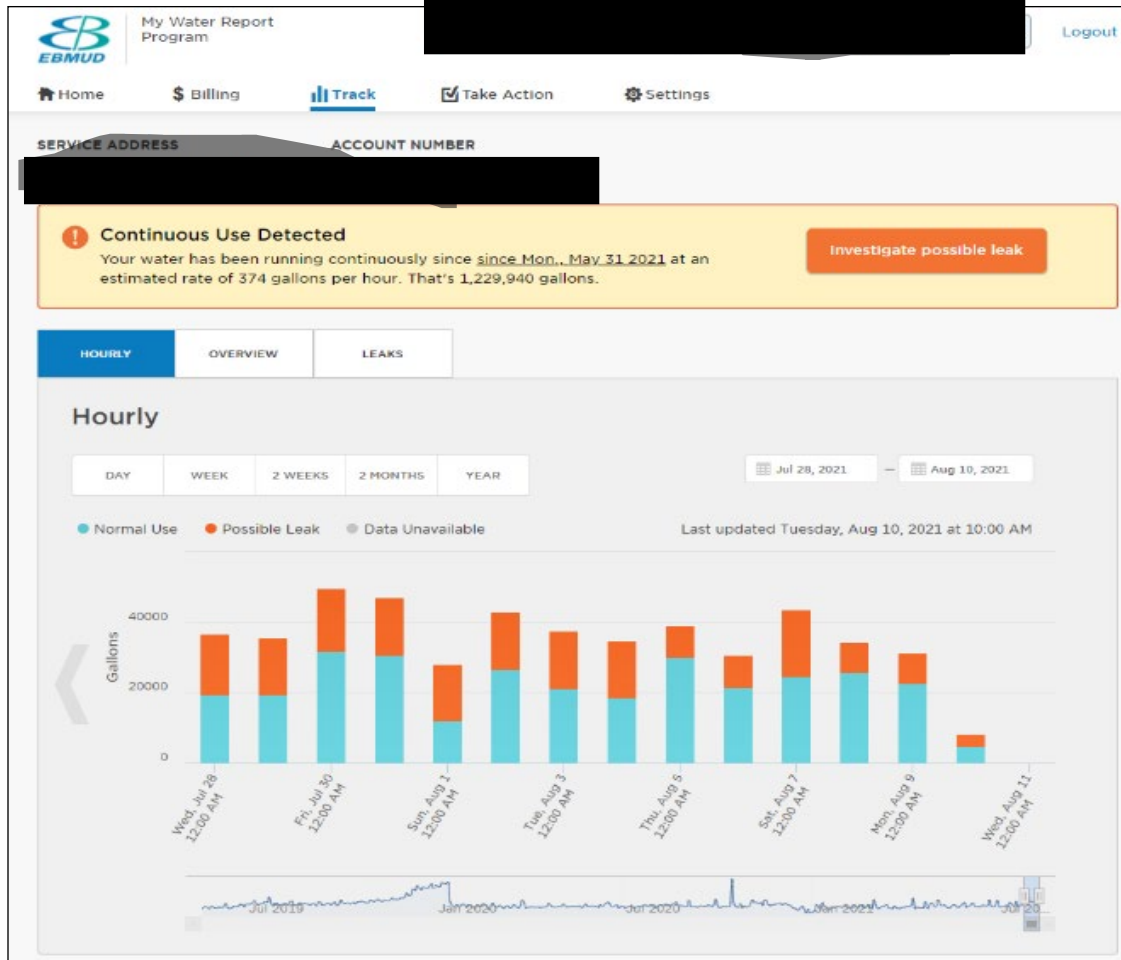


Figure 10. Daily data showing continuous water consumption which is likely a leak



Figure 11. Hourly data showing continuous water consumption which is likely a leak

Another key component of this software is the internal dashboard for staff to monitor program outcomes, automate and manage communications, and improve operational efficiency with analytics and reports. This allows staff to assist customers over the phone with their water use and help them set up alerts and other customized features.

The web portal can also distinguish irrigation usage versus suspected leaks and typical indoor usage. In the example below, this customer’s typical low volume indoor usage is color-coded blue, the large periodic usage indicative of irrigation is colored green, and a sudden large continuous usage which could be a leak is colored red.

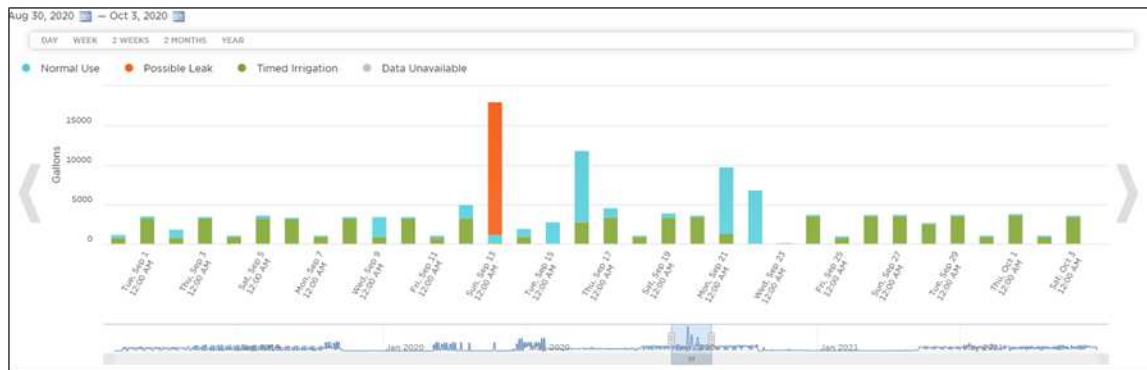


Figure 12. My Water Report Program Administrative highlights irrigation usage.

## 4 Technical Proposal: Evaluation Criteria

For a more detailed explanation of project features and associated benefits, please refer to Section 3.0 – Technical Project Description (not repeated here) for evaluation criteria review.

### 4.1 Evaluation Criteria A—Quantifiable Water Savings: (28 Points)

As described above, expansion of the AMI network and provision of this service to more customers is expected to result in significant water and energy savings. Water savings opportunities may include fixing leaks, using alternative irrigation techniques, and replacing older appliances and machinery with new higher efficiency appliances. The faster, more immediately available, and detailed data will be more customer-friendly and facilitate water conservation activities better than traditional water conservation interventions. Granular data allows customers to identify specific processes or appliances that use higher than expected water use and quantify that use in order to justify upgrades. The quantifiable water savings and rationale is summarized below:

#### 4.1.1 Amount of Estimated Water Savings

##### 4.1.1.1 Sub criterion A.1 – Quantifiable Water Savings (Municipal Metering)

EBMUD estimates a water savings of at least 1,176 AF from this project. This estimate is based on an average customer water use of 375 gallons per day, seven percent anticipated savings, and the upgrade of 40,000 meters as described in this section. Using this data, the anticipated savings from this project would be calculated in acre ft/year as:



40,000 services X 375 gallons/day X 365 days per year X 7 percent savings /325,851 gallons/AF = 1,176 AF/Year.

More information on the assumptions behind this calculation are included below.

#### 4.1.2 Current Losses

Without the benefit of information from AMI meters, many customers lose water through leaks, excessive irrigation, inefficient plumbing, or inefficient industrial processes. Indoor and industrial water uses result in additional water use unnecessarily going to wastewater treatment plants where additional water is not beneficial and ultimately requires energy to treat before being released to the environment.

In EBMUD's service area excessive irrigation results in no beneficial use as it is either evaporates or is released to the San Francisco Bay. EBMUD's very limited groundwater sources rely on water that is very deep in a confined aquifer that is not directly recharged by surface water.

#### 4.1.3 Documentation of Estimated Water Savings

For this project, EBMUD is using a conservative estimate of seven percent savings for each customers offered AMI services, as explained in Section 3.3. In previous AMI deployments, EBMUD has experienced higher than seven percent savings rates when EBMUD staff has worked directly with customers, especially those with very high water consumption, large landscapes, and industrial processes with large conservation opportunities. However, EBMUD is using a lower estimate from this project for the following reasons:

1. The majority of the AMI installation will not be targeted to specific accounts.
2. Many of the largest consuming customers were already included in AMI as part of the last WaterSMART grant. However, with the expanded AMI coverage, some larger accounts will also be targeted for this project.
3. Because of the current drought conditions, mandatory water restrictions, and previous conservation, EBMUD customers have already reduced their water use. However, leaks identified by AMI will continue to save water.

The seven percent savings rate was observed in two of EBMUD's residential-focused previous AMI projects: the Blackhawk AMI project and a recently completed study with UC Davis and the Center for Water-Energy Efficiency.

EBMUD reported to USBR on the Blackhawk AMI project in March of 2015. This project involved approximately 4,000 residential, irrigation and commercial customers in the Danville area. EBMUD observed a seven percent savings rate from customers who were just offered the AMI portal without assistance from EBMUD staff. This savings rate was based on their consumption in the year before their online consumption was available to the year after. However, the savings rate was considerably higher when EBMUD staff assisted with the savings. Approximately 1/3 of the customers in the project utilized the conservation portal. Approximately one fourth of the customers appeared to have regular leaks during this study. Significant savings from this project included discovery of an approximately 50,000 gallon per day leak that had been

running for several years before it was identified and an approximately 1,000,000 gallon per day that was identified by the system and stopped within several days after the system notified the customer.

More recently, EBMUD recently completed a pilot study in partnership with the UC Davis Center for Water-Energy Efficiency and Pacific Gas and Electric, who is the electricity and natural gas provider in EBMUD's Service Area. The goal of this one-year study was to evaluate the water and energy savings associated with providing hourly water consumption data to single family residential customers. For this study, 10,000 single-family residential water customers within EBMUD's AMI coverage area were randomly selected to receive an AMI water meter upgrade. Of these, 5,000 customers serving as a treatment group were provided access to their online portal with their hourly AMI data and other associated AMI-only services. The 5,000 customers serving as a control group were only provided with bimonthly billed usage and associated conservation services. Customers were not informed they were part of this research study.

UC Davis staff carefully analyzed the water, electricity, and natural gas usage of the 10,000 water service accounts in this study. While the final study has not yet been published, they have preliminarily determined that the water savings from this study attributable to offering customers the portal with AMI data was approximately 6.5 percent higher than offering customers only information on their bimonthly billing. Due to the nature of this research study and the constraints within, it is possible that the ultimate savings rate of an AMI deployment could be higher, as more customers sign up for the portal over time.

## 4.2 Benefit Quantification for Municipal Metering and AMI

### 4.2.1 Determination of Water Savings

The methodology is described in 4.1.3. EBMUD has extensive records on its monthly customer demand going back to 1973. For the purposes of this project, monthly customer billed consumption from 2021 divided by the number of accounts provided the average account usage. EBMUD is not certain which meters will receive AMI on this project but will likely target users with greater than average consumption, so this estimate is also conservative.

EBMUD serves a wide range of customers, with the largest customer group being single family residential. However, EBMUD is not targeting a specific group for this project, aside from those in the specified Danville area. Upgraded meters will be selected based on scheduled meter changeouts, scheduled large meter maintenance, and where other business needs require an AMI upgrade. According to EBMUD billing records, EBMUD had 386,755 accounts with non-zero consumption in 2021. The average consumption on these accounts was 375 gpd in 2021. This number is likely conservative because accounts with larger consumption tend to be replaced and maintained more often than accounts with average consumption.

### 4.2.2 Current Losses and Potential for Savings

Current losses and potential for savings was conservatively estimated from previous projects as described in Sections 4.1.3 and 3.2. As described in Section 3.3, the portal that EBMUD uses to display AMI data makes evaluation of water use fairly easy and automatically identifies leaks and irrigation.

### 4.2.3 End Use Metering

EBMUD is not proposing using grant funds for installing AMI on submeters. However, the potential to install AMI capability on submeters (particularly in multi-family residential buildings) is being evaluated as part of EBMUD's AMI business plan.

### 4.2.4 Manufacturers

Initially EBMUD plans to mobilize quickly for this project with its existing manufacturers and network which is the Sensus AMI fixed network with 520M endpoints. EBMUD uses a wide variety of meters in its service area; however, the majority of the meters are manufactured by Badger meter with the HRE register. EBMUD may at its discretion rebid the existing contracts and, if another manufacturer is selected, may switch to that manufacturer through the course of the project. However, EBMUD would continue to operate the existing system even if a second system is acquired for new accounts.

### 4.2.5 Verified Water Savings Calculation

As with previous AMI projects, EBMUD will calculate water savings by comparing the change in water use of accounts where AMI is installed versus the change in use where AMI is not installed. The replacement of aging meters with new ones typically results in an increase in registered consumption, so EBMUD will apply a correction factor to account for this, based on information gained from non-AMI meter installations in the previous year. In addition, data will be collected on the number of leaks documented and when customers log on to the AMI customer portal in order to provide additional qualitative data on how customers respond to notifications.

## 4.3 Evaluation Criteria B—Renewable Energy: (20 Points)

### 4.3.1 Sub criterion No. B.1: Renewable Energy Project

Although EBMUD has many renewable energy projects, this project is not a renewable energy project but will increase energy efficiency.

### 4.3.2 Sub criterion No. B.2: Increasing Energy Efficiency in Water Management

Water savings associated with AMI correspond with significant energy savings due to reduction in pumping and treating. EBMUD has a very large and diverse service area in its water and wastewater systems, including six water treatment plants, 129 reservoirs, 136 pumping plants and 4,200 miles of pipe. The majority of the water supply comes from the Pardee Dam which is 90 miles away and can usually be gravity fed to the EBMUD service area, although in certain times of year pumping is necessary. EBMUD also has a supplemental supply which is much more energy intensive. EBMUD energy use falls into a number of large uses shown in Figure 13 below including:

1. Distribution within service area
2. Water Treatment
3. Raw Water Pumping
4. Supplemental Supply
5. Waste Water Treatment

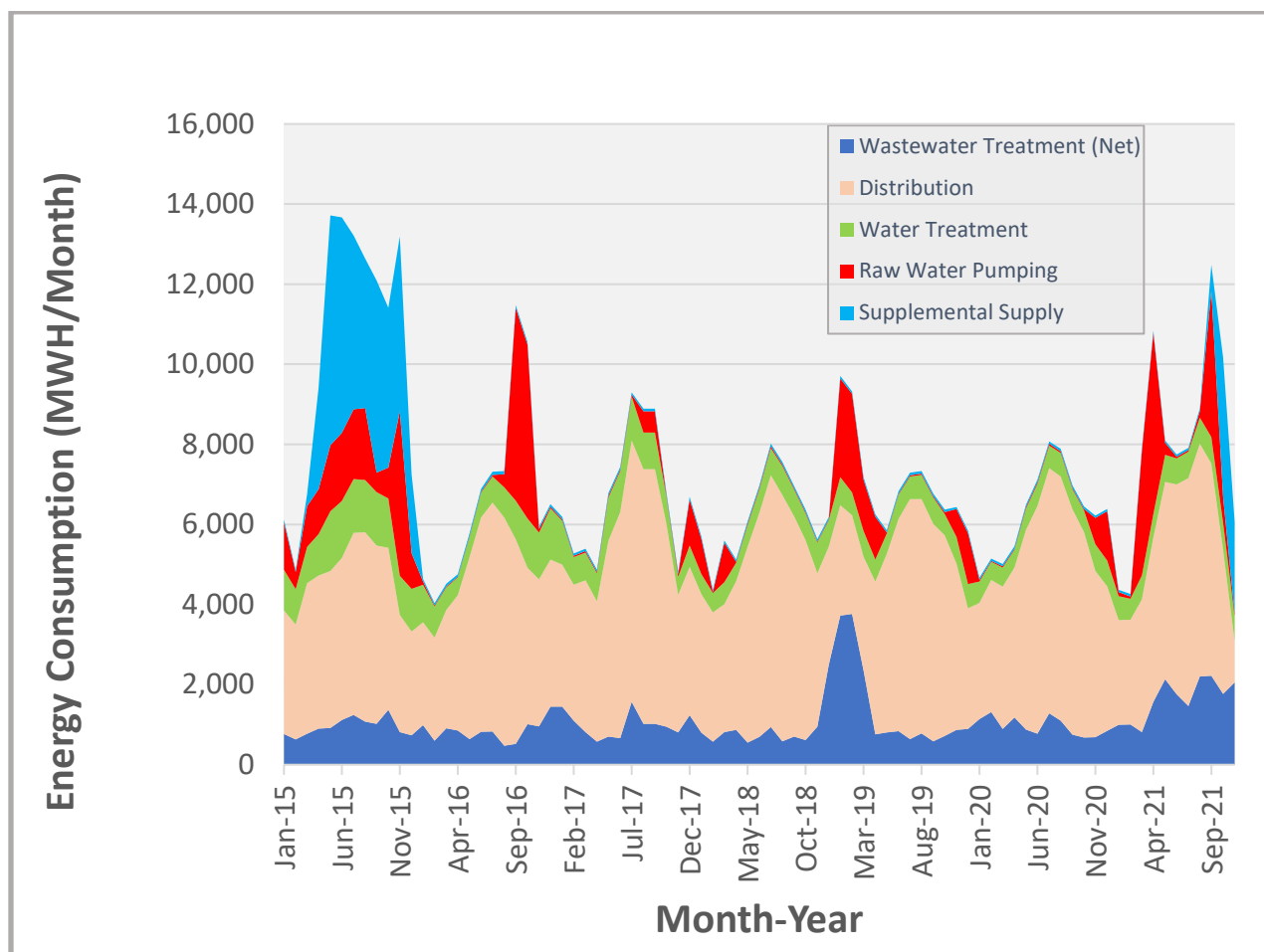


Figure 13. Summary of Net Energy Consumption at EBMUD

Water conserved through this project will reduce energy use in each of these categories, as discussed in more detail below.

#### 4.3.2.1 Water Distribution and Treatment Energy Savings

The most consistent and most direct energy savings come from water distribution savings including pumping and treating water. EBMUD has a diverse area with homes in hills and low-lying areas that fall into 132 pressure zones. As shown in Figure 14 below, each zone has a unique mix of source water treatment plants, pumping plants, regulators, and reservoirs in order to deliver sufficient water at appropriate pressure. Based on pumping plant records of energy, volume, and lift, EBMUD has determined that the average pumping plant uses approximately 6.97 KWH/MG/ft of lift. Using this number and the energy intensity at each water treatment plant EBMUD has calculated the energy intensity of each of its accounts within these 132 pressure zones which ranges from 180 to 9,000 Kwh/MG with the majority of the larger accounts in the less energy intense zones. The lower number accounts for gravity fed pressure zones from the most efficient of the water treatment plants and the higher number represents zones where extensive pumping is required and perhaps from the least efficient water treatment plant. The weighted (by demand) average energy intensity per account of the 386,755 accounts with non-zero use is 1,373 KWH/MG. Therefore, the anticipated annual energy savings in distribution and

treatment from this project is 526 MWH/Year from this project as calculated by the following formula.

$$375 \text{ gpd} * 40,000 \text{ accounts} * 365 \text{ days/yr} * 7 \text{ percent savings} / 1,000,000 \text{ gallons/MG} * 1,373 \text{ KWH/MG} / 1000 \text{ kWh/MWH} = 526 \text{ MWH/Year}$$

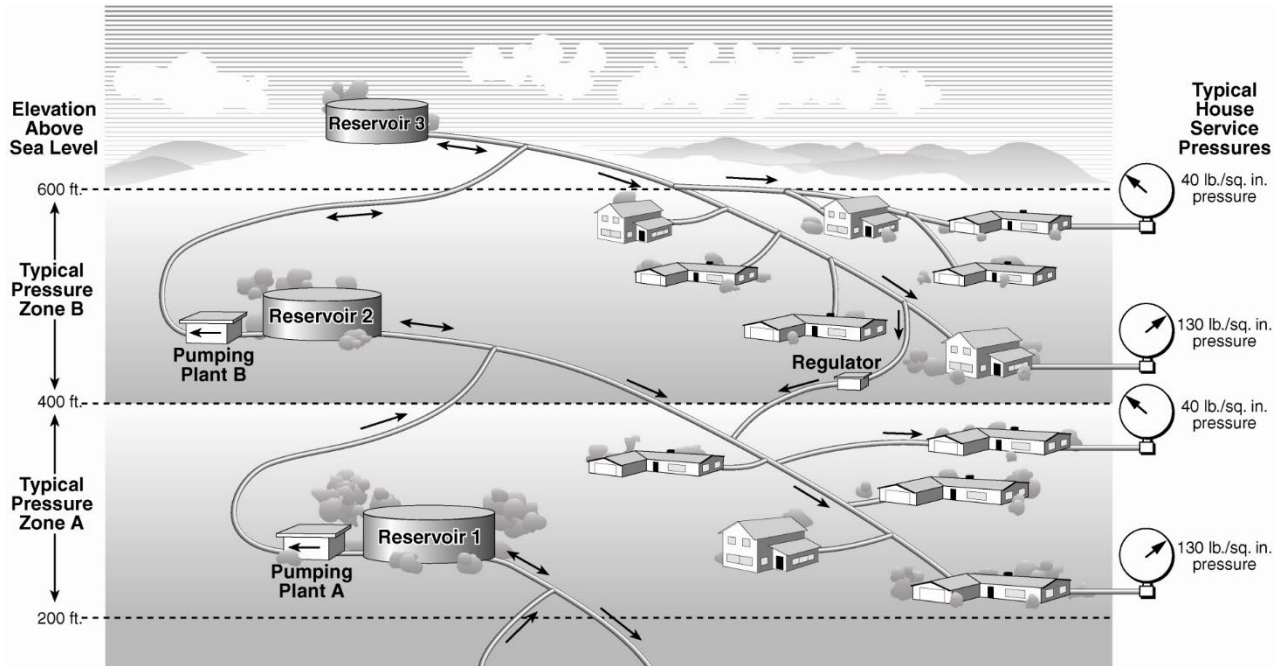


Figure 14. Illustration of different pressure zone pumping requirements

#### 4.3.2.2 Raw Water Pumping Energy

As discussed above, EBMUD normally gravity feeds water through its aqueducts from Pardee Reservoir to the EBMUD service area at up to approximately 200 MGD. During times of high demand and low Pardee reservoir levels, supplemental pumps are necessary to drive raw water to EBMUD's service area. The energy required to operate these pumps can exceed all other EBMUD energy demands combined as show in Figure 13. Conserving water from this project will allow for more water in Pardee and lower demand which results in less raw water pumping required. However, it is difficult to predict exactly when these pumps will be needed because many factors influence the need for these pumps. EBMUD has three pump trains known as Walnut Creek No 1, 2, and 3. Walnut Creek NO 1 has three 2,000 horsepower (hp) pumps in them each capable of delivering 32 million gallons per day (MGD). Walnut Creek No. 2 has three 2,500 hp capable of delivering 45 MGD and Walnut Creek No. 3 has four 3,500 horsepower pumps each capable of delivering 57.3 MGD. Walnut Creek No. 1 is rarely operated. For purposes of this calculation below, assume the use of the 2,500 HP pump is the one whose use is offset by the water conservation savings.

Assuming there is a 1.05 MGD of water saved from this project as described above, the energy saved from not running when they are needed is approximately  $1.05/45 \text{ MGD} * 2,500 \text{ HP} * .746 \text{ KW/HP} * 24 \text{ hours/day} = 1.044 \text{ MWH/day}$ . This would equate to a yearly rate of 381.2 MWH/year; however, it is not typically operated year-round.

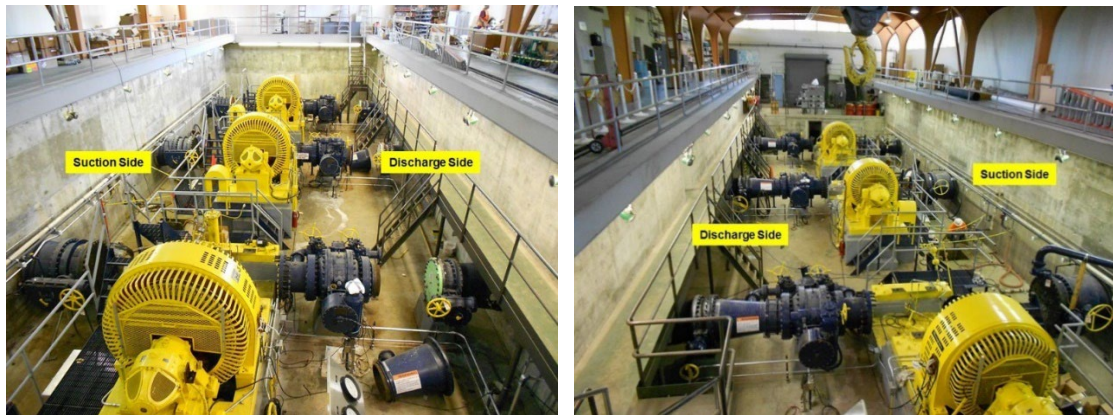


Figure 15. Walnut Creek raw water pumping plants

#### 4.3.2.3 Supplemental Water Supply Energy Savings

EBMUD operates its Freeport facilities during drought periods to obtain supplemental supplies. This source is much more energy intensive than EBMUD's Pardee reservoir; therefore, conserving water through this project will reduce the need for this source and reduce energy use. Between October 4, 2021, and March 31, 2022, EBMUD took 31,915 Acre-Feet of water through Freeport. EBMUD calculated that this required a total additional raw water pumping energy use of 35,442 MWH hours and produced 4,153 metric tons of greenhouse gas emissions. The energy intensity of this water (not including distribution and further treatment) is 3,408 KWH/MG. Considering the 1,373 KWH/MG from distribution and treatment, the total energy intensity of this water is 4,781 KWH/MG. The energy saved from this project when Freeport supplemental is required is 1,832 MWH/year.

- (1)  $35,442 \text{ MWH} * 1,000\text{KWH/MWH} / 31,915 \text{ AF} / 325,851 \text{ gallons /af} * 1,000,000 \text{ gallons/MG} = 3,408 \text{ KWH/MG}$
- (2)  $3,408 + 1,373 = 4,781 \text{ KWH/MG}$
- (3)  $4,781 \text{ KWH/MG} * 1,176 \text{ AF/yr} / 3.069 \text{ AF/MG} / 1000\text{Kwh/MG} = 1,832 \text{ MWH/yr.}$

#### 4.3.2.4 Hydroelectric Plant Energy

EBMUD operates hydroelectric plants at Pardee and Camanche reservoirs which are 23.6 MW and 10.7 MW respectively. Water released is not sent to the EBMUD service area. Unfortunately, EBMUD is not able to directly correlate water released to the hydroelectric plants with conservation.

#### 4.3.2.5 Wastewater Treatment Energy Savings

Wastewater treatment and conveyance requires energy. EBMUD's Main Wastewater Treatment Plant produces renewable energy from the biogases emitted by waste streams it treats, so the energy savings from conservation are reduced. This project will not reduce biological and chemical demand but it will reduce the amount of freshwater in wastewater and will ultimately lower energy use in this area by reducing the total volume of wastewater that has to be pumped and treated.

#### 4.3.2.6 Point of Energy Savings

As described above, the point of energy savings is at multiple points through EBMUD raw water and treated water systems including pumps and water treatment plants.

#### 4.3.2.7 Water Treatment Energy Savings

The distribution energy estimates include terminal potable water treatment plant but do not include less significant raw water treatment.

#### 4.3.2.8 Reduced vehicle miles driven

Conversion of a meter reading system from manual read to AMI will inevitably reduce the amount of driving required in meter reading. However, because the proposed AMI upgrades are not going to be concentrated geographically, EBMUD cannot with certainty calculate the reduction in vehicle trips at this time.

### 4.4 Evaluation Criteria C—Sustainability Benefits: (20 Points)

#### 4.4.1 Enhancing Drought Resiliency

This project will enhance drought resilience and address the future impacts of climate change by making customers more aware of their water use patterns and opportunities to save water. Table 1 below summarizes a number of potential water conservation benefits of AMI and identifies whether these benefits provide immediate drought benefits and/or long-term water supply benefits. Some of these benefits will allow customers to make short-term decisions that will affect temporary reductions in water use, others will allow for longer term decisions that may take years to implement but will have impacts on future water use and some affect both categories.

Table 1. Summary of Drought and Long-Term Conservation benefits from AMI

Conservation Issue	Drought	Long term
Leaks	X	X
<ul style="list-style-type: none"> <li>Leak identification</li> </ul>	X	X
<ul style="list-style-type: none"> <li>Leaks-burst type (higher than normal use) not necessarily continuous</li> </ul>	X	X
<ul style="list-style-type: none"> <li>Leak intermittent but continuous like toilet leak</li> </ul>	X	X
<ul style="list-style-type: none"> <li>Obtain leak information for better leak threshold than relying on billing data</li> </ul>	X	X
<ul style="list-style-type: none"> <li>Using hourly data to pinpoint location of leak with customer</li> </ul>	X	X
<ul style="list-style-type: none"> <li>Verify leak repair</li> </ul>	X	X
<ul style="list-style-type: none"> <li>Low flow leak identification, possibly unmeasured</li> </ul>		X
Irrigation		
<ul style="list-style-type: none"> <li>Budget verification—are they watering correctly?</li> </ul>	X	X
<ul style="list-style-type: none"> <li>Irrigation rules enforcement drought time real monitoring</li> </ul>	X	
<ul style="list-style-type: none"> <li>Differentiate indoor versus outdoor use</li> </ul>		X
<ul style="list-style-type: none"> <li>Troubleshoot irrigation leaks based on change in volume</li> </ul>	X	X
Drought Response		
<ul style="list-style-type: none"> <li>Enforce watering restrictions</li> </ul>	X	

• Excessive use warnings	X	
• Better real time demand analysis - have people starting irrigating again?	X	X
• Real time assessment of consumption for customer classes	X	X
• Enhancing conservation during drought to obtain short term benefit	X	
• Investigate water waste prohibitions, follow up on customer reports	X	X
General Conservation		
• Identifying conservation opportunities: Help customers and staff help make better decisions in general	X	X
• Evaluate conservation programs		X
• Real time consumption evaluation based on campaign	X	X
• Resolve customer disputes over billing	X	X
• More informed on what customers are doing so we can respond accordingly to tell us what we should market	X	X
• Better integration with smart home technology		X
• Identify conservation opportunities	X	X
• Ability to monitor submeters		X
• Enhanced use of on line tools	X	X
• High Bill notification	X	X
• More accurate metering with better price signals for customers. Opportunity to consider static meter technology.	X	X
Data Benefits		
• Evaluating baseline usage	X	X
• Evaluate potential customer savings from different strategies based on better data	X	X
• Better estimates of household profiles	X	X
• Real time evaluation of water efficiency	X	X
• Improving our recommendations, with better data to validate our savings estimates, e.g., analysis of drip conversion program		X
• Helpful information for budget-based rates		X
• Differentiate outdoor versus indoor use	X	X
• Making data available for energy/water balance		X
• Ability to obtain daily and true monthly consumption patterns by zone and customer classes. Not just estimates.	X	X
Supply Side or District Side Conservation		
• Real time pressure sensing	X	X



• Evaluate where loss is occurring via DMAs		X
• Better track system flushing and reduce flushing with better water age	X	X
• Meter sizing	X	X
• Detect water theft	X	X
• Hydrant meter data-real time consumption and location information		X
• Remote shutoffs when accounts are closed		X
• Identification of meter failure or suspect meter accuracy	X	X
• Ability to detect pipeline leaks acoustically at meter		
• More accurate information on water quality for flushing from real time hydraulic model, e.g., digital twin.	X	X
Large Customer Specialized		
• Large user establish typical diurnal use, shift work	X	X
• Direct feed to Data Control Centers (DCSs)	X	X
• Submeter, irrigation meter or additional device applications	X	X
• Additional sensors added to network for a fee		X
• Ability to export hourly water use data to other applications.	X	X

**4.4.1.1 Ecologic Resiliency to Climate Change**

This project does provide resiliency to climate change because not only does it provide immediate water conservation but long-term savings as well. As discussed above, the majority of EBMUD’s water supply comes from the Mokelumne River, an important ecosystem and habitat for species like Chinook Salmon and Steelhead. Reducing the demand for water during droughts allows EBMUD and its partners on the Mokelumne River to better manage the Mokelumne River fishery to benefit these species.

**4.4.1.2 Will Water Remain in the System for Longer Period of Time?**

EBMUD operates a complex water storage system partly designed to improve ecologic benefits including temperature control on the Mokelumne River. EBMUD works with partners on the lower Mokelumne River to manage releases from Pardee and Camanche Dams to maintain a cold water pool. Additional conservation from this project will allow for more flexibility in operating this system including allowing water to stay in the Pardee Reservoir longer when appropriate. This allows EBMUD to maintain cooler water releases to the Mokelumne River.

**4.4.1.3 Will the Project Benefit Species?**

The majority of EBMUD’s water supply originates from the Mokelumne Watershed and Pardee Reservoir. Water Conservation projects such as this allow EBMUD to better manage its flows and releases and support ecological improvements on the Mokelumne River.

The Mokelumne River provides important habitat for fall run Chinook salmon, which migrate from the ocean and reach the Mokelumne in late summer and early fall to spawn. In the spring, the juvenile salmon then migrate to the ocean, grow, and ultimately return to the Mokelumne two to

three years later to spawn. Salmon spawn in the river below Camanche Dam and many also enter the Mokelumne River Fish Hatchery located at the base of EBMUD's Camanche Dam, where eggs are collected, fertilized, incubated, and raised for release in the spring.

In 1998, EBMUD entered into a Joint Settlement Agreement (JSA) with U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) that specified a number of actions to protect and improve habitat on the Lower Mokelumne River. EBMUD continues to meet its flow commitment to protect the Lower Mokelumne River by providing in-stream flow releases from Camanche Dam to improve fishery conditions. Reduced water use in EBMUD's service area provides for more flexibility in managing releases to the River.

In particular, leaving additional water in Pardee and Camanche Reservoirs allows EBMUD to maintain a cold water pool that supports important temperature regulation. One of the important factors to recovery of steelhead is the availability of sufficient cool water. Conserved water from the project is anticipated to contribute to a larger available supply due to reduced demand.

#### *4.4.1.4 Other Ecosystem Benefits*

EBMUD is not aware of the presence or absence of endangered species on the private property of our customers within the East Bay service area where the usage will be studied. However, if these species are present, they would certainly benefit from improved water use efficiency, a reduction in the amount of irrigation run-off containing chlorinated water, as well as toxic chemicals from the application of fertilizer, herbicides, and pesticides applied to modern lawns. The runoff from these lawns can drain to nearby catch basins which drain to our creeks and bay and into the habitat of birds, fish, amphibians and reptiles.

#### *4.4.1.5 Will the Project Directly Result in More Efficient Management of the Water Supply?*

This project will allow EBMUD to better customer water use patterns in real time, allowing for more flexible management of the water system and more targeted conservation outreach. For example, having information on what time of day customers are irrigating would allow for better messaging and outreach during droughts.

### **4.4.2 Addressing a Specific Water and/or Energy Sustainability Concern(s)**

#### *4.4.2.1 Issues impacting water sustainability*

EBMUD, like most water utilities in the West, is experiencing more frequent and severe droughts and warmer weather, while at the same time experiencing significant population growth. EBMUD relies primarily on one main water source, the Mokelumne Watershed, which is also subject to severe droughts. EBMUD's Climate Action Plan projects that a 7.2°F increase in air temperature by the year 2100 could reduce snow-covered area in the Mokelumne watershed by 38 percent. Other supplemental supplies may be impacted by climate change as well. For example, EBMUD's CVP contract with USBR is subject to the Municipal and Industrial (M&I) Shortage Policy, meaning that in years of low supply EBMUD may not be able to get its full allocation. Similarly, water transfers may become more difficult or expensive.

Through years of conservation efforts, EBMUD's water use has remained constant even as its population has increased. Since EBMUD historically prioritized the most cost-effective water conservation measures; in the future, additional conservation savings may require measures that

are more expensive, difficult to implement, or that have short-term results. AMI presents a new opportunity to obtain both short-term and long-term sustainability both in water and energy management.

#### *4.4.2.2 Issues impacting Energy Sustainability*

As described in Subsection 1.2, EBMUD has implemented a number of renewable energy projects. However, in dry years, which are projected to be more frequent due to changing climate, energy demands will increase as EBMUD utilizes supplemental water supplies that require substantially more energy to deliver and treat. By reducing customer demand during drought, this project will also reduce energy demands associated with pumping and treating water.

Due to the risk of fire from sparking electrical equipment, EBMUD's energy provider PG&E has implemented Public Safety Power Shutoffs during extreme hot and dry conditions. These shutoffs impact EBMUD by not allowing it to use electrically powered pumps and/or require extensive use of portable generators. EBMUD has used its AMI system to identify large water users during this period which stress the water system, and also used the AMI portal to communicate with customers to reduce discretionary water use during these periods.

#### *4.4.2.3 How the Project Helps Energy and Water*

This project will help by reducing water and energy use overall, but it also allows for the identification of high or unnecessary water use during critical periods such as droughts and power emergencies. EBMUD has found that increased use of the AMI Customer Portal has made outbound communication with customers easier, quicker, and less expensive than other means of communication.

#### *4.4.2.4 Where Will the Conserved Water Go?*

Water made available through conservation efforts and programs can then be available for other programs or uses, for in-stream use, or for other watershed beneficiaries (i.e. senior water-rights holders), or to lessen the need for EBMUD to produce or acquire additional supply such as through the Freeport project.

#### *4.4.2.5 Mechanism To Put Conserved Water to Its Intended Use*

EBMUD has a highly versatile water supply system. No additional mechanism is required to put the conserved water to the intended use.

#### *4.4.2.6 Quantity of Water Conserved for the Intended Purpose*

This would be the same as water conserved as described in Subsection 4.1.1.1 it is 1,176 AF/year.

### *4.4.3 Other Project Benefits.*

#### *4.4.3.1 Combating the Climate Crisis*

As described in Subsection 4.3.2, this project is very much aligned with addressing climate change objectives by conserving water, reducing energy use (and associated GHG emissions), and providing EBMUD new tools to identify demand management strategies.

This project will result in a lower greenhouse gas emission by reducing energy use. As described in Subsection 4.2.1.1 this project is projected to save 526 MWH/year during normal years and up to 1.044 MWH/day of raw water pumping (381.2 MWH/year equivalent) when required. Should Freepoint supplemental supply be needed, it would also offset an additional 1,305 MWH/year.

The proposed project will strengthen water supply sustainability by providing EBMUD tools to identify conservation opportunities, quickly identify waste, and be able to target customers with specific conservation messages to enhance short-term water savings when needed. Deploying additional AMI meters would position EBMUD better to address the impacts of climate change, specifically the increase in duration, severity and frequency of drought as described in Section 4.3.1. The AMI system can provide information on the type of water use that is occurring within the service area and depending on the severity of the water shortage, allow EBMUD to take action to reduce that usage.

#### *4.4.3.2 Disadvantaged or Underserved Communities*

This project supports Executive Orders 14008 and 13985 by providing tools to conserve water and lessen financial burdens to people of color and others who have been historically marginalized and underserved. While this project will not exclusively target disadvantaged communities, EBMUD's service area includes many such communities that will benefit from the project objectives. This project plans to install AMI meters throughout the District as old meters need to be replaced rather than specifically targeting large water users. This approach will help to equitably invest in and provide new tools to all of our communities, including those that have been historically marginalized. This approach is intentionally more equitable than targeting households with higher water use, as those households are often more affluent and not historically underserved.

EBMUD serves many areas that are considered to be disadvantaged communities (DAC) by the State of California, as shown in Figure 16 below. DACs include census geographies in which the median household income (MHI) is less than 80 percent of the Statewide MHI. Figure 16 below highlights census tracts within the EBMUD service area that meet this threshold. This criterion is more stringent than the definition provided in Section 1015 of the Cooperative Watershed Act, which defines DACs as communities where MHI is less than 100 percent of average. EBMUD's service area encompasses significant portions of Alameda and Contra Costa counties, both of which are diverse, majority-minority counties, with over 50 percent of the population being non-white alone according to the US Census Bureau.

This project benefits disadvantaged communities by providing tools to better manage water use and thus reduce the financial impacts of associated water bills. AMI will help customers in disadvantaged communities to identify and catch leaks early, and thus not be negatively impacted by the burden of a significantly increased water bill due to an unknown leak.

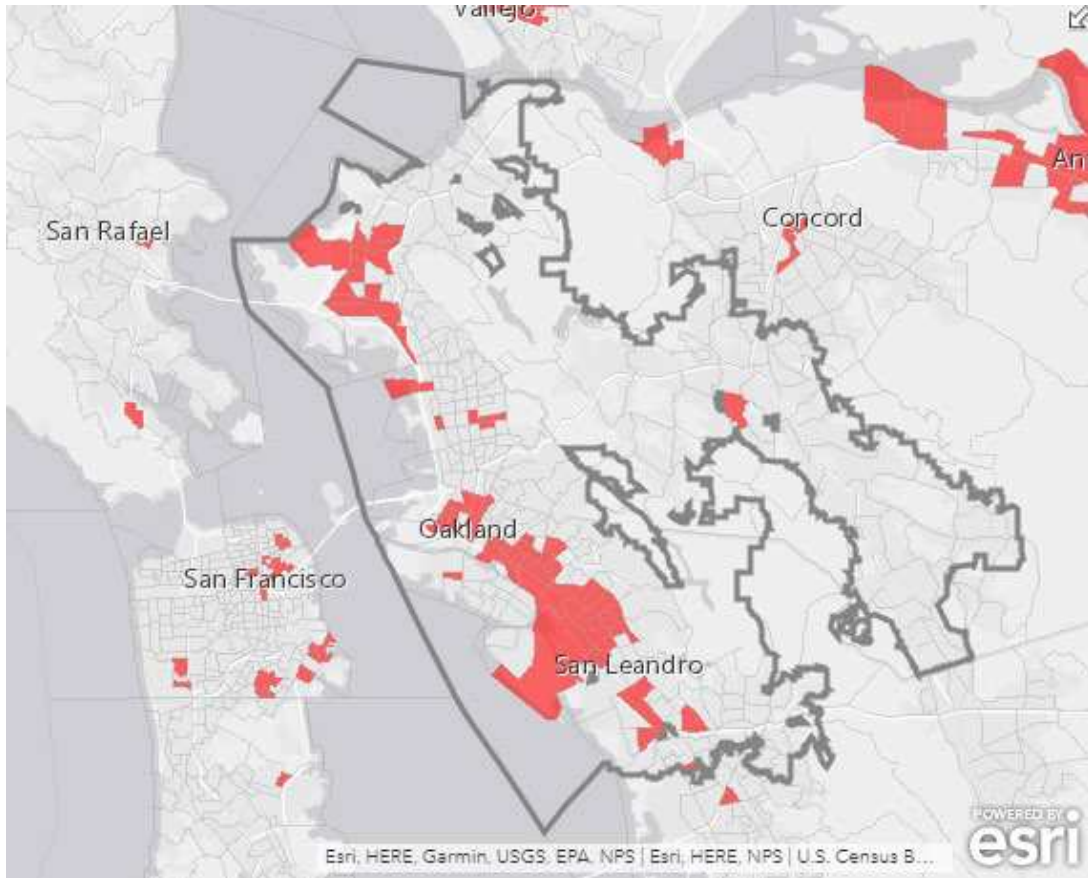


Figure 16. This map highlights census tracts that are defined as disadvantaged communities (DACs) by the State of California in red. To meet this definition, a census tract must have a median household income (MHI) that is less than 80 percent of the Statewide annual MHI. The MHI threshold to meet this guideline is \$62,938 and is based on 2020 American Community Survey data. Data acquired from the CA Department of Water Resources DAC Mapping Tool.

#### 4.5 Evaluation Criteria D—Complementing On-Farm Irrigation Improvements: (10 Points)

EBMUD does not have any significant farming activities within its service area.

#### 4.6 Evaluation Criteria E—Planning and Implementation: (8 Points)

EBMUD has several planning documents that provide support for this project, including its 2021 Water Conservation Strategic Plan (WCSP) Update. This project will also support EBMUD’s ability to meet its long-term water supply planning goals, which include increasing water conservation to 70 million gallons per day by the year 2050.

##### 4.6.1 Project Planning

###### 4.6.1.1 Related Documents

EBMUD has completed a number of plans (linked below) that discuss the importance and applications of AMI, including the 2021 WCSP update, an SOR, a 2020 Urban Water Management Plan, Water Shortage Contingency Plan, Water Supply Management Program, a

Water Loss Control Plan, and a 2050 Demand Study. EBMUD is planning to finalize the AMI Business Plan for discussion by the EBMUD Board shortly after the finalization of this application.

Of the many documents that discuss AMI, the WSCP addresses analysis of AMI as a conservation tool most closely. The 2021 WCSP update covers a ten-year planning horizon, from 2021 through 2030.

The phased implementation of water conservation measures is based on projected supply and demand, with the understanding that expansion of some programs may be accelerated in order to respond to droughts or regulatory mandates. In developing the 2021 WCSP update, measures were selected that were cost-effective, appropriate for EBMUD's service area, and that would result in sustained water savings. The 2021 WCSP update also takes into consideration the requirements of state and federal regulations.

The 2021 WCSP provides the methodology that was used to select and evaluate activities for inclusion in the Program and the development of forecasts for 2050 water savings. The selected activities are described in detail to show how they will help customers save water. Implementation strategies and phasing in of specific measures are also discussed. AMI was considered to be one of the most powerful conservation tools in this plan and is included in all high and low conservation forecasts.

Here are links to EBMUD's online documents:

- [https://www.ebmud.com/download\\_file/force/9740/719?Water\\_Conservation\\_Strategic\\_Plan\\_2021.pdf](https://www.ebmud.com/download_file/force/9740/719?Water_Conservation_Strategic_Plan_2021.pdf)
- <https://www.ebmud.com/water/about-your-water/water-supply/urban-water-management-plan>
- <https://www.ebmud.com/water/about-your-water/water-supply/water-supply-management-program-2040>
- <https://www.ebmud.com/water/about-your-water/water-supply/mokelumneamadorcalaveras-integrated-regional-water-management-plan>

#### *4.6.1.2 Goals Met by This Project*

As discussed in the WCSP, AMI is an important element of meeting EBMUD's water conservation target of 70 million gallons per day (MGD) conserved in the year 2050.

AMI will also be important in meeting emerging State regulations. In 2018, the State of California adopted a new set of regulations known as "Making Water Conservation a California Way of Life," laid out in AB 1668 and SB 606. Collectively known as the Long-Term Water Use Efficiency Framework, these bills form a foundation for conservation and drought planning in the state. They outline a methodology for calculating agency targets for water use efficiency based on factors such as population, residential indoor water use standards, landscaped areas, and water loss. AMI will be an essential tool for EBMUD to meet these new standards. The regulations set aggressive goals for indoor residential water use efficiency; AMI data will help EBMUD and its

customers to meet these standards. In addition, AMI data will prove valuable for complying with performance standards related to irrigation and conservation programming for the commercial, industrial, and institutional sectors.

#### 4.6.2 Readiness to Proceed

As described elsewhere, EBMUD is prepared to begin the project immediately upon contract agreement or when allowed to begin for reimbursement purposes. EBMUD already has a small existing network of AMI collectors that provide a large coverage area. Any endpoint added within that coverage area will immediately be available for customer use. The project also includes adding additional collectors to expand this area which will take more time but planning work can begin before the grant agreement is finalized.

##### 4.6.2.1 Description of Major Tasks

Below is a description of the three major tasks necessary to complete the project.

- Task 1. Installation of AMI meters. This task will either involve the replacement of water meters and/or water meter registers, then replacing the meter box lid and/or cover as necessary. The AMI endpoint will then be installed and programmed. This task will begin upon Grant Acceptance and will continue for three years or when the grant goals are met.
- Task 2. Customer Outreach. After AMI endpoints are installed in Task 1, Water Conservation staff will reach out to customers with upgraded meters to make them aware of the AMI Water data available and offer related conservation services. Outreach to customers with newly installed AMI will continue as long as AMI meters are being added. Conservation services related to AMI data are currently offered and will continue to be offered indefinitely.
- Task 3. Installation of additional collectors. This will involve construction of AMI collector towers and collection equipment and is expected to take 12-18 months, including planning, depending on the site Planning work may commence as soon as EBMUD is notified of preliminary grant award. Construction work will not commence prior to grant acceptance.

##### 4.6.2.2 Permits Required

The proposed work does not require any permits.

##### 4.6.2.3 Engineering or Design Work

The only design work performed for this project so far has been the completion of the AMI Propagation study by EBMUD's vendor, which was used to determine how many collectors were desired for this project as shown in Figure 9 in Subsection 3.1. This work is not billable to the project.

##### 4.6.2.4 Policies or Administration Actions

As this is an expansion of existing practices, EBMUD does not have any new policies or administrative actions that need to be required.

##### 4.6.2.5 Project Schedule

Given that this is an expansion of an existing project, the schedule is relatively straightforward:

- Complete environmental and cultural compliance May 2023
- January 2023 to May 2023 Procurement of Inventory needed to begin installing endpoints.
- May 2023 to May 2026. Installation of 40,000 AMI endpoints and outreach to customers
- January 2023 to May 2023. Planning for collector design at seven sites.
- May 2023 to December 2023. Design of seven AMI collector towers.
- December 2023 to December 2024 construction of AMI Collection towers

The expected timeline for environmental and cultural compliance is expected to be minimal based on the experience of work completed in Phase 1.

## 4.7 Evaluation Criteria F—Collaboration (6 Points)

The expansion of AMI at EBMUD is a very popular project amongst EBMUDs customers and stakeholders. This project provides immediate benefits to customers by offering them away to achieve financial and environmental benefits relatively easily with a new tool to save water and energy. It also provides them online tools which they can use to manage their water bills and plan for future bills. The hourly data improves transparency of water billing to customers and increases trust in EBMUD’s meter data. As shown by the many letters of support for this project, stakeholders appreciate the availability of highly granular data on water consumption and the ability to offer new tools for water and energy savings. Other utilities benefit from EBMUDs programs and frequent presentation on conservation and AMI.

### 4.7.1 Encourages Collaboration

EBMUD promotes and encourages collaboration with other utilities by participating in meter and AMI related work groups, conferences, committees, and forums. EBMUD frequently meets with other utilities in various stages of AMI deployments to share insights, deployment strategies, planning documents, and public outreach materials.

### 4.7.2 Widespread Support

EBMUD received generally widespread support from its customers and stakeholders in the community as well as other water utilities for its AMI initiatives. As indicated in the attached Letters of Support, many customers look forward to having additional AMI meters installed so that they can more closely monitor their consumption patterns.

### 4.7.3 Significance of the Collaboration

On the customer side, AMI data allows EBMUD to better work with its customers to reduce their water use. For large commercial and industrial water users, AMI data helps them to better manage their operations and look for ways to save water. For irrigation customers, hourly data allows for more accurate leak detection, identification of overwatering, and real-time comparisons against water budgets. With AMI, EBMUD is better able to serve its customers by developing tools like leak alerts, high bill notification, and water budgets that are dependent on more frequent meter reads.

In addition, EBMUD is an industry leader that collaborates with other water agencies and is active in organizations like Association of California Water Agencies, Alliance for Water Efficiency, and



the California Water Efficiency Partnership. EBMUD will leverage these relationships to share its experiences and findings in order to help advance AMI and water conservation industry-wide.

#### 4.7.4 Increase the Possibility/Likelihood of Future Water Conservation by Other Users

This project will increase the growth of AMI by other water utilities as well. Despite not having a full AMI system, EBMUD has supported research on AMI for approximately 17 years and consultant with many other utilities that have full AMI systems. EBMUD is active in numerous industry associations and is recognized as a leader in water conservation. EBMUD has provided presentation on its AMI research findings at numerous conferences and has promoted the use of AMI for water conservation using tools like online portals, hourly water usage, high resolution meters, leak detection and daily water budgets.

#### 4.7.5 Supporting Documents

EBMUD received many Letters of Support from customers and stakeholders. This includes several letters from customers that already have smart meters on some of their accounts but would like to have it for all their accounts. .

### 4.8 Evaluation Criteria G—Additional Non-Federal Funding (4 Points)

$$\frac{\$13,908,753 \text{ Non-Federal}}{\$18,908,753 \text{ Project Total}} = 74 \text{ percent}$$

The price ratio above is based on this stand-alone project described above. However, EBMUD is in the process of finalizing its AMI business case for full system deployment. If the full system deployment is accepted by the EBMUD Board of Directors, the actual project costs could be in excess of over \$150 million dollars and will include up to 380,000 additional meters.

### 4.9 Evaluation Criteria H—Nexus to Reclamation (4 Points)

Please refer to Section 2.5 for more information on the relationship with EBMUD and Reclamation including previous grants awarded to EBMUD. EBMUD has a contract with USBR for supplemental dry year supplies from the CVP. EBMUD’s contract allows it to request CVP allocations any year when its projected end of September total system storage falls below 500,000 acre-feet.

This project also builds on a previous grant-funded project. In 2016, EBMUD received an award of \$1 million in grant funding from USBR that allowed it to develop its existing AMI network and install endpoints on 3,000 of its largest accounts (Grant Agreement R16AP00126). EBMUD was able to show water and energy savings associated with that project. This new project will build on those successes.

In addition, information obtained and methodology developed during this study will be shared with the USBR and other Reclamation project utilities to help them obtain similar benefits from meter accuracy, water supply accounting, and AMI business cases.

#### 4.10 Performance Measures

As discussed in Section 4.1 and specifically Subsection 4.1.1, the water and energy conserved as a result of this project will be calculated based on one year average water usage before and after AMI information is presented to customers. Full data analyses are not envisioned until approximately one year after the actual analysis of AMI-provided data is assembled. Comparative water usage must be based on approximately one year prior to the AMI installation and one year after. An anticipated significant benefit from the project is the additional information on apparent losses and the potential to identify and track low flow leaks which may ultimately result in significantly reduced demand. The success of specific incidents of leak management and other interventions can be documented on a case-by-case basis as illustrated in Section 4.1.3. This methodology is supported by previous research efforts in EBMUD AMI projects and documented in reports provided to the USBR.

### 5 Project Budget

#### 5.1 Budget Proposal

The proposed project cost/budget is listed in Table 2. The discussion that follows provides a detailed explanation of project costs. EBMUD has grant funding available from a California Department of Water Resources (DWR) Proposition 1 grant which will likely be used on this project. No other non-federal or third-party contributions are anticipated. Below is a summary of funding sources.

Table 2. Proposed Project Budget

BUDGET ITEM DESCRIPTION	Unit Rate	QTY	EBMUD FUNDING	USBR FUNDING	TOTAL COST
		(hrs/mo)			
<b>Personnel</b>					
<b>Project Management/Analysis</b>					
- Mgr of Water Conservation	\$103	250	\$25,750	\$0	\$25,750
- Senior Civil Engineer	\$92	500	\$46,000	\$0	\$46,000
- Associate Civil Engineer	\$82	750	\$61,500	\$0	\$61,500
<b>Conservation Implementation</b>					
- Water Conservation Rep	\$59	300	\$17,700	\$0	\$17,700
- Water Conservation Tech	\$50	500	\$25,000	\$0	\$25,000
- Water Conservation Sup	\$76	300	\$22,800	\$0	\$22,800
- Admin Clerk	\$41	200	\$8,200	\$0	\$8,200
<b>Equipment Installation/Testing</b>					
- Meter Reader/Mech	\$46	33000	\$ 1,518,000	\$0	\$1,518,000
- Meter Reader/Mech Foreman	\$59	5000	\$295,000	\$0	\$295,000
- Meter Reader and Maint Sup	\$69	3000	\$207,000	\$0	\$207,000
- Meter Mechanic II	\$50	4000	\$200,000	\$0	\$200,000
- Meter Repair and Testing Sup	\$72	200	\$14,400	\$0	\$14,400
- Admin Clerk	\$41	4000	\$164,000	\$0	\$164,000
Salaries and Wages SubTotal			\$2,605,350	\$0	\$2,605,350
<b>FRINGE BENEFITS</b>					
Full-time employees (100.76 percent)			\$2,625,151	\$0	\$2,625,151
Salaries and Wages Total			\$5,230,501	\$0	\$5,230,501
<b>EQUIPMENT</b>					
Ford F-250, Monthly	\$1,445	306	\$442,170		\$442,170
Ford Escape, Monthly	\$610	18	\$10,980		\$10,980
Small Meter Equipment	\$262	37000	\$5,132,600	\$4,561,400	\$9,694,000
Medium Meter replacement	\$568	400	\$113,600	\$113,600	\$227,200
Large and medium meter retrofit	\$250	2600	\$325,000	\$325,000	\$650,000
Equipment Subtotal			\$6,024,350	\$5,000,000	\$11,024,350
<b>CONTRACTS</b>					
AMI Equipment Installation	\$60,000	7	\$420,000		\$420,000
Contracts Subtotal			\$420,000	\$0	\$420,000
<b>TOTAL DIRECT COSTS</b>			<b>\$11,674,851</b>	<b>\$5,000,000</b>	<b>\$16,674,851</b>
INDIRECT COSTS – (15.90 percent) of all Direct costs			\$2,233,902	\$0	\$2,233,902
<b>TOTAL PROJECT COSTS</b>			<b>\$13,908,753</b>	<b>\$5,000,000</b>	<b>\$18,908,753</b>

**Table 3. Summary of non-Federal and Federal funding sources**

Funding Sources	Funding Amount
Non-Federal Entities	
1. EBMUD	\$13,270,653
2. California Department of Water Resources, Prop 1 Grant*	638,100
Non-Federal Subtotal:	\$13,908,753
Requested Reclamation Funding	\$5,000,000
Total Project Funding	\$18,908,753

*\*DWR grant funds will be applied to the Small Meter Equipment costs at a rate of \$75/device up to the grant allocated amount in the grant for AMI.*

**Table 4. Total Project Cost Table**

Source	Amount
Costs to be reimbursed with the Federal Funding	\$5,000,000
Costs to be paid by the applicant	\$13,270,653
Value of Third Party contributions (DWR)	638,100
Total Project Funding	\$18,908,753

## 5.2 Budget Narrative

### 5.2.1 Personnel - (52,000 Hours)

#### 5.2.1.1 Project Management and Analysis- (1,500 Hours)

Staff from various departments including the Water Conservation Manager Alice Towey and the AMI Business Case Project Manager Casey LeBlanc will provide management oversight of the project. David Wallenstein, Associate Engineer, will service as Project Manager for the overall project and also perform technical analysis. Mr. Wallenstein is a registered civil and mechanical engineer with significant prior experience managing numerous AMI, water loss control, water conservation, energy management, and end use demand studies. Project engineering support will be provided under all phases of the project, including analyzing field data, field work scheduling, preparing evaluation reports, grant progress reporting, and working with some customers.

#### 5.2.1.2 Conservation Implementation - (1,300 Hours)

Water Conservation Representatives and Technicians will be responsible for working with customers in the project to help them save water. Additional time for use with AMI tools on this project is included in the table. Water conservation supervisory work will include overseeing the work of Water Conservation Representatives and customer services. Additional work from this project will be incorporated into existing practices for AMI projects. The Administrative Clerk in Water Conservation routes AMI related customer requests and distributes conservation materials related to AMI accounts such as leak detection kits.

#### 5.2.1.3 Equipment Testing/Installation - (49,200 Hours)

Meter Reader/Mechanics (MRMs) will be responsible for changing out approximately 37,000 small meters sizes 5/8 to 1 inch at an approximate rate of 10 per 9-hour day. Based on this rate,

this work will need approximately seven MRMs' majority of their time during the three-year project period. These seven MRMs will be supported by one MRM foreman spending the majority of their time on this project and one Meter Reader and Maintenance Supervisor who will spend approximately 50 percent of their time during the project period on this project.

Meter Mechanic IIs will be responsible for approximately 400 medium size (1-1/2 and 2-inch) meter replacements. A two-person crew can replace about two medium size meters per day. Meter Mechanic IIs will also upgrade larger meters approximately 2,600 medium and large meters with AMI during normal maintenance and testing which will add approximately 15-minutes to their workload per meter. Only the time spent programming and upgrading the upgraded meters is included in this estimate. The Meter Repair and Testing Supervisor will oversee/assign the work of meter mechanics, consult on meter issues and review test results and will spend approximately 200 hours in support of the project.

The Administrative Clerk is responsible for creating and managing work orders and updating meter and radio exchange records in EBMUD customer information system. During the course of the three-year project, the Clerk will create work orders and update records at a rate of approximately 10 meters per hour and will require 4,000 hours to complete these tasks.

### 5.2.2 Fringe Benefits

Fringe Benefits have two components: Paid Absence (leave) and Employer Paid Benefits. In FY 2022, Paid Absence is approximately 19.5 percent and Employer Paid Benefit is approximately 68 percent. The Paid Absence rate of 19.5 percent is multiplied by each of the regular hours worked during the bi-weekly payroll period. Then the combined worked hour and paid absence amount is multiplied by the Employer Paid Benefit rate of 68 percent. The result is a compounded rate of 100.76 percent on each of the regular hours worked. A copy of an EBMUD internal memorandum documenting the rate is provided in Attachment C.

### 5.2.3 Travel/Vehicles

No travel other than that required during equipment installation, data collection, and customer meetings is anticipated for this project. EBMUD will use vehicles in its fleet to complete meter installation and upgrade. EBMUD plans to use eight full-time Ford F-250s, one assigned Ford Escape full-time and one half-time Ford F-250s for this project. The rate included in this table includes all the fuel and maintenance costs for these vehicles but not purchase price per EBMUD Fleet Vehicle Use Charge (VUC) and Procedures 709 and 731

### 5.2.4 Equipment, Materials, and Supplies

Aside from the metering, end points, meter lids, and small tools, vehicles and miscellaneous plumbing supplies very little other equipment is anticipated. As shown in Table 5, the total current unit material cost for smaller AMI meters and end points is approximately \$262. It is uncertain at this time what size meters will be needed for each installation but since the majority of EBMUD's smaller services are 5/8-inch this estimate was weighted to the smaller size. Medium size meters are more expensive and labor intensive so only 400 replacements are planned for this project with a unit cost of \$568. Many more medium size meters will receive retrofits which are much less expensive. Larger meters are significantly more expensive and require significantly more labor; therefore, EBMUD is only planning for retrofit of these meters project rather than replacement.

Due to inflation and supply chain limitations on raw materials, meter and related equipment prices have risen dramatically in the last two years and may have additional increases in FY 2023. Equipment such as existing AMI collectors, meters, end points and test equipment, and other supplies purchased prior to May 2023 will not be included in the project budget.

Current and most recent prices more meters are shown below. These prices are subject to change during the course of the project:

**Table 5. Summary of estimated pricing for meter and radio parts**

Size	Work Done	Meter	Radio	Register	Lid	Misc. Supplies	Tax	Total
Small								
5/8-in	Replace	\$85	\$85		\$53	\$10	\$22	\$255
¾-in	Replace	\$102	\$85		\$100	\$10	\$27	\$324
1-in	Replace	\$142	\$85		\$120	\$10	\$33	\$390
Medium								
1.5-in	Replace	\$345	\$85		\$50	\$25	\$47	\$552
1.5-in	Retrofit		\$85	\$65	\$50	\$25	\$21	\$246
2-in	Replace	\$419	\$85		\$50	\$25	\$54	\$633
2-in	Retrofit		\$85	\$65	\$50	\$25	\$21	\$246
Large								
3-in & up	Retrofit		\$170	\$156	Varies	\$25	\$32	\$383

### 5.2.5 Contractual/Construction

EBMUD does not envision using additional contractors for this phase of the project except for construction services of the seven collectors. The cost estimate is based on the contract costs for design, construction, installation, and provision of collectors from Phase 1.

### 5.2.6 Reporting

The following reports are required as part of grant funding:

- Financial Reports SF-425.
- Program Performance Reports (Interim, Annual, Final, and Project Monitoring/Performance Measures Reports)

### 5.2.7 Indirect Costs

EBMUD has a federally approved overhead rate of 15.9 percent which applies to all costs including salaries, benefits, materials, and contracts. The Negotiated Indirect Cost Rate Agreement is provided in Attachment D.

### 5.2.8 Total Costs

The total cost for the proposed project is \$18,908,753; and the cost share EBMUD is seeking from the USBR is \$5,000,000 or a 26 percent share.

### 5.2.9 Budget Form

SF-424A is provided is submitted with this application.

## 5.3 Funding Plan and Letters of Commitment

### 5.3.1 Applicant Cost Share

As shown in the Proposed Budget table, the total project cost is projected to be \$18,908,753 including up to \$11,024,350 in meter equipment, and \$5,230,501 of in-kind services as labor and equipment. EBMUD anticipates contributing \$13,908,753 of its own funds, requesting \$5,000,000 from the USBR. EBMUD will pay for its portion of the project from its obligated capital and operating funds. EBMUD's contribution will include in-kind labor contributions and monetary funds as needed.

### 5.3.2 Costs Incurred before Project Start Date

EBMUD intends to continue installing meters as part of existing operations. Based on the information provided in the FOA, the preliminary grant announcement is anticipated in December 2022 and grant agreement acceptance is anticipated no later than May 2023.

### 5.3.3 Funding Partners (No Letters of Commitment needed)

There are no funding partners.

### 5.3.4 Funding Requested or Received from other Federal partners

No other federal funding has been requested as of this time for this project.

## 6 Environmental And Cultural Resources Compliance

### 6.1 Impacts to the Environment

Due to the limited scope and nature of meter replacements and installation of radio equipment, this work is defined as routine and there will be no significant impacts to the environment. However, there may be some minor earth work on EBMUD property in order to install poles for AMI Collector Network expansion at seven sites. None of these sites where poles are to be installed are habitat for listed or sensitive species.

In undertaking the actions that will be funded by the grant, EBMUD will comply with any environmental requirements. EBMUD will conduct an environmental review of any installation actions to determine whether the actions to promote the AMI system are exempt from the California Environmental Quality Act (CEQA) or whether further CEQA analysis is necessary. It is expected that the activities that will be funded will be covered by the following CEQA exemptions: (1) CEQA Guidelines section 15301-Existing Facilities, which includes minor alterations or repairs of existing public and private structures, including alterations to plumbing; (2) CEQA Guidelines section 15322-Educational or Training Programs; and (3) CEQA Guidelines

section 15061-Common Sense exemption. It is also expected that the Reclamation's action in providing the grant will be subject to a categorical exclusion because the work to be done is minor and will be confined to areas that are already impacted by development activities.

## 6.2 Endangered Species

The installation activities and other actions funded by the grant will not affect any endangered species within the project area.

## 6.3 Wetlands in Project Area

There are wetlands in some areas of the EBMUD service area. However, due to the electronic nature of this technology, there will be no work on this project in the wetlands area.

## 6.4 Age of Infrastructure

The EBMUD delivery system varies in age from over 100 years to less than one year.

## 6.5 Effect on Irrigation Features

This project does not involve modification of these facilities.

## 6.6 Historical Buildings

Historical buildings and features within EBMUD will not be affected by this project.

## 6.7 Archeological Sites

Archeological sites within EBMUD will not be affected by this project.

## 6.8 Low Income or Minority Populations Affected

The project will have no adverse effect on low income or minority populations.

## 6.9 Access to Indian Sacred Sites or Tribal Lands

This project will not limit access to any sites.

## 6.10 Spread of Invasive Species

This project will not contribute to spread of weeds or invasive species.

# 7 Permits

Permits are not required. All equipment will be installed on EBMUD owned facilities.

# 8 Overlap or Duplication of Effort Statement

EBMUD does not anticipate any overlap with this project and any other project. EBMUD does have \$638,100 in funding allocated for AMI from the California Department of Water Resources



Proposition 1 funding. The funding is eligible for expenses between June 2, 2020 and November 20, 2024.

## 9 Conflict of Interest Disclosure Statement

EBMUD is not aware of any potential conflict of interest with this project and has policies in place to identify, disclose, and mitigate or eliminate identified conflicts of interest including EBMUD Procedure 601 Conflict of Interest Disqualification Procedure.

### 9.1 Uniform Audit Reporting Statement

EBMUD has not been required to submit any single audit report(s) on or before fiscal year 2021. The upcoming single audit for the District will be for fiscal year 2022 which is due March 31, 2023. EBMUD has an EIN number of 94-6000590.

## 10 Letters of Support

EBMUD was pleased to receive many Letters of Support from its customers as well as stakeholders in its service area, many of whom can directly or indirectly benefit from the completion of this project. Copies of the letters are in the attachment.

## 11 Official Resolution

A copy of an Official Resolution from EBMUD Board of Directors meeting the terms in the proposal is provided in the attachments.

## 12 SAM Identifier

Unique Entity ID: N6LBY2YUZ8C1

CAGE Code: 1UWY8

Legal Entity Name: East Bay Municipal Utility District

DBA: East Bay Municipal Utility District, Water System

## Attachment A: Letters of support

ERIC SWALWELL  
15TH DISTRICT, CALIFORNIA

**CO-CHAIR, DEMOCRATIC STEERING  
AND POLICY COMMITTEE**

20990 REDWOOD ROAD  
CASTRO VALLEY, CA 94546  
(510) 370-3322

174 CANNON HOUSE OFFICE BUILDING  
WASHINGTON, DC 20515  
(202) 225-5065

SWALWELL.HOUSE.GOV

**Congress of the United States**  
**House of Representatives**  
Washington, DC 20515

**PERMANENT SELECT  
COMMITTEE ON INTELLIGENCE**  
CHAIR, SUBCOMMITTEE ON INTELLIGENCE  
MODERNIZATION AND READINESS

**COMMITTEE ON JUDICIARY**  
SUBCOMMITTEE ON ANTITRUST, COMMERCIAL AND  
ADMINISTRATIVE LAW  
SUBCOMMITTEE ON COURTS, INTELLECTUAL  
PROPERTY, AND THE INTERNET

**COMMITTEE ON HOMELAND SECURITY**  
SUBCOMMITTEE ON INTELLIGENCE AND  
COUNTERTERRORISM

July 7, 2022

Camille Calimlim Touton  
Commissioner  
U.S. Bureau of Reclamation  
1849 C Street, N.W.  
Washington, D.C. 20240

**Letter of Support – East Bay Municipal Utility District’s *Expanding AMI Deployment for Water Conservation Project* Application for the U.S. Bureau of Reclamation WaterSMART: Water and Energy Efficiency Grant Program**

Dear Commissioner Touton:

I am writing to express support for East Bay Municipal Utility District (EBMUD) and their grant application for the U.S. Bureau of Reclamation’s WaterSMART: Water and Energy Efficiency Grant Program. EBMUD plans to use the funding for its Expanded Advanced Metering Infrastructure (AMI) deployment for water conservation.

EBMUD provides critical infrastructure for Bay Area residents, including those in California’s 15th Congressional District. EBMUD’s project will help provide real-time water consumption information through an AMI network. I have been told that previous studies, including recent pilots by EBMUD, have shown that such real-time information helps customers and utilities to save water and energy. Expanding AMI in EBMUD’s service area has the potential to assist customers with water and energy conservation efforts. For example, tools like AMI allow customers to save water by identifying leaks more quickly. In addition, real-time data through AMI can help customers better manage their operations as well as select the most cost-effective water and energy efficiency upgrades. This project could help the state address its third year of serious drought, as well as advance climate change goals.

Given that EBMUD’s additional investment in AMI will not only help customers conserve water and energy, but also improve sustainability efforts, I respectfully request that you give EBMUD’s application full and fair consideration, in accordance with applicable laws, rules, and regulations.

Sincerely,



Eric Swalwell  
Member of Congress

**BARBARA LEE**  
13TH DISTRICT, CALIFORNIA  
**DEMOCRATIC STEERING  
AND POLICY COMMITTEE**  
Co-Chair



**Congress of the United States**  
**House of Representatives**  
**Washington, D.C. 20515-0509**

**REPLY TO OFFICE CHECKED**

- WASHINGTON OFFICE**  
2470 Rayburn House Office Building  
Washington, D.C. 20515  
Phone: (202) 225-2661  
Fax: (202) 225-9817
- DISTRICT OFFICE**  
1 Kaiser Plaza, Suite-1010  
Oakland, CA 94612  
Phone: (510) 763-0370  
Fax: (510) 763-6538  
website: lee.house.gov

**COMMITTEE ON APPROPRIATIONS**  
**Chair**, Subcommittee on  
State, Foreign Operations, and Related Agencies  
**Member**, Subcommittee on  
Labor, Health and Human Services, Education  
and Related Agencies  
**Member**, Subcommittee on  
Agriculture, Rural Development  
Food and Drug Administration, and Related Agencies  
**COMMITTEE ON THE BUDGET**

July 26, 2022

Ms. Camille Calimlim Touton  
Commissioner, U.S. Bureau of Reclamation  
1849 C Street, N.W.  
Washington, D.C. 20240

**Subject: Support for East Bay Municipal Utility District's Expanded AMI Deployment for Water Conservation Project grant application for the United States Bureau of Reclamation's WaterSMART: Water and Energy Efficiency Grant Program**

Dear Commissioner Touton:

I am writing today to support the East Bay Municipal Utility District (EBMUD) in its efforts to seek grant funding through the United States Bureau of Reclamation's WaterSMART: Water and Energy Efficiency Grant program for EBMUD's Expanded Advanced Metering Infrastructure (AMI) deployment for water conservation project. These efforts will help EBMUD provide real time water consumption information via an AMI network.

Previous studies, including recent pilots by EBMUD, have shown that such real-time information can help customers and utilities to save water and energy. This is a very important and worthwhile project to expand AMI in EBMUD's service area, which includes numerous fence line and disadvantaged communities. I support this project because it has the potential to help customers conserve water and energy. Tools like AMI allow customers to save water by identifying leaks more quickly. Real-time data also allows customers to better manage their operations and select the most cost-effective water and energy efficiency upgrades for the long term. This will not only have comprehensive impacts on our local communities but, help address larger water issues across the state.

This is especially important as California being in its third year of a serious drought, and climate change is likely to make such droughts more frequent in the future. EBMUD's additional investment in AMI will help it to conserve water and energy and improve the overall sustainability of our region.

Therefore, I ask full and fair consideration be given to East Bay Municipal Utility District (EBMUD) and their efforts to obtain grant funding for their AMI network. Thank you in advance for your consideration of this project. If you have any questions please direct them to my staff, Lily Moser at 202-536-9939 or [Lily.Moser@mail.house.gov](mailto:Lily.Moser@mail.house.gov).

Sincerely,

Congresswoman Barbara Lee  
Member of Congress

June 10, 2022

Alice Towey  
Manager of Water Conservation  
East Bay Municipal Utility District  
P.O. Box 24055  
Oakland, CA 94623

RE: Support of USBR WaterSMART: Water and Energy Efficiency Grant for EBMUD's  
*Expanded AMI Deployment for Water Conservation Project*

Dear Ms. Towey:

UC Berkeley's Office of Sustainability & Residential Student Service Programs supports the East Bay Municipal Utility District (EBMUD) in its efforts to provide real time water consumption information via an Advanced Metering Infrastructure (AMI) network. UC Berkeley's sustainability offices strongly believe that such real-time information will advance water and energy savings at our facilities. We look forward to partnering with EBMUD on this very important project to expand AMI in EBMUD's service area.

UC Berkeley's Office of Sustainability & Residential Student Service supports this project because it has the potential to help customers like us manage our operations and conserve water and energy. Tools like AMI allow customers to save water by identifying leaks more quickly. Real-time data would also allow us to better manage our operations and help us in selecting the most cost-effective water and energy efficiency upgrades for the long term. The AMI meters can be instrumental in helping us understand water usage trends and ways we can conserve water on campus through changes in operations, education, and infrastructure.

California is in its third year of a serious drought, and climate change is likely to make such droughts more frequent in the future. EBMUD's additional investment in AMI will help us to conserve water and energy and improve the overall sustainability of our campus and of the region. Thank you for your consideration.

Sincerely,

*Kira Stoll*

Kira Stoll  
Chief Sustainability & Carbon Solutions Officer  
University of California, Berkeley



Samantha Lubow  
Sustainability Coordinator, Residential Student Service Programs  
University of California, Berkeley



COLLEGE OF ENGINEERING  
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING  
TELEPHONE (530) 752-0586  
FAX (530) 752-7872

ONE SHIELDS AVENUE  
DAVIS, CALIFORNIA 95616-5294

June 9, 2022

Alice Towey  
Manager of Water Conservation  
East Bay Municipal Utility District  
P.O. Box 24055  
Oakland, CA 94623

RE: Support of USBR WaterSMART: Water and Energy Efficiency Grant for EBMUD's Expanded AMI Deployment for Water Conservation Project

Dear Ms. Towey:

As you are aware, the Center for Water Energy Efficiency (CWEE) at the University of California Davis, recently completed a pilot study in partnership with the East Bay Municipal Utility District (EBMUD) and Pacific Gas and Electric (PGE). The study focused on characterizing the water and energy savings associated with Advanced Metering Infrastructure (AMI) water meters coupled with a customer-facing portal to make the data accessible for unique messaging to individual customers. The pilot study observed roughly a 6.5% reduction of water use in single-family residential households. If this program were to be rolled out across the entire EBMUD service territory, this water savings would save EBMUD roughly 2 gigawatt-hours of electricity annually, and the associated greenhouse gas emissions.

California is in its third year of a serious drought, and climate change is likely to make such droughts more frequent in the future. EBMUD's additional investment in AMI will help it to conserve water and energy and improve the overall sustainability of our region. I strongly support your proposal, and I and my center would be happy to assist in your efforts.

Sincerely,

A handwritten signature in black ink that reads "Frank Loge".

Frank Loge, Ph.D., P.E.  
Professor, Dept. of Civil and Environmental Engineering  
Director, Center for Water Energy Efficiency  
University of California Davis  
[fjloge@ucdavis.edu](mailto:fjloge@ucdavis.edu)



**San Francisco Bay Chapter**

Serving Alameda, Contra Costa, Marin and San Francisco counties

27 June 2022

Alice Towey  
Manager of Water Conservation  
East Bay Municipal Utility District  
P.O. Box 24055  
Oakland, CA 94623

RE: Support of USBR WaterSMART: Water and Energy Efficiency Grant for EBMUD's *Expanded AMI Deployment for Water Conservation Project*

Dear Ms. Towey:

Sierra Club works to protect, preserve, and restore our natural environment. Protecting our streams and rivers by reducing water waste and unsustainable use is a priority.

Our organization, Sierra Club San Francisco Bay Chapter Water Committee, supports the East Bay Municipal Utility District (EBMUD) in its efforts to provide real time water consumption information via an Advanced Metering Infrastructure (AMI) network. EBMUD staff have shared with us previous studies, including recent pilots by EBMUD, showing that such real-time information can help customers and utilities to save water and energy. We look forward to partnering with EBMUD on this very important project to expand AMI in EBMUD's service area.

Sierra Club supports this project because it has the potential to help customers conserve water and energy. Tools like AMI allow customers to save water by identifying leaks more quickly. Real-time data also allow customers to better manage their operations and select the most cost-effective water and energy efficiency upgrades for the long term.

California is in its third year of a serious drought, and climate change is likely to make such droughts more frequent in the future. EBMUD's additional investment in AMI will help it to conserve water and energy and improve the overall sustainability of our region.

Sincerely,

Heinrich Albert

Co-chair, Sierra Club San Francisco Bay Chapter Water Committee



# DERWA

**DSRSD • EBMUD Recycled Water Authority**  
***PARTNERS IN WATER RECYCLING***

---

July 14, 2022

Alice Towey  
Manager of Water Conservation  
East Bay Municipal Utility District  
P.O. Box 24055  
Oakland, CA 94623

RE: Support of USBR WaterSMART: Water and Energy Efficiency Grant for EBMUD's  
*Expanded AMI Deployment for Water Conservation Project*

Dear Ms. Towey:

The Dublin San Ramon Services District/East Bay Municipal Utility District Recycled Water Authority (DERWA) was formed in 1995 to provide a safe, reliable, and consistent supply of recycled water for irrigation within the San Ramon Valley. In 2021, the DERWA program produced 1.88 billion gallons of recycled water that was delivered to the cities of Dublin, San Ramon, and Pleasanton.

DERWA supports the East Bay Municipal Utility District (EBMUD) in its efforts to provide real time water consumption information via an Advanced Metering Infrastructure (AMI) network. Previous studies, including recent pilots by EBMUD, have shown that such real-time information can help customers and utilities to save water and energy. We look forward to partnering with EBMUD on this very important project to expand AMI in EBMUD's service area.

DERWA supports this project because it has the potential to help water customers conserve water and energy. Tools like AMI allow customers to save water by identifying leaks more quickly. Real-time data also allow customers to better manage their operations and select the most cost-effective water and energy efficiency upgrades for the long term.

California is in its third year of a serious drought, and climate change is likely to make such droughts more frequent in the future. EBMUD's additional investment in AMI will help it to conserve water and energy and improve the overall sustainability of our region.

Sincerely,



Jan Lee  
Authority Manager, DERWA



# CITY OF OAKLAND



7101 EDGEWATER DRIVE, BUILDING 4

OAKLAND, CALIFORNIA 94621

Oakland Public Works Department  
Bureau of Environment, Parks and Tree Services Division

PHONE (510) 615-5852  
FAX (510) 615-5411  
TDD (510) 238-7644

**Alice Towey**  
**Manager of Water Conservation**  
**East Bay Municipal Utility District**  
**P.O. Box 24055**  
**Oakland, CA 94623**

**RE: Support of United States Bureau of Reclamation's WaterSMART Water and Energy Efficiency Grant, for East Bay Municipal Utility District's "Expanded Automated Metering Infrastructure Deployment for Water Conservation Project" Application.**

Dear Ms. Towey:

The City of Oakland's Parks and Tree Services Division (PTSD) which is responsible for landscape water usage throughout the City, supports the East Bay Municipal Utility District (EBMUD) in its efforts to provide real time water consumption information via an Advanced Metering Infrastructure (AMI) network. The City of Oakland's PTSD strongly believes that such real-time information will advance water and energy savings at the 394 sites (parks, gardens, recreation centers, libraries and other public facilities) that our meters are responsible for.

Currently there are 79 AMI meters installed throughout the City of Oakland's Parks and Tree Services, and Parks and Recreation Center meters which gives us 20% coverage in hourly water consumption and data collection. Increasing this coverage would allow us to save water by identifying potential leaks more quickly and reduce staff time spent troubleshooting- allowing more time to be spent on actual repairs to our systems. Real-time data would allow us to better manage our operations and also help us in selecting the most cost-effective water and energy efficiency upgrades for the long term.

California is in its third year of a serious drought, and climate change is likely to make such droughts more frequent in the future. EBMUD's additional investment in AMI will help us to conserve water and energy and improve the overall sustainability of our region.

We look forward to partnering with EBMUD on this very important project to expand AMI in EBMUD's service area.

Sincerely,

*David Moore*

David Moore  
Acting Park Manager  
Parks and Tree Services Division  
City of Oakland Public Works Department



An American Public Works Association Accredited Agency



May 20, 2022

Alice Towey  
Manager of Water Conservation  
East Bay Municipal Utility District  
P.O. Box 24055  
Oakland, CA 94623

RE: Support of USBR WaterSMART: Water and Energy Efficiency Grant for EBMUD's  
*Expanded AMI Deployment for Water Conservation Project*

Dear Ms. Towey:

Port of Oakland supports the East Bay Municipal Utility District (EBMUD) in its efforts to provide real time water consumption information via an Advanced Metering Infrastructure (AMI) network. Port of Oakland strongly believes that such real-time information will advance water and energy savings at our facilities. We look forward to partnering with EBMUD on this very important project to expand AMI in EBMUD's service area.

Port of Oakland supports this project because it has the potential to help customers like us manage our operations and conserve water and energy. Tools like AMI allow customers to save water by identifying leaks more quickly. Real-time data would also allow us to better manage our operations and help us in selecting the most cost-effective water and energy efficiency upgrades for the long term.

California is in its third year of a serious drought, and climate change is likely to make such droughts more frequent in the future. EBMUD's additional investment in AMI will help us to conserve water and energy and improve the overall sustainability of our region.

Sincerely,

Jared Carpenter  
Manager of Utilities Administration  
Port of Oakland

# Public Works Department

Administrative Services Division



May 26, 2022

Alice Towey  
Manager of Water Conservation  
East Bay Municipal Utility District  
P.O. Box 24055  
Oakland, CA 94623

**RE: Support of USBR WaterSMART: Water and Energy Efficiency Grant for EBMUD's Expanded AMI Deployment for Water Conservation Project**

Dear Ms. Towey:

City of Richmond Public Works Department supports the East Bay Municipal Utility District (EBMUD) in its efforts to provide real time water consumption information via an Advanced Metering Infrastructure (AMI) network. Public Works strongly believes that such real-time information will advance water and energy savings at our facilities. We look forward to partnering with EBMUD on this very important project to expand AMI in EBMUD's service area.

Public Works supports this project because it has the potential to help customers like us manage our operations and conserve water and energy. Tools like AMI allow customers to save water by identifying leaks more quickly. Real-time data would also allow us to better manage our operations and help us in selecting the most cost-effective water and energy efficiency upgrades for the long term.

California is in its third year of a serious drought, and climate change is likely to make such droughts more frequent in the future. EBMUD's additional investment in AMI will help us to conserve water and energy and improve the overall sustainability of our region.

Sincerely,

A handwritten signature in black ink, appearing to read "Joe Leach".

Joe Leach  
Director of Public Works

SignNow e-signature ID: c68aedef7b...  
05/26/2022 21:09:24 UTC

cc: EBMUD Files

May 27, 2022

Alice Towey  
Manager of Water Conservation  
East Bay Municipal Utility District  
P.O. Box 24055  
Oakland, CA 94623

**RE: Support of USBR WaterSMART: Water and Energy Efficiency Grant for EBMUD's Expanded AMI Deployment for Water Conservation Project**

Dear Ms. Towey:

On behalf of the East Bay Regional Park District, we write to express our support for the East Bay Municipal Utility District (EBMUD) in their efforts to provide real-time water consumption information via an Advanced Metering Infrastructure (AMI) network. The East Bay Regional Park District understands the importance and benefit of real-time information which will advance water and energy savings at our facilities and for communities throughout the East Bay.

The Park District supports this project because it has the potential to help customers like us proactively manage our operations to conserve water and energy. Tools like AMI allow customers to save water by providing alerts in real-time which identify leaks more quickly. This data would also enable the Park District to improve operations and be more responsible with water use during the state's prologued drought. Currently, our parks have around 87 meters across EBMUD's jurisdiction including Oakland, Richmond, Berkeley, Lafayette, Castro Valley and San Leandro. This technology would support savings in water, energy, time and taxpayer funding.

We look forward to partnering with EBMUD on this project aimed at expanding AMI in EBMUD's service area. EBMUD's additional investment in AMI will help the Park District and East Bay communities to conserve water and energy, as well as improve the overall sustainability of our region.

Sincerely,



Sabrina Landreth  
General Manager

CC: Park District Board of Directors

Board of Directors

Colin Coffey  
President  
Ward 7

Beverly Lane  
Vice-President  
Ward 6

Dennis Waespi  
Treasurer  
Ward 3

Elizabeth Echols  
Secretary  
Ward 1

Dee Rosario  
Ward 2

Ellen Corbett  
Ward 4

Ayn Wieskamp  
Ward 5

Sabrina B. Landreth  
General Manager



June 8, 2022

Alice Towey  
Manager of Water Conservation  
East Bay Municipal Utility District  
P.O. Box 24055  
Oakland, CA 94623

RE: Support of USBR WaterSMART: Water and Energy Efficiency Grant for EBMUD's  
*Expanded AMI Deployment for Water Conservation Project*

Dear Ms. Towey:

Bayer HealthCare in Berkeley supports the East Bay Municipal Utility District (EBMUD) in its efforts to provide real time water consumption information via an Advanced Metering Infrastructure (AMI) network. Bayer HealthCare in Berkeley strongly believes that such real-time information will advance water and energy savings at our facilities. We look forward to partnering with EBMUD on this very important project to expand AMI in EBMUD's service area.

Bayer HealthCare in Berkeley supports this project because it has the potential to help customers like us manage our operations and conserve water and energy. Tools like AMI allow customers to save water by identifying leaks more quickly. Real-time data would also allow us to better manage our operations and help us in selecting the most cost-effective water and energy efficiency upgrades for the long term.

California is in its third year of a serious drought, and climate change is likely to make such droughts more frequent in the future. EBMUD's additional investment in AMI will help us to conserve water and energy and improve the overall sustainability of our region.

Sincerely,  
  
Taniya Arora  
Plant Engineer



Bayer U.S. LLC	Cell: +1 510.292.5826
Pharmaceutical Division	E-mail: <a href="mailto:taniya.arora@bayer.com">taniya.arora@bayer.com</a>
800 Dwight Way	Web: <a href="http://www.bayer.com">http://www.bayer.com</a>
B47, 202E	
Berkeley, CA 94710	
United States	

**Wallenstein, David**

---

**From:** Galli, Ed <EGALLI@slzusd.org>  
**Sent:** Tuesday, June 21, 2022 9:39 PM  
**To:** Towey, Alice  
**Cc:** Wallenstein, David; Marr, Doug  
**Subject:** Support for AMI Deployment

*CAUTION – This email came from outside of EBMUD. Do not open attachments or click on links in suspicious emails.*

---

June 21, 2022

Alice Towey

Manager of Water Conservation

East Bay Municipal Utility District

PO Box 24055

Oakland, CA 94623

RE: Support of USBR WaterSMART: Water and Energy Efficiency Grant for EBMUD's *Expanded AMI Deployment for Water Conservation Project*

Dear Ms. Towey:

The San Lorenzo Unified School District fully supports the East Bay Municipal Utility District (EBMUD) in its efforts to provide real time water consumption information via an Advanced Metering Infrastructure (AMI) network. The San Lorenzo USD strongly believes that such real-time information will advance water and energy savings at our facilities. All of our school sites are 65 to 70 years old, and real-time data would allow us to identify leaks much sooner, better manage our operations, and help us in selecting the most cost-effective water and energy efficiency upgrades for the long term.

California is in its third year of a serious drought, and climate change is likely to make such droughts even more frequent in the future. EBMUD's additional investment in AMI will greatly assist us in conserving water and energy and doing our part to improve the overall sustainability of our region.

Sincerely,

Ed Galli

San Lorenzo USD

Energy/Water/Solar Management

[edgalli@slzusd.org](mailto:edgalli@slzusd.org)

Cell: 510-364-6044

**Disclaimer**

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June 2, 2022

Alice Towey  
Manager of Water Conservation  
East Bay Municipal Utility District  
P.O. Box 24055  
Oakland, CA 94623

RE: Support of USBR WaterSMART: Water and Energy Efficiency Grant for EBMUD's  
*Expanded AMI Deployment for Water Conservation Project*

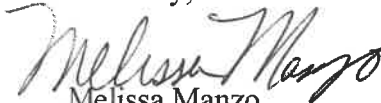
Dear Ms. Towey:

Blackhawk supports the East Bay Municipal Utility District (EBMUD) in its efforts to provide real time water consumption information via an Advanced Metering Infrastructure (AMI) network. Blackhawk strongly believes that such real-time information will advance water and energy savings at our facilities. We look forward to partnering with EBMUD on this very important project to expand AMI in EBMUD's service area.

Blackhawk supports this project because it has the potential to help customers like us manage our operations and conserve water and energy. Tools like AMI allow customers to save water by identifying leaks more quickly. Real-time data would also allow us to better manage our operations and help us in selecting the most cost-effective water and energy efficiency upgrades for the long term.

California is in its third year of a serious drought, and climate change is likely to make such droughts more frequent in the future. EBMUD's additional investment in AMI will help us to conserve water and energy and improve the overall sustainability of our region.

Sincerely,



Melissa Manzo  
General Manager  
Blackhawk HOA



## Attachment B: EBMUD Board Resolution

RESOLUTION NO. 35301-22

AUTHORIZING AN APPLICATION TO THE UNITED STATES BUREAU OF  
RECLAMATION FOR A WATERSMART WATER AND ENERGY EFFICIENCY GRANT  
FOR FISCAL YEAR 2023 AND DESIGNATING AN AUTHORIZED  
REPRESENTATIVE TO EXECUTE A GRANT AGREEMENT

Introduced by Director McIntosh ; Seconded by Director Coleman

WHEREAS, the East Bay Municipal Utility District (District) is a public agency formed under the Municipal Utility District Act that provides water service to approximately 1.4 million customers in Alameda County and Contra Costa County in California; and

WHEREAS, under the authority of Section 9501(a) of the Secure Water Act, Subtitle F of Title IX of the Omnibus Public Land Management Act of 2009, Title IX of Public Law 111-11 (42 U.S.C. §§ 10361 et seq.), the U.S. Department of Interior Bureau of Reclamation's WaterSMART Program offers Water and Energy Efficiency Grants to eligible recipients to support water and energy efficiency projects under Funding Opportunity R23AS00008; and

WHEREAS, pursuant to the WaterSMART Program, the District is eligible as a water district in the western United States to receive an award under Funding Opportunity R23AS00008 for projects that seek to conserve and use water more efficiently and accomplish other benefits that contribute to sustainability in the West; and

WHEREAS, the District proposes to use the funds that are being made available to expand its Advanced Meter Infrastructure in order to help customers conserve and use water more efficiently in order to obtain quantifiable water savings;

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the East Bay Municipal Utility District hereby authorizes the General Manager to submit an application, in a form approved by the Office of General Counsel, to the United States Bureau of Reclamation Financial Assistance Operations Section for up to \$5,000,000 in grant funding under the 2023 WaterSMART Energy and Efficiency Grant Program Funding Opportunity R23AS00008, to assist in funding the expansion of the District's Advanced Metering Infrastructure.

BE IT FURTHER RESOLVED that the Board of Directors of the East Bay Municipal Utility District identifies the General Manager as the District official with legal authority to enter into an agreement if the District is offered such grant funding.

BE IT FURTHER RESOLVED that if the East Bay Municipal Utility District is offered such grant funding, the District shall work with the United States Bureau of Reclamation to meet established deadlines for entering into a grant agreement, and the General Manager shall review the terms and conditions of any grant agreement presented by the United States Bureau of

Reclamation, in consultation with the Office of General Counsel, and seek approval to execute said grant agreement and accept the funds.


ADOPTED this 12th day of July, 2022 by the following vote:

AYES: Directors Coleman, Katz, McIntosh, Mellon, Patterson, Young, and President Linney.


NOES: None.

ABSENT: None.


ABSTAIN: None.

  
\_\_\_\_\_  
President

ATTEST:

  
\_\_\_\_\_  
Secretary

APPROVED AS TO FORM AND PROCEDURE:

  
\_\_\_\_\_  
General Counsel

# Attachment C: EBMUD Internal Fringe Benefits Rate Memorandum

## EAST BAY MUNICIPAL UTILITY DISTRICT

---

DATE: July 30, 2021  
TO: Sophia Skoda, Director of Finance *SS*  
FROM: Andrea Miller, Controller *AM*  
SUBJECT: FY 2022 Rates for Paid Absence, Fringe Benefit and Overhead

### Summary

Staff has completed the analysis of internal rates for fiscal year 2022. The details of the changes are described in the note below.

### Paid Absence

The paid absence rate will slightly increase from 19.25% to 19.50% for Water due to an anticipated increase in vacation leave usage with Shelter-in-Place mandates lifted. The rate for Wastewater will remain unchanged at 19.50%. While leave usage is anticipated to increase across the District, the impact is amplified in Water due to the large number of staff.

### Fringe Benefits

The fringe benefits rate will increase from 65.25% to 68.00% for Water and from 63.50% to 66.50% for Wastewater due to higher projected District retirement contribution rates.

### Department Overhead

The department overhead rate for WRD will increase due to higher overhead expenses. The rate for WAS will decrease due to higher labor costs relative to overhead. O&M will see a decrease in their rate as a result of lower expenses, specifically General Training. Other department overhead rates remain relatively stable.

### Administrative & General (A&G)

The A&G overhead rate for Water will decrease from 36.00% to 33.50% due to lower Risk Management expenses. The Wastewater rate will remain the same at 15.00%.

If you have questions, please call Lawrence Fan at extension 0258.

**Paid Absence, Fringe Benefit and Overhead Rates (Percentage) for FY 2022 and 2021**

DESCRIPTION	CODES	% FY 2022	% FY 2021
<b>Paid Absence (PA)</b>			
Water System	WSG	19.50	19.25
Wastewater System	WWG	19.50	19.50
<b>Fringe Benefits (FB)</b>			
Water System	WSG	68.00	65.25
Wastewater System	WWG	66.50	63.50
<b>Combined Paid Absence and Fringe Benefit (Direct Labor Cost)</b>			
Water System	WSG	100.76	97.06
Wastewater System	WWG	98.97	95.38
<b>Overhead Rates</b>			
<b>Departmental:</b>			
Engineering	ENG	24.00	24.00
Operations and Maintenance	MCD, OSD, WOD	11.00	12.25
Natural Resources	NRD	4.50	4.50
Water Resources	WRD	27.00	22.50
Wastewater	WAS	18.00	19.00
<b>Administrative and General:</b>			
Water System	WSG	33.50	36.00
Wastewater System	WWG	15.00	15.00

**Example:** Calculate the direct costs and full costs of an employee making \$50 an hour in ENG (WSG).

Increase the hourly wage by the PA and FB rates to obtain the Direct Labor:

$$[\$50.00 \times 1.1950 \times 1.6800 = \$100.38]$$

Increase the Direct Labor by Dept Rate (if any) then by A&G for Full Labor:

$$[(\$100.38 \times 1.240) \times 1.3350 = \$166.17]$$

**Note:** Hourly Rate = 5101

$$+ 5101 \times \text{PA Rate} = 5110$$

$$\underline{+ (5101 + 5110) \times \text{FB Rate} = 5111}$$

$$\underline{\underline{5101 + 5110 + 5111 = \text{Direct Labor Cost}}}$$

**FY 2022 Department Combined Paid Absence, Fringe Benefit and Overhead Rates**  
*(Multiply by the Regular or Overtime Hourly Rate to compute the Full Cost Rate)*

Department	Full Cost Rate for Regular Hours Worked (Example 1)	Full Cost Rate for OT Hours Worked (Example 2)
ADM	268.01%	133.50%
CUS	268.01%	133.50%
ENG	332.34%	165.54%
FIN	268.01%	133.50%
GEN	268.01%	133.50%
OGC	268.01%	133.50%
HRD	268.01%	133.50%
ISD	268.01%	133.50%
MCD	297.50%	148.19%
OSD	297.50%	148.19%
WOD	297.50%	148.19%
NRD	280.08%	139.51%
WRD	340.38%	169.55%
WAS	270.00%	135.70%

**Examples:** The following examples assume the same \$50.00 hourly work rate of a fictitious employee in ENG as used in the previous example. The rates used in the examples below are highlighted in the above matrix.

1. The Full Cost of a regular work hour includes: Base Hourly Rate, Paid Absence Rate, Fringe Benefit Rate, Departmental and Administrative and General Overhead rates. To calculate the full cost per hour worked, multiply the regular work hour wage by the percentage found in the above table.

**[\$50 x 332.34% = \$166.17]**

2. The Full Cost of an overtime work hour includes only Overtime Hourly, Departmental and Administrative & General Overhead rates. Paid Absence and Fringe Benefit rates are not applied to Overtime Full Cost. To obtain the full cost per overtime hour worked, multiply the OT hourly wage by the percentage found in the above table.

**[\$75.00 x 165.54% = \$124.16]**

Distribution:  
OBR

## Appendix D: Indirect Cost Rate Agreement with the U.S. Department of the Interior National Business Center





# United States Department of the Interior

OFFICE OF THE SECRETARY

Washington, DC 20240

## State and Local Governments Indirect Cost Negotiation Agreement

---

**EIN:** 94-6000590

**Date:** 03/28/2022

**Organization:**

East Bay Municipal Utility District  
375 Eleventh Street, Mail Slot 402  
Oakland, CA 94607

**Report Number:** 2022-0150

**Filing Ref.:**

Last Negotiation Agreement  
dated: 05/04/2021

The indirect cost rate contained herein is for use on grants, contracts, and other agreements with the Federal Government to which 2 CFR Part 200 applies subject to the limitations in Section II.A. of this agreement. The rate was negotiated by the U.S. Department of the Interior, Interior Business Center, and the subject organization in accordance with the authority contained in applicable regulations.

### Section I: Rate

---

Start Date	End Date	Rate Type	Name	Rate	Base	Location	Applicable To
			07/01/2020	06/30/2021	Final	Indirect	15.90 %
07/01/2022	06/30/2023	Provisional	Name	Rate	Base	Location	Applicable To
			Indirect	15.90 %	(A)	All	All Programs

**(A) Base:** Total direct costs, less capital expenditures and passthrough funds. Passthrough funds are normally defined as payments to participants, stipends to eligible recipients, or subawards, all of which normally require minimal administrative effort.

**Treatment of fringe benefits:** Fringe benefits applicable to direct salaries and wages are treated as direct costs; fringe benefits applicable to indirect salaries and wages are treated as indirect costs.

**Section II: General**

---

- A. **Limitations:** Use of the rate(s) contained in this agreement is subject to any applicable statutory limitations. Acceptance of the rate(s) agreed to herein is predicated upon these conditions: (1) no costs other than those incurred by the subject organization were included in its indirect cost rate proposal, (2) all such costs are the legal obligations of the grantee/contractor, (3) similar types of costs have been accorded consistent treatment, and (4) the same costs that have been treated as indirect costs have not been claimed as direct costs (for example, supplies can be charged directly to a program or activity as long as these costs are not part of the supply costs included in the indirect cost pool for central administration).
- B. **Audit:** All costs (direct and indirect, federal and non-federal) are subject to audit. Adjustments to amounts resulting from audit of the cost allocation plan or indirect cost rate proposal upon which the negotiation of this agreement was based will be compensated for in a subsequent negotiation.
- C. **Changes:** The rate(s) contained in this agreement are based on the accounting system in effect at the time the proposal was submitted. Changes in the method of accounting for costs which affect the amount of reimbursement resulting from use of the rate(s) in this agreement may require the prior approval of the cognizant agency. Failure to obtain such approval may result in subsequent audit disallowance.
- D. **Rate Type:**
1. **Fixed Carryforward Rate:** The fixed carryforward rate is based on an estimate of the costs that will be incurred during the period for which the rate applies. When the actual costs for such period have been determined, an adjustment will be made to the rate for a future period, if necessary, to compensate for the difference between the costs used to establish the fixed rate and the actual costs.
  2. **Provisional/Final Rate:** Within six (6) months after year end, a final indirect cost rate proposal must be submitted based on actual costs. Billings and charges to contracts and grants must be adjusted if the final rate varies from the provisional rate. If the final rate is greater than the provisional rate and there are no funds available to cover the additional indirect costs, the organization may not recover all indirect costs. Conversely, if the final rate is less than the provisional rate, the organization will be required to pay back the difference to the funding agency.
  3. **Predetermined Rate:** A predetermined rate is an indirect cost rate applicable to a specified current or future period, usually the organization's fiscal year. The rate is based on an estimate of the costs to be incurred during the period. A predetermined rate is not subject to adjustment.
- E. **Rate Extension:** Only final and predetermined rates may be eligible for consideration of rate extensions. Requests for rate extensions of a current rate will be reviewed on a case-by-case basis. If an extension is granted, the non-Federal entity may not request a rate review until the extension period ends. In the last year of a rate extension period, the non-Federal entity must submit a new rate proposal for the next fiscal period.
- F. **Agency Notification:** Copies of this document may be provided to other federal offices as a means of notifying them of the agreement contained herein.
- G. **Record Keeping:** Organizations must maintain accounting records that demonstrate that each type of cost has been treated consistently either as a direct cost or an indirect cost. Records pertaining to the costs of program administration, such as salaries, travel, and related costs, should be kept on an annual basis.
- H. **Reimbursement Ceilings:** Grantee/contractor program agreements providing for ceilings on indirect cost rates or reimbursement amounts are subject to the ceilings stipulated in the contract or grant agreements. If the ceiling rate is higher than the negotiated rate in Section I of this agreement, the negotiated rate will be used to determine the maximum allowable indirect cost.
- I. **Use of Other Rates:** If any federal programs are reimbursing indirect costs to this grantee/contractor by a measure other than the approved rate(s) in this agreement, the grantee/contractor should credit such costs to the

**Section II: General (continued)**

---

affected programs, and the approved rate(s) should be used to identify the maximum amount of indirect cost allocable to these programs.

- J. **Central Service Costs:** If the proposed central service cost allocation plan for the same period has not been approved by that time, the indirect cost proposal may be prepared including an amount for central services that is based on the latest federally-approved central service cost allocation plan. The difference between these central service amounts and the amounts ultimately approved will be compensated for by an adjustment in a subsequent period.
- K. **Other:**
1. The purpose of an indirect cost rate is to facilitate the allocation and billing of indirect costs. Approval of the indirect cost rate does not mean that an organization can recover more than the actual costs of a particular program or activity.
  2. Programs received or initiated by the organization subsequent to the negotiation of this agreement are subject to the approved indirect cost rate(s) if the programs receive administrative support from the indirect cost pool. It should be noted that this could result in an adjustment to a future rate.
  3. Indirect cost proposals must be developed (and, when required, submitted) within six (6) months after the close of the governmental unit's fiscal year, unless an exception is approved by the cognizant agency for indirect costs

**Section III: Acceptance**

---

Listed below are the signatures of acceptance for this agreement:

By the State and Local Governments

By the Cognizant Federal Government Agency

East Bay Municipal Utility District

---

US Department of the Interior - BOR

---

DocuSigned by:  
*Andrea Miller*  
FF5065BD2AC5416...

---

DocuSigned by:  
*Craig Wills*  
B47DB1F4A5DB4BF...

---

Signature

Signature

Andrea Miller

---

Craig Wills

---

Name:

Name:

Controller

---

Division Chief  
Indirect Cost & Contract Audit Division  
Interior Business Center

---

Title:

Title:

4/4/2022

---

3/29/2022

---

Date

Date

Negotiated by: Omar Sheyyab  
Telephone: (916) 930-3806

Next Proposal Due Date: 12/31/2022