Attachment 14. Areas Affected by Project

Laguna Beach County Water District

2016 WaterSMART: Water and Energy Efficiency Grant Application

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Southern Orange County, including portions of the city of Laguna Beach, a portion of Crystal Cove State Park, and the unincorporated community of Emerald Bay, located in Orange County, CA.

Advanced Metering Infrastructure to Enhance Water and Energy Efficiency Project

Grant Applicant:

LAGUNA BEACH
COUNTY WATER DISTRICT

Laguna Beach County Water District
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Submitted to:
U.S. Department of the Interior, Bureau of Reclamation's WaterSMART: Water and Energy Efficiency Grants for Fiscal Year 2016

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Technical Proposal and Evaluation Criteria

The technical proposal and evaluation criteria (50 pages maximum) includes: (1) the Executive Summary, (2) Background Data, (3) Technical Project Description, (4) Evaluation Criteria and (5) Performance Measures. To ensure accurate and complete scoring of your application, your proposal should address each subcriterion in the order presented here.

Executive Summary

January 20, 2016
Mr. David Youngblood, Manager of Engineering
Laguna Beach County Water District, Laguna Beach, Orange County, California

- **A one paragraph project summary that specifies the work proposed, including how project funds will be used to accomplish specific project activities and briefly identifies how the proposed project contributes to accomplishing the goals of this FOA (see Section III.B, "Eligible Projects").**

Laguna Beach County Water District (District/LBCWD) is proposing the Advanced Metering Infrastructure (AMI) to Enhance Water and Energy Efficiency Project (AMI Project) as part of its long-term goal of water supply reliability and efficient water management. The AMI Project includes the upgrade of 8,633 existing manually-read water meters with an AMI fixed base network system that will automatically collect and store hourly consumption data, aiding in water conservation and water use efficiency, improved water management, energy savings, and reduced carbon emissions. AMI Project Activities include: 1) procurement of a qualified contractor; 2) upgrade to an AMI fixed-based network including water meters, AMI radio transmitters, collectors, and software that will automatically collect and store hourly consumption data; 3) deploy a web-based utility management portal and a web-based customer portal for water customers to access their accounts to view both real-time flow and information and historical usage data; 4) integrate the AMI system into the District's customer information system and global positioning system (GPS) of all AMI equipment and water meters; and 5) integration with the District's work management software (Nobel). The upgrade to a fully automated AMI system leads to wide-ranging efficiency improvements resulting in water savings of 400 acre-feet per year (AFY), 1,120,000 kilowatt hours (kWh) per year in energy savings, and carbon emissions reductions on the order of 695,254 pounds of CO2 per year. Furthermore, deployment of a Customer Portal through which water users will have online access to their own real-time hourly water usage data will prompt District customers to make positive changes to their water use behaviors. The proposed AMI Project will reduce real system losses and increase water use efficiency and conservation through the availability of near real-time data on water usage and daily water needs. One-hundred percent of the District's drinking water is surface water imported by the Metropolitan Water District of Southern California (MWD). MWD's imported water sources are the Colorado River and the State Water Project, which draws water from the San Francisco-San Joaquin Bay Delta. The AMI Project will expand upon the District's efforts to promote water use efficiency by accomplishing the following: 1) More rapid identification and correction of water leaks (currently meters are read every other month allowing leaks to go undetected and water to be wasted for a month before being noticed), 2) More accurate meter readings compared to aging meters (half the District's meters are at replacement age and are likely erroneously registering lower water use than actual water use), and 3) Reduced potable water usage based on customer education through the AMI Project's data on water usage. With the current drought conditions and decreased reliability of imported water supply, conservation and water use efficiency are key factors for improving water sustainability within the service area. Figure 1 shows the Project Location.

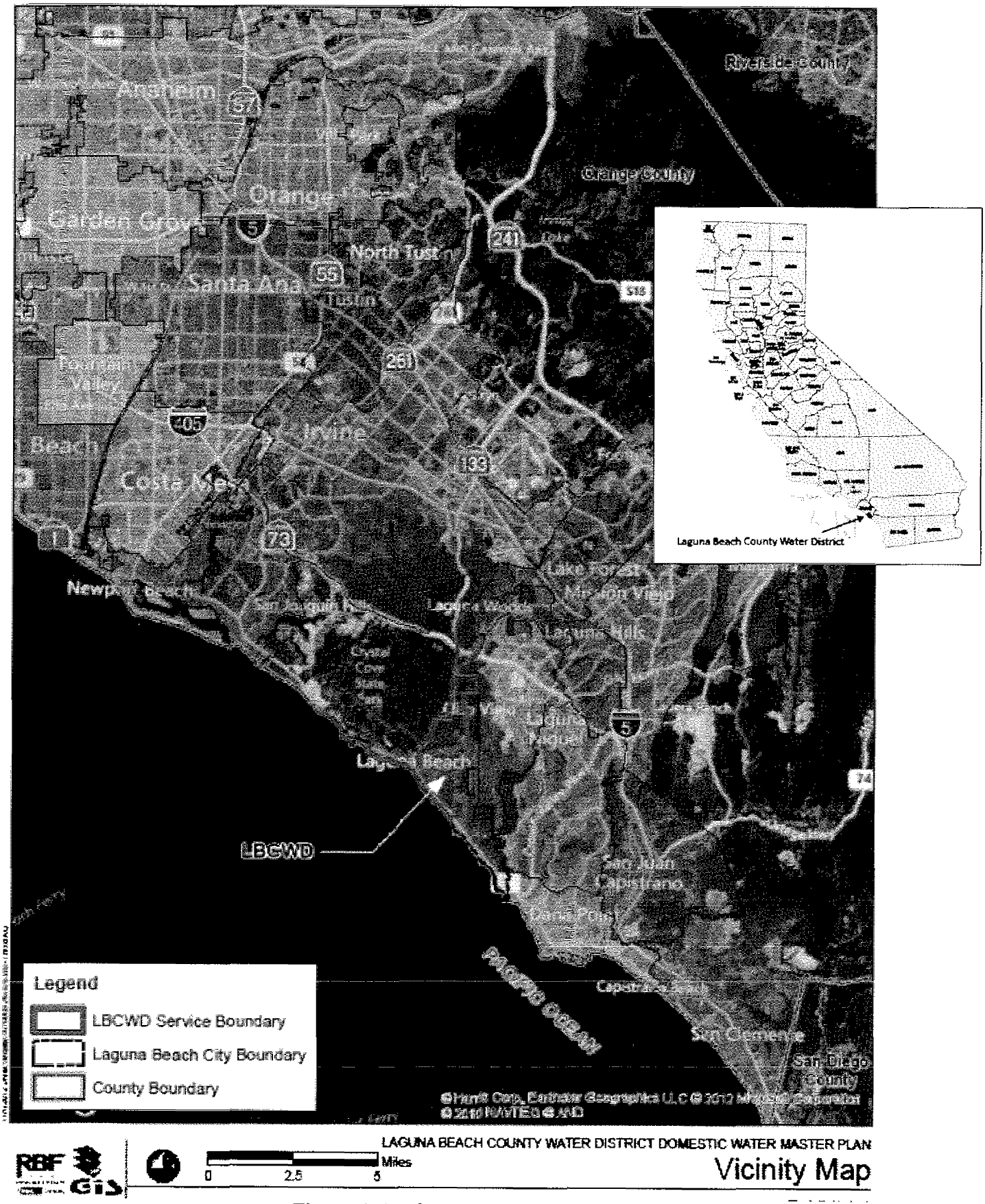

Figure 1. LBCWD and Project Location

- **State the length of time and estimated completion date for the project.**

Following the September 30, 2016 Funding Award, the AMI Project will be completed by September 15, 2017. The District has provided a schedule (Subcriterion No. F.2—Readiness to Proceed) indicating that the AMI Project will be completed within the 2-year timeframe following the funding award.

- **Whether or not the project is located on a Federal facility.**

The AMI Project is not located on a Federal facility.

Background Data

Laguna Beach County Water District (LBCWD/District) service area covers nearly 8.5 square miles and includes northern Laguna Beach with a portion of Crystal Cove State Park, the main urbanized area of Laguna Beach not including the south end of the City of Laguna Beach, and along Laguna Canyon Road north to Sycamore Hills neighborhood off El Toro Road. The service area is characterized by gently rolling and steep hillside areas. The District's service area is edged to the north and east by the Laguna Greenbelt, which encompasses 10,000 acres of largely undeveloped lands, separating the service area from other communities in the County of Orange.

Figure 1 shows the location and boundary of the District in the State of California, within the County of Orange, and with the City of Laguna Beach identified.

Water Supply and Demand

The District currently obtains water from one water source: imported treated water from the Metropolitan Water District of Southern California (MWD) through the Municipal Water District of Orange County (MWDOC). The District entitlement to imported water is based on its maximum purchase within the past 10 years of 4,934 AF (2003), although the District purchases an annual average of 4,300 AFY of imported water, of which approximate 95 percent is from the Colorado River.

Year 2020 projections include production of groundwater from a Santa Ana River Basin entitlement of 2,025 acre-feet per year (AFY) in the Orange County Groundwater Basin. The District is currently exploring options with the Orange County Water District (OCWD), the Basin's manager, for exercising its adjudicated right to groundwater. The District has proposed development of a production well in the Basin to augment the District's water supply portfolio to diversify from imported water.

Table 1. Water Supply Entitlement

Year	Water Supply Source (AFY)		
	Imported	Colorado River Water % of Imported	Groundwater
2020	4,930	95%	2,025
2015	4,930	95%	0
2010	4,930	95%	0

Sources: Laguna Beach County Water District 2010 Urban Water Management Plan and Manager of Engineering and Operations, David Youngblood, LBCWD

The District has approximately 8,633 service connections for its nearly 21,000 residents and businesses, including the sale of water to the Emerald Bay Service District (approximately 500 connections serving 326 AFY). The District has the following billing classifications: single-family residential, multi-family residential, commercial (includes industrial, hotels, and institutional/government), landscape and mixed uses (includes residential with commercial and other use). Table 2 shows water demand by sector.

Table 2. Water Demand by Sector – Current and Projected

Water Use Sector	2015		2020 (projected)	
	No. of Accounts	Acre-Feet	No. of Accounts	Acre-Feet
Single Family Residential	6,815	2,232	6,959	2,417
Multi-Family Residential	1,065	585	1,065	585
Commercial/Institutional/Governmenta	525	700	525	700
Landscape	84	150	84	150
Other – Mixed Use	144	30	144	30
Total Demand	**8,633**	**3,697**	**8,777**	**3,882**

Source: Manager of Engineering and Operations, David Youngblood, PE, Laguna Beach County Water District

Potential Shortfalls In Supply

Although all of California has been experiencing extreme drought and water use efficiency and conservation continues, the District does not anticipate a shortfall in supply to meet demands. Water Entitlement totals (Table 1) exceed Total Demand (Table 2) by 44 percent. Even with continuing regulations of increased water conservation in California – currently at 25 percent statewide and proposed to drop to 22 percent – the District is well positioned to receive supply to meet demand through its 2020 projections and beyond. The District's 2015 water demand shown in Table 2 includes a 23.1 percent cumulative conservation savings.

In addition, describe the applicant's water delivery system as appropriate. For agricultural systems, please include the miles of canals, miles of laterals, and existing irrigation improvements (i.e., type, miles, and acres). For municipal systems, please include the number of connections and/or number of water users served and any other relevant information describing the system.

Water Delivery System

The District's water distribution system consists of reservoir storage, pump stations, pressure reducing stations, pipelines, interconnections, emergency generators, and pumping connections.

Currently, the District maintains 8,633 service connections and 135 miles of distribution pipelines, ranging in diameter from 4 to 16 inches. Transmission lines that bring imported water to the District include the Aufdenkamp and Coast Supply transmission lines, which range from 24 to 42 inches in diameter. Water supply, currently all potable, is received through two Metropolitan Water District of Southern California connections: CM-1A and CM12. CM-1A is located outside the District service area near Pacific Coast Highway and provides water to the 200 pressure zone with an average flow

of 1,006 gallons per minute (gpm). CM-12 is located outside the District service area in the City of Irvine and provides water to the 400 pressure zone through the 42"/36" Aufdenkamp Transmission Main with an average flow of 3,493 gpm.

The District also maintains 21 storage reservoirs with a total storage capacity of 33.5 million gallons within five pressure zones: 200, 400, 600, 800 and 1000, plus two supplemental pressure zones that are boosted from the 800 pressure zone and 1000 pressure zone. The 200 pressure zone has the largest demand. These reservoirs are used for daily fluctuations in demand while providing approximately 10 days of water to the community in the event of an emergency. District staff operates and maintains 36 pumps in 14 pumping stations. There are 14 pump stations that supply water to the 400, 600, 800, and 1000 pressure zones and 18 pressure reduction stations.

The District's service area is primarily a built-out community, with very little growth anticipated within the existing service area. Only minor development, re-development and in-fill projects are expected; therefore, no substantial increase in water usage due to development and major system expansions is expected in the future.

If the application includes renewable energy or energy efficiency elements, describe existing energy sources and current energy uses.

The District relies on electricity from Southern California Edison and the District does not produce any renewable energy itself. The AMI Project would serve to modernize the District's water management facilities and equipment to increase energy efficiency by installing AMI technology. The proposed AMI Project would promote energy efficiency by reducing fuel consumption and frequency in maintenance of District vehicles previously used to collect monthly meter readings and quantifiably reduce energy consumption through water significant improvements in water use efficiency and conservation that would reduce pumping and importation of water from MWD, which receives its supply from the State Water Project and the Colorado River Aqueduct. The importation of water is extremely energy intensive, and much of the state's energy consumption is attributed to the conveyance of water. Any reduction in water loss and overall consumption would have an impact on increasing energy efficiency of the overall system operations. Based on the publication "California's Water – Energy Relationship" prepared by the California Energy Commission (November 2005, page 51), the amount of electrical energy required to transfer 1 acre-foot of water from northern California to an area just north of the District requires an estimated 3,000 kWh. The same publication also estimates 2,000 kWh for each acre-foot of water that is imported from the Colorado River to southern California. Combining the two water sources, the amount of power per AF required to transfer the water is approximately 2,500 kWh for a total of 7,500,000 kWh/year.

In addition, the distribution of potable water throughout the District's system requires approximately 300 kWh per acre foot. The District's system is described above under "Water Delivery System". The District serves water at elevations from sea level to 1,100 feet above sea level. Due to the variation in topography pumping is required to move this water throughout the system. This requires approximately 300 kWh per acre foot of potable water. Therefore, it is estimated that it takes an average of 2,800 kWh/AF to convey imported water from SWP and CRA to the District and to distribute the water throughout the District's service area. The District relies on electricity from Southern California Edison.

Identify any past working relationships with Reclamation. This should include the date(s), description of prior relationships with Reclamation, and a description of the projects(s).

The Municipal Water District of Orange County (MWDOC) completed the Phase 3 Doheny Ocean Desalination Project – Extended Pumping and Pilot Plant Test, Regional Watershed and Groundwater Modeling, and Full Scale Project Conceptual Assessment in 2013. The Project Participants included Laguna Beach County Water District, South Coast Water District, City of San Clemente, City of San Juan Capistrano, Moulton Niguel Water District. The total project cost was $6,147,000. MWDOC was a recipient of the U.S. Bureau of Reclamation, WaterSMART Grant R10AP35290 for $499,000. Although Laguna Beach County Water District was not a recipient of the Grant, they were a project participant that contributed to the completion of the Project.

Technical Project Description

The technical project description should describe the work in detail, including specific activities that will be accomplished as a result of this project. This description shall have sufficient detail to permit a comprehensive evaluation of the proposal.

The District's is proposing to implement the Advanced Metering Infrastructure (AMI) to Enhance Water and Energy Efficiency Project (AMI Project) as part of its long-term goal of water supply reliability and efficiency water management. The AMI Project includes the upgrade of 8,633 existing water meters, currently manually read, with an AMI fixed base network system that will automatically collect and store hourly consumption data, aiding in water conservation and water use efficiency, improved water management, energy savings, and reduced carbon emissions.

The AMI Project assumes procurement of the qualified contractor will occur prior to execution of a funding agreement with Reclamation. For the bid process, the District will follow its Procurement Policy and issue a Notice Inviting Bids for Design-Build Proposals for the AMI Project. Qualified contractors shall submit details on the required work including, but not limited to: 1) procurement of water meters; 2) procurement of AMI radio transmitters, collectors, software, a web-based utility management portal and a web-based customer portal for utility users to access consumption; 3) integration of the AMI system into the District's customer information system (Utility Management Solution-UMS by CUSI); 4) global positioning system (GPS) of all AMI equipment and water meters, and 5) procurement and integration with the District's work management software (Nobel).

Each qualified bid will include all of the following: 1) overall capabilities and flexibility of the proposed AMI system, and it's compatibility and adaptability with other systems and future technologies; 2) compatibility with the District's existing customer information system, communications details, workflow and software required for seamless integration with the Work Management Software, and the security levels and access control for NERC Critical Infrastructure Protection Standards compliance; 3) customer references where the contractor has integrated an AMI system into the same system as the District's; 4) data retention capabilities assuming eight years of records per customer; 5) two-way communications system type, capabilities, licensing requirements, issues, and security details; 6) required permitting; 7) web browser capable AMI data retrieval; 8) ease of use of reports and report generators; 9) information technology equipment and service proposed, personnel requirement and skills, and web-based management of AMI software; 10) photo documentation; and 11) customer communication plan.

The work to be performed as part of the Technical Project Description shall consist of a qualified contractor to procure and install a "turn-key" AMI fixed base network, or an approved alternative, retrofitting recently installed meters with appropriate equipment, and installing new water meters. An AMI fixed base network or an approved alternative method will be proposed by the selected contractor and accepted by the District. The District will only approve the use of equipment, technologies, and capabilities that are currently commercially available, have been implemented in other agencies, and have a proven history of success.

The work will include, but is not limited to, procurement of water meters, procurement of AMI radio transmitters, collectors, software, a web-based utility management portal and a web-based customer portal for utility users to access consumption. Additional work as part of this project shall include the integration of the AMI system into the District's customer information system (Utility Management Solution-UMS by CUSI, Version 4.4.380.1), global positioning system (GPS) of all AMI equipment and water meters, and procurement and integration with the District's work management software (Nobel), in accordance with the requirements for each individual area.

The District will convert approximately 2,285 existing Neptune and Hersey water meters, for total of 8,633 existing meters in the District's system. All work will be in compliance with all applicable local, state, and federal regulations for the prevention of water and air pollution.

Project Tasks

Task 1: Project Management

LBCWD staff and the selected contractor will meet to establish the Project Management Team and begin AMI Project discussions. District staff and the Contract Project Manager will establish the final Scope of Work to facilitate the AMI Project, confirm the Customer Communication Plan, review invoicing, reporting and documentation requirements during construction, as well as performance monitoring and reporting.

The Customer Communication Plan that will include written materials, notices, web page information, and phone script. With District approval, the contractor will develop and distribute written materials relating to installation of the AMI System, including purpose, rate design, project schedule, and cost savings opportunities. Notices will include utility bill inserts or direct mailing, customer letters about installation and scheduling, customer door hangers, post installation AMI System brochure, AMI System customer demonstrations (up to five), and other appropriate materials Information will be distributed at least two weeks prior to an area being retrofitted, including the opportunity to make appointments where a meter is not accessible or if a customer has special needs regarding the momentary disruption of water service. The contractor will also provide all of its meter installers a 1-hour orientation on AMI meter installation.

The Contract Project Manager will manage implementation of the AMI Project for the duration of the work.

Task 2: Equipment Procurement

The District will work collaboratively with the Contractor to select the appropriate equipment for the AMI Project. The District will only approve the use of equipment, technologies, and capabilities that are currently commercially available, have been implemented in other agencies, and have a proven

history of success. Once selected, the District will follow its Procurement Policy to purchase the AMI water meters, meter box lids, and the complete communication system.

Task 3: Installation of Communication System to Support the AMI System
Install appropriate number of AMI radio transmitters, collectors, software, a web-based utility management portal and a web-based customer portal that will collect the hourly consumption data and relay this information so it will be available in the web-based application that can be accessed in real-time for District billing, consumption trends, and live leak reports.

Task 4: Remove and Replace Existing Meter System with AMI Network
Disconnect all 8,633 meters and replace with the selected AMI device. This work will involve using a hand-held programmer to download the meter type and size into the new unit and transferring the customer information from the old unit to the new unit. All customers will be notified through a written service alert when the work will be done and that they can expect no to momentary service interruption since the exchange does not require turning off the water service.

Task 5: Final Testing and Implementation
As identified, install any additional infrastructure required to gather the hourly consumption data. Deploy the Customer Information System and provide access by customers ensuring accuracy of information and operation. The Customer Information System will provide customers with real-time consumption data, and will assist them in managing their individual water usage more efficiently.

Contractor will prepare as-built documents following completion of the AMI system and integration with the Customer Information System and meter reading interface system. As-built documents will include: a network diagram/schematic; data workflow; equipment location, type, software, addressing (MAC, IP, etc.); equipment configuration by location; and construction photographs.

Task 6: Grant Management and Reporting
District staff will negotiate, execute and manage the cooperative agreement with Reclamation. Reporting will be performed on a semiannual basis, including submittal of Financial Reports and Program Performance reports, as well as Financial Reimbursement Requests using the online ASAP system through the System for Award Management (SAM). Program Performance and Final Reports will be in accordance with requirements included in the cooperative agreement. Performance Reports will include information regarding the status of the Project's Performance Measures, including Water Savings, Water Better Managed, Energy Savings, and Carbon Emission Savings. The methods of measuring Project Performance, which will be used for producing these reports, are explained in more detail in Section 5 Performance Measures.

Evaluation Criteria

The evaluation criteria portion of your application should thoroughly address each of the following criterion and subcriterion in the order presented to assist in the complete and accurate evaluation of your proposal. (Note: it is suggested that applicants copy and paste the below criteria and subcriteria into their applications to ensure that all necessary information is adequately addressed). **Applications will be evaluated against the evaluation criteria (listed below), which comprise 100 points of the total evaluation weight.** Please note that projects may be prioritized to ensure balance among the program Task Areas and to ensure that the projects address the goals of the WaterSMART program.

Evaluation Criterion A: Water Conservation (28 points)

Subcriterion No. A.1—Quantifiable Water Savings

Describe the amount of water saved. 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. Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations. Please be sure to consider the questions associated with your project type (listed below) when determining the estimated water savings, along with the necessary support needed for a full review of your proposal (please note, the following is not an exclusive list of eligible project types. If your proposed project does not align with any of the projects listed below, please be sure to provide support for the estimated project benefits, including all supporting calculations and assumptions made).

In addition, all applicants should be sure to address the following:

- **What is the applicant's average annual acre-feet of water supply?**

The District's total average annual water supply is 4,300 AFY.

- **Where is that water currently going (i.e., back to the stream, spilled at the end of the ditch, seeping into the ground, etc.)?**

4,300 AFY of imported potable water is currently being delivered to the District's service area, including the following uses: single-family residential, multi-family residential, commercial (includes industrial, hotels, and institutional/government), landscape and mixed uses (includes residential with commercial and other use). Based on District analysis, approximately 8% of water delivered is lost from system leakage. Water lost is likely seeping back into the ground or making its way into a stormdrain or ocean.

- **Where will the conserved water go?**

Water conserved as a result of the proposed Project's implementation represents a decrease in local demand, which would decrease the amount imported by the District through MWDOC and MWD; thereby, the conserved water will remain at its source, in the Bay-Delta and in the Colorado River, for environmental and other uses.

Please address the following questions according to the type of project you propose for funding.

(2) Municipal Metering: Municipal metering projects can provide water savings when individual user meters are installed where none exist to allow for unit or tiered pricing, when existing individual user meters are replaced with advanced metering infrastructure (AMI) meters, and when new meters are installed within a distribution system to assist with leakage reduction. To receive credit for water savings for a municipal metering project, an applicant must provide a detailed description of the method used to estimate savings, including references to documented savings from similar previously implemented projects. Applicants proposing municipal metering projects should address the following:

(a) How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.

Amount of average water saved/conserved (AFY):
(Water Loss Reduction + Reduction in Consumption)
170 AFY + 230 AFY = 400 AFY

Detail and supporting calculations for estimate:

The AMI Project will achieve water savings by implementing the following: 1) More rapid identification and correction of water leaks (currently meters are read every other month allowing leaks to go undetected and water to be wasted for a month before being noticed), 2) More accurate meter readings compared to aging meters (half the District's meters are at replacement age and are likely erroneously registering lower water use than actual water use), and 3) Reduced potable water usage based on customer education through the AMI Project's data on water usage.

Current water losses are approximately eight (8) percent of the potable water demand. The total water demand for the 8,633 service connections is approximately 4,300 AFY. Approximately 348 AFY of that total demand is unaccounted for. To determine total water loss, the District compared the total water purchased from MWDOC to the water billed to District customers and calculated an average of 8% water loss over the past 11 years, resulting in approximately 348 AFY water loss, as shown in the table below.

Table 3 Water Loss

	Loss	Avg AF Loss
Avg 11 years	8%	348.8
Avg 9 years	7%	295.3
Current Year	8%	303.5

Empirical data demonstrates that customer portals help improve water use efficiency and reduce consumption by up to five percent. Other water agencies that have installed AMI have been able to reduce water losses down to nearly one percent. The District has estimated that the AMI Project will reduce water losses from 8% down to 4%, saving approximately 170 AFY.

Savings will also result from the deployment of a Customer Portal, through which customers for all AMI units will be able to independently access their own real-time flow data on the District's website. These additional water savings will come from self-leak detection and water use behavioral change on the part of customers who access the data for the purpose of monitoring their consumption. Eastern Municipal Water District (EMWD), which is a wholesaler of water in Southern California, recently implemented a demonstration project, which included implementation of a Customer Portal similar to the proposed AMI Project. For EMWD's demonstration project, they installed AMI units for a subset of their customer base, included daily water use information on their water bills, and made flow data available to customers on their website. EMWD determined that an average annual savings of 0.027 AF per meter was realized through implementation of their project. Since the District's proposed AMI Project includes these same activities, it is anticipated that this same level of savings can be achieved at a minimum for all of the District's AMI units. Therefore, applying the same savings of 0.027 AFY/meter to the proposed A results in the following calculation: 0.027 AFY/meter * 8,633 meters = 233 AFY, or approximately 230 AFY water saved through the Customer Portal. Therefore, the total water savings from the AMI Project is 170 AFY + 230 AFY = 400 AFY.

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

In addition, the District's Domestic Water Master Plan (May 2014, page 2) describes that in order to determine water demand and development within the District, historic water usage in the 10-year period from 2001/02 to 2010/11 was analyzed with yearly totals of water delivered to the District, water billed to customers, and active services. The Water Master Plan described water conservation measures to reduce water loss. In addition, as described above in section (a), current distribution system losses where recently determined by the District comparing the total water purchased from MWDOC to the water billed to District customers and calculated an average of 8% water loss over the past 11 years, resulting in approximately 348 AFY water loss. Also described above in section (a), the potential for reductions in water use by individual users were determined based on EMWD's demonstration Project, which realized an average annual savings of 0.027 AF per meter resulted through implementation of their AMI Project. Some potential reasons for water loss include water used in operation and maintenance, pipe leaks, reservoir leaks, fire department use, meter error and unmetered water usage.

(c) For installing individual water user meters, refer to studies in the region or in the applicant's service area that are relevant to water use patterns and the potential for reducing such use. In the absence of such studies, please explain in detail how expected water use reductions have been estimated and the basis for the estimations.

Expected water use reduction and supporting documentation is discussed above in section (a). In addition, the District's Domestic Water Master Plan (May 2014, page 2) describes that in order to determine water demand and development within the District, historic water usage in the 10-year period from 2001/02 to 2010/11 was analyzed with yearly totals of water delivered to the District, water billed to customers, and active services. The Water Master Plan describes current water use patterns and identifies water conservation measures, such as meter upgrades, as potential for reducing water use. In addition, the District's Strategic Plan Draft 2013-2023 identifies a goal to Continue Small Capital Replacement Program, including the replacement of meters, as well as investigate and implement Automated Meter Reading (AMR)/Advanced Metering Infrastructure (AMI) technologies to improve accuracy of billed data and to improve efficiency and effectiveness of the District's meter reading process.

(d) If installing distribution main meters will result in conserved water, please provide support for this determination (including, but not limited to leakage studies, previous leakage reduction projects, etc.). Please provide details underlying any assumptions being made in support of water savings estimates (e.g., how leakage will be reduced once identified with improved meter data).

Not applicable. No distribution main meters will be installed.

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

The AMI Project includes the upgrade of 8,633 existing water meters, currently manually read, with an AMI fixed base network system. The District has been evaluating AMI technologies, customer portal providers, and utility data management systems for several years. To that end, the District solicited proposals from several vendors to identify potential solutions for implementing AMI.

Proposals were received from several vendors including teams led by Neptune and Sensus. The District has already performed an exhaustive review of these solutions and is ready to complete the procurement process to select the most beneficial and cost effective solution with the greatest promise for long-term success. The District will convert approximately 2,285 existing Neptune and Hersey water meters, for total of 8,633 existing meters in the District's system. All 8,633 meters will be disconnected and replaced with the selected AMI device.

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

Actual water savings will be verified upon completion of the AMI Project through the use of utility data management software to conduct a water balance in the system. Additionally, all usage data for all meters equipped with AMI will be compared to historical values to determine water savings due to increased water use efficiency.

Subcriterion No. A.2—Percentage of Total Supply:

Provide the percentage of total water supply conserved: State the applicant's total average annual water supply in acre-feet.

The District's total average annual water supply is 4,300 AFY.
Please use the following formula:

$$\frac{\text{Estimated Amount of Water Conserved}}{\text{Average Annual Water Supply}} = \frac{400\ \text{AF}}{4{,}300\ \text{AF}} = 9.3\%$$

Evaluation Criterion B: Energy-Water Nexus (16 points)

For projects that include construction or installation of renewable energy components, please respond to Subcriterion No. B.1— Implementing Renewable Energy Projects Related to Water Management and Delivery. If the project does not implement a renewable energy project but will increase energy efficiency, please respond to Subcriterion No. B.2— Increasing Energy Efficiency in Water Management. If the project has separate components that will result in both implementing a renewable energy project and increasing energy efficiency, an applicant may respond to both. However, an applicant may receive no more than 16 points total under both Subcriteria No. B.1 and B.2.

Subcriterion No. B.1— Implementing Renewable Energy Projects Related to Water Management and Delivery

Up to 16 points may be awarded for projects that include construction or installation of renewable energy components (e.g., hydroelectric units, solar-electric facilities, wind energy systems, or facilities that otherwise enable the use of renewable energy). Projects such as small-scale solar resulting in minimal energy savings or production will be considered under Subcriterion No. B.2 below.

This AMI Project does not include renewable energy components.

AND/OR

Subcriterion No. 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 management project (e.g., reduced pumping).

- **Please provide sufficient detail supporting the calculation of any energy savings expected to result from water conservation improvements. If quantifiable energy savings are expected to result from water conservation improvements, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt hours per year.**

Based on the publication "California's Water – Energy Relationship" prepared by the California Energy Commission (November 2005, page 51), the amount of electrical energy required to transfer 1 acre-foot of water from northern California (State Water Project) to an area just north of the District requires 3,000 kWh. The same publication also identifies 2,000 kWh for each acre-foot of water that is imported from the Colorado River to southern California. Using an assumed 50-50 split of water sources the amount of power per AF required to transfer the water is 2,500 kilowatt-hours per AF (kWh/AF) for a total of 7,500,000 kWh/year. "Energy Down the Drain: The Hidden Costs of California's Water Supply," by the National Resources Defense Council indicates that the amount of energy used to deliver water from the State Water Project to Southern California over the Tehachapi Mountains is equivalent to one-third of the total average household electric use in the region. This does not include the energy required to import water to Southern California from the Colorado River Aqueduct, and any reduction in water loss and overall consumption would reduce the overall energy consumption from system operations.

In addition to the 2,500 kWh/AF required for conveyance and pumping of State Water Project and Colorado River Aqueduct imported water the District, the District uses additional energy to distribute that water. The District serves water at elevations from sea level to 1,100 feet above sea level. Due to the variation in topography pumping is required to move this water throughout the system. To pump the imported water for distribution is an additional 300 kWh/AF based on actual energy usage provided by District staff. Therefore, a total of 2,800 kWh/AF of energy is used to distribute the water within the service area. A reduction in consumption by 400 AFY due to increased water use efficiency and decreased water losses could result in a savings of approximately 1,120,000 kWh/year on the potable water system.

- **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?**

The District maintains 8,633 service connections and 135 miles of distribution pipelines, ranging in diameter from 4 to 16 inches. Transmission lines that bring imported water to the District include the Aufdenkamp and Coast Supply transmission lines, which range from 24 to 42 inches in diameter. Water supply, currently all potable, is received through two Metropolitan Water District of Southern California connections: CM-1A and CM12. CM-1A is located outside the District service area near Pacific Coast Highway and provides water to the 200 pressure zone with an average flow of 1,006 gallons per minute (gpm). CM-12 is located outside the District service area in the City of Irvine and provides water to the 400 pressure zone through the 42"/36" Aufdenkamp Transmission Main with an average flow of 3,493 gpm.

The District also maintains 21 storage reservoirs with a total storage capacity of 33.5 million gallons within five pressure zones: 200, 400, 600, 800 and 1000, plus two supplemental pressure zones that are boosted from the 800 pressure zone and 1000 pressure zone. The 200 pressure zone has the largest demand. These reservoirs are used for daily fluctuations in demand while providing approximately 10 days of water to the community in the event of an emergency. District staff operates and maintains 36 pumps in 14 pumping stations. There are 14 pump stations that supply water to the 400, 600, 800, and 1000 pressure zones and 18 pressure reduction stations.

The proposed Project would positively impact the current pumping requirements by reducing the need to pump 400 AFY of imported water. This results in an avoided purchase cost and energy for conveyance for imported water. Conserving 400 AFY of imported water allows 1,120,000 kWh/year of energy to remain unused. Conserving energy results in reducing greenhouse gas (carbon) emissions. Carbon emission estimates are 0.61 lbs. of CO2/kWh based on the United States Environmental Protection Agency's 9th edition of eGRID, "Year 2010 eGRID Subregion Emissions - Greenhouse Gases". By offsetting 400 AFY of imported water, the Project will avoid GHG emissions of approximately 683,200 pounds of CO2 per year. Over the 20-year lifespan of the AMI Project, this totals approximately 13,664,000 pounds of avoided carbon emissions. The AMI Project will reduce imported pumping requirements by offsetting importation of 400 AFY of water.

- **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.**

Not applicable. The District doesn't divert water.

- **Does the calculation include the energy required to treat the water?**

Yes, however the District performs very minimal treatment to the water and 95% of the total energy usage is for pumping,

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

Not only would the installation of AMI help reduce energy consumption due to decreased water loss and consumption, it would also benefit the overall energy consumption by eliminating energy costs associated with fuel costs. AMI would eliminate the need for field customer service representatives to drive throughout the service area collecting meter readings each month, resulting in an estimated fuel savings of approximately 615 gallons each year, in addition to savings on truck maintenance.

The District typically uses vehicles (fleet) at a rate of approximately 18,000 miles per year for meter readings and verifications. Estimating 22 miles per gallon (mpg), this amounts to approximately 820 gallons of fuel per year. The District expects to still have some usage of these vehicles but the usage is anticipated to be reduced to 25%. Therefore, it is expected that the District will save 75% of 820 gallons or about 615 gallons per year.

The U.S. Environmental Protection Agency (EPA) indicates that 19.6 pounds of carbon emissions are produced for every gallon of gasoline burned. By reducing the amount of gasoline used annually by 615 gallons, the District would eliminate 12,054 pounds of carbon emissions each year.

- **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).**

Not applicable.

Evaluation Criterion C: Benefits to Endangered Species (12 points)

Up to 12 points may be awarded for projects that will benefit federally-recognized candidate species or up to 12 points may be awarded for projects expected to accelerate the recovery of threatened or endangered species, or addressing designated critical habitat.

For projects that will directly benefit *federally-recognized candidate species*, please include the following elements:

- **What is the relationship of the species to water supply?**

The District's water supply consists solely of imported water obtained from Municipal Water District of Orange County (MWDOC), via Metropolitan Water District of Southern California (MWD). MWD typically blends supplies from its Colorado River Aqueduct with water allocated from the State Water Project before delivery to the District. As the AMI Project seeks to offset imported water deliveries to the District, benefits also include alleviating stress on the Bay-Delta habitat. Rationing water supplies received from the Bay-Delta helps limit the ecological impact of importing water. Twenty-nine known species of fish once populated the estuary and currently twelve of those species are considered gone or threatened by extinction. The Bay-Delta is also home to the Delta Smelt, which is a protected species through a 2007 court order. With a reduction in this imported water demand, the impact on the Delta Smelt, Salmon and other species currently impacted by water pumping activities, will be alleviated to the extent of the AMI Project.

- **What is the extent to which the proposed project would reduce the likelihood of listing or would otherwise improve the status of the species?**

The AMI Project improves the status of the listed species by making more water available in the Bay-Delta to support the species and their habitats. Approximately 4,300 AFY of water is moved from the northern California Bay-Delta area through the State Water Project to meet this area's demand for water. With a reduction in this imported water demand, the impact on the Delta Smelt, Salmon, and other species currently impacted by water pumping activities will be alleviated to the extent of the AMI Project. Any reduction in water use from the State Water Project for this region has a positive impact on the species in and around the Bay-Delta area.

For projects that will directly accelerate the recovery of *threatened or endangered species or address designated critical habitats*, please include the following elements:
(1) How is the species adversely affected by a Reclamation project?

Listed threatened or endangered species or designated critical habitat located in the Bay-Delta are adversely affected by the State Water Project and imported water. When water is delivered from the Bay-Delta there is less available to support its habitats. There is a negative ecological impact on the Bay-Delta region as a result of importing water from the region. An example of this is the negative impact on the Delta Smelt which, due to its one-year life cycle and relatively low reproductive rate, is highly susceptible to changes in the environmental conditions of its native habitat. The Delta Smelt

has been considered a 'canary in the coal mine' since reductions in its population are an indicator of deterioration conditions throughout the entire Bay-Delta ecosystem. It has been observed that the Delta Smelt population does better when outflow is allowed to flow downstream and create a nursery habitat for Delta smelt in Suisun Bay. The species' habitat, life cycle, and reproduction rates are adversely affected by water imported via the State Water Project.

(2) Is the species subject to a recovery plan or conservation plan under the ESA?

Yes, the species is subject to a recovery plan under the ESA. The Delta Smelt was included in the Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes initially approved in November 1996. The Delta Smelt was also designated as a protected species through a 2007 court order.

(3) What is the extent to which the proposed project would reduce the likelihood of listing or would otherwise improve the status of the species?

The District's water supply consists solely of imported water obtained from MWDOC via MWD. MWD typically blends supplies from its Colorado River Aqueduct with water allocated from the State Water Project before delivery to the District. As the AMI Project seeks to offset imported water deliveries to the District, benefits include alleviating stress on the Bay-Delta Habitat. Decreasing water supplies received from the Bay-Delta help reduce negative ecological impacts triggered by water exportation from the area.

Since 100% of the District's water supply is imported water from the Colorado River and State Water Project, the proposed AMI Project will greatly improve the status of the species in the Bay-Delta by generating more local supply through conservation measures. Twenty-nine known species of fish once populated the estuary and currently twelve of those species are considered gone or threatened by extinction. Therefore, reductions in imported water mitigate negative environmental impacts on the Bay-Delta.

Evaluation Criterion D: Water Marketing (12 points)

Up to 12 points may be awarded for projects that propose water marketing elements, with maximum points for projects that establish a new water market.

(1) Estimated amount of water to be marketed

As a result of the AMI Project, approximately 400 AFY will be conserved by customers. The customers/ water use types are discussed in Subcriterion No. A.1.

(2) A detailed description of the mechanism through which water will be marketed (e.g., individual sale, contribution to an existing market, the creation of a new water market, or construction of a recharge facility)

The District's supply is currently 100% imported water from MWDOC via MWD. The implementation of the AMI Project will make available up to 400 AFY or 8,000 AF over the 20-year life of the AMI Project. Any additional water supply that becomes available results in reduced dependence on imported water.

The District water market is assured since the pricing of State Water Project and other imported water supplies stimulates increased usage of local markets.

(3) Number of users, types of water use, etc. in the water market

The District has approximately 8,633 service connections for its nearly 21,000 residents and businesses, including the sale of water to the Emerald Bay Service District (approximately 500 connections serving 326 AFY). The District has the following uses: single-family residential, multi-family residential, commercial (includes industrial, hotels, and institutional/government), landscape and mixed uses (includes residential with commercial and other use). All of the District's water supply is potable water imported via MWDCO and MWD, with an average water demand of 4,300 AFY.

(4) A description of any legal issues pertaining to water marketing (e.g., restrictions under reclamation law or contracts, individual project authorities, or State water laws)

There are no legal issues pertaining to the marketing of water supplies through the AMI Project.

(5) Estimated duration of the water market

The District anticipates a 20-year life span for the metering equipment installed, which will provide approximately 8,000 AF of saved water within the District's service area that will be available for the water market.

Evaluation Criterion E: Other Contributions to Water Supply Sustainability (14 points)

Up to 14 points may be awarded for projects that contribute to a more sustainable water supply. *This criterion is intended to provide an opportunity for the applicant to explain how the project relates to a completed* ***WaterSMART Basin Study,*** *how the project could expedite future* ***on-farm improvements,*** *and/or how the project will provide* ***other benefits to water supply sustainability*** *within the basin. An applicant may receive the maximum 14 points under this criterion based on discussion of one or more of the numbered sections below.*

Subcriterion E.1 Addressing Adaptation Strategies in a WaterSMART Basin Study.

Proposals that provide a detailed description of how a project is addressing an adaptation strategy specifically identified in a completed Basin Study (i.e., a strategy to mitigate the impacts of water shortages resulting from climate change, drought, increased demands, or other causes) may receive maximum points under this criterion. Applicants should provide as much detail as possible about the relationship of the proposed project to the adaptation strategy identified in the Basin Study, including, but not limited to, the following:

- **Identify the specific WaterSMART Basin Study where this adaptation strategy was developed. Describe in detail the adaptation strategy that will be implemented through this WaterSMART Grant project, and how the proposed WaterSMART Grant project would help implement the adaptation strategy.**

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. As the District is completely reliant on imported water sources, availability of water supply from the State Water Project and Colorado River Aqueduct are critical. One of the primary adaptation strategies identified in the Basin Study included water use efficiency and reuse. The AMI Project would help

increase water use efficiency of potable water. Greater water use efficiency would reduce the stress on the system and its limited water supply.

- **Describe how the adaptation strategy and proposed WaterSMART Grant project will address the imbalance between water supply and demand identified by the Basin Study.**

The Basin Study's portfolio includes in Chapter 3 an adaptation strategy for municipal water conservation and reuse, and the proposed WaterSMART Grant Project will address the imbalance between water supply and demand identified in the Basin Study by reducing the District's demand on imported water from the Colorado River and State Water Project. Imported water supplies for Orange County are uncertain due to periodic droughts in northern California and the Colorado River Basin, court decisions related to Bay Delta endangered species, implementation of the terms of the Quantification Settlement Agreement for Colorado River water, and environmental concerns affecting delivery of Owens Valley water. Changing demographics and climate variability present additional long-term challenges to an adequate water supply. Various Orange County area water management agencies, such as the District, are actively pursuing strategies for developing local water resources. The AMI Project will implement significant water conservation measures to assist with water savings for the region. The AMI Project contributes to a sustainable water supply within the District's service area and provides an overarching benefit to the region.

- **Identify the applicant's level of involvement in the Basin Study (e.g., cost-share partner, participating stakeholder, etc.).**

The District is not directly involved in the Basin Study, however MWD is involved and represents its imported water customers, including the District. MWD's involvement reflects the Coastal Southern California region. Being heavily dependent on the Colorado River via MWD supply, the District's water demand reduction actions will directly impact the water supply and demand data in the Basin Study. The District is very interested in working together with Reclamation to identify positive solutions such as the AMI Project and to implement them to meet the water supply challenges that lie ahead.

- **Describe whether the project will result in further collaboration among Basin Study partners.**

The AMI Project may result in further collaboration between MWD and the District. Because the Basin Study Partners include the State of California, there is likely to be ongoing collaboration with the state, regional, and local agencies to implement and support the Basin Study. If awarded funding, the District would work closely with Reclamation and would collaborate more directly with state representatives located in the Lower Colorado Region to manage water supply. The region has collaborated with Reclamation on an Ocean Desalination Project in the past, as listed in the Background Data section of this proposal. If the District's AMI Project is awarded funding, further collaboration with Reclamation will occur.

Subcriterion E.2: Expediting Future On-Farm Irrigation Improvements

Points may be awarded projects that describe in detail how they will directly expedite future on-farm irrigation improvements for, including future on-farm improvements that may be eligible for NRCS funding. Please address the following:

Not Applicable.

Subcriterion E.3: Other Water Supply Sustainability Benefits

Up to 14 points may be awarded for projects that will build long-term drought resilience in an area affected by drought.

If the proposed project will make water available to alleviate water supply shortages resulting from drought, please address the following:

- **Will the project make water available to alleviate water supply shortages resulting from drought?**
    - **Explain in detail the existing or recent drought conditions in the project area. Describe the impacts that are occurring now or are expected to occur as a result of drought conditions.**

The proposed AMI Project will make 400 AFY of imported water available, or an estimated 8,000 AF over the AMI Project's 20-year lifetime, thereby reducing imported water demand (from the State Water Project and Colorado River Aqueduct) by that same amount during the current drought's water supply shortages. Since the District's water supply is 100% imported water from the State Water Project and Colorado River Aqueduct systems, water conserved results in less imported water transported from the State Water Project and Colorado River Aqueduct which allows more water to be available for the habitats within those resources. The Project will reduce imported water demands in the long term.

California is currently experiencing a historic drought that is affecting the entire state, and these conditions are likely to continue into the foreseeable future. California's drought conditions have been severe in the Project area. Governor Brown's declaration of a drought emergency on January 17, 2014, resulted in the District immediately issuing news releases and notices to their service area customers to reduce water use up to 20%. California has experienced dry years and droughts from 2007 to 2011 and from 2013 to the present, and this has placed an immense strain on water supplies resulting some of the lowest water storage levels in history. Improvements in water use efficiency will free up additional supply to help address shortages elsewhere.

In response to the lowest Sierra snowpack in recorded history and the ongoing severe drought conditions, Governor Brown signed Executive Order B-29-15 on April 1, 2015 calling for statewide mandatory water reductions to assist California in becoming more drought resilient. The Governor directed the State Water Resources Control Board to implement mandatory water reductions in cities and towns across California to reduce water usage by 25 percent. On May 5, 2015 the CA State Water Resources Control Board (SWRCB) adopted an emergency regulation requiring an immediate 25% reduction in overall potable urban water use statewide in accordance with Gov. Jerry Brown's Executive Order issued on April 1, 2015. To reduce water use by 25% statewide, the regulation adopted by the State Board places each urban water supplier into one of eight tiers which are assigned a conservation standard, ranging between 4% and 36%. On November 13, 2015, Governor Brown issued Executive Order B-36-15 (EO B-36-15) that calls for an extension of restrictions to urban potable water usage until October 31, 2016, should drought conditions persist through January 2016. EO B-36-15 is the fifth in a series of Executive Orders by Governor Brown on actions necessary to address California's severe drought conditions, which directed the State Water Board to implement

mandatory water reductions in urban areas to reduce potable urban water usage by 25 percent statewide. Most recently, the State Water Resources Control Board adjusted the water reduction percentage to 22 percent based on a variety of hydrologic conditions.

- **Describe the severity and duration of drought conditions in the project area.**

The results of the drought conditions can be seen throughout the South Orange County region through the increased implementation of local supply development projects and conservation measures and ordinances. With only one wet year in 2011, the region is in the middle of yet another multiple-year drought. Although 2016 is projected to be a wet year, as noted on the District's website, 2015 was the fourth consecutive year of one of the worst droughts in California's history. 2014 was the hottest year and 2013 was the driest year on record in the state. Due to these unprecedented hot and dry conditions, nearly half the water stored in the regions reservoirs has been used and one wet year will not make up for the severe water shortage conditions.

While the District and its customers have taken significant steps over the years to reduce water use, continued effort is necessary in order to extend the State's diminishing water supplies and meet the current mandatory 25 percent reduction and the coming 22 percent reduction. Beginning December 1, 2015, District customers must limit outdoor watering to one day per week (Mondays only) and only before 8 a.m. or after 8 p.m. In addition, all District customers must adhere to prohibited uses of water. The District's goal is to help customers achieve compliance through education and assistance. Expanded rebate programs through MWD and the District's free Waterwise House Call are available to all eligible customers. Many of the strategic reliability measures implemented by MWD and the local water purveyors have helped to protect the region from rationing or other severe conservation measures thus far.

- **Describe how the water source that is the focus of this project (river, aquifer, or other source of supply) is impacted by drought.**

The water source for the District's proposed Project, as well its entire service area, comes from imported water. The current drought and anticipated future drought conditions make imported water supplies unreliable with looming shortfalls in imported water supply. The cost of imported water has also increased due to its limited supply. On April 14, 2015, the MWD Board voted to impose a Level 3 allocation starting in July for its wholesale water users, including MWDOC, from whom the Districts receives its imported water supply. While numbers will vary among agencies based on local conditions, this is roughly a 15% reduction in wholesale water use on a regional level and establishes a surcharge of roughly four times the normal price of an acre foot of water for use beyond the allocated amount. Funds collected from the surcharge will go toward additional conservation. The allocation plan is one tool MWD will be using to support the Governor's call for a 25% reduction in urban water use statewide, along with conservation programs, rebates, accelerated state funding for projects, and enforcement actions. This AMI Project will implement much needed water conservation to reduce imported water demand. The 400 AFY of water savings, totaling an estimated 8,000 AF of lifetime water savings, will reduce imported water needs. The District is currently 100 percent reliant on imported water supplies and therefore the District's entire water supply is threatened by current drought conditions. The AMI Project is needed to address the dire situation of limited imported water supplies.

- **Provide a detailed explanation of how the proposed WaterSMART Grant project will improve the reliability of water supplies during times of drought.** *For example, will the proposed project prevent the loss of permanent crops and/or minimize economic losses from drought conditions? Will the project improve the reliability of water supplies for people, agriculture, and/or the environment during times of drought? In accordance with those requirements, project proposals requesting compensation for economic losses resulting from drought, and proposals for the purchase of water are not eligible for funding under this program.*

Water shortages have massive impacts with few solutions that can be immediately implemented to mitigate them. This has increased the immediacy of local resource development and increasingly aggressive water conservation projects and programs in the District's service area. The proposed AMI Project will improve the reliability of water supplies during times of drought by conserving 400 AFY for an estimated 8,000 AF of lifetime water savings and thereby reducing imported water demand by that same amount. Since the District's water supply is 100% imported water from the State Water Project and Colorado River Aqueduct systems, water conserved results in less imported water transported from the State Water Project and Colorado River Aqueduct which allows more water to be available for the habitats within those resources. In addition, the associated costs and energy required to deliver 400 AFY of imported water to the District is saved, which results in less financial impact to the District and less environmental impact from greenhouse gases. The AMI Project will reduce imported water demands in the long term.

The proposed AMI Project will most certainly prevent the loss of permanent crops and minimize economic losses from drought conditions. The AMI Project will improve the reliability of water supplies from both the State Water Project and the Colorado River Aqueduct, which would ultimately benefit people, agriculture, and the environment associated with both of these water supply sources. The District is committed to the collaboration and maintenance of regional and local partnerships to enhance water supply reliability by promoting a regional common goal and adding flexibility to water portfolios and distribution systems. The AMI Project would provide a major step forward in contributing towards this goal. The AMI Project, if funded, could result in an additional availability of approximately 400 AFY of water that would otherwise be lost and unavailable to the District and the South Orange County region.

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. All of these factors are critical for ensuring water supply sustainability in the future. The proposed AMI Project would cost $375 per acre foot for a 20-year lifetime. This is a very small price to pay, given the increasing costs of imported water and the severe water supply challenges that Southern California constantly faces.

Integrating system wide water conservation measures is critical for meeting water supply demands. The AMI Project is also needed to ensure Disadvantaged Communities (DACs) have a reliable potable water supply. Although DACs do not reside in the District's service area, the South Orange County region includes DACs, including areas in the Cities of San Juan Capistrano and Laguna Woods, as shown in Figure 2. The South Orange County region is highly reliant on imported water supply, with approximately 70% of its water supply coming from imported sources. The proposed AMI Project assists in reducing the region's reliance on imported water supply through saving 400 AFY.

- **Will the project make water available to address a specific concern? For example:**

  - **Will the project directly address a heightened competition for finite water supplies and over-allocation (e.g., population growth)?**

The AMI Project will directly address a heightened competition for finite water supplies and over-allocation within MWD's service area by saving approximately 400 AFY, or 8,000 AF over the lifetime of the AMI Project. The District is 100% reliant on imported water from MWD and MWDOC. With nearly 19 million people in MWD's service area, Southern California is heavily reliant on imported water supplies to meet demands. Strategies to reduce this reliance are sought in various ways through local supply development and conservation. The proposed AMI Project will help reduce dependence on imported water supplies that are more expensive and more energy intensive. In addition, imported water represents a supply that is constrained by climatic variability and heightened competition for its finite supply. The Program will result in measurable water conservation that reduces the District's dependency on imported supply.

The AMI Project will help reduce competition for limited water supplies through the Delta and the Colorado River Basin, promote increased water supply reliability, and ultimately allow more water to be available within the region and improve the overall water supply situation and health within the region. It was forecasted by Reclamation that projected demands would exceed available supply in the Colorado River, and in order to reduce the supply gap, increased conservation and water use efficiency measures would need to be taken.

The AMI Project increases local water supply reliability by reducing the need for potable water and thereby putting existing potable water supplies to greater beneficial use. Further implementation of water conservation measures to meet non-potable demands is a critical component to improving Basin health and water supply reliability.

  - **Describe how the water source that is the focus of this project (river, aquifer, or other source of supply) is impacted by climate variation**.

The source of water for this AMI Project is imported water that would be conserved through the AMI Project implementation. California faces unmatched drought conditions in 2015 after recording the hottest year on record in 2014 and the driest year ever recorded in 2013. 2015 had some of the warmest and driest months on record, including a record low snowpack in the Sierra Nevada. Today, 27 million Californians are living in areas experiencing exceptional drought, according to the U.S. Drought Monitor. For the Southland, MWD's deliveries from Northern California through the State Water Project are currently at just 20 percent of its contracted amount. The SWP typically provides about a third of Southern California's water. Storage in the district's other supply source—the Colorado River—stands at less than 50 percent of capacity after 15 drought years in the Southwest. Imported water is impacted by climate variation by being greatly limited during the current and projected drought conditions. Climate variation presents unpredictable weather patterns and unreliable supplies of water. Therefore, the reliability of imported water availability has been significantly reduced.

As the drought continues and with State Water Project allocations held at only 5%, local and imported supply stores are being depleted. This may result in the need for local supply agencies to implement

mandatory rationing to limit potable demands. Reducing the demand on potable supplies reduces the dependency on imported supplies.

- **Will the project help to address an issue that could potentially result in an interruption to the water supply if unresolved?**

This AMI Project will help address the issue of threatened water reliability for the South Orange County region by conserving 400 AFY of imported potable water. The District is 100% reliant on imported water, while the region is 80% dependent on imported water. Imported pipelines cross five faults over 200 times, poses a high vulnerability to the region during times of drought, earthquake, or other catastrophic event. The 2004/2013 South Orange County Reliability Studies identified following Risks: Emergency shutdowns of outside facilities, Prolonged drought, and Lack of local project implementation. By implementing the AMI Project, approximately 8,000 AFY of imported will be saved over the lifetime of the AMI Project, thereby decreasing the region's imported water dependency, and increasing local reliability.

- **Will the project make additional water available for Indian tribes?**

No, the Project will not make additional water available for Indian tribes.

- **Will the project make water available for rural or economically disadvantaged communities?**

Yes, the AMI Project will indirectly make water available for economically disadvantaged communities. The AMI Project will conserve 400 AFY for an estimated 8,000 AF of lifetime water savings of potable water thereby making that same amount of potable water available to serve Disadvantaged Communities (DACs) within the South Orange County region. The AMI Project will help ensure DACs have a reliable potable water supply, as shown in orange in Figure 2 below. The AMI Project will increase regional supply reliability, decrease water consumption, and decrease energy needed for supplying and transporting water.

- **Does the project promote and encourage collaboration among parties?**

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

Yes, there is widespread support for the AMI Project from MWDOC and other members of the South Orange County region, as it aims to enhance water reliability for the region. The City of Laguna Beach, located within the District's service area, fully supports efforts to enhance water use efficiency. The AMI Project partner, Emerald Bay Service District, also supports the AMI Project and has committed funding to implement the AMI Project to reduce water loss and increase water conservation.

The AMI Project will improve the reliability of water supplies from both the State Water Project and the Colorado River Aqueduct, which would ultimately benefit people, agriculture, and the environment associated with both of these water supply sources. The District is committed to the collaboration and maintenance of regional and local partnerships to enhance water supply reliability by promoting a regional common goal and adding flexibility to water portfolios and distribution systems. The AMI Project would provide a giant step forward in contributing towards this goal. This

AMI Project, if funded, could result in an additional availability of approximately 8,000 AF of water that would otherwise be lost and unavailable to the District and the region.

Letters of support were provided by the City of Laguna Beach, Village Laguna (a non-profit organization), and Charlotte and Alex Masarik (Laguna Beach residents). A letter of funding commitment and support was provided by the Emerald Bay Service District. The letters of support and commitment are included in Exhibit A. Village Laguna is a non-profit mutual benefit community organization whose mission statement is to preserve, enhance, and celebrate the unique village character and cultural heritage of Laguna Beach; to foster community spirit and address social needs; and to work toward restoring and protecting our ocean and coastal habitats.

Laguna Beach and adjacent South Orange County DACs

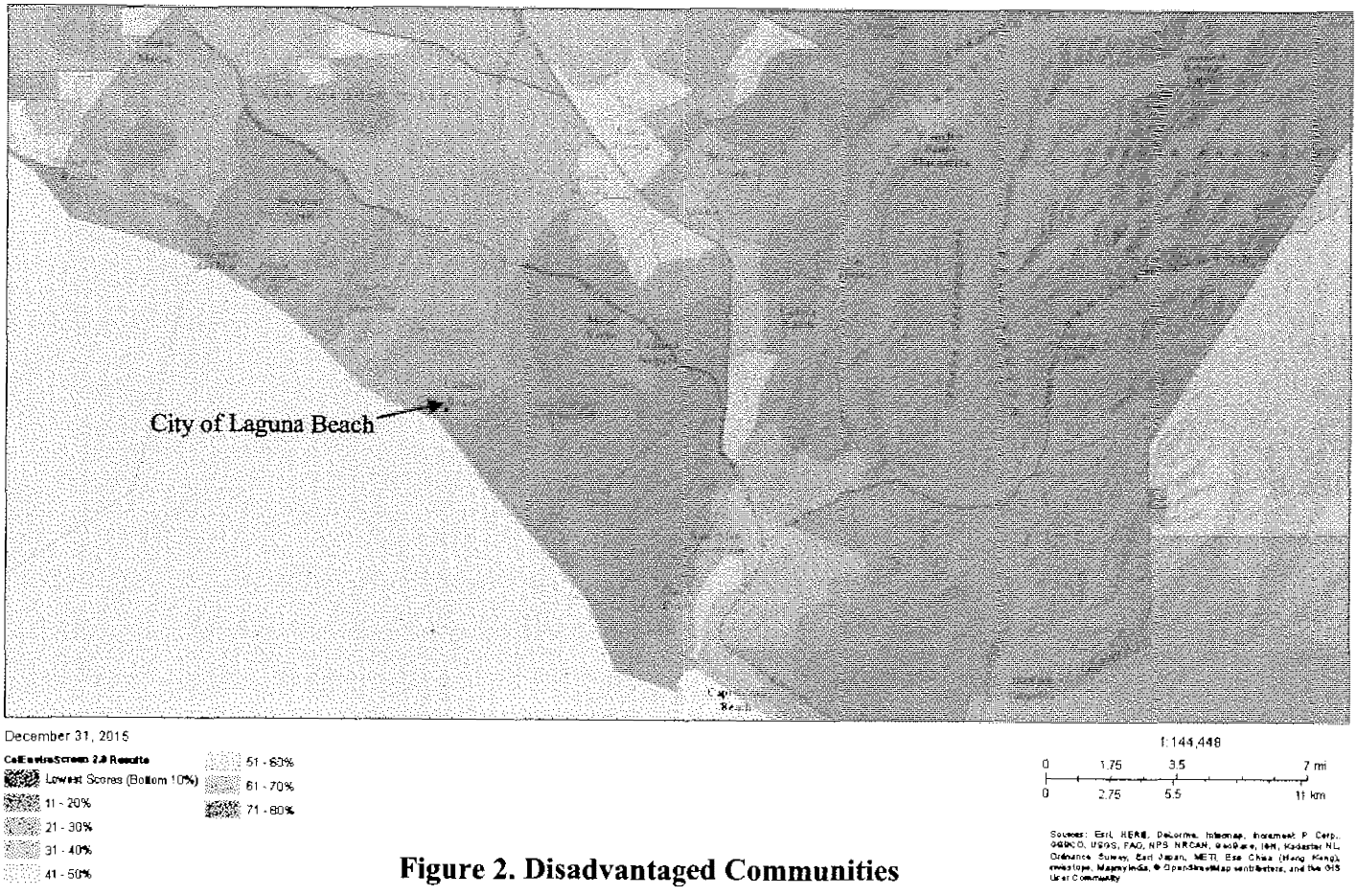

Figure 2. Disadvantaged Communities

- **What is the significance of the collaboration/support?**

The District is committed to the collaboration and maintenance of regional and local partnerships to enhance water supply reliability by promoting a regional common goal and adding flexibility to water portfolios and distribution systems. The AMI Project enhances its partnership with MWDOC to work towards greater regional water conservation efforts throughout Southern California. The District spoke with other local agencies who have implemented an AMI Project, including Moulton Niguel Water District, who was a recipient of the WaterSMART: Water and Energy Efficiency Grant from Reclamation in FY 2015. Moulton Niguel Water District is a MWDOC member agency and their

Project is similar in nature to the proposed AMI Project, therefore it aided the District in gaining insight about the AMI system.

The significance of the collaboration is that the AMI Project would provide a major step forward in contributing towards this goal. This AMI Project, if funded, could result in an additional availability of approximately 400 AFY of water that would otherwise be lost and unavailable to the District and the South Orange County region. Increased collaboration between the District and its customers will also demonstrate acknowledgement of the District's progressive approach to increasing conservation through improved water management.

- **Will the project help to prevent a water-related crisis or conflict?**

There is a water-related conflict within the Bay-Delta and the Colorado River (over limited water supplies) from which the District receives its imported water. This AMI Project will help to reduce the amount of water needed for import to southern California through the MWD system. In addition, this AMI Project may serve as a model to other agencies that are looking for ways to meet current emergency drought reductions. The District is 100% reliant on imported water supplies from the Bay-Delta and Colorado River Aqueduct. The South Orange County region is 80% reliant on the same imported water supplies. Therefore, the water-related conflict within the Bay-Delta and Colorado River is significant and implementing the AMI Project will assist in increasing local water reliability and decreasing imported water demand.

- **Is there frequently tension or litigation over water in the basin?**

The AMI Project is not located in a Basin, but receives water from the Colorado River Basin. Yes, there is frequently tension over the water in the Colorado River Basin.

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

Yes, there is the potential for future water conservation improvements by other water users. Water conservation and water management will be enhanced by the completion of this AMI Project. The AMI Project is market transformative and could become mainstream.

- **Will the project increase awareness of water and/or energy conservation and efficiency efforts?**

- **Will the project serve as an example of water and/or energy conservation and efficiency within a community?**

Yes, the AMI Project will increase awareness of water conservation and efficiency efforts and the AMI Project will serve as a model to other agencies. The implementation of Moulton Niguel Water District's AMI Project served an example for the District's proposed AMI Project due to its water and energy efficiency within the South Orange County community. Furthermore, the deployment of a Customer Portal will allow water users to have online access to their own real-time hourly water usage data, which will prompt District customers to make positive changes to their water use behaviors. This AMI Project provides a widespread example of water and energy conservation

and efficiency within the District's service area, including most of the City of Laguna Beach with the exception of the area known as South Laguna, as well as areas within unincorporated south Orange County communities. The proposed AMI Project will reduce real system losses and increase water use efficiency and conservation through the availability of near real-time data on water usage and daily water needs. The AMI Project will expand upon the District's efforts to promote water use efficiency by accomplishing the following: 1) More rapid identification and correction of water leaks (currently meters are read every other month allowing leaks to go undetected and water to be wasted for a month before being noticed), 2) More accurate meter readings compared to aging meters (half the District's meters are at replacement age and are likely erroneously registering lower water use than actual water use), and 3) Reduced potable water usage based on customer education through the AMI Project's data on water usage. With the current drought conditions and decreased reliability of imported water supply, conservation and water use efficiency are key factors for improving water sustainability within the service area. The benefits of the AMI Project will serve as an example for the community.

- **Will the project increase the capability of future water conservation or energy efficiency efforts for use by others?**

Yes, the AMI Project will increase the capability of future water conservation efforts for use by others by implementing AMI technologies that will remain in place for approximately 20 years. As the use of AMI technologies increases throughout the South Orange County region, cost to implement AMI technologies may become more affordable and therefore increase the capability of other agencies to implement AMI technologies or related programs. Implementation of the technologies will ensure users conserve water.

- **Does the project integrate water and energy components?**

The AMI Project is a water savings project and includes a reduced energy demand component. With reduced potable water demand, there will be less water required for pumping within the District's distribution systems resulting in less energy demand for pumping. The decrease in pumping will result in less energy usage within the District's service area, saving approximately 1,120,000 kWh/year of energy.

Evaluation Criterion F: Implementation and Results (10 points)

Up to 10 points may be awarded for the following:

Subcriterion No. F.1—Project Planning

Points may be awarded for proposals with planning efforts that provide support for the proposed project.

Does the project have a Water Conservation Plan, System Optimization Review (SOR), and/or district or geographic area drought contingency plans in place? Does the project relate/have a nexus to an adaptation strategy developed as part of a WaterSMART Basin Study)? Please self-certify, or provide copies of these plans where appropriate, to verify that such a plan is in place.

Provide the following information regarding project planning:

(1) Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, Basin Study, or other planning efforts done to determine the priority of this project in relation to other potential projects.

The District's Domestic Water Master Plan (May 2014) supports the AMI Project by identifying water use, water loss, and water conservation measures required to reduce water loss. In addition, the District's Strategic Plan Draft 2013-2023 identifies a goal to Continue Small Capital Replacement Program, including the replacement of meters, as well as investigate and implement Automated Meter Reading (AMR)/Advanced Metering Infrastructure (AMI) technologies to improve accuracy of billed data and to improve efficiency and effectiveness of the District's meter reading process. Lastly, the District's 2010 Urban Water Management Plan includes measures for system leaks and detection, as well as water conservation measures that support the proposed AMI Project.

(2) 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 AMI Project conforms to and meets the goals of the District's Domestic Waster Master Plan, including water conservation and capital improvement by replacing all of the District's meters with an upgraded AMI meter program. The AMI Project also meets the goals of the Strategic Plan Draft 2013-2023, such as the goal to Continue Small Capital Replacement Program with the replacement of meters and the implementation of the AMI technologies. The AMI Project helps meet the State's AB 32 goals by reducing greenhouse gas emissions as a result of the reduction in water treatment and delivery from imported water supplies. The AMI Project will avoid GHG emissions by conserving approximately 695,254 lbs. of CO2/year. The AMI Project also helps to meet the goals of the District's regional 2010 Urban Water Management Plan, California Water Plan Update 2009, the South Orange County Integrated Regional Water Management Plan (IRWMP) and MWDOC's Water Reliability Study. Water use efficiency and energy efficiency are two of the main goals in all of these plans that will enable the region to manage water supplies and resources for future generations. Lastly, as a member agency, the District is covered by MWDOC's Regional Urban Water Management Plan. MWDOC is a member of the CUWCC. The AMI Project supports the District's efforts to achieve their Conservation Demand Management Measure and Best Management Practice goals as well as the statewide goals of 20% reduction in urban water use by 2020 as mandated by SBX7-7.

Subcriterion No. F.2—Readiness to Proceed

Points may be awarded based upon the extent to which the proposed project is capable of proceeding upon entering into a financial assistance agreement.

Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. ***(Please note, under no circumstances may an applicant begin any ground-disturbing activities—including grading, clearing, and other preliminary activities— on a project before environmental compliance is complete and Reclamation explicitly authorizes work to proceed)***

The implementation plan for the AMI Project includes the tasks described in the **Technical Proposal: Technical Project Description.**

Estimated Program Schedule – The Table 4 below shows the AMI Project schedule with a grant award date of September 30, 2016, and completion of the AMI Project no later than September 15, 2017.

Table 4. Project Schedule with Dates

Project Schedule by Task	Start Date	End Date
Funding Award	9/30/16	9/30/16
Task 1: Conduct Bid Process to Select Qualified Contractor	9/1/15	4/31/16
Task 2: Identify Project Management Team and Work with Contractor to Develop Final Scope of Work	4/1/16	9/30/16
Task 3: Work with Contractor to Finalize Customer Communication Plan	7/1/16	9/15/16
Task 4: Install Infrastructure to Support AMI System	9/16/16	11/15/16
Task 5: Remove and Replace Existing meter system with AMI Network	11/16/16	4/15/17
Task 6: Final Implementation	4/16/17	9/15/17
Task 7. Performance Monitoring	10/1/17	9/15/17
Task 8. Grant Management and Reporting	10/1/17	9/15/17

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

There are no required permits anticipated for the AMI Project. All of the AMI Project work will be conducted at current meter locations and District property. All AMI Project-related approvals will be handled by the District and will be executed in a timely and efficient manner. Final approval from the District Board of Directors would be required prior to proceeding with the AMI Project.

Subcriterion No. F.3—Performance Measures
Points may be awarded based on the description and development of performance measures to quantify actual project benefits upon completion of the project.

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (e.g., water saved, marketed, or better managed, or energy saved). For more information calculating performance measure, see Section VIII.A.1 "FY2016 WaterSMART Water and Energy Efficiency Grants: Performance Measures."

Measuring Devices: a. Municipal Metering

For projects that install or replace existing municipal meters, the applicant should consider the following:

- Whether the project includes new meters where none existed previously or replaces existing meters.

The AMI Project replaces existing meters with AMI meters.

- Whether the project includes individual water user meters, main line meters, or both

The AMI Project includes individual water user meters only.

- If the project replaces existing meters with new meters, whether new technologies (automatic meter reading (AMR) or advanced metering infrastructure (AMI) meters) will be employed.

AMI meters will be employed.

- If main line meters are included, whether system leak detection may be improved.

Not applicable.

- Include a description of both pre and post-project rate structuring.

In an effort to go beyond water supply projects to increase water reliability, the District utilizes a water budget based rate structure to effectively manage demand, which was implemented in 2011. The District implemented a Tiered Rate Structure based on property specific Water Budgets to provide customers with an economic incentive to use water efficiently and pass on the higher costs associated with conservation programs and development of supplemental water sources to those who use water inefficiently. The Rate Structure is a form of an inclining block rate structure where a budget is allocated amongst the first blocks or tiers and is based on the estimated, efficient water needs of individual customers. The Rate Structure creates a pricing incentive to stay within the individually determined efficient water budget with rates steadily increasing into the upper tiers. The District's Rate Structure has two tiers and includes a commodity rate and bi-monthly service charge, which are described below.

In October 2014, the District's Board of Directors adopted a 5-year rate setting strategy (Rate Study/Tiered Rates Update). The first increase took effect November 1, 2014. All following increases become effective on and after November 1 of each year beginning January 2015. Rate increases over the subsequent four-year period go into effect without further rate hearings. The rates are subject to pass-through charges, which could include increased costs from our wholesale supplier and/or "penalties" or "surcharges" for water use that exceeds the water supply allocation imposed on the District by its wholesale supplier. The proposed AMI Project will be completed no later than September 30, 2018. Therefore, there will be no changes to the rate structure, as described, between pre and post AMI Project.

Water Commodity Charge - The District's commodity charge is based on water usage. The cost to the consumer for water is lower if less water is used and higher if more water is used. The commodity charge is metered in units. One unit equals 748 gallons.

Commodity Rate	**Multi-Year Rate**				
	2015	**2016**	**2017**	**2018**	**2019**
Tier 1 – Water Budget. All billed usage within Water Budget	$4.25	$4.61	$4.99	$5.39	$5.76
Tier 2 – Water Budget. Inefficient Use. All billed usage in excess of Water Budget	$7.21	$7.65	$8.13	$8.61	$9.09

Bi-monthly Service Charge - The District's service charge is levied against all customers in the

District on a bi-monthly basis based on the size of each meter on the customer's premises. The charge recovers costs associated with providing water to the serviced property, which do not vary with consumption. These costs include meter reading and billing customers for each bi-monthly period, maintenance of meters and service lines in the distribution system, administrative costs, water quality testing, and salaries and benefits.

Bi-Monthly Service Charge *(Based on meter size)*	**Multi-Year Rate**				
	2015	**2016**	**2017**	**2018**	**2019**
3/4-inch meter *(typical single-family residence)*	$27.57	$29.87	$32.36	$34.91	$37.36
1-inch meter	$68.92	$74.67	$80.91	$87.28	$93.39
1–1/2-inch meter	$137.85	$149.33	$161.82	$174.56	$186.79
2-inch meter	$220.56	$238.93	$258.91	$279.30	$298.79
3-inch meter	$413.55	$448.00	$485.45	$523.68	$560.36
6-inch meter	$1,378.49	$1,493.32	$1,618.18	$1,745.60	$1,867.87

A Water Budget is the amount of water a household or business requires each two-month billing period. The factors used to calculate a water budget depend on the type of service account held with the District. Below is a description of how the District developed Water Budgets for its various accounts.

Single Family: Water Budgets for single-family residential accounts include enough water for efficient indoor and outdoor use and are based on the following factors.

Indoor Water Use Factors

- Water use per person, per day. A 1997 American Water Works Association study showed that on average, a person uses about 60 gallons of water each day indoors. This number includes all indoor water use, such as showers and washing clothes, and is based on water efficient devices.
- Number of people in the household. The 2000 Census states that there are 2.1 people per household in the City of Laguna Beach. The District is allocating enough water for 3 people per single-family home.
- Number of days per billing cycle. Number of days, approximately 60, that you are being billed for service.

Outdoor Water Use Factors

- Landscaped area. The landscaped area is the amount of area on the property that is being irrigated. Pools and spas are also included in the landscaped area. County Assessor parcel data and Geographic Information System data (GIS) obtained from the City were used to determine the landscape area for your home.
- Evapotranspiration. The amount of water that is lost by soil each day due to evaporation and plant transpiration. For your water budget, historical rain data has been used.
- Plant factor. The plant factor is the amount of irrigation water required by a plant. Plant factors vary by the type of plant. For example, turf grasses have a plant factor between 0.6 to 0.8, while water efficient plants have a plant factor of only 0.3 to 0.4. Your allocation is calculated using a plant factor of 0.8.
- Irrigation efficiency. Irrigation efficiency measures how efficiently your irrigation system operates. Ideally, all irrigation systems would be 100 percent efficient. In reality, most systems have an irrigation efficiency factor of about 0.7. Your allocation is calculated using an efficiency factor of 0.7.

Multi-Family: Water Budgets for single meter Multi-family accounts (more than one family sharing one water meter) are based on a 3-year rolling historical average for each meter. Each business is unique and has water needs based on factors such as the type of business, number of employees, and the use of water for conducting business. Businesses are allocated water based on a 3-year rolling historical water use average.

Hotel Accounts: Hotel/Motel accounts are allotted water based on the number of guest rooms. The District is allocating 144 gallons per room based on a comprehensive study conducted by the Cornell University School of Hotel Administration, which found that a typical hotel utilizes 144 gallons of water per day for typical hotel use.

Irrigation Accounts: Water budgets for Irrigation only accounts are set according to the property's total square footage of irrigated area, evapotranspiration rate, plant factor, and irrigation efficiency.

More information including current rates is available on the District's website, at the following link: http://www.lbcwd.org/customer-service/water-budget-based-rate-structure

- If the installing meters will result in conserved water, please provide support for this determination (including, but not limited to, studies and previous projects).

The District provides data reports every two months on water production and consumption to identify and repair leaks. The following studies provide baseline data for the AMI Project: the District's Domestic Water Master Plan (May 2014) identifies water use, water loss, and water conservation measures required to reduce water loss; the District's Strategic Plan Draft 2013-2023 states that implementing an Automated Meter Reading (AMR)/Advanced Metering Infrastructure (AMI) technologies will improve accuracy of billed data and to improve efficiency and effectiveness of the District's meter reading process; the District's 2010 Urban Water Management Plan includes information on system leaks and detection, as well as water conservation measures that support the proposed AMI Project.

The District has a clear baseline of historical water distribution and billing data to compare with current and future records once AMI has been installed and the customer portal has been put into place. Analytical software is included as part of the AMI Project proposal, and this software will assist the District in analyzing the data collected as part of the AMI Project. For example, some of the software programs currently under evaluation have the capability to integrate water consumption data with GIS data to quickly assess any areas with potential leaks and determine the magnitude of the issue at hand. It is the goal of the District to equip District employees with the adequate tools and capability to not only monitor water production and consumption but also to analyze and evaluate solutions and follow-up actions for all factors that may contribute to water loss and decreased water use efficiency. Similarly, it is the goal of the District to provide tools and resources to the customers so that they can comprehensively understand their water usage patterns and have access to regular feedback on the effectiveness of any activities and efforts to reduce water usage in their homes and businesses.

- A logical scheme should be developed that compares before and after installation flow quantities and that accounts for leakage and other considerations. The site-specific water savings verification plan should be as detailed as possible and clearly state all assumptions and the relative level of accuracy expected. In addition, please provide details underlying any assumptions being

made in support of water savings estimates (e.g., residential users will reduce use once a more advanced billing structure is imposed).

The performance measures that will be used to quantify actual benefits upon completion of the AMI Project will include measures to quantify water savings, water better managed, and energy savings resulting from the installation of the newer, more technologically-advanced meters. Pre- and post-installation consumption measurements will be analyzed for all customers who are notified by the District that they have a leak and for all customers who view their flow data through the Customer Portal on the District's website. Water consumption at each of the 8,633 sites where the AMI units will be installed will be monitored over a 12-month period using monthly billing data. Post-installation water consumption for each of the AMI units will be compared against pre-installation consumption to verify water savings. The following table summarizes the performance measures of the AMI Project that will demonstrate and quantify actual benefits and effectiveness of the AMI Project. Water use monitoring will be provided to USBR throughout the reporting period and also included in the final report. Water use monitoring will continue beyond that timeframe to be able to make a fair assessment of the actual water savings from this AMI Project. The table below summarizes the Project Performance Measures.

Table 5 Project Performance Measures

AMI Project Performance Measures		
Performance Measure	Target	Measurement Tools and Methods
Water Savings – Reduction in Consumption	230 AFY	• Water consumption reported by the fixed network for each customer who is provided by the District with access to or who accesses independently real-time flow data produced by the new water metering units will be analyzed over a 12-month period both before and after initial exposure to the data. • Post-installation water consumption data will be compared against pre-installation consumption to verify water savings.
Water Better Managed - Water Loss Reduction	170 AFY	• Post-installation water consumption will be measured over a 12-month period following AMI installation to verify water better managed. • A water loss audit will be periodically conducted.
Energy Savings	From Water Savings: 1,120,000 kWh/year	• Water savings will be converted to energy savings using the calculation of 2,800 kWh/AF of water conserved.
Carbon Emissions Savings	683,200 lbs. of CO2/year from water savings and 12,054 lbs. CO2/year from reduced vehicle miles.	• Confirm the water savings resulting from the project in the "Water Savings" Project Performance Measure, and convert to carbon emissions using the calculation of required energy = 2,800 kWh/AF and CO2 emissions= 0.61 lbs. of CO2/kWh. • Verify reduced vehicle miles and estimate carbon emissions savings using 19.6 lbs. of CO2/gallon.

Subcriterion No. F.4—Reasonableness of Costs:

Please include information related to the total project cost, annual acre-feet conserved (or better managed), and the expected life of the improvement.

For all projects involving physical improvements, specify the expected life of the improvement in number of years and provide support for the expectation (e.g., manufacturer's guarantee, industry accepted life-expectancy, description of corrosion mitigation for ferrous pipe and fittings, etc.). Failure to provide this information may result in a reduced score for this section.

The industry accepted life-expectancy of the AMI Project components is 20 years. This life-expectancy is determined by both AMI industry standards and is also supported by "Go with the Flow of Advanced Meter Technology" in the October 2010 issue of the Water Technology Journal. As explained in Subcriterion No. A.1, the total AMI Project cost and water savings were calculated based on empirical data of similar projects and cost estimates from bid documents provided by contractors. The estimated total AMI Project cost is $3,000,000 for a savings of approximately 400 AFY.

The following provides a step by step explanation of these calculations:

Total Project Cost (Approximate) = $3,000,000

Annual Acre-Feet Conserved = 400 AFY

Improvement Life (years)* = 20 (*Expected useful life of the meters)

Energy Capacity (Savings)= 400AFY * 2,800 kWh/AF = 1,120,000 kWh/yr.
The AMI Project will increase energy efficiency by conserving water, which reduces the demand of imported water and thereby decreases the energy (and associated costs) required to transport imported water from the Colorado River and State Water Project to the District's service areas. Approximately 2,500 kilowatt-hours per AF (kWh/AF) is required for conveyance and pumping of State Water Project and Colorado River Aqueduct imported water the District receives from MWDOC. In addition, to pump the imported water from the basin for distribution is an additional 300 kWh/AF based on actual energy usage provided by District staff. Therefore, a total of 2,800 kWh/AF of energy is used to deliver imported water to the District. The Project will reduce the need to import water by 400 AFY.

Calculation:
$3,000,000/ (400 x 20) = $375/AF

Result:
The estimated cost over the 20-year life of the AMI Project is $375 per AF. It is anticipated that the AMI Project will provide 400 AFY, or 8,000 AF over the life of the AMI Project of imported water savings.

Evaluation Criterion G: Additional Non-Federal Funding (4 points)

*Up to **4 points** may be awarded to proposals that provide non-Federal funding in excess of 50 percent of the project costs. State the percentage of non-Federal funding provided.*

The Non-federal cost-share is 90% to be provided through cash contributions.

$ 2,700,000 Non-federal funding
$ 3,000,000 Total Project Cost
= 90%

Evaluation Criterion H: Connection to Reclamation Project Activities (4 points)
*Up to **4 points** may be awarded if the proposed project is in a basin with connections to Reclamation project activities. No points will be awarded for proposals without connection to a Reclamation project or Reclamation activity.*

(1) How is the proposed project connected to Reclamation project activities?

The proposed AMI Project is associated with the Colorado River Basin, and the District receives water from MWD via MWDOC, which currently relies on the Colorado River Aqueduct and the State Water Project as its primary sources of water. The AMI Project itself does not directly involve Reclamation project lands or Reclamation facilities, but it will increase the availability of the overall water supply through improvements in water use efficiency and conservation and ultimately benefit the Colorado River Basin.

Reclamation manages the Colorado River system from which MWD imports water. The District purchases 100% of its supply from MWD through MWDOC. Approximately 95% of the District's annual water supply is water imported from the Colorado River and the remaining 5% is imported from northern California via the State Water Project. Water savings associated with the AMI Project translate to more water remaining in these two fragile systems. The proposed AMI Project directly supports Reclamation's current efforts to further advance water use efficiency and conservation. The AMI Project benefits Reclamation because it reduces imported water supplies from the Colorado River and northern California.

(2) Does the applicant receive Reclamation project water?

Yes, the District receives a mixture of Colorado River water and State Water Project water through MWD and MWDOC.

(3) Is the project on Reclamation project lands or involving Reclamation facilities?

No, the AMI Project is neither on Reclamation lands nor involves Reclamation facilities.

(4) Is the project in the same basin as a Reclamation project or activity?

No, the AMI Project is not in the same basin as a Reclamation project or activity.

(5) Will the proposed work contribute water to a basin where a Reclamation project is located?

The water savings attained will be the result of reduced imports from the Bay- Delta and the Colorado River, thereby impacting the Colorado River Basin. By reducing the amount of water imported, this water in effect remains in the basin from which it originates, or is made available

to meet demands in other areas of the State. Any increase in water reliability and greater availability in overall water supply resulting from water use efficiency and conservation efforts would also help Reclamation in meeting the federal Indian trust responsibility, a legally enforceable fiduciary obligation on the part of the United States to protect tribal treaty rights, lands, assets, and resources, to the tribes.

(6) Will the project help Reclamation meet trust responsibilities to Tribes?

No, the AMI Project will not help Reclamation meet trust responsibility to Tribes as there is no direct impact on tribes in the Project area.

Performance Measures (included under Subcriterion No. F.3—Performance Measures)

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 must respond to 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. Additional information about environmental compliance is provided in Section IV.D.4. "Project Budget," under the discussion of "Environmental and Regulatory Compliance Costs," and in Section VIII.B., "Overview of Environmental and Cultural Resources Compliance Requirements."

(1) Will the 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.

No, the AMI Project involves an upgrade to existing meters and should pose no impact to the surrounding environment. The work will be performed on property that is considered already disturbed, and no further requirements are needed.

(2) 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 known species listed or proposed to be listed as a Federal endangered or threatened species, or designated critical habitats are within the AMI Project area.

(3) 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 project may have.

No, there are not wetlands or other surface waters inside the AMI Project boundaries that potentially fall under CWA jurisdiction as "waters of the United States." No associated impacts would occur and no mitigation is required.

(4) When was the water delivery system constructed?

The original water delivery system was built in 1925.

(5) Will the 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 AMI Project will not result in any modification of or effect to individual features of an irrigation system.

(6) 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.

There are no buildings, structures, or features listed or eligible for listing on the National Register of Historic Places within the AMI Project sites.

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

No.

(8) Will the project have a disproportionately high and adverse effect on low income or minority populations?

The AMI Project will not have a disproportionately high and adverse effect on low income or minority populations. The AMI Project has the potential to provide positive monetary benefits to low income and minority populations by identifying water inefficiencies within their community which, after installation of AMI, will potentially decrease the costs to that population.

(9) Will the project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

The AMI Project will not limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands.

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

No, the AMI Project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native species known to occur in the area.

Required Permits or Approvals

Applicants must state in the application whether any permits or approvals are required and explain the plan for obtaining such permits or approvals.

There are no required permits anticipated for the AMI Project. All of the AMI Project work will be conducted at current meter locations and District property. All Project-related approvals will be handled by the District and will be executed in a timely and efficient manner. Final approval from the District Board of Directors would be required prior to proceeding with the AMI Project.

Official Resolution

An official resolution meeting the requirements set forth above is mandatory.
An official resolution of the LBCWD Board of Directors is scheduled for review and adopted at the next meeting of the Board of Directors of January 21, 2016. The Resolution will be submitted following the Board Meeting and within 30 days after the application deadline or by February 19, 2016.

The resolution verifies the District's legal authority to enter into an agreement; the Board of Directors has reviewed and supports submittal of this application; the capability of the District to provide the amount of funding and in-kind contributions specified in the Funding Plan; and that the District will work cooperatively with Reclamation to meet established deadlines for entering into a cooperative agreement.

Project Budget

The complete AMI Project Budget includes a Funding Plan, Budget Proposal, Budget Narrative, and the SF 242 Budget Form.

Funding Plan and Letters of Commitment

The District will fund all non-Reclamation project costs. The District has allocated budget for the AMI Project, as included on page 8 of the District's 2015-2016 Operating Budget available online at the following link: http://www.lbcwd.org/home/showdocument?id=822. AMI Project funding will also be provided by Emerald Bay Service District; therefore, a letter of commitment is included in Exhibit A.

1. **Cost Share Contribution:** The District will provide its cost share in monetary (cash) contributions. The AMI Project is included in the Capital Budget and is funded by property taxes, office lease revenue, reserve storage fees, and interest income.

2. **In-kind Costs Incurred Before the Anticipated Project Start Date:** The District does not anticipate any in-kind costs prior to the project start date.

3. **Funding Partners:** Emerald Bay Service District, a community service district provides water from LBCWD through approximately 500 connections. LBCWD maintains all of the water pipelines and administers all billings, connections and disconnections.

4. **Funding Requests from other Federal Partners:** No other funding has been requested or received from other Federal partners.

5. **Pending Funding Requests:** There are no pending funding requests for the AMI Project.

Table 6 summarizes the funding sources for the AMI Project:

January 12, 2016

David Youngblood, PE
Manager of Engineering & Operations
Laguna Beach County Water District
306 Third Street
Laguna Beach, CA 92652

Re: Letter of Support for Funding Laguna Beach County Water District's Advanced Metering Infrastructure (AMI) to Enhance Water and Energy Efficiency Project grant application for the United States Department of the Interior, Bureau of Reclamation's WaterSMART: Water and Energy Efficiency Grants for Fiscal Year 2016 – FOA No. 16-FOA-DO-004.

Dear Mr. Youngblood:

We understand that the Laguna Beach County Water District (District) is submitting a WaterSMART: Water and Energy Efficiency Grant application for consideration by the United States Bureau of Reclamation for Fiscal Year 2016. This grant would help fund the **Advanced Metering Infrastructure to Enhance Water and Energy Efficiency Project,** also known as the AMI Meter Upgrade Project, as part of its long-term goal of water supply reliability and efficient water management. The District has been providing reliable, safe drinking water to its customers since 1925 and its service area includes most of the City of Laguna Beach. The City of Laguna Beach fully supports the Project and the District's efforts to enhance water use efficiency and local water supply reliability.

If you have any questions or need additional information regarding our support of this project, please do not hesitate to contact me by email at jpietig@lagunabeachcity.net or via telephone at 949-497-0704.

Sincerely,

John Pietig
City Manager

To preserve and enhance the unique village character of Laguna Beach

January 15, 2016

David Youngblood, PE
Manager of Engineering & Operations
Laguna Beach County Water District
306 Third Street
Laguna Beach, CA 92652
Dyoungblood@lbcwd.org;
(949) 494-1041 Office

Re: Letter of Support for Funding Laguna Beach County Water District's Advanced Metering Infrastructure (AMI) to Enhance Water and Energy Efficiency Project grant application for the United States Department of the Interior, Bureau of Reclamation's WaterSMART: Water and Energy Efficiency Grants for Fiscal Year 2016 – FOA No. 16-FOA-DO-004.

Dear Mr. Youngblood:

We understand that the Laguna Beach County Water District (District) is submitting a WaterSMART: Water and Energy Efficiency Grant application for consideration by the United States Bureau of Reclamation for Fiscal Year 2016. This grant would help fund the **Advanced Metering Infrastructure to Enhance Water and Energy Efficiency Project,** also known as the AMI Meter Upgrade Project, as part of its long-term goal of water supply reliability and efficient water management. The District has been providing reliable, safe drinking water to its customers since 1925 and its service area includes most of the City of Laguna Beach. Village Laguna fully supports the Project and the District's efforts to enhance water use efficiency and local water supply reliability.

If you have any questions or need additional information regarding our support of this project, please do not hesitate to contact me by email at johanna@felders.net or via telephone at 949-497-4525.

Sincerely,

Johanna Felder
President
Village Laguna

Friday, January 15th, 2016

David Youngblood, PE
Manager of Engineering & Operations
Laguna Beach County Water District
306 Third Street
Laguna Beach, CA 92652
Dyoungblood@lbcwd.org
(949) 494-1041 Office

Re: Letter of Support for Funding Laguna Beach County Water District's Advanced Metering Infrastructure (AMI) to Enhance Water and Energy Efficiency Project grant application for the United States Department of the Interior, Bureau of Reclamation's WaterSMART: Water and Energy Efficiency Grants for Fiscal Year 2016 – FOA No. 16-FOA-DO-004.

Dear Mr. Youngblood:

We understand that the Laguna Beach County Water District (District) is submitting a WaterSMART: Water and Energy Efficiency Grant application for consideration by the United States Bureau of Reclamation for Fiscal Year 2016. This grant would help fund the **Advanced Metering Infrastructure to Enhance Water and Energy Efficiency Project,** also known as the AMI Meter Upgrade Project, as part of its long-term goal of water supply reliability and efficient water management.

We strongly and fully support SMART Water Meters. As residential customers we had a serious water leak in our house last year that was not identified immediately and our water bill skyrocketed because of the LBCWD two-month billing system and aging water meters. LBCWD STAFF were extremely helpful at identifying the problem, but it would have saved us a lot of expense and more importantly conserved water if we had had SMART Water Meters with real-time information. We also believe Smart Water Meters customers tend to use less water, because they get more interested in their water consumption rather than waiting for a bill every two months.

Smart Water Meters provide better management of Water Conservation? Yes, we believe they positively affect the bottom line of water utilities by reducing energy consumption costs and increase management efficiency and thus would offset the loss of revenue from lower water sales. This factor is significant, because more than one-quarter of our water district's total costs are for energy to treat and pump the water? Need we tell you, of course not! Less wasted water equates to less wasted energy and costs. As conservationists, we look forward to all of Laguna Beach's water meters being replaced by SMART water meters.

Sincerely and with thanks,

Charlotte and Alex Masarik
761 Oak Street, Laguna Beach
949-494-1630
charlottemasarik@cox.net

Emerald Bay Service District

600 EMERALD BAY
LAGUNA BEACH, CALIFORNIA
92651
949-494-8571

January 7, 2016

David Youngblood, PE
Manager of Engineering & Operations
Laguna Beach County Water District
306 Third Street
Laguna Beach, CA 92652

Re: Letter of Commitment for Funding Laguna Beach County Water District's Advanced Metering Infrastructure (AMI) to Enhance Water and Energy Efficiency Project grant application for the United States Department of the Interior, Bureau of Reclamation's WaterSMART: Water and Energy Efficiency Grants for Fiscal Year 2016 - FOA No. 16-FOA-DO-004.

Dear Mr. Youngblood:

We understand that the Laguna Beach County Water District (LBCWD) is submitting a WaterSMART: Water and Energy Efficiency Grant application for consideration by the United States Bureau of Reclamation (USBR) for Fiscal Year 2016. This grant would help fund the Advanced Metering Infrastructure to Enhance Water and Energy Efficiency Project, also known as the AMI Meter Upgrade Project. We understand that LBCWD is the lead applicant for the grant and Emerald Bay Service District (EBSD), as project partner, will provide funding for the Project. This letter serves as a funding commitment for EBSD to provide funds in the amount of $300,000 for the Project pending final cost accounting. The funds will be available to the applicant on September 1, 2016. There are not any time constraints on the availability of funds.

The Emerald Bay Service District fully supports the Project and is excited to continue to work closely with LBCWD to enhance water use efficiency and local water supply reliability.

If you have any questions or need additional information regarding our funding commitment and support of this project, please do not hesitate to contact me by email at MDunbar@EBservicedistrict.com or via telephone at (949) 494-8572.

Sincerely,

Michael P. Dunbar

Michael Dunbar, P.E.
General Manger
Emerald Bay Service District