



LARGE METER ADVANCED METERING INFRASTRUCTURE (AMI) RETROFIT

WaterSMART Grants:
Water and Energy Efficiency Grants
for Fiscal Year 2025

NOFO: R24AS00052

Wednesday, November 13, 2024, 4:00 p.m. Mountain Daylight Time

Proposal Submitted to U.S. Bureau of Reclamation via Grants.gov
Financial Assistance Operations
Attn: NOFO Team
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Executive Summary

Date: November 13th, 2024

Applicant Name: Las Virgenes Municipal Water District

City, County, and State: Calabasas, Los Angeles County, Ca

Applicant Type: Category A

Funding Group: Tier I

Brief Project Summary:

The Las Virgenes Municipal Water District is requesting grant funding assistance to replace and/or upgrade 117 of its existing large, non-AMI drinking water and recycled water meters (3-inch to 10-inch) serving a mix of customer types, including: 77 commercial customers, 21 recycled water customers, 18 multi-family residential complexes, and 1 irrigation customer. This project will save an estimated 488 acre-feet of water and approximately 2,004,997 kWh of electricity annually.

Project Duration: 24 months

Estimated Project Completion Date (month/year): October 2027

Grant Funds Requested: \$432,081

Whether or not the proposed project is located on a Federal facility:

The proposed project is not located on a Federal Facility.

Project Location

The LVMWD service area comprises a 122-square mile area (74,640 acres) in western Los Angeles County, including the Los Angeles/Ventura County boundary to the northwest and the City of Los Angeles to the east. The service area includes the incorporated cities of Agoura Hills, Calabasas, Hidden Hills, and Westlake Village as well as unincorporated portions of western Los Angeles County (see Figure 1). The project work will be completed at multiple locations, as shown on Figure 2.

Figure 1: Las Virgenes Municipal Water District Service Area

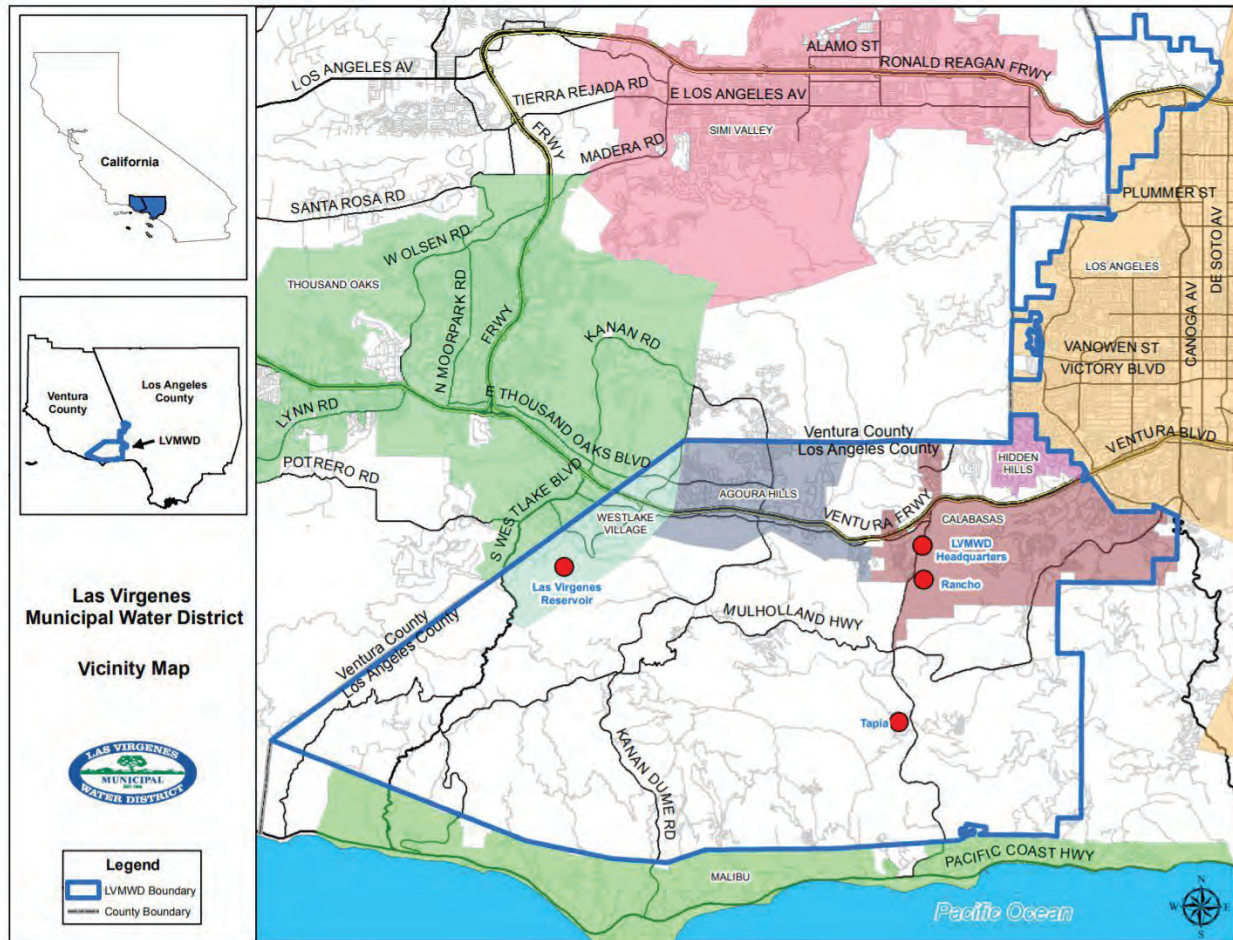
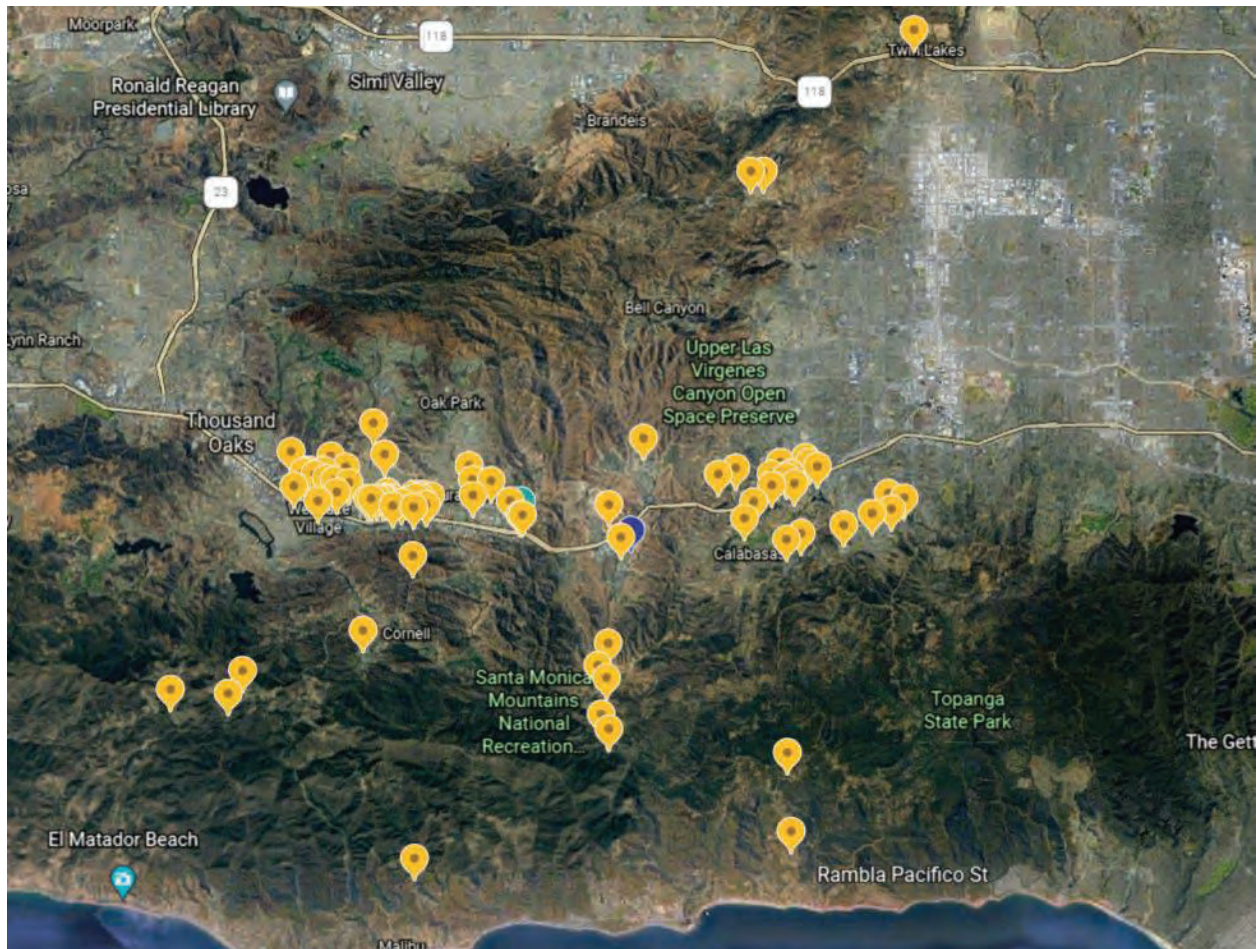


Figure 2: Large Meter Project Locations



Project Description

A large portion of the service area is undeveloped land characterized by the Santa Monica Mountains that range in elevation from a few feet above mean sea level (MSL) to elevations exceeding 2,500 ft.-MSL; these open space areas comprise about 35 to 40 percent of the total service areas and are mostly held in public ownership by state and national parks that do not require water service. The remaining portion is primarily made up of mixed residential and commercial land uses, while only a small portion of the service area is designated as industrial and agricultural land use types. The development pattern in recent years within the service area has been predominately commercial/office along the freeway corridor with some modest residential development and growth in smaller tracts.

The majority of LVMWD's service area climate is a semi-arid environment with mild winters, warm summers and moderate rainfall, consistent with coastal Southern California. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes and average monthly temperatures ranging from

52 to 78 degrees Fahrenheit. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or dry hot Santa Ana winds.

LVMWD's water demands are primarily residential consisting of single-family residential homes with associated landscape irrigation, serving more than 75,000 residents, which use approximately 77 percent of potable water demand. 100 percent of the LVMWD potable water is purchased from imported water sources through wholesale purchases from the Metropolitan Water District of Southern California (MWD), to which LVMWD is a member agency. Water imported by MWD is sourced from the northern California State Water Project (SWP) and the Colorado River. Currently, LVMWD receives solely SWP water originating from northern California through the Sacramento-San Joaquin Bay Delta (Delta) and is treated at the Jensen Filtration Plant in Granada Hills prior to deliver to LVMWD. In addition to potable water, the district distributes approximately 4,240 acre-feet of recycled water annually for commercial and golf course landscape irrigation.

The district proposes to replace and/or upgrade 117 large meters (77 commercial/large residential, 21 recycled water, 18 multi-family residential, and 1 irrigation) to AMI, which will utilize the existing Neptune 360 Meter Data Management System integration software (MDMS). These high water use customers will also be connected to the Customer Engagement Platform Software via the new customer portal, gaining additional insight into water use. These customer classes are primarily commercial with a mix of multi-family, and recycled water for landscape and golf courses. The proposed large meter replacement project is the final phase of the district's meter replacement program to upgrade meters to Advanced Meter Infrastructure (AMI).

These large meters are manually read and many of the existing large meter inventory are not compatible with the new AMI radio transmitters and must be replaced. A retrofitted meter is defined as connecting a Neptune MIU and antenna to the existing meter's encoded register. LVMWD has identified 99 large meters in need of replacement and 18 is need of a retrofit.

Detailed Scope of Work

LVMWD will be installing a hybrid, fully automated, two-way, fixed based Advanced Metering Infrastructure (AMI) system with simultaneous one-way drive-by reading (Automatic Meter Reading - AMR) capability, meters, associated equipment and installation services. The proposed AMI system is a two-way AMI system between the AMI head-end and data collection unit (DCU) is also capable of one-way drive-by reading (AMR) to provide redundancy capability for data collection in the event of an emergency and/or system malfunction. The AMI meters will automatically relay water usage readings to the District's billing system utilizing a system of 21 data collectors or "fixed network sites" recently completed and performing successfully. The proposed large meter replacement project will replace 99 large water meters 3-inch to 10-inch in size with AMI meters and provide all necessary fittings and new meter box lids for each meter, where applicable. An additional 18 existing meters that have been replaced within the past 5 years will be retrofitted with Neptune Meter Interface Units (MIU), since these meters are compatible with Neptune MIU.

Table 1. List of Meter Replacement and AMI Retrofits

Meter Size	Replacement	Retrofit	Totals
3-inch	49	8	57
4-inch	22	5	27
6-inch	22	5	27
8-inch	5	0	5
10-inch	1	0	1
	99	18	117

The district's existing large meters are a mix of meter types including, manifold service, single jet, compound meters, magnetic meters, turbo, and propeller. The meter manufacturers also vary. The District's preference will be to maintain uniformity by installing meters from the same manufacturer for the large meter inventory for optimizing long term maintenance and maximizing operational efficiencies. The meter type for the new meters will likely be ultrasonic meters, however, turbine meters may be used in some locations. This will be determined during field inspections. More specifically, meter type will be selected to ensure each meter accurately and effectively measures water flow across the appropriate range of flow rates based on customer class type and customer water demand data. The large meter types and specifications will be developed as under a field deployment strategy to be completed by the program management consultant and included in the proposed project's budget and scope of work as described below.

The general specifications for these meters are as follows:

1. The new meters must be compatible with the District's new fixed AMI network, which consists of Neptune LoRaWAN Enabled Network with Tektelic Gateways.
2. The new large meters must be able to detect and record low and high water flows with 8-digit reading.
3. The new meters must be compatible with the Neptune ProCoder solid state absolute encoder register or equivalent.
4. Endpoints to be installed will be Neptune ProCoder solid state absolute encoder register where feasible.

Neptune Radio Endpoint Specifications:

The Neptune ProCoder solid state absolute encoder register features a high-resolution mechanical sweep hand to detect ultra-low flows as well as monitor direction of flow. It combines the high-power, two-way radio frequency (RF) R900 meter interface unit (MIU) and the E-Coder solid state absolute encoder into one integrated package to provide easier installation, requires no field programming, and does not have an external wiring due to the integrated design. Designed to collect meter usage data and remotely transmit the information to collectors at pre-determined intervals, allowing for hour consumption profiling to help

address consumption disputes, detect leaks, and reverse flow occurrences. Description of the LVMWD Fixed AMI Network in Use. The Neptune LoRaWAN Enabled Network with Tektelic Gateways (DC's) are permanently mounted in strategic areas around the District's rugged service area.

Powered both by AC and solar, these DC's in the field receive the transmissions directly from the AMI endpoints, as the Neptune system does not utilize repeaters which are a potential weakness in other fixed-network offerings. These DC's transmit the information back to the host software via GPRS and cellular backhaul.

Neptune 360 Software platform (web based). The DC's communicates with this software to populate the database with meter reading information being transmitted from the AMI endpoint radios in the field. The host software is very user-friendly and can be customized by each user to generate reports specific to each of their needs.

Additionally, the District is using the Watersmart Portal, a cutting-edge customer use interface that can be accessed by any device. Watersmart serves to augment Neptune 360 by surfacing actionable insights hidden in AMI data to improve operational efficiency and customer satisfaction. This includes a utility dashboard, customer portal, alerts, leak notifications and water reports.

LoRaWAN Enabled Network with Tektelic Gateways. This collector features two-way communications which allow for over-the-air programming, 24-hour usage/consumption profiling, and priority alarms for leak detection, reverse flow, no flow, and other value added features. As a tower-based system, the cell size is optimized, which allows for small number of collectors to confidently cover the system and provide maximum redundancy.

Highly secure RSA encryption over a proprietary communications protocol for all commands and data transfers afford enhanced protection. Furthermore, the firmware is coded with security to ensure unauthorized access is not allowed at any level. For data storage on collectors, AES encryption is used to ensure that even if access to the database is gained, sensitive information cannot be extracted from it.

Standard Meter Installation:

1. Meters will be located above ground, in outside meter boxes or vaults with adequate access, or if access is restricted, Contractor will be able to obtain access from the property owner within one week of request, during normal business hours.
2. Additional labor or groundwork may be needed to access meters, including but not limited to cutting, removal and replacement of asphalt, tree roots, shrubbery, or landscaping obstructions. All work will be completed within existing public right of way upon existing infrastructure.
3. Contractor shall be responsible for providing all equipment and tools necessary for the safe removal and installation of large meters.
4. Contractor shall be responsible for replacing any meter improperly installed.
5. Contractor shall verify the meter connects to the District MDMS system.

The AMI features will include:

- Ability to detect very low water use.
- Timely leak detection
- Improved monthly billing efficiency.
- Water Budget Compliance
- Enhance personnel safety.
- Improve customer service.
- Reduce greenhouse gas emissions.

Project Management:

MeterSYS, LLC will provide comprehensive project management services to oversee LVMWD's large meter replacement project, which includes replacing 99 meters and retrofitting 18 meters across LVMWD's service area. Given the district's complete reliance on imported water and the critical nature of accurate metering for both potable and recycled water customers, a dedicated Program Manager will work closely with District staff to lead regular project meetings, track project progression, manage project schedules and milestones, and provide monthly reporting on project activities and financials. This includes utilizing Teams/SharePoint for document management and the MeterSYS Iform work order management system for field data quality control. The Program Manager will serve as the primary liaison between the Contractor, Neptune Technologies, Ferguson Waterworks, and the project team, managing the statement of work, advising on vendor deliverables and performance, managing change orders, and coordinating issue resolution.

The scope also includes monitoring contractor compliance during solution installation, start-up, and execution to manage risks and ensure successful completion of project goals across all customer classes. The Program Manager will develop and maintain the field deployment strategy and oversee meter testing, right-sizing determinations, installations, and accurate meter data capture across the AMI system, meter data management system and utility billing. Special consideration will be given to the varying site conditions and accessibility challenges presented by the district's mountainous terrain and diverse customer base. All project activities will be thoroughly documented with detailed reporting for executive staff, tracking of issues and risks, and development of remediation strategies as needed to keep the project on schedule and within budget.

Evaluation Criterion A—Quantifiable Water Savings

Estimated Water Savings

For projects that conserve water, please state the estimated amount of water expected to be conserved (in acre-feet per year) as a direct result of this project.

The District's potable water supply is 100 percent reliant on purchases of imported water through wholesale purchases from the Metropolitan Water District of Southern California (MWD), to which the District is a member agency. Water imported by MWD is sourced from the northern California State Water Project (SWP) and the Colorado River. Currently, the District receives solely SWP water originating from northern California through the Sacramento-San Joaquin Bay-Delta (Delta).

The proposed project will save an estimated 488 acre-feet of potable and recycled water annually. This water savings will help support California's Making Conservation a California Way of Life regulation, which sets new water conservation goals for urban retail water suppliers while accounting for local factors such as population and climate. The regulation, which goes into effect January 1, 2025, aims to achieve long-term water use efficiency to help the state adapt to more extreme weather and future droughts.

The expected useful life for the new meters is 20 years, therefore, to total estimated water savings over the project's useful life is 97,600 acre-feet.

Current losses

Please explain where the water that will be conserved is currently going and how it is being used. Consider the following:

Explain where current losses are going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground)?

The current losses are likely seeping into the ground. Significant water loss can occur in the time between water billings with manual-read meters since real time data is not available. Water could be leaking for an entire month before it is discovered on a higher than normal water bill. The water lost due to leaks either increases wastewater flows to the sanitation district, seeps into the ground, or ends up in the storm drain system.

If known, please explain how current losses are being used. For example, are current losses returning to the system for use by others? Are current losses entering an impaired groundwater table becoming unsuitable for future use?

Traditionally, large water meters were designed for accuracy at high volume flow rates, but not designed to provide accuracy across a spectrum of flow rates. Additionally, in many cases, the end user's demand patterns change over time. For example, accounts that were once a commercial facility with intermittent usage may now be a hotel where the meter type is not properly configured for the current user – the meter is not designed to pick up low flow. Furthermore, the large meters are limited in their ability to detect water leaks and lack the

ability to communicate water use using advanced meter infrastructure. These large meters record large volumes of water consumption for primarily hotels, resorts, golf courses, and the like. These meters are not able to record low flows of water use (e.g. ultra low flow toilets/urinals, or very small leaks), resulting in the under reporting of water consumption. Additionally, the inability for the meter to detect low flows results in inaccurate billing for water use and low flow leaks may never be recognized. This unbilled metered water (low flows) causes the District to purchase more imported water to meet forecasted demands, reducing available water for other regions and communities, and the district also losses revenue due to the inability of the meters to accurately track low flow uses.

Larger leaks likely also go undetected until the meter is manually read, and excessive water consumption is identified. Excessive water consumption is not typically reported and/or addressed for multiple months due to the delay in recognizing the increased water consumption and additional time to respond and correct the problem resulting in the loss of hundreds of gallons of water due to the volume of water large meters manage.

Furthermore, the limited function of the meters is likely impeding the District's ability to quantify water losses accurately.

Are there any known benefits associated with where the current losses are going? For example, is seepage water providing additional habitat for fish or animal species?

No, no known benefits are associated with the current losses.

[Support/documentation of Estimated Water Savings](#)

The estimate was calculated based on an estimated savings of 7 percent of the averaged water demand 6,970 AFY for large meter customers, including recycled water customers. Two-thirds of the meters included in this project scope are for large residential, commercial, and multi-family customers.

- Average demand: $6,970 \text{ AFY} \times 7\% = 488$ (rounded)

[Type of Infrastructure improvement](#)

How have current distribution system losses and/or the potential for reductions in water use by individual users been determined?

District staff researched potential water savings that the installation of AMI meters could achieve by reviewing research papers conducted on the subject. Research papers conducted on the subject suggest that when customers are more in tune with their hourly or daily water consumption habits, water use can be expected to be reduced by between 5 and 10 percent. Smart Meters coupled with the utilization of a customer interface software platform such as Dropcounter™ yielded a 7 percent reduction in water usage in the City of Folsom and a 9 percent reduction in water usage in the Austin Water Utility (*The Effect of Social and Consumption Analytics on Residential Water Demand*; Nemati, Buck, Soldati; December 30, 2016).

The Channel Islands Beach Community Services District installed Smart Meters along with a customer interface platform and reported a 9 percent reduction in water use due to the new system after accounting for other variations such as weather and concurrent conservation programs.

LVMWD already uses a water budget rate structure; the addition of the smart meters, the AMI network and the meter data management system for the smaller meters (3/4-inch to 2-inch sized meters) recently upgraded throughout the district actually contributed to a water savings of greater than 40 percent! Customers were able to increase water conservation by better understanding their water use and also through district messaging calling for conservation during the most recent drought (2021-2022), as well as identifying many leaks.

By switching from standard volumetric meters that do not have the ability for remote monitoring to the AMI System and MDMS, the new meters' ability to provide near real-time, two-way communication electronically to both staff and customers will enable the District to mitigate water leaks and losses, educate consumers on how to reduce water usage and help control water use during water alerts and droughts, if necessary.

It is anticipated that the large meter customers will also significantly increase their water conservation once their meters have been upgraded to have the capabilities associated with AMI as well as the ability to access to near real-time water usage data. The customer will be able to receive high usage alerts that will include the time of day this higher usage is occurring and will be better able to correct such issues. The District will also be able to receive such alerts and will be able to provide the customer information regarding potential leaks and provide conservation tips.

Water savings and improved water use efficiency equaling 7 percent represents the most typical savings achieved by other water agencies for AMI projects focused on large meter customers (e.g. commercial, hotels, vacation resorts, and large landscapes).

What types (manufacturer and model) of devices will be installed and what quantity of each?

The district staff have been evaluating meter technologies since 2019 and recently completed the upgrade of all of its more than 22,000 smaller, 3/4-inch to 2-inch size meters to AMI. The AMI network is in place and interfaced with the customer billing system. The manufacturer and model of the meters the large meters will be upgraded to are:

- Neptune Mach10 Ultrasonic Meters with V5 R900i, CF with a 6-foot Antenna
- Alternative meter type: Neptune HP Turbine Meters with V5 ProCoder R900i, CF with a 6-foot Antenna
- Meters not requiring replacement will be upgraded with AMI Neptune v5R900 MIU with a 6-foot antenna

How will actual water savings be verified upon completion of the project?

Currently, the water system is not able to detect water losses or other problems with these large meters. The District's new meter data management system interfaces with the software

with the billing system, however, the benefits of this system cannot be realized for the large meters until they are replaced with AMI compatible meters and with AMI radio endpoints. The new AMI meters will provide interval usage data on at least an hourly basis, and potentially in 15-minute intervals, and the system will also send staff and water customers electronic alerts to identify and repair such problems. Furthermore, the accuracy of these new meters exceeds that of the existing meters due to their age and limited function. The software supporting the AMI system will provide data and compare it to previous years' consumption data (historical use) to provide the actual water savings. Water use per connection will be compared pre- and post- project to determine actual water savings. Leaks detected and repaired will also be included in the actual water savings calculation.

Evaluation Criterion B—Renewable Energy

Subcriterion B.2—Increasing Energy Efficiency in Water Management

Describe any energy efficiencies that are expected to result from implementation of the water conservation or water efficiency project (e.g., reduced pumping).

As an agency that purchases 100 percent of its potable water from imported sources through the Metropolitan Water District of Southern California, with water sourced from the northern California State Water Project, LVMWD's water delivery requires significant energy for conveyance, treatment, and distribution. Water is treated at the Jensen Filtration Plant in Granada Hills prior to delivery to LVMWD's service area, which comprises 122 square miles of varied topography in the Santa Monica Mountains, ranging from sea level to elevations exceeding 2,500 feet. A study published in the journal, Environmental Research Letters, found that customer-focused water conservation programs are just as cost-effective as energy efficiency programs in reducing electricity use, greenhouse gas emissions, and other energy intensive operations. Energy is essential for delivering safe and reliable water from its source to consumer. The state of California uses approximately 20 percent of statewide electricity and 30 percent of nonpower plant natural gas to move, treat, and heat water (Klein et al 2005). By reducing the demand for imported water, greenhouse gas emissions (GHG) are also reduced.

The energy intensity represents an estimate of energy used to extract, divert, convey, treat, and distribute water supplies. The most recent energy data available used to estimate energy consumption and energy intensity for the LVMWD potable water system is from FY 2018 (LVMWD UWMP 2020).

LVMWD Potable System Estimated Energy Intensity (2020 Urban Water Management Plan):

The sum of the weighted energy usage (kWh) = 3,972,817 kWh

Potable System Volume (AF)= 20,506 AF

Estimated System Energy Intensity (kWh/AF)= 194kWh/AF

(The sum of Potable System Energy Consumption, 3,972,817 kWh divided by total AF energy use, 20,506 AF, equals 194 kWh/AF weighted average)

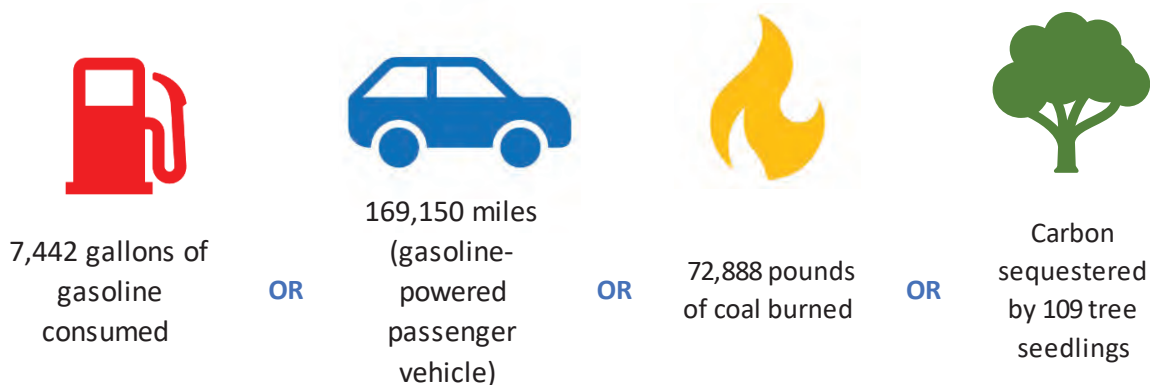
Post project estimated quantifiable water savings: 488 AFY

Energy Savings Formula:

1. Energy Intensity kWh/AF x project water savings AFY = kilowatt-hours/year
 - 194 kWh/AF x 488 AFY = **94,672 kWh/Yr**

The Implementation of the proposed Large Meter AMI Retrofit project will generate energy savings by reducing water use, thereby reducing the energy used to pump, treat, and distribute water within the district, as well as to the district by reducing the amount of imported water needed. The total estimated energy savings are calculated based on the energy required to divert, convey, treat, and deliver potable water supplies within LVMWD's potable system. It is estimated that the proposed project will result in an energy savings of approximately **94,672 kilowatt-hours/year (kWh/Yr)**.

This reduction in energy consumption will also contribute to reduced indirect GHG emissions associated with electricity generation. Using the EPA Greenhouse Gas Equivalencies Calculator, the proposed Project avoids an estimated annual use of **145,807 lbs. of CO₂ or 66.1 metric tons (MT)**. This GHG emission reduction (66.1 MT of CO₂) is equivalent to the following annually:



How will the energy efficiency improvement combat/offset the impacts of climate change, including an expected reduction in greenhouse gas emissions.

Through improved leak detection and water conservation enabled by the proposed large meter AMI retrofit project, the project is expected to reduce water losses and decrease water demands on imported water supplies. This reduction in water usage directly translates to energy savings, as less water will need to be pumped, treated, and distributed throughout the district. Specifically, the water savings will decrease the amount of energy required for to treat and distribute water, which in turn reduces the indirect greenhouse gas emissions associated with electricity generation used for water system operations.

Using the [EPA Greenhouse Gas Equivalencies Calculator](#), the anticipated water savings from the project will result in reduced energy consumption that avoids an estimated **145,807 pounds (or 66.1 metric tons)** of CO₂ emissions annually. This is equivalent to reducing GHG emissions from 169,150 miles driven by an average gasoline-powered passenger or the carbon sequestered by 1,09 tree seedlings grown for 10 years. This calculation is based on the reduced electricity needed

for pumping and distributing water that would otherwise be lost through leaks or inefficient usage. By providing near, real-time data on water consumption and early leak detection, the AMI system helps combat climate change impacts through both water conservation and the associated reduction in energy-related greenhouse gas emissions.

If the project will result in reduced pumping, please describe the current pumping requirements and the types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements and energy usage?

The District's 122 square mile service area elevation varies from sea level to over 2000 feet. LVMWD operates 24 pumping stations which are dependent on electrical power and nearly 400 miles of pipelines. Additionally, the recycled water distribution system consists of 62 miles of pipelines. The District maintains 22 main pressure zones due to the mountainous topography of its service area.

For billing purposes, the pressure zones are categorized into five pumping zone levels based on hydraulic grade line (HGL). The Hydraulic Grade Line is defined as the sum of the elevation head (energy) and the pressure head. In hilly areas, similar to the District's service area, the HGL is crucial for an efficient water distribution systems, determining pump locations and capacities, and preventing negative pressure zones that can cause cavitation and damage.

The following are the District's five pressure areas:

- Zone 1 includes all domestic water customers receiving water that does not require pumping above a hydraulic gradient of 1,235 feet.
- Zone 2 includes all domestic water customers receiving water that requires pumping to elevations between 1235 and 1700 feet.
- Zone 3 includes all domestic water customers receiving water that requires pumping to elevations between 1700 and 2200 feet.
- Zone 4 includes all domestic water customers receiving water that requires pumping to elevations greater than 2200 feet.
- Zone 5 includes all domestic water customers who are served water purchased by the District from sources other than the Metropolitan Water District of Southern California.

By using water more efficiently, the proposed project will reduce the overall demand for water, thus, reducing the energy required to pump, treat, and distribute the water. Additionally, less water in the system will reduce the overall load, minimizing the risk of pressure drops and the need for additional pumping stations.

Please indicate whether your energy savings estimate originates from the point of diversion, or whether the estimate is based upon an alternate site of origin.

According to the 2020 Urban Water Management Plan, the energy intensity calculation originates from the energy used to extract, diver, convey, treat, and distribute water supplies.

The energy used to import water supplies is not included in the noted calculation.

Does the calculation include any energy required to treat the water, if applicable?

Yes, it includes the energy required to treat drinking water. This calculation does not include the energy required to treat recycled water.

Will the project result in reduced vehicle miles driven, in turn reducing greenhouse gas emissions? Please provide supporting details and calculations.

In addition to the energy savings benefits noted previously, this project will reduce greenhouse gas emissions by nearly eliminated the need to drive to each meter to manually read water consumption for the billing cycle. The District's 122-square mile service area is rural and located within the Santa Monica Mountains. Due to its rural setting, the District experiences challenges associated with physically reading and inspecting meters that are located in difficult to access locations on customer properties, and/or the distance required to travel and staff time to physically go read the meters.

Using AMI with a two-way communication function to read the meter and preliminarily assess leaks or malfunctions will promote faster troubleshooting and resolution, more accurate readings to more accurately track water use and customer billings, while saving money by avoiding vehicle miles. There may still be the infrequent reading required to verify a reading and/or if an endpoint is not transmitting data.

The meters proposed for replacement are distributed throughout the District's 122-square mile service area within the Santa Monica Mountains. While the exact vehicle miles driven varies by route, it is estimated that, on average, 40 miles are driven each month to manually read these meters, for a total of 480 miles driven each year. Implementation of the proposed Project will automate meter reading tasks, nearly eliminating the need for monthly drive-by readings.

Based on calculations using the US EPA Greenhouse Gas Reduction Calculator, the reduction in vehicle miles driven will save approximately 423 pounds of greenhouse gas carbon dioxide equivalent emissions annually. This reduction in emissions is equivalent to the carbon sequestration of 3.2 tree seedlings grown for ten years, 0.224 acres of U.S. forests in one year, or 0.001 acres of U.S. forests preserved from conversion to cropland in one year. Occasional site visits may still be required to verify readings or address non-transmitting endpoints, but the automated system will dramatically reduce the need for routine travel to meter locations.

This calculation assumes the following:

- 22.5 miles/gallon = 21.6 gallons of gasoline annually
- 21.6 gallons = 423 pounds of GHG emissions, according to the U.S. EPA GHG Calculator

Describe any renewable energy components that will result in minimal energy savings/production (e.g., installing small-scale solar as part of a SCADA system).

The AMI Network utilizes very small solar systems to power its transmitters. While the energy production from these small-scale solar systems is minimal, they represent a sustainable power source for the AMI network's critical communication infrastructure and reduce reliance on grid power for system operation. No additional solar-powered transmitters are anticipated for the new AMI large meters installation or retrofits.

Evaluation Criterion C— Other Project Benefits

Resilience and Sustainability Benefits. Will the project address a specific water and/or energy sustainability concern? Please address the following:

Explain and provide detail of the specific issue(s) in the area that is impacting water resilience and sustainability. Consider the following:

Describe recent, existing, or potential drought or water scarcity conditions in the project area. Is the project in an area that is experiencing, or recently experienced, drought or water scarcity?

As an agency that relies 100 percent on imported water sources from the State Water Project through the Metropolitan Water District of Southern California, LVMWD is particularly vulnerable to drought conditions and water scarcity. The district serves more than 75,000 residents across a 122-square mile service area characterized by a semi-arid environment with mild winters, warm summers, and moderate rainfall. From January 2014 through April 2017, California experienced one of the most severe droughts in its history. California Governor Brown declared a drought State of Emergency in January 2014 and called for 20 percent conservation. California has experienced dry years and droughts from 2007 to 2011 and from 2013 to the 2017, and this has placed an immense strain on water supplies resulting in some of the lowest water storage levels in history.

Twenty-first century statewide droughts include the three-year 2007–2009 event and the five-year 2012–2016 event. These events were the first times statewide proclamations of emergency were used to respond to drought impacts and they also illustrated the effect of a warming climate worsening the impacts associated with drought. California tied its record for the lowest April 1st statewide snowpack set in Water Year 1977 (25 percent of average) in Water Year 2014 and then broke the record in Water Year 2015 (5 percent of average). Calendar years 2014 and 2015 were the warmest and second-warmest years of record, respectively, for statewide average temperature. New records for catastrophic wildfires were set during and after the 2012–2016 drought. That drought was the first time the State imposed mandatory urban water use reduction requirements on water suppliers, and all of California's 58 counties declared local emergencies.

On April 21, 2021, Governor Gavin Newsom declared another State of Emergency in 41 counties due to drought, which was later expanded three times ---May 10, 2021, July 8, 2021, and October 19, 2021---to ultimately declare that the entirety of the state's 58 counties were experiencing varying degrees of drought ranging from severe to exceptional conditions. This

multi-year drought began just three years after the record-setting drought of 2012-2016, caused significant, immediate impacts on communities across California with vulnerable water supplies, farms that rely on irrigation to grow food and fiber, and fish and wildlife that rely on stream flows and cool water.

Following these two, multi-year droughts, the March 3, 2023, snow survey conducted by the Department of Water Resources and partner agencies found that most regions of the Sierra Nevada were above average for snow water content, which substantially improved surface water supplies, but did not abate the severe drought conditions that remained in some parts of the State, including the Klamath River basin and the Colorado River basin, and many groundwater basins throughout the State that remain depleted from overreliance and successive multi-year droughts.

Describe any projected increases to the severity or duration of drought or water scarcity in the project area. Provide support for your response (e.g., reference a recent climate informed analysis, if available).

Despite a record breaking wet year in 2023, water supply conditions are still top of mind for LVMWD. Relying solely on potable water delivered from the State Water Project (SWP) and through the Metropolitan Water District of Southern California (MWD), the state of the snowpack and reservoir levels are important to the total allocation of potable water LVMWD receives. At the height of the last drought, water supplies were stretched so thin LVMWD customers faced a 73 percent mandatory reduction in water use.

In anticipation of increases to the frequency of multi-year droughts and to ensure reliable water delivery, the District has created a Water Shortage Contingency Plan that includes six stages of water restriction. These stages correspond to progressive ranges of 10, 20, 30, 40 and 50 percent shortages and greater than 50 percent. As of February 2023, the District has moved back to stage 2 of its WSCP, after remaining in Stage 3 for over a year. Under stage 3, the District-wide target for reduction in water use was 35 percent, which was achieved by customers.

In 2023, Las Virgenes Municipal Water District partnered with the Triunfo Water and Sanitation District to complete a Climate Action and Adaptation Plan. Drought and extreme heat were two climate change hazards projected to increase in the area. Extreme heat defined as the number days above 93.9 degrees Fahrenheit are projected to increase from 4 days a year to 23 days a year, an almost five-fold increase; and drought durations are forecasted to increase by 12 days by the end of the century. The combination of increasing temperatures and longer drought also increase the potential for wildfires. The projected climate changes associated with all three of these hazards increase the importance of implementing effective water savings and reliability measures now, before these hazards worsen, to ensure continued water supply reliability in the future.

Completing the AMI upgrade of the district's large meters will enhance water supply reliability by allowing the District to issue notifications to customers concerning conservation, low and high water use, low flowing as well as high flowing water leaks and permit the District to

remotely read meters.

Completion of the implementation of the large meter replacements and AMI endpoint installations will provide a meaningful increase in water use efficiency and water supply reliability, reducing impacts on the State Water Project water supplies and support the interstate compact to reduce demands on the Colorado River to support recovery of the river water supplies.

Additionally, the project will directly contribute to building drought resiliency by implementing a high caliber water management strategy that emphasizes water reliability, conservation, and increase water use efficiency.

Explain and provide detail of the specific issue(s) in the area that is impacting energy sustainability, such as reliance on fossil fuels, pollution, or interruptions in service.

The same climatic conditions that have caused on-going drought conditions in the region and throughout California has also led to increased frequency of wildfires. The 2018 Woolsey Fire decimated communities in the District's service area, destroying 1,643 structures and forcing 250,000 people to evacuate (The Malibu Times, Dill & Pederson). The fire highlighted several critical energy and service reliability issues in the district:

1. **Power Infrastructure Vulnerability:** The entire district lost power during the fire, affecting hundreds of facilities and pump stations that normally run on electricity. The District had to rely on generators, propane, and natural gas to keep critical water infrastructure operational. The proposed AMI system helps address this vulnerability by reducing energy consumption through water conservation and improved water management, saving approximately 2,004,997 kWh of electricity annually, reducing stress on the electrical grid.
2. **Communication System Disruption:** The new AMI network includes redundancy capabilities with both two-way fixed communication and one-way drive-by reading capability as backup in the event of an power outage or transmitter problem. The system employs highly secure RSA encryption and AES encryption for data storage, protecting against cyber security threats that could interrupt service.
3. **Supports Air Quality Standards:** The district service area is located within the South Coast Air Quality Management District (AQMD), designated an "extreme" nonattainment area by the U.S. EPA for ozone levels. The U.S. EPA classifies areas of ozone nonattainment (e.g., "extreme," "severe," "serious," "moderate," or "marginal") based on how much an area exceeds the standard. The South Coast AQMD has until August 3, 2038, to attain the 2015 ozone standard for the Basin (70 ppb or below), which is 20 years from the designation as an "extreme" nonattainment area.

The topography and climate of Southern California combine to make the Basin an area highly favorable for forming air pollution. A warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. Within the atmosphere, the warm upper layer

forms a cap over the cooler surface layer, which traps the pollutants near the ground. Light winds can further limit ventilation. Additionally, the region experiences more days of sunlight than any other major urban area in the nation except Phoenix, Arizona. This abundant sunlight triggers the photochemical reactions which produce ozone and PM2.5 (Air Quality Management District 2022, Chapter 1 (AQMP)).

This technological upgrade represents a significant step toward creating a more resilient and efficient water system that can better withstand and respond to future climate-related challenges while reducing its environmental impact. Beyond improving water management and increasing water conservation, the project will also reduce vehicle emissions by eliminating manual meter reading trips and decrease chemical usage through more efficient water treatment. The project's estimated annual savings of over 2 million kWh demonstrates its substantial contribution to reducing the district's carbon footprint and reliance on fossil fuel-generated power, while simultaneously improving its ability to provide safe, reliable water.

Please describe how the project will directly address the concern(s) stated above.

Improve Water Meter Accuracy. The new meters have a greater range of detecting and recording water consumption at both high flows and low flows, which will significantly improve the accuracy of recording water consumption; thereby improving the accuracy of water bills.

Advance Metering Infrastructure. The proposed project will allow the District to issue near real-time alerts to customers concerning conservation, water use, water leaks, and permit the District staff to remotely read meters. This functionality will improve water management by engaging customers through better water use transparency and provide better tools for forecasting water needs into the future to address the changing climate conditions. The project will also conserve energy and reduce carbon emissions by eliminating the need to drive to each meter on a monthly basis. The AMI network will include the ability to detect leaks. This technology will assist the district with identifying locations needing repairs quicker by receiving notifications at the district office and also provide the operations staff alerts to problems that will allow them to implement changes in the distribution network faster to restore water.

Will the project directly result in more efficient management of the water supply? For example, will the project provide greater flexibility to water managers, resulting in a more efficient use of water supplies?

Yes, the installation of AMI will directly result in more efficient management of the water supply. By supplying nearly real time data on water uses, AMI enables district staff of leaks, nearly real time, and notify customers via email, the customer portal, and/or phone call in the event of a significant leak; thereby reducing water loss and ensuring more efficient use of water supplies. The detailed consumption data allows for a better understanding of usage patterns, facilitating the implementation of demand management strategies such as targeted conservation programs. This not only enhances operational efficiency by automating processes like meter reading but also engages customers by providing them with detailed information about their water usage, encouraging more responsible consumption.

Overall, AMI offers flexibility and responsiveness in water management, allowing for quick adjustments to supply and demand changes, which is particularly valuable during droughts or other water scarcity events. This leads to a more efficient and sustainable management of water supplies, benefiting both the district and its customers.

Address where any conserved water as a result of the project will go and how it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.

100 percent of the conserved potable water will be used to reduce the amount of imported water supplies and/or allow the district to store more water for drought resiliency. The current water losses associated with recycled water meters will be better managed with increased meter accuracy and bring awareness to needed repairs in irrigation systems. This is especially important because potable water is currently used to augment recycled water use during the warmer months.

Indicate the quantity of conserved water that will be used for the intended purpose(s).

The conserved water will likely result in a decrease in imported water supply, based on past practices associated with previous water conservation efforts:

The project will result in a decrease in water use, reducing the need for imported water by 488 AFY making less of an impact on Delta and/or the Colorado River.

Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.

The District could opt to reduce the amount of imported water purchased, which does not require any additional action or mechanism. Additionally, the District has 25 large steel storage tanks as well as the Las Virgenes Reservoir to store potable water, if some or all of the conserved water is needed to be stored for future use during drought.

Will the project assist States and water users in complying with interstate compacts?

LVMWD, as a member agency to MWD, may also receive water from the Colorado River Basin, which has been experiencing a historic, extended drought since 2000, impacting regional water supply and as populations rise in Arizona and Colorado. The Basin has experienced its lowest 16-year period of inflow in over 100 years of record keeping, and reservoir storage has declined from nearly full to about half capacity. For the first time, Reclamation declared a water shortage on the Colorado River in 2021, announcing mandatory cutbacks in 2022 that reduced water allotments to Arizona farmers, Nevada, and Mexico as the Lake Mead reservoir reached a record low level of capacity. Currently, Lake Mead is still low, at only 33 percent of full capacity despite record rain falls in 2023. AMI projects such as the large meter replacement project achieve long term water conservation, thereby reducing the demand for water from imported sources.

The Project will help achieve the Co-Equal Goals for the Delta as outlined in The Delta Plan by reducing the need to import water from the State Water Project by approximately 7 percent, or approximately 488 acre-feet per year. This is water that can stay in the Delta to provide flows for endangered fish and wildlife habitat and/or supports the recovery of the Colorado River.

Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?

Water-related crises and conflict are unfortunately a frequent issue in California, often between regions (e.g. northern California vs. southern California). Water from the Delta and State Water Project in northern California is moved to southern California via large canals, reservoirs, and pump systems. During droughts, water supply allocations to water purveyors and agricultural sectors in the Central Valley are reduced first, then to southern California providers, and finally to northern California. These water supply reductions result in lawsuits over water rights, fallowed crops, restricted water consumption by customers which can impact some business operations and maintenance.

Ecological Benefits. In addition to the separate WaterSMART Environmental Water Resources Projects NOFO, this NOFO places a priority on projects that that result in ecological benefits, through this section and other sections above, consistent with the SECURE Water Act. Please provide information regarding how the project will provide ecosystem benefits, including the following:

Will the project benefit species (e.g., federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of particular recreational, or economic importance)? Please describe the relationship of the species to the water supply, and whether the species is adversely affected by a Reclamation project or is subject to a recovery plan or conservation plan under the Endangered Species Act (ESA).

The Sacramento-San Joaquin Delta is the source of drinking water for 29 million Californians from the San Francisco Bay Area to San Diego and irrigation for 3 million acres of farmland that help feed the nation. But the ecosystem challenges in the Delta itself are daunting – invasive aquatic species, more frequent toxic algal blooms, bare minimum stocks of native fish, warming air temperatures, sea-level rise that could imperil levees and seasonal precipitation that swings sharply from drought to flood and back to drought.

The Delta Smelt is considered to be an indicator species for the overall health of the Bay-Delta estuary ecosystem. The Delta Smelt is considered endangered ([Bureau of Reclamation 2024](#)) and is a species that is carefully monitored and is impacted by changes in water pumping/diversions. While this project's water savings is small over a short period of time compared to the quantity of water supplied by the Delta, it may cumulatively benefit the Delta Smelt over the 20-year useful life of the meters by reducing the amount of water needed and allow more water to remain in the Delta and serve as an example to other utilities to also invest in these water saving upgrades.

Conservation Projects such as AMI, reduce the demands on water supplies and allow the

resources such as Delta benefit for survival and recovery of endangered species. Many of the endangered species need higher volumes of water and lower temperatures to survive. Any incremental increase of water helps provide these necessary conditions for the endangered species. Some of the endangered species in the Delta include the Delta Smelt, Chinook Salmon and Sacramento Splittail.

Will water remain in the system for longer periods of time? If so, provide details on current/future durations and any expected resulting benefits (e.g., maintaining water temperatures or water levels, recreational benefits, etc.).

While the district is not directly responsible for the management of imported water sources, the large meter replacement project will contribute significantly to water conservation efforts that benefit the entire system. By replacing 99 meters and retrofitting 18 large meters with AMI technology, the project will save an estimated 488 acre-feet of water annually. This conserved water, which would otherwise be lost through inaccurate metering, undetected leaks, and excess consumption, allows wholesale water suppliers to better manage diversions. More efficient management of these water resources helps maintain water levels in the source systems, benefiting aquatic species, supporting recreational activities, and promoting overall ecosystem health. The project's enhanced leak detection and real-time monitoring capabilities will ensure that more water remains in the natural, thereby supporting the broader goal of sustainable water resource management across California's interconnected water systems.

Will the proposed project reduce the likelihood of a species listing or otherwise improve the species status?

The proposed project, which will save an estimated 488 acre-feet of water annually through improved metering accuracy and leak detection, contributes to water conservation efforts that benefit the Sacramento-San Joaquin Delta ecosystem, particularly its endangered species.

By reducing unnecessary water withdrawals from the State Water Project, particularly during drought conditions, the project helps maintain more water in natural systems that support several endangered species including the Delta Smelt, Chinook Salmon, and Sacramento Splittail. Furthermore, the project serves as a model for other utilities to implement similar water-saving technologies, potentially creating a larger cumulative benefit for these species that require higher water volumes and lower temperatures for survival. This is especially significant given that LVMWD receives 100 percent of its water supply from the State Water Project, making water conservation efforts directly beneficial to Delta ecosystem health and species recovery efforts.

Please describe any other ecosystem benefits as a direct result of the project.

This project does not have any other direct benefit to ecosystems.

Climate Change: E.O. 14008 emphasizes the need to prioritize and take robust actions to reduce climate pollution; increase resilience to the impacts of climate change; protect public health; and conserve our lands, waters, oceans, and biodiversity.

Describe how the project addresses climate change and increases resiliency. For example,

does the project help communities adapt to bolster drought resilience?

The proposed project significantly enhances community resilience to climate change, particularly in addressing drought challenges. By installing Advanced Metering Infrastructure (AMI), the project dramatically improves water use efficiency and management capabilities. These new meters provide accurate, real-time data on water consumption, allowing for quick detection of leaks and unusual usage patterns. This precision in water monitoring is crucial as communities face increasing water stress due to climate change.

The project bolsters drought resilience in several ways. It ensures accurate water accounting, reducing losses through undetected leaks or billing inaccuracies. The real-time data enables water managers to make informed, timely decisions about distribution and usage restrictions during dry periods. Additionally, by providing detailed usage information to consumers, the system promotes water conservation habits, creating a more water-conscious community. This behavioral change can lead to long-term water savings that extend beyond drought periods.

Furthermore, the project indirectly contributes to climate change mitigation by reducing energy needs for water treatment and distribution. By minimizing water waste, less energy is required to pump, treat, and distribute water, thereby reducing the associated carbon footprint. While modest on an individual basis, these energy savings can be substantial when considered across the entire water system and over time.

Does the project seek to improve ecological resiliency to climate change?

Not directly applicable to this project. However, the proposed project will indirectly improve ecological resiliency to climate change. By reducing water waste through improved metering and leak detection, the project helps preserve more water in natural systems like rivers and aquifers. This increased water availability can support aquatic ecosystems during drought conditions, which are likely to become more frequent and severe with climate change. Additionally, the enhanced ability to manage water resources more efficiently can indirectly benefit ecological systems dependent on these water sources, allowing for more adaptive management that considers environmental needs alongside human water demands.

Does the proposed project seek to reduce or mitigate climate pollutions such as air or water pollution?

The proposed project, while not primarily conceived as a pollution mitigation strategy, contributes to the reduction of climate-related pollutants through direct and indirect mechanisms.

The project's primary impact on atmospheric pollutants and greenhouse gas emissions is realized through nearly eliminating the need to drive to each meter to manually read the meter. This directly decreases vehicle emissions and the use of fossil fuels yielding a reduction in greenhouse gases as discussed under Criterion B.

Conserving water also has a direct benefit to mitigate air pollution by reducing the amount of energy expended to import, treat, and distribute water. By minimizing water losses and

optimizing distribution efficiency, the project reduces the volume of water requiring pumping and treatment, thereby decreasing energy consumption and associated greenhouse gas emissions.

With regard to water pollution, the project's impact is more subtle but nonetheless meaningful. Increased water use efficiency potentially leads to a reduction in the volume of water requiring treatment, which may result in a decreased utilization of water treatment chemicals.

Furthermore, the project's capacity for rapid leak detection and remediation can mitigate incidents where prolonged leaks could lead to soil erosion or the introduction of chlorinated water into the natural environment.

Additionally, the granular data provided by the Advanced Metering Infrastructure (AMI) system facilitates more precise management of water treatment processes. This enhanced data resolution potentially enables optimizations in chemical usage and energy consumption within treatment facilities, while also providing clear data to perform aging water calculations that help optimize water quality management. The implementation of AMI technology also has the potential to foster a culture of conservation among consumers, which may indirectly catalyze broader community initiatives aimed at pollution reduction and climate change mitigation.

Does the proposed project include green or sustainable infrastructure to improve community climate resilience?

While the proposed project does not incorporate large, traditional green infrastructure elements, it represents a significant investment in sustainable infrastructure that improves community climate resilience. Small solar panels and battery systems are incorporated into the remote areas of the district to power radio transmission. The AMI system dramatically improves the efficiency of water distribution, reducing losses and unnecessary consumption. This conservation of water resources enhances communities' ability to withstand drought conditions and other climate-related water challenges. The system's real-time, granular data on water consumption represents sustainable infrastructure that enables proactive, adaptive management of water resources, crucial for building climate resilience.

Furthermore, the data provided supports long-term sustainability planning, allowing communities to make informed decisions about future infrastructure investments and conservation programs. By improving water use efficiency, the project reduces strain on existing water infrastructure, potentially reducing the need for costly expansions of the water treatment works or distribution pipelines. The associated energy savings contribute to overall infrastructure sustainability and climate mitigation goals. Lastly, the AMI system's ability to integrate with other smart technologies may serve as a cornerstone of future sustainable infrastructure, further enhancing community resilience to climate change.

Does the proposed project contribute to climate change resiliency in other ways not described above?

The proposed project contributes to climate change resiliency in several additional ways.

1. It provides water managers and customers with more timely and granular data on

- water use patterns, enabling more adaptive management as climate conditions change.
2. The improved accuracy for water usage will reduce non-revenue water losses, improving the financial resilience of water utilities.
 3. By improving overall water system efficiency, it helps communities better prepare for and respond to climate-related water stress and shortages.
 4. Inform long-term water resource planning and climate adaptation strategies to make more informed decisions about water management.

Evaluation Criterion D— Disadvantaged Communities, Insular Areas, and Tribal Benefits

Subcriterion D.1. Disadvantaged Communities

If applicable, describe how the proposed project will serve or benefit a disadvantaged community, identified using the tool. Will the project improve public health and safety by addressing water quality, add new water supplies, provide economic growth opportunities, or provide other benefits in a disadvantaged community?

The proposed project does not directly benefit a disadvantaged/underserved community.

Subcriterion D.2. Tribal Benefits

The Department is committed to strengthening tribal sovereignty and the fulfillment of Federal Tribal trust responsibilities. The President’s memorandum, *Tribal Consultation and Strengthening Nation-to-Nation Relationships*, asserts the importance of honoring the Federal Government’s commitments to Tribal nations. Address the following, if applicable:

Does the proposed project directly serve and/or benefit a Tribe? Will the project increase water supply sustainability for an Indian Tribe? Will the project provide renewable energy for an Indian Tribe?

The proposed project does not directly serve or benefit a tribe.

Does the proposed project support Tribal led conservation and restoration priorities, and/or incorporate or benefit indigenous traditional knowledge and practices?

N/A

Does the proposed project directly support tribal resilience to climate change and drought impacts or provide other Tribal benefits such as improved public health and safety through water quality improvements, new water supplies, increased renewable energy, or economic growth opportunities?

N/A

Does the proposed project support Reclamation’s Tribal trust responsibilities or a Reclamation activity with a Tribe?

N/A

Evaluation Criterion E— Complementing On-Farm Irrigation Improvements

This project does not complement on-farm irrigation improvements.

Evaluation Criterion F— Readiness to Proceed

Identify and provide a summary description of the major tasks necessary to complete the project. Note: Do not repeat the more detailed technical project description provided in Section D.2.2.2 Application Content. This section should focus on a summary of the major tasks to be accomplished as part of the project.

This project is “ready to proceed” project that includes development of a implementation plan and contractor procurement. This project is the final phase of the district’s AMI upgrades.

1. Procurement:

1.1. Meters and AMI Radio Transmitters:

- The District has requested quotes from a meter supplier that has been used to replace the other meters throughout the service area.
- The District will place an order for the meters and the AMI Radio transmitters to be installed by a contractor.

1.2. Meter Installation Contractor:

- The District will solicit competitive proposal from qualified large meter installation contractors.
- The lowest responsive qualified bidder will be selected to complete the work and will be required to pay prevailing wages to workers.

2. Implementation:

- Removal and replacement of existing large meters ranging in size from 3-inch to 10-inch. The larger meters will require the contractor to use a hoist or similar equipment to safely remove and replace meters sizes 6” or greater especially in vault locations.
 - a. 50 percent of meters installed
 - b. 100 percent meter installed
 - c. AMI upgrade: 18 meters have recently been replaced and are AMI compatible. These meters will be upgraded with endpoint radios and interfaced with the fixed area network. If the contractor determines the meter is not compatible, it will be replaced with a compatible meter.

3. Performance Analysis:

- Monitoring and gathering data using the WaterSmart software program to quantify actual water savings, estimated energy savings, and customer engagement for installed AMI meters.

Describe any permits that will be required, along with the process for obtaining such permits.

May need an encroachment permit for some locations. These permits will be secured as need from either the city or county and planned well in advance of work in these locations.

Identify and describe any engineering or design work performed specifically in support of the proposed project.

The District has completed a comprehensive field inspection and billing record audit of all of the large meters in the District's service area and identified the meters that need to be replaced or can be retrofitted with AMI endpoints. Meter quotes have been requested for budgeting purposes.

A propagation study was performed and a map depicting geo locations of the Neptune DC's at various points around the District with 100 percent of them utilizing a cellular backhaul to relay meter data to the host server. Sufficient DC's are used to ensure redundancy throughout the District service area and to maximize read-rate success.

The field deployment strategy will be completed by a program management consultant after securing grant funds to proceed with the project. This plan will determine what types of meters can be installed at each location and will include specifications to be used for installation of the meters.

Describe any new policies or administrative actions required to implement the project.

Not Applicable

Describe the current design status of the project. If additional design work is required prior to construction, describe the planned process and timeline for completing the design work.

The district has identified the meters to be upgraded. A field deployment strategy is needed to identify any additional retrofits required to complete the upgrades to the meters. The district will procure the services of an AMI program consultant to develop the workplan and assist the district with procurement of a construction contractor to install the meters, and to providing construction management oversight.

Please also include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.

Table 2. Estimated Project Schedule Major Milestone Summary*

Milestone/Activity	Estimated Start Date	Estimated Completion Date
Procurement: AMI Program Consultant	June 1, 2025	August 15, 2025
Procurement: Meters*	April, 2025	October, 2025
Procurement: AMI Radios*	April, 2025	September, 2025
Procurement: Meter Contractor	August 15, 2025	October 30, 2025
50 percent of meters installed	November 1, 2025	October 31, 2026
100 percent of meters installed	November 1, 2026	October 31, 2027

*Procurement of meters and AMI radios is anticipated to require a six to eight month lead time to receive; therefore, the district plans to begin procurement for the meters upon receiving a notice of award and prior to the final execution of a grant agreement.

Was the expected timeline for environmental and cultural compliance discussed with the local Reclamation regional or area office?

No, the timeline for environmental and cultural compliance has not been discussed with the local Reclamation regional or area office; however, this project is anticipated to qualify under the categorical exclusion designation under NEPA. This project is considered exempt under CEQA.

Evaluation Criterion G—Collaboration

Is there widespread support for the project? Please provide specific details regarding any support and/or partners involved in the project. What is the extent of their involvement in the process?

On September 17, 2019, the District e-mailed a survey to customers and within only a few days, 1,330 responses were received. The number of responses provided a high level of statistical accuracy for representation of the entire customer base. The survey results provide several insights. When customers were asked for their feelings about the District installing Smart Meters, 43.9 percent of respondents indicated that they strongly support the project with another 30 percent moderately supporting it (but had some concerns), for a total of 73.9 percent. Another 14.2 percent of customers were not sure and had no fixed opinion, and the remainder either moderately or strongly opposed the concept of Smart Meters. When asked whether they would take advantage of the features offered by Smart Meters, 46.7 percent said "definitely" and another 31 percent said "probably," for a total of 77.7 percent. A total of 50.3 percent of the respondents indicated that they thought Smart Meters were either probably or definitely worth the additional cost.

Regarding the AMI radio waves, 12 percent were very concerned with the concept of a health risk to them or the community. Another 12.9 percent were very concerned with data security.

In general, the survey indicates that the large majority of customers support the installation of Smart Meters, but a small minority did express concerns about cost, data privacy, health risks associated with radio waves, and interestingly, the perceived potential for loss of jobs (meter

readers) at the District. These responses prompted staff to hire a professional public outreach firm to assist in providing additional outreach efforts for the project to better educate and inform customers about Smart Meters.

Outreach efforts under the current meter installations has been effective at educating and addressing customer concerns. These outreach efforts will also continue during the replacement of the large meters.

Additional outreach efforts planned for the implementation of this project include, but are not limited to:

- Bill stuffers;
- Additional news releases;
- Social media and webpage content;
- Presentations at community meetings, including Chamber of Commerce and City Councils;
- Door hangers (in collaboration with -contracted installation contractor); and
- Video that will be posted on the District's website and social media outlets.

What is the significance of the collaboration/support?

The residents and businesses in the District's service area are very engaged and interested in new policies and projects occurring within the District, and community outreach, education and transparency is important to the LVMWD Board of Directors.

Will this project increase the possibility/likelihood of future water conservation improvements by other water users?

The repairs of identified leaks will increase future water conservation actions by customers who may opt to replace leaking, older fixtures, devices and appliances with newer ones that have improved water efficiency. Such replacements will affect long term, future water conservation.

The District will also be able to provide messaging to customers with focused water conservation messages informing customers of the water conservation rebate programs and workshops available to customers. This focused messaging will likely increase participation rates in the District's other conservation programs and further reduce water use.

Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?

This Project will help attain the goal to *"Make Conservation a California Way of Life"* across multiple sectors by providing tools to commercial, multi-family, golf courses, and large landscape customers that will make them more familiar with their water-use habits and to notify customers (and the District) when they have a leak. Non-residential customers have requested to have access to these data; however, the current meters are unable to support this function.

Las Virgenes Water District strives to implement projects that will save significant amounts of

valuable water, which benefits not just the district service area, but also makes more water available to the region, and other communities who are also reliant upon water from the SWP and the Colorado River. AMI systems have a proven track record in water conservation beyond drought stages. This is one of the single-most important factors in success of the AMI system and is achieved by customer's involvement in staying informed of their water usage.

Please attach any relevant supporting documents (e.g., letters of support or memorandum of understanding).

In June 2023, LVMWD conducted a comprehensive customer experience survey (attached) to assess satisfaction levels and gather feedback from its service area of over 75,000 residents. The survey, which garnered 563 responses representing a 95 percent confidence level, provided valuable insights into customer perceptions of water service, billing practices, drought response, and communication effectiveness. This feedback is particularly relevant to the district's current large meter replacement project, as many survey responses highlighted issues that the new AMI system will address, including better water use monitoring, improved leak detection, and enhanced customer communication. The survey results indicate that while customers generally rate their overall satisfaction at 3.6 out of 5, there are opportunities for improvement in areas such as water budget understanding, bill clarity, and real-time usage data access - all of which will be enhanced through the implementation of the AMI system for the district's large meter customers who account for about 40 percent of the district's of water demand. The results of the customer survey is included as Attachment 1.

Letters of support have been provided by the City of Calabasas Mayor Alicia Weintraub, City of Calabasas Chamber of Commerce, and California Assemblymember Jacqui Irwin and are included as Attachment 2, as noted under the "Letters of Support" section following the budget section.

Evaluation Criterion H— Nexus to Reclamation

Describe the nexus between the proposed project and a Reclamation project or Reclamation activity. Please consider:

Does the applicant have a water service, repayment, or operations and maintenance (O&M) contract with Reclamation?

No

If the applicant is not a Reclamation contractor, does the applicant receive Reclamation water through a Reclamation contractor or by any other contractual means?

100 percent of the LVMWD potable water is purchased from imported water sources, provided entirely through wholesale purchases from the Metropolitan Water District of Southern California (MWD), to which LVMWD is a member agency. Water imported by MWD is sourced from the northern California State Water Project (SWP) and the Colorado River. Currently, LVMWD receives solely SWP water originating from northern California through the Sacramento-San Joaquin Bay-Delta.

Will the proposed work benefit a Reclamation project area or activity?

Yes, by reducing water consumption by 488 acre-feet, the proposed AMI project will reduce the amount of imported water required and contribute water to the Sacramento/San Joaquin Delta and/or the Colorado River Basin by an equivalent amount. The Delta is the predominant source of supply for the Reclamation's Central Valley Project and the Colorado River Basin is managed by Reclamation.

This project supports Reclamation's objectives to leverage local funds and resources to conserve and use water more efficiently, reduce energy use, and increases water supply reliability.

Is the applicant a Tribe?

No.

Performance Measures

The District uses a water budget-based rate structure. This structure allocates water usage into three categories: indoor use, outdoor use, and special adjustments for specific needs. Each household is allotted 55 gallons of water per person per day for indoor use, based on California standards. Outdoor water use is calculated using the irrigated area and local weather data to ensure efficient watering of plants and turf grass, with adjustments made monthly. Special adjustments cater to medical needs, licensed care providers, and livestock care. Water usage within the budget is billed at the lowest rates, while excess usage incurs higher costs. The project involves replacing large meters with Advanced Metering Infrastructure (AMI) to improve meter reading accuracy. This will lead to changes in water use due to better accuracy, customer behavior changes, and proactive leak repairs.

The WaterSmart Software platform will track data, increasing customer awareness and allowing the District to monitor project performance. Metrics such as customer engagement, trends, leaks, and water consumption will be tracked.

Post-installation water use will be compared to historical data, and customers can view this comparison. The goal is to enhance water use efficiency and customer awareness to achieve an estimated water savings of 488 AF annually.

Project Budget

The Large Meter AMI Retrofit Project has a total estimated cost of \$864,163, which will be funded through an equal cost-share arrangement between the USBR and LVMWD. The federal contribution from USBR will be \$432,081 and the non-federal match from LVMWD will be \$432,082, representing a 50-50 split of the total project costs.

The project budget consists of two main categories: contractual and construction costs. The contractual portion, totaling \$148,777, includes Full-Service Program Management, Procurement, and Implementation services to be provided by MeterSYS, along with an estimated allocation for labor compliance monitoring to ensure prevailing wages are paid to contractor workers.

Most of the budget is allocated to construction costs at \$715,386. This includes materials such as Neptune Mach 10 Ultrasonic Meters and v5 R900i units with 6' Antennas for meters ranging from 3" to 10" in size, as well as Neptune v5 R900 MIU units with 6' Antennas for meters requiring retrofits. The construction budget also includes estimated labor costs for installation of the new large meters and retrofit of large meters with AMI transmitters of meters installed within the past five years, plus customer coordination and communication efforts.

No costs are budgeted for personnel, fringe benefits, travel, equipment, supplies, other direct costs, or indirect charges, as these activities are incorporated into the contractual and construction categories.

Table 3. Summary of Non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non-Federal Entities: LVMWD	\$432,082
Non-Federal Subtotal	\$432,082
Requested Reclamation Funding	\$432,081

The budget narrative (Attachment B) and supporting project cost documents are uploaded to the Grants.gov portal using the Project Budget Narrative Submission Form.

Environmental and Cultural Resources Compliance

To allow Reclamation to assess the probable environmental and cultural resources impacts and costs associated with each application, all applicants should consider the following list of questions focusing on the NEPA, ESA, and NHPA requirements. Please answer the following questions to the best of your knowledge. If any question is not applicable to the project, please explain why. The application should include the answers to:

Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water

[quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

The project is considered Categorical Exempt under CEQA, because it consists of operating and maintaining existing equipment to provide water service by a utility (water meters), but is also exempt pursuant to 14 CCR 15303, 14 CCR 15282(k), Cal Pub. Res. C. Section 21080.23, and Cal Pub. Res. C., Section 21080.21. A Notice of Exemption (NOE) will be filed with the County of Los Angeles.

The project scope involves the replacement of large, potable water meters ranging in size from 3-inch to 10-inch with modernized meters capable of detecting and recording low flows. AMI endpoints will be installed on the meters. There are no anticipated environmental or cultural resources impacts with the proposed project.

There are no anticipated impacts to the surrounding environment.

Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

No, it is not anticipated that any species would be affected by any activities associated with the proposed project.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States"? If so, please describe and estimate any impacts the proposed project may have.

No, there are no impacts to wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "waters of the United States."

When was the water delivery system constructed?

LVMWD was formed in 1958 to supply imported water to western Los Angeles County. The water delivery system was originally constructed in the 1960s, with multiple expansions of the delivery system in the 1970s to 2000 as the community grew.

Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

No, the project will not result in any modifications or effects to individual features of an irrigation system.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local

Reclamation office or the State Historic Preservation Office can assist in answering this question.

No, there are no buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places that would be impacted by this project.

Are there any known archeological sites in the proposed project area?

No, there are no known archaeological sites in the proposed project area.

Overlap or Duplication of Effort Statement

LVMWD has not applied for any other federal or state funding to complete the proposed scope of work. If LVMWD receives any funding that would exceed the 50 percent nonfederal cost share, LVMWD will notify the NOFO point of contract or program coordinator immediately.

Conflict of Interest Disclosure Statement

The LVMWD staff is not aware of any potential conflict of interest associated with this funding request or for the proposed Project.

Letters of Support

This Project has support from the City of Calabasas Mayor Alicia Weintraub, City of Calabasas Chamber of Commerce, and California Assemblymember Jacqui Irwin. All stakeholders have enthusiastically expressed their endorsement for the project. They recognize that replacing remaining manual read large meters with new AMI-equipped meters is critical to maintaining the reliability, efficiency, and resilience of the District's water supply through improved accuracy, leak detection, and water conservation capabilities. Letters are included in Attachment 2.

Official Resolution

A resolution will be executed by the Las Virgenes Municipal Water District Board of Directors authorizing the district to commit to the financial and legal obligations associated with the receipt of a financial assistance award prior to executing an agreement with Reclamation.

Letters of Funding Commitment

The non-federal cost share will be provided by the district; no third-party cost share will be used to fund this project.

Unique Entity Identifier (UEI) and System for Award Management (SAM)

The Sam.gov Registration status for the LVMWD is active with an expiration date of August 21, 2025. The District will continue to update and maintain an active registration status. The verification of the District's registration status is included in Attachment 3.

References

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“Building a Defense Against Extinction”. United States Bureau of Reclamation. 2024.

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Proudly serving the Business Community for over 69 years!

November 7, 2024

David Pedersen, General Manager
Las Virgenes Municipal Water District
4232 Las Virgenes Road
Calabasas, CA 91302

RE: Support for LVMWD's Large Meter Advanced Metering Infrastructure (AMI) Retrofit Project

Dear David Pedersen,

On behalf of the Calabasas Chamber of Commerce, I am writing to express our support for Las Virgenes Municipal Water District's (LVMWD) Large Meter AMI Retrofit project, which is requesting grant funds from the US Bureau of Reclamation WaterSMART: Water and Energy Efficiency Grants program.

As an integral part of the community, we recognize the critical importance of modernizing our water infrastructure to enhance efficiency, conservation, and resilience. This project represents the final phase of LVMWD's comprehensive AMI implementation, focusing on upgrading large meters (3-inch to 10-inch) that serve major commercial and residential customers throughout the service area.

The WaterSMART funding opportunity will enable LVMWD to complete this vital infrastructure upgrade, addressing immediate water conservation needs while aligning with broader objectives of sustainability and economic vitality. The project will save an estimated 488 acre-feet of water annually, resulting in impressive, estimated water savings of 97,600 acre-feet over the project's 20-year useful life. Additionally, the project will reduce energy consumption by approximately 94,672 kilowatt-hours annually through improved efficiency and reduced vehicle trips for meter reading.

Furthermore, the collaboration between LVMWD and stakeholders, including our Chamber of Commerce, exemplifies the spirit of partnership necessary to address our region's water challenges effectively. We commend LVMWD for its proactive approach to water conservation and infrastructure modernization, particularly as our region continues to face recurring drought conditions.

As representatives of local businesses, we particularly appreciate how this technology will provide commercial customers with tools to better manage their water usage and costs through real-time monitoring and early leak detection capabilities. This project will benefit both our business community and the environment by promoting more efficient water use and reducing waste.

Please consider this project favorably and allocate the necessary funding to ensure its successful implementation. We look forward to continuing our collaboration with LVMWD and other stakeholders to advance initiatives that benefit our community.

Thank you for your consideration. Please do not hesitate to reach out if you require any additional information.

Sincerely,
Lisa Clayden
President & CEO
Calabasas Chamber of Commerce



ALICIA WEINTRAUB
Mayor

November 4, 2024

David Pedersen
General Manager
Las Virgenes Municipal Water District
4232 Las Virgenes Road
Calabasas, CA 91302

Subject: Letter of Support for Las Virgenes Municipal Water District's Large Meter Advanced Metering Infrastructure (AMI) Retrofit Project

Dear David Pedersen,

On behalf of the City of Calabasas, I am writing to express our strong support for Las Virgenes Municipal Water District's (LVMWD) Large Meter Advanced Metering Infrastructure (AMI) Retrofit project, which is requesting funds from the WaterSMART: Water and Energy Efficiency Grants program.

As one of the primary cities served by LVMWD, we recognize the vital importance of this infrastructure modernization project to our community's water security and sustainability goals. This final phase of LVMWD's AMI implementation will upgrade large meters serving our city's major water users, including commercial centers, multi-family residential complexes, and public facilities.

The WaterSMART funding opportunity will enable the completion of this critical infrastructure project, which aligns perfectly with our city's commitment to environmental stewardship and resource conservation. The projected annual water savings of 488 acre-feet throughout the district service area is particularly significant for our community. These water savings will enhance our community's drought resilience and support the city's sustainability objectives.

The implementation of AMI technology will extend the benefits stemming from AMI to large parcel property owners within our community. Real-time leak detection capabilities will prevent costly water waste, while improved accuracy in water usage monitoring will ensure fair billing and better resource management. The technology will also help our largest water users better manage their consumption patterns,

supporting our city's broader conservation efforts while reducing local greenhouse gas emissions through eliminated meter-reading vehicle trips.

We commend LVMWD for its forward-thinking approach to water management and its commitment to implementing state-of-the-art technology to benefit our community. This project represents a crucial investment in infrastructure serving our residents and businesses for decades to come.

We strongly urge you to consider this project favorably and allocate the necessary funding for its implementation. The City of Calabasas fully endorses this project and stands ready to support its successful completion.

Thank you for your consideration of this important project. Please do not hesitate to contact our office if you require any additional information.

Sincerely,

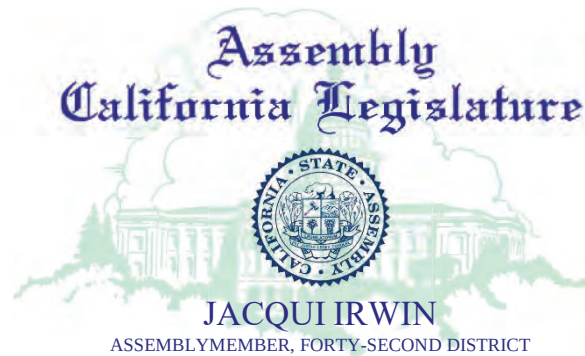


Alicia Weintraub
Mayor
City of Calabasas

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0044
(916) 319-2042

DISTRICT OFFICE
223 E THOUSAND OAKS BLVD, #412
THOUSAND OAKS, CA 91360
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E-MAIL
Assemblymember.Irwin@assembly.ca.gov



COMMITTEES
CHAIR: REVENUE & TAXATION
AGRICULTURE
BUSINESS & PROFESSIONS
HIGHER EDUCATION
PRIVACY & CONSUMER PROTECTION
SELECT COMMITTEES
CHAIR: CYBERSECURITY

November 5th, 2024

Bureau of Reclamation: Water Resources and Planning Office
Mail Code: 86-63000
P.O. Box 25007
Denver, CO 80225-0007

RE: Letter of Support for Las Virgenes Municipal Water District's Large Meter Advanced Metering Infrastructure (AMI) Retrofit Project

To Whom It May Concern,

I am writing to express my strong support for Las Virgenes Municipal Water District's (LVMWD) Large Meter Advanced Metering Infrastructure (AMI) Retrofit project. I understand the critical challenges our region faces regarding water conservation and infrastructure modernization. The need to invest in innovative solutions to safeguard our water resources has never been more pressing.

This project represents the final phase of LVMWD's comprehensive AMI implementation effort, focusing on upgrading large meters serving large commercial and residential customers within the cities of Agoura Hills, Calabasas, Hidden Hills, Westlake Village, and the unincorporated areas of western Los Angeles County. I am particularly impressed by the project's potential to save an estimated 97,600 acre-feet of water over the expected 20-year useful life of the proposed AMI upgrades. By modernizing these critical infrastructure components, the reliability and efficiency of serving water is enhanced, ensuring better management of our precious water resources.

Beyond environmental stewardship, the improved efficiency resulting from this project will translate into long-term benefits for LVMWD and its customers. The real-time monitoring capabilities will provide valuable data for both the utility and its largest water users, enabling more informed decision-making and faster response to potential issues.

I commend LVMWD for its leadership in water conservation and strongly urge you to consider this project for the WaterSMART Water and Energy Efficiency Grants program.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jacqui Irwin', is written over a light blue rectangular background.

JACQUI IRWIN

Assemblymember, 42nd District

ATTACHMENT A
BUDGET DETAIL AND NARRATIVE TEMPLATE

Summary			
6. Budget Object Category	Total Cost	Federal Estimated Amount	Non-Federal Estimated Amount
a. Personnel	\$0		
b. Fringe Benefits	\$0		
c. Travel	\$0		
d. Equipment	\$0		
e. Supplies	\$0		
f. Contractual	\$148,777		
g. Construction	\$715,386		
h. Other Direct Costs	\$0		
i. Total Direct Costs	\$864,163		
i. Indirect Charges	\$0		
Total Costs	\$864,163	\$432,081	\$432,082
Cost Share Percentage		50%	50%