LV Tap Advanced

METER ENHANCEMENT PROGRAM

WaterSMART: Water and Energy Efficiency Grants for FY 2020 and 2021
FOA: BOR-DO-21-F001

September 17, 2020

Project Contact: Craig A. Jones
Management Analyst II – Engineering/External Affairs
Las Virgenes Municipal Water District
4232 Las Virgenes Road
Calabasas, CA 91302
Email: CJones@lvmwd.com
Main (818)251-2131

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List of Acronyms

AF	Acre-feet
AFY	Acre-feet per year
BMP	Best Management Practices
CEQA	California Environmental Quality Act
EPA	U.S. Environmental Protection Agency
IRWMP	Integrated Regional Water Management Plan
NEPA	National Environmental Policy Act
NOAA Fisheries	National Oceanic Administration, National Marine Fisheries
UWMP	Urban Water Management Plan

1 Technical Proposal and Evaluation Criteria

1.1 EXECUTIVE SUMMARY

Date: September 17, 2020

Applicant: Las Virgenes Municipal Water District

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

Project Location: District-wide

Project Name: LV Tap Advanced Meter Enhancement Program

Project Duration: 24 months

Estimated Project Completion (mm/yy): 3/31/2023

Funding Group: Tier I

Grant Funding Requested: $500,000

Local Matching Funds: $5,117,201

Project Summary:

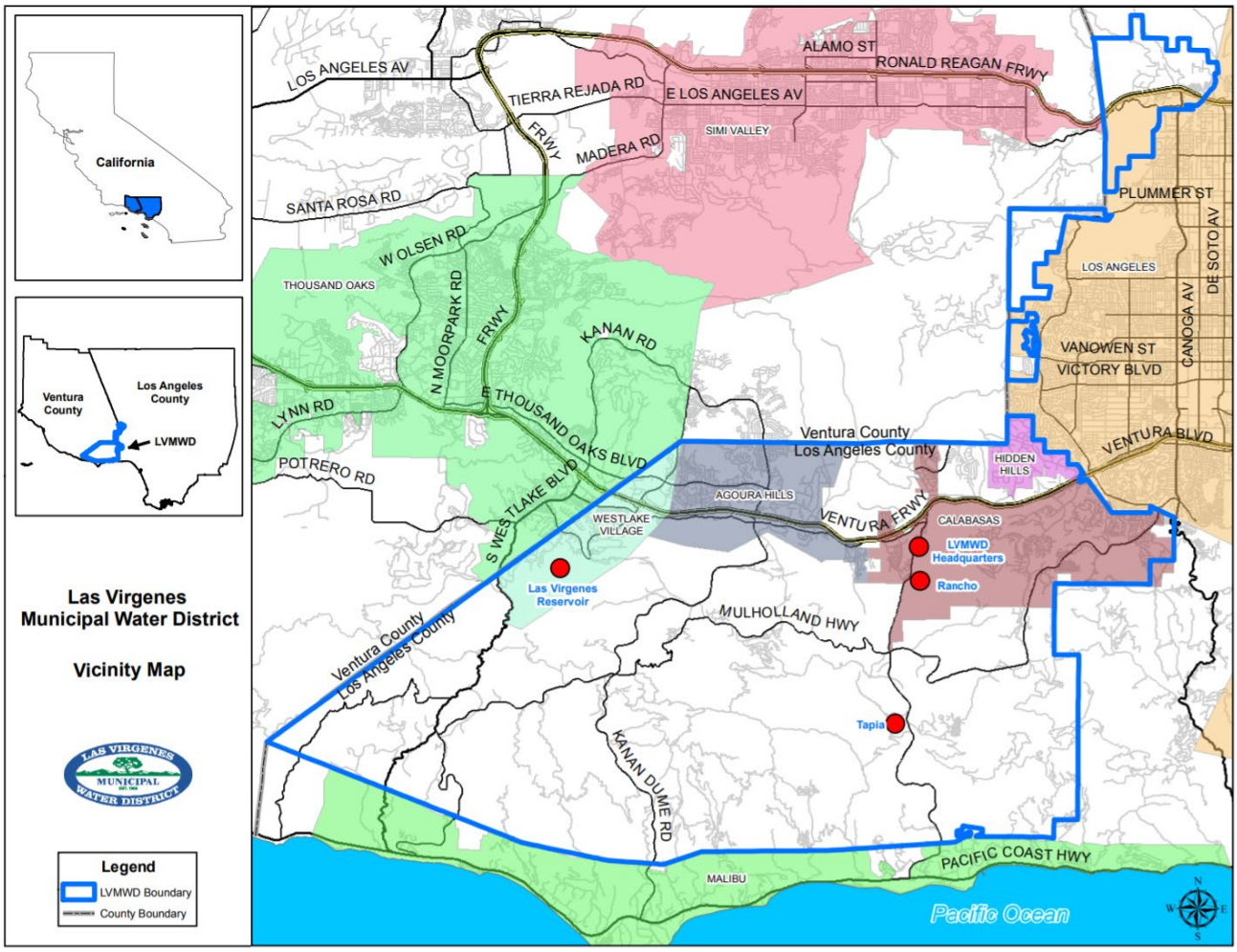
The Las Virgenes Municipal Water District is requesting grant funding assistance for the installation of 19,469 AMI meters to replace existing, non-AMI meters at all existing residential properties within the District's 122-square mile service area. This project will save an estimated 1,113 acre-feet of water and approximately 4,574,413 kWh of electricity annually.

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.

The proposed project is not located on a Federal Facility.

1.2 PROJECT LOCATION

The proposed project will be completed throughout the District's service area, shown in the following map.



1.3 TECHNICAL PROJECT DESCRIPTION

1.3.1 Background

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.

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 rear 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, with nearly 99 percent 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 and is treated at the Jensen Filtration Plant in Granada Hills prior to deliver to LVMWD.

In addition to the potable water, the District distributes approximately 4,240 acre-feet of water annually for commercial and golf course landscape irrigation.

The District's currently has approximately 22,000 meter connections, all with manually-read water utility meters. The District is currently implementing a Meter Data Management Software (MDMS) installation and integration, and Customer Engagement Platform Software, along with a preliminary installation phase of 2,000 meters to beta test all integrated systems and collectors to ensure proper read to bill functionality prior to proceeding to full implementation of the AMI meter project proposed. The beta phase is anticipated to be completed March 30,2021 and full implementation to begin approximately April 1,2021.

1.3.2 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 radio antennas or "fixed network" currently being installed, with a planned completion date of November 2020.

The proposed project will replace all single-family residential water meters ¾" to 1" in size, approximately 19,469 with AMI meters and provide all necessary fittings and new meter box lids for each meter.

Meter Size	Meter Type	Quantity	Unit Cost, incl. sales tax
¾" x 1"	Neptune T-10, PD Nutating Disc Meter, w/ 12x20" lids	17,064	$275.94
1"	Neptune T-10, PD Nutating Disc Meter, w/ 12x30" lids	2,405	$377.78

The selected AMI meters for noted sizes above are the Neptune T-10 meter Nutating Disc type, These meters exceed the latest C700 Standard. The Neptune nutating disc, positive displacement meter has been time-proven for accuracy and dependability since 1892. These meters consist of three major assemblies: An R900i register/MIU, a lead-free high copper alloy main case, and a nutating disc measuring chamber. This corrosion resistant, lead-free, high copper alloy main case can withstand almost every service condition, internal water pressure, rough handling, and inline piping stress. The innovative floating chamber design of the nutating disc measuring elements protects the chamber from frost damage, while the unique chamber seal extends the low-flow accuracy by sealing the chamber outlet port to the main case outlet port. The nutating

disc measuring element utilizes corrosion resistant materials throughout and a thrust roller to minimize wear.

Meter reads will be registered and transmitted in 0.01 cubic feet increments or less.

The phase prior to the installation of the meters described includes the installation of a fixed network signal transmission system. This stand-alone fixed network, complete with software and materials and equipment, is in progress and is not included within the scope of this proposed project; however, the description of the network equipment and features are included in this description to provide a more complete technical understanding of the AMI system. This Network system interfaces with the District's existing billing system and new Meter Data Management (MDM) software and includes a Propagation Study and Beta Phase to verify that there will be no detrimental interferences with other radio transmissions, including but not limited to the District's SCADA system.

The Neptune AMI endpoint is a full 2-way radio which allows for daily time synchronization and over-the-air programming. The AMI endpoint sends a single transmission per day which includes an exact midnight read, hourly consumption data, leak/tamper information, and other endpoint diagnostics which arms District personnel with all the information they would ever need and want. The AMI endpoint has an auto-detect feature and does not need to be programmed during installation, regardless of which encoded register to which it is attached.

The Neptune R900 AMI Data Collectors (DC's) will be permanently mounted in strategic areas around the District's distribution system and can be AC powered or 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 can transmit the information back to the host software via GPRS, Ethernet, and/or Wi-Fi backhaul. The Contractor's RF Propagation team will use a propagation map that positions Neptune DC's at various points around the District with 100% of them utilizing a cellular backhaul to relay meter data to the host server. Sufficient DC's will be used to ensure redundancy throughout the District service area and to maximize read-rate success.

The Neptune R900 Software has been installed on a host server on the District's network. 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. This database is

capable of storing millions of records and District personnel are able to access it via a user-friendly web interface from computers on the District's network. The host software is very user-friendly and can be customized by each user to generate reports specific to each of their needs. The AMI software assists Customer Support personnel in

successfully resolving water usage disputes between Billing staff and District customers, by providing reports that pinpoint specific dates, times, and levels of consumption.

Neptune Radio Endpoint:

The E-Coder R900i 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 date 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 and notify Ventura Water of priority alarms via email or text message. The R900i also comes with a 20-year warranty.

R900 Data Collector (R900 DC)

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 affords 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 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. No additional labor or groundwork will be needed to access meters, including but not limited to cutting, removal and replacement of asphalt, tree roots, shrubbery, or landscaping obstructions.
3. Contractor shall be responsible for replacing any meter improperly installed.
4. Contractor shall verify the meter connects to the District MDMS system.

The AMI features will include:

- Timely leak detection
- Improved monthly billing efficiency

- Water Budget Compliance
- Enhance personnel safety
- Improve customer service
- Reduce Greenhouse gas emissions

Past Working relationship with Reclamation

The District has received previous grant awards for the following projects:

Grant Program	Agreement No.	Status
Title XVI Feasibility Study	R17AC00096	Completed 2018

1.4 EVALUATION CRITERIA

1.4.1 Evaluation Criterion A - *Quantifiable Water Savings*

Describe the amount of estimated water savings.
It is estimated that the replacement of the existing meters with automated meters for the proposed phase will conserve approximately 925.47 AFY. This calculation is based on an estimated savings of 7 percent of the averaged water demand for 2016 through 2019 of 15,907 AFY for single-family residential customer.

Describe current losses:

Water meters are a critical component of the successful and effective operation of a water utility. Since manual meter reading does not provide many of the benefits of AMI meters and as meters age, they underreport water usage. The District is currently unable to detect and alert customers of water leaks on the customer side of the meter. Therefore, water waste and losses are likely occurring, but the District is unable to quantify this water loss accurately.

The water that will be conserved is currently likely seeping into the ground, leaving residential properties in the form of excess water runoff, and/or unaccounted due to meter reporting errors.

Municipal Metering:

How has the estimated average annual water savings that will result from the project been determined?

This calculation is based on an estimated savings of 7 percent of the averaged water demand for 2016 through 2019 of 15,907 AFY for single-family residential customer.

15,907 AFY x 7% = 1,113.49 AFY

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%. Smart Meters coupled with the utilization of a customer interface software platform such as Dropcounter™ yielded a 7% reduction in water usage in the City of Folsom and a 9% 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 recently installed Smart Meters along with a customer interface platform and reported a 9% reduction in water use due to the new system after accounting for other variations such as weather and concurrent conservation programs.

According to the Pacific Institute, when coupled with effective pricing structures, reductions of 15 to 20 percent in water can be achieved, with additional water savings possible through the improved management of the water system with respect to the identification and the repair of leaks that would likely go unnoticed for months with standard volumetric meters. For example, The City of Santa Maria reduced their waters losses from 6 percent to 2 percent after converting to an AMI system, and the City of Sacramento was able to detect and repair leaks that resulted in water savings of 236 million gallons of water over a two-year period.[1]

LVMWD already uses a water budget rate structure; the addition of the smart meters, the AMI network and the meter data management system will likely water conservation increase due to the fact that 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.

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 real-time, two-way communication electronically to both staff and customers will enable the District to mitigate water leaks and loses, educate consumers on how to reduce water usage and help control water use during water alerts and droughts, if necessary.

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 residential customers.

[1] Metering in California," Pacific Institute, September 2014. https://pacinst.org/wp-content/uploads/2014/09/pacinst-metering-in-california.pdf

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

Meter Size	Meter Type	Quantity
¾" x 1"	Neptune T-10, PD Nutating Disc Meter, w/ 12x20" lids	17,064
1"	Neptune T-10, PD Nutating Disc Meter, w/ 12x30" lids	2,405

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 end user meters. The District is currently installing a new meter data management system that will interface with the software with the billing system, however, the benefits of this system cannot be realized until the smart meters and fixed area network system has been installed. The new AMI system will provide real-time 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.

The base calculation will use the averaged water demand for single-family residential properties of 15,907 AFY.

1.4.2 Evaluation Criterion B—Water Supply Reliability*:*

Specific water reliability concerns. Please address the following:

Explain and provide detail of the specific issue(s) in the area that is impacting water reliability, such as shortages due to drought, increased demand, or reduced deliveries. Will the project directly address a heightened competition for finite water supplies and over-allocation (e.g., population growth)?

Yes, multi-year droughts occur in California and the most recent 6-year drought resulted in serious water supply sustainability concern as the region water utility districts worked to manage water demands versus environmental impacts and available supplies.

On January 17, 2014, California Governor Edmund G. Brown Jr. declared a State of Emergency and directed state officials to take all necessary actions to prepare for the drought conditions and called upon every Californian to conserve water. As water supplies continued to diminish, the Governor's office called on all water agencies to implement drought measures to reduce water demands and the Department of Water Resources reduced SWP allocations for southern California contractors to zero on January 31, 2014, and then 5% for 2014. Water resources remained very low throughout the entire State with DWR restricting SWP suppliers to 15-20 percent of their requested allotments until March 2017.

On May 14, 2019, the LVMWD Board of Directors was provided with an update on the State's new water conservation legislation (AB 1668 and SB 606) and the District's current and planned conservation efforts. While customers have been meeting past mandates by the State for conserving water (i.e. 20x2020), the new legislation will require the District to reduce residential consumption by an estimated 3,000 acre-feet per year. Achieving the targets under this new mandate will require a multi-pronged approach and implementation of a number of conservation programs in the coming years, including the deployment of Smart AMI Meters. Once installed and fully operational, the system has the potential of reducing residential water consumption. Reduced water use with Smart Meters is associated primarily with enhanced customer awareness of hourly and daily water use and the early detection of leaks.

Describe how the project will address the water reliability concern.

The Conserved water will result in a decrease in imported water supply: The project will result in a decrease in water use, reducing the need for imported water by 1,113.49 AFY- Making less of an impact on Bay Delta. In conjunction with Pure Water Project works to preserve and localize water supply portfolio through leak detection efforts, etc.

This Project will help attain the goal of *Make Conservation a California Way of Life* by providing tools to water customers that will make them more familiar with their water-use habits and to notify customers (and the District) when they have a leak. The Project will also help achieve the Co-Equal Goals for the Delta by reducing the need to import water from the State Water Project by approximately 7 percent, or approximately 1,113 acre-feet per year. This is water that can stay in the Delta to provide flows for endangered fish and wildlife habitat.

- **Indicate the quantity of conserved water that will be used for the intended purpose.**

Decreased water use will result in an equal decrease in demands to imported water.

Will the project make water available to achieve multiple benefits or to benefit multiple water users?

- ***Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and***

industrial, environmental, recreation, or others)?

While the proposed project is focused on reducing residential customer water consumption, all potable water customers will benefit from better water supply reliability. As population increases and climate changes put increased pressure on finite water sources, all activities that will achieve better water use efficiency and reduce potable water consumption will benefit all customers and industries that rely upon potable water supplies both locally and for all who rely on imported water supplies.

- ***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.***

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 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, 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.

- ***Will the project benefit a larger initiative to address water reliability?***

This Project will help attain the goal of *Make Conservation a California Way of Life* by providing tools to water customers that will make them more familiar with their water-use habits and to be able to better identify and proactively correct their water leaks.

- ***Will the project benefit Indian tribes?***

  The District is not aware of any project benefits to Indian tribes.

- ***Will the project benefit rural or economically disadvantaged communities?***

The community served by LVMWD is not economically disadvantaged, however much of 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.

- **Describe how the project will help to achieve these multiple benefits.**

As described previously, reducing water demands will improve water use efficiency for the District and improve reliability for MWD (imported water) by increasing the amount of available imported water in the region.

Does the project promote and encourage collaboration among parties in a way that helps increase the reliability of the water supply?

Yes. By engaging customers using the customer portal providing real-time water use and alerts to high water use and/or leaks, the District is collaborating with customers to increase the reliability of the water supply.

- **Is there widespread support for the project?**

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% of respondents indicated that they strongly support the project with another 30% moderately supporting it (but had some concerns), for a total of 73.9%. Another 14.2% 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% said "definitely" and another 31% said "probably," for a total of 77.7%. A total of 50.3% of the respondents indicated that they thought Smart Meters were either probably or definitely worth the additional cost. With regard to radio waves, 12% were very concerned with the concept of a health risk to them or the community. Another 12.9% were very concerned with data security, and 19.3% of respondents said they would probably or absolutely opt-out of the program for $25 per month (the current policy allows for an opt-out of $25 bi-monthly based on the old bimonthly billing cycle).

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 have already started and will escalate upon execution of an agreement with Ferguson.

RMG Communications, a professional public affairs firm, was hired to provide additional outreach efforts, which will be performed as the project gets underway. The firm is assisting staff by providing informative material that will be available to the District's customers.

Additional outreach efforts include but are not limited to:

- Bill stuffers;

- Additional news releases;
- Social media and webpage content;
- Presentations at community meetings, including HOAs and City Councils;
- Door hangers (in collaboration with Ferguson); 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 living 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.

- **Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?**

Implementation of the AMI program will allow the District 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 help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?**

As California's climate changes and demands for imported water increases, reducing the District's water demands will also reduce demands for imported water. By reducing water demands and improving water reliability, future water-related crises are lessened for the region and imported water supplies.

- **Describe the roles of any partners in the process.** Not applicable.

- **Will the project address water supply reliability in other ways not described above?** Not applicable.

1.4.3 Evaluation Criterion C—Implementing Hydropower

The proposed project does not include the implementation of hydropower; therefore, the questions associated with this criterion are not applicable.

1.4.4 Evaluation Criterion D—Complementing On-Farm Irrigation Improvements

The proposed project does not include improvements that complement on-farm irrigation improvements; therefore, the questions associated with this criterion are not applicable.

1.4.5 Evaluation Criterion E—Department of the Interior and Bureau of Reclamation Priorities

Department Priorities

1. ***Creating a conservation stewardship legacy second only to Teddy Roosevelt***

a. Utilize science to identify best practices to manage land and water resources and adapt to changes in the environment;

AMI is an example of best practices to manage water resources and adapt to changes in the environment. The Colorado River Basin (Basin) Water Supply and Demand Study confirms that without future actions, the Basin faces a range of potential future imbalances between supply and demand. One of the primary adaptation strategies identified in this study included water use efficiency and reuse. This project would help increase water use efficiency of potable water by improving the accuracy of the meters and by identifying and alerting the District and customers of water leaks occurring within the customer water fixtures and irrigation. The studies overwhelming show water savings and improved water efficiency is obtained by utilizing smart AMI meters.

2. ***Utilizing our natural resources***

a. Ensure American Energy is available to meet our security and economic needs;

Importing, treating and distributing potable water in southern California uses an estimated 12,700 kWh per 1 million gallons or 3.09 AF of water, according to the California Energy Commission. This project's estimated savings of 1,113 AF of water annually will save an estimated 4,574,413 kWh each year.

3. ***Restoring trust with local communities***

a. **Expand the lines of communication with Governors, state natural resource offices, Fish and Wildlife offices, water authorities, county commissioners, Tribes, and local communities.**
   The District recognizes the importance of maintaining community outreach regarding activities and policies and engaging stakeholders (e.g. cities, neighboring water districts, etc.). In preparation for this project, the District conducted a community survey to learn community interest, concerns, and the level of support for the project. The feedback from this survey showed a large majority of support for the project, however concerns over customer privacy was a clear issue that the District needed to address specifically. To address this concern, the District has hired a professional public affairs firm to provide additional community outreach, as described previously under section 1.4.2 to educate customers on this and other concerns that may develop.

5. ***Modernizing our infrastructure***

a. Support the White House Public/Private Partnership Initiative to modernize U.S. infrastructure;

The project facilitates private sector efforts to construct infrastructure projects serving American needs. The WaterSMART grant funds will allow the District to fast track the implementation of the final phase to complete the installation of AMI radios on approximate 19,469 meters. In order to complete the work within 24 months, the District will utilize contractor labor for the installation, supporting jobs in the private construction sector.

Reclamation Priorities

1**.** ***Increase Water Supplies, Storage, and Reliability under WIIN and other Authorities***

The proposed project will increase available imported water supplies in the region and improve water reliability by implementing this AMI meter project as noted. Thus, lessening the impacts of periods of drought upon the water supply in support of the SECURE Water Amendments Act of 2014, which includes planning for or addressing the impact of drought.

2. ***Leverage Science and Technology to Improve Water Supply Reliability to Communities***

The capabilities and reliability of AMI systems have significantly improved, with a proven track record in providing real-time water consumption data with a two-way communication network allowing the District and customers to quickly become aware of water leaks, high consumption periods to help customers make behavior changes, and will alert the District to meter malfunctions. All of these capabilities are accessed remotely, allowing for quicker resolution. Furthermore, the messaging system and customer portal allows the District to distribute focused messages regarding water use and conservation tips. None of these capabilities are currently available to the District with the current metering infrastructure.

These new AMI capabilities and improved meter accuracy will significantly improve water supply reliability by: 1) reducing water wasted through reducing customer excess water use through increased awareness and control by the customer to understand their water use and/or identify fixture leaks, and 2) improving meter accuracy allowing the District to better forecast water supply needs.

3. ***Address Ongoing Drought***

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. Completion of the implementation of the AMI installations will provide significant an increase in water use efficiency, reducing impacts

on regional resources during times of normal and drought cycles. The AMI system will allow the District to issue email notifications to customers concerning conservation, water use, water leaks, and permit the District to remotely read meters.

Additionally, the AMI Implementation Program 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.

5. ***Improve Water Supplies for Tribal and Rural Communities***
The District serves rural communities located within the Santa Monica Mountains. This project will improve water use efficiency and reliability through improved water consumption readings and promote water supply resiliency by reducing water demands.

1.4.6 Evaluation Criterion F—Implementation and Results

1.4.6.1 Subcriterion F.1— Project Planning

Does the applicant have a Water Conservation Plan and/or System Optimization Review (SOR) in place? Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, Drought Contingency Plan or other planning efforts done to determine the priority of this project in relation to other potential projects.

LVMWD self-certifies that it has a Water Conservation Plan. In 2018, the District created a Comprehensive Water Conservation Plan to assure compliance with state mandates and to make sure that conservation stays a local way of life will require a combination of strong outreach and education, as well as making investments in innovative conservation programs to assure that conservation continues to be a local way of life. The 2018-20 Comprehensive Water Conservation Plan outlined a number of water conservation programs aimed at reducing wasteful water use, helping customers stay within their water budgets and achieving new and emerging state water conservation regulations. In order to achieve those goals, the District launched several conservation efforts targeting our most wasteful water users and inefficient outdoor water use. In July 2020, an update of those efforts and what additional efforts were included as part of the updated Comprehensive Water Conservation Plan (CWCP) with adding additional objectives and identifying projects/programs aimed at achieving greater water use efficiency and reduce water consumption. As a principle driver for these efforts, Making Conservation a California Way of Life is also summarized with key actions and dates that will form the framework of state water policy for the next decade.

(1) Describe how the project conforms to and meets the goals of any applicable planning efforts and identify any aspect of the project that implements a feature of an existing water plan(s).

The CWCP includes key actions to comply with two important California legislative actions that require water agencies to implement additional conservation efforts: AB 1668 and SB 606. These legislative actions establish guidelines for efficiency water use and a framework for the implementation and oversight of the new standards.

The proposed AMI meter installation project is specifically identified in the CWCP as a water conservation and water use efficiency project that will improve tracking of water use and conservation effectiveness, significantly improve the estimations of apparent water loss due to customer meter reading inaccuracies, and help the District to meet water use objectives established by these legislations.

1.4.6.2 Subcriterion F.2— Performance Measures

The District currently uses a water budget based rate structure. This rate structure will be in effect pre- and post-project. The water budget rate structure is a unique water budget based upon three household uses of water: 1) Indoor use, 2) Outdoor use, and 3) Special Adjustments that may be appropriate for individual households. Each household is assigned a standard volume of 55 gallons (current California standard) of water per person per day for indoor use. Outdoor use is determined by using the customer's irrigated area and local weather data to determine the efficient volume of water to support healthy plants and a modest amount of turf grass---this amount fluctuates month to month with weather conditions. Thirdly, adjustments will be made for special situations such as medical needs, licensed child/adult/health care providers and caring for horses or livestock. Water use within the monthly household water budget is considered efficient and is billed at the lowest rates, while water use above the water budget is considered inefficient and potentially wasteful depending on the quantity. Water use exceeding the water budget is billed at a higher cost.
Since there will not be a change in the billing structure, changes to water use will be related to improved accuracy of meter readings, customer behavior changes due to awareness of high water use and/or increased water use, and customer leak alerts facilitating pro-active repair of leaking fixtures and/or irrigation. These data will be tracked using the WaterSmart Software platform. In addition to increasing customer awareness of water use, this system will allow the District to monitor/track project performance by measuring customer engagement, trends, leaks, high bills, and compare post installation water use as it compares to historical use. This water use comparison is also available to the customer to view as post installation data is generated.
The WaterSmart software is also able to calculate energy savings associated with the water savings.
This software will be the primary tool the District will use to quantify post-project benefits.

1.4.6.3 Subcriterion F.3— Readiness to Proceed

Design and procurement have been completed for this project, and the Beta phase to complete the installation of the AMI wireless network and software interfaces are currently in progress and will be completed by April 1, 2021. The table below shows the milestones for the proposed project phase to complete the installation of AMI meters on all existing, developed residential properties, replacing the existing non-AMI meters.

Table 1. Project Schedule Major Milestone Summary		
Milestone/Activity	Actual or Planned Start Date	Planned Completion Date
Full Implementation	April 1, 2021	June 30, 2022
Performance Analysis	July 1, 2022	March 31, 2023

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

  Permits are not required for this project.

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

  A report was prepared by an outside consultant, TritonAMI, to explore the costs and feasibility of the project in 2017. The feasibility study confirmed that Advanced Metering Infrastructure was feasible, comparable to long-term costs for traditional manual meter reading, but also offered several additional benefits, including improved customer service, timely leak detection, water conservation and greenhouse gas reduction.

  After completing the feasibility study, an outside consultant, Utiliworks, specializing in Advanced Metering Infrastructure design and project management was hired for design of the project. The specifications developed by Utiliworks consist of “design parameters”, which includes physical limitations as well as functional requirements for the AMI System.

  Utiliworks developed a Competitive Request for proposal/Specifications and documents for solicitation of proposals from vendors and assisted in developing an Agreement with the selected vendor(s). The vendors that submitted proposals have conducted signal propagation studies and have identified both the quantity and locations for a fixed network antenna system along with other software and hardware requirements.

  After completing the feasibility and design, the District solicited bids to implement the next phases: Beta and Full Implementation. During the Beta phase, the District is installing the radio towers, MDMS, completing the customer billing interface system, customer portal deployment, and 2,000 meters. The purpose of the Beta phase is to test and verify the new AMI infrastructure and interfaces are fully operational prior to the full implementation phase to install AMI meters on all of the residential properties. The Beta phase is beginning now, and will be completed by April 1, 2021. This application proposal is for the full implementation phase of the project.

As noted in the project schedule, 100% of the remaining meters (approximately 19,469 meters) will be installed within 14 months.

Project Performance Analysis will consist of 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 new policies or administrative actions required to implement the project.**
  Not applicable.

1.4.7 Evaluation Criterion G— Nexus to Reclamation Project Activities

Is the proposed project connected to Reclamation project activities? If so, how? Please consider the following:

- **Does the applicant receive Reclamation project water?**

100 percent of the LVMWD potable water is purchased from imported water sources, with approximately 99 percent 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.

- **Is the project on Reclamation project lands or involving Reclamation facilities?**
  Not applicable.

- **Is the project in the same basin as a Reclamation project or activity?**

No, the project is not located within a basin that is subject to a Reclamation project or activity.

- **Will the proposed work contribute water to a basin where a Reclamation project is located?**

Yes, by reducing water consumption by 1,113 acre-feet, the proposed AMI project will reduce the amount of imported required and contribute water to the Sacramento/San Joaquin Delta by an equivalent amount. The Delta is the predominant source of supply for the Reclamation's Central Valley Project.

- **Will the project benefit any tribe(s)?**

LVMWD is not aware of any tribes that would benefit from this project.

1.4.8 Evaluation Criterion H— Additional Non-Federal Funding

$$\text{Non-Federal Funding} = \frac{\$5,117,201}{\text{Total Project Cost } \$5,617,201} = 91\%$$

2 Project Budget

2.1 Funding Plan and Letters of Commitment

No other federal funds have been received as of the date of this proposal.

Non-Reclamation funds will be committed and secured prior to the execution of an agreement with Reclamation.

Table1: Total Project Cost Table

SOURCE	AMOUNT
1. Costs to be reimbursed with the requested Federal Funding	$500,000
2. Costs to be paid by the applicant	$4,117,201
3. Other: California Prop. 1Funds	$1,000,000
Non-Federal Subtotal	**$5,117,201**
TOTAL PROJECT FUNDING	**$5,617,201**

2.2 Budget Proposal

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL Cost
	$/Unit	QTY		
Salaries and Wages				
N/A				
Fringe Benefits				
N/A				
Travel				
N/A				$0
Equipment				
N/A				
Supplies and Materials				
N/A				
Contractual/Construction				
¾" x 1" Meters w/ lids	$275.94	17,064	EA	$4,708,640
1" Meters w/ lids	$377.78	2,405	EA	$908,561
Environmental and Regulatory Compliance				
Reclamation Environmental Review				$2,000
Total Direct Costs				**$5,619,201**
Indirect Costs				
N/A	Percentage	$base		**$0**
TOTAL ESTIMATED PROJECT COSTS				**$5,619,201**

2.3 Budget Narrative

Salaries and Wages: Not Applicable.

Fringe Benefits: Not applicable.

Travel: Not applicable.

Equipment: Not applicable.

Materials and Supplies: Not applicable**.**

Contractual/Construction

The chart below details the meters and lids that will be installed by a contractor. This cost does not include labor; however, labor will be provided by the contractor.

Meter Size	Meter Type	Quantity	Unit Cost, incl. sales tax	Total
¾" x 1"	Neptune T-10, PD Nutating Disc Meter, w/ 12x20" lids	17,064	$275.94	$4,708,640
1"	Neptune T-10, PD Nutating Disc Meter, w/ 12x30" lids	2,405	$377.78	$908,561
	Total	19,469		$5,617,201

Third-Party contributions

The District has submitted an application requesting $1.5 million in grant funds from the California Proposition 1 Integrated Regional Water Management Grant for the implementation of the project. The District has been notified $1,000,000 will be awarded. It is anticipated the District will execute an agreement within the next 3 to 4 months.

Environmental and Regulatory Compliance Costs

- **The cost incurred by Reclamation to determine the level of environmental compliance required for the project and review of environmental compliance documents prepared by a consultant.**

It is presumed that Reclamation's environmental compliance review will be minimal since the work will be completed on existing infrastructure and may qualify for a categorical exclusion. $2,000 has been allocated for this task, subject to revision by Reclamation if grant funds are awarded.

- **The cost incurred to prepare any necessary environmental compliance documents or reports**

CEQA documentation began in August 2017 and was completed on March 12, 2018. While the initial analysis and determination were made in August of 2017, a Notice of Exemption was not filed with the County of Los Angeles until March 12, 2018.

- **The cost incurred by the recipient in acquiring any required approvals or permits, or in implementing any required mitigation measures**

Not applicable

Other Expenses: None

Indirect Costs: None

3 Environmental and Cultural Resources Compliance

CEQA documentation was completed in March 2018. The project was determined to be Categorically Exempt under CEQA. The project was determined to be categorically exempt 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.

The project scope involves the replacement of residential potable water meters with AMI meters, radios, and replacing the meter box lids. There are no anticipated environmental or cultural resources impacts with the proposed project.

- **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.**

  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 Clean Water Act (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 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.

- **Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?**

  No, the project will not have a disproportionately high and adverse effect on low income or minority populations.

- **Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?**

  No, the project will not limit access to and ceremonial use of Indian sacred sites or result in other negative impacts on tribal lands.

- **Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?**

The project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native species known to occur in the area.

4 Required Permits or Approvals

No permits or approvals are required.

5 Official Resolution

The resolution will be presented to the Las Virgenes Municipal Water District Board of Directors on the next available Board meeting, October 20, 2020, authorizing the general manager to submit grant applications to and execute an agreement with Reclamation for the implement of the proposed project. The resolution agrees to use the funds identified in this funding plan for the proposed project.

The executed resolution will be forwarded under separate cover.

6 References

"*2015 Urban Water Management Plan*," Las Virgenes Municipal Water District. Kennedy/Jenks Consultants.

"Automatic Meter Reading/Automated Metering Infrastructure (AMR/AMI) Implementation Project Report", Carlos G. Reyes, P.E., Director of Resource Conservation and Public Outreach, Las Virgenes Municipal Water District, *2017.*

"*Comprehensive Water Conservation Plan*", Las Virgenes Municipal Water District, Fiscal Years 2018 – 2020.

"*Comprehensive Water Conservation Plan Update*", Las Virgenes Municipal Water District, Fiscal Years 2020 – 2022.

"The Effect of Social and Consumption Analytics on Residential Water Demand", 2017 ASSA Annual Meeting-Chicago, AERE section on Behavioral Interventions and Water Conservation. Copyright 2016 by Mehdi Nemati, Steven Buck, and Hilary Soldati.

"Metering in California," Pacific Institute, September 2014. https://pacinst.org/wp-content/uploads/2014/09/pacinst-metering-in-california.pdf