Advanced Metering Infrastructure Implementation Program Phase 2 Project

Grant Applicant:

City of Newport Beach
949 West 16th Street, Newport Beach, California 92663
Project Manager: Steffen Catron
Utilities Manager
Utilities Department
Email: SCatron@newportbeachca.gov
Phone: 949-718-3402

Submittal Date: March 19, 2019

Submitted to:
U.S. Department of the Interior, Bureau of Reclamation's
WaterSMART Grants: Water and Energy Efficiency
Grants for Fiscal Year 2019 for Funding Group 2

Table of Contents

MANDATORY FEDERAL FORMS

The following forms were submitted electronically via grants.gov: SF-424 Application for Federal Assistance, SF-424C Budget Information – Construction Programs, SF-424D Assurances – Construction Programs, and SF-LLL Disclosure of Lobbying Activities.

TECHNICAL PROPOSAL AND EVALUATION CRITERIA

Executive Summary

March 19, 2019
Mr. Steffen Catron, Project Manager
City of Newport Beach
Newport Beach, Orange County, California

The City of Newport Beach Utilities Department (City) is proposing the Advanced Metering Infrastructure (AMI) Implementation Program Phase 2 (Project) as part of its long-term goal of water supply reliability and efficient water management. The Phase 2 AMI Project includes the upgrade of 26,309 existing meters (including 25,467 manually read meters and 842 Automatic Meter Reading [AMR] vehicle drive-by read 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, and energy savings. Funding would be used to accomplish the following Phase 2 AMI Project activities: 1) Environmental compliance; 2) Equipment procurement (Mueller Systems' Mi.Net AMI system); 3) 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; 4) Integrate Mi.Host AMI Software with the City's MUNIS Customer Information System (CIS) Software from Tyler Technologies for Billing purposes, 5) Integrate Mi.Host AMI Software with Consumer Portal to provide a web-based consumer portal for use by the City's customers; and 6) Community outreach and customer communication. The AMI Project will allow the City to implement a full distribution system with AMI to provide hourly water usage information and high water usage and leak alerts that can be provided to customers. With the availability of actual water data, the City would monitor the effectiveness of AMI implementation through a before-and-after analysis of the data. The Phase 2 AMI Project builds upon the success of the current pilot program and will follow an initial implementation phase (Phase 1). Phase 1 will upgrade 250 meters, while the Phase 2 AMI Project will upgrade the remaining 26,309 meters. Phase 2 of the AMI Implementation Program would expand the program to include all 26,559 potable water accounts to include Mueller Systems' Mi.Net AMI System. **This grant application is to fund implementation of Phase 2 only (not Phase 1).** Phase 2 will result in quantifiable and sustainable water savings of 1,157.32 acre-feet per year (AFY). Deployment of the software, a Customer Portal, will allow water users with internet access to view their own real-time hourly water usage data. This will prompt 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, resulting in improved water management. The City depends on imported water for 25% of its potable water demands; conservation and water use efficiency are key factors in improving water sustainability within the region. The City receives surface water imported by the Metropolitan Water District of Southern California (MWD) through the Municipal Water District of Orange County (MWDOC). MWD imports water from the Colorado River Aqueduct (CRA) and the State Water Project (SWP), which draws water from the San Francisco-San Joaquin Bay Delta. The City's customers are committed to and have succeeded in maximizing water conservation. The AMI Project will expand upon the City's efforts to promote water use efficiency by accomplishing 1) faster identification and correction of water leaks (currently meters are read bi-monthly allowing leaks to go undetected and water to be wasted for up to two months

before being detected), 2) more accurate meter readings compared to aging meters (many of the City'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 water usage data. The City strives to be an example of water use efficiency and water conservation for other cities that depend heavily on imported water supplies. Current drought conditions and decreased reliability of imported water supply make conservation and water use efficiency critical for improving water sustainability.

Following the anticipated fall 2019 funding award, the AMI Project will begin immediately and be completed by August 1, 2022, within the 3-year timeframe.

The AMI Project is not located on a federal facility.

Background Data

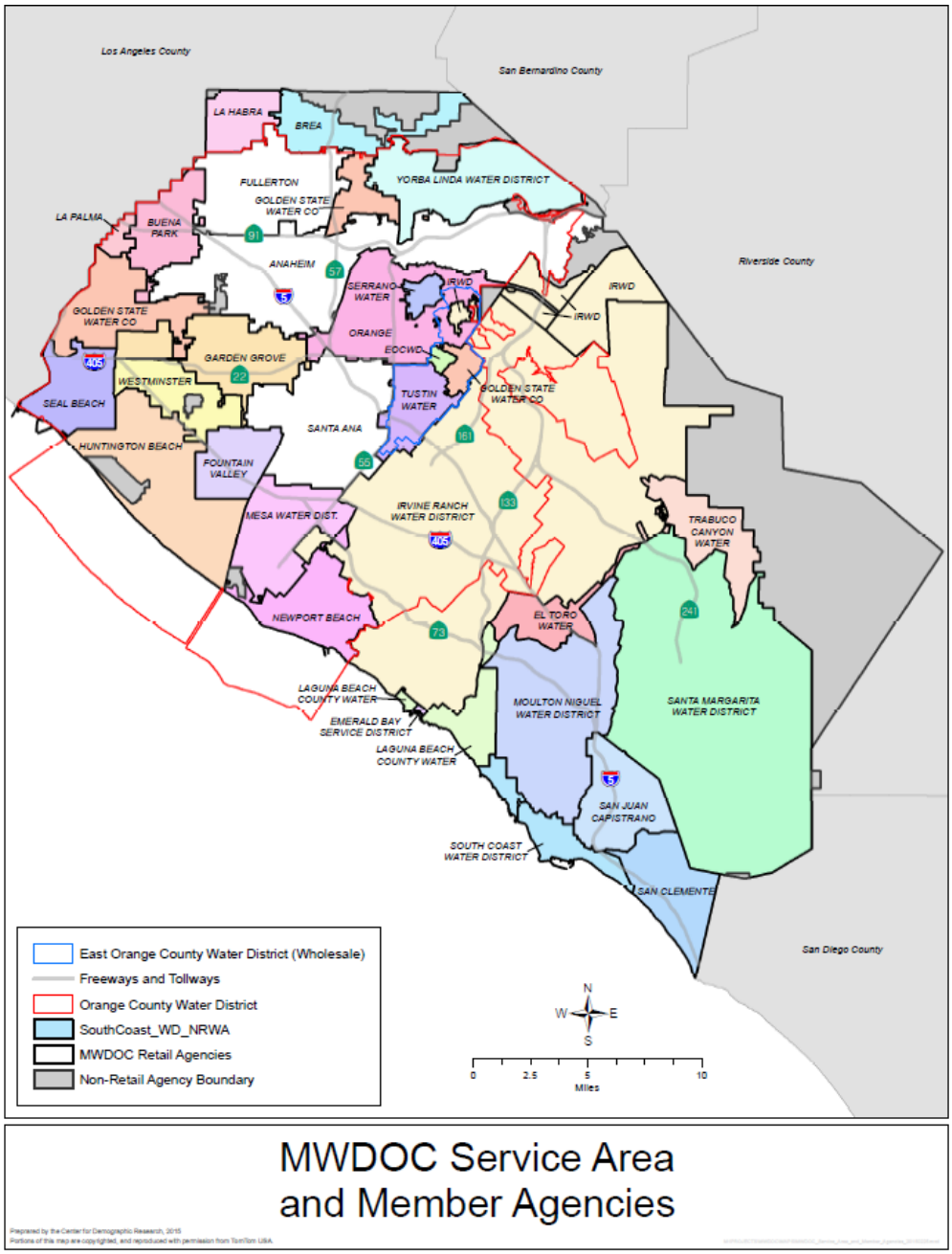
Sources of Supply and Water Rights

The City's main sources of water supply are local groundwater, imported water, and recycled water. In Fiscal Year (FY) 2017-18, the City relied on approximately 72% local groundwater water, 24% imported water, and 4% recycled water. The City's 2015 Urban Water Management Plan (UWMP) projects that, through 2040, local groundwater will be maintained at 70% of supply, imported water will increase slightly to 26.5%, and recycled water will increase slightly to 3.5% as the composition of the City's water supply, as shown in Table 4. The City works with three primary agencies, MWD, MWDOC, and Orange County Water District (OCWD), to ensure a safe and reliable water supply that will continue to serve the community in periods of drought and shortage. Groundwater is produced from local groundwater wells managed by OCWD. Imported water is purchased from MWDOC, the regional wholesale water suppliers of Orange County, who in turn purchases water imported from SWP and the Colorado River through MWD and delivered through MWDOC. Recycled water is purchased from OCWD. The City's location within MWDOC is shown on Figure 1, *City of Newport Beach Location within the MWDOC Service Area*, and its location within the OCWD's service area is shown on Figure 2, *City of Newport Beach Location within Orange County Water District Service Area*.

A good portion of the City's potable water supply is groundwater pumped from four wells within the City of Fountain Valley. Pumped groundwater travels through more than 6 miles of the 30-inch Groundwater Transmission Main traversing the cities of Fountain Valley, Huntington Beach, and Costa Mesa. In addition, a pump station, a treatment facility, and a 3-million-gallon reservoir assist in the transmission and treatment effort. The City meets up to 75% of its potable water demand through groundwater from the Orange County Water Basin (OC Basin), under regulations of OCWD's Basin Production Percentage (BPP).

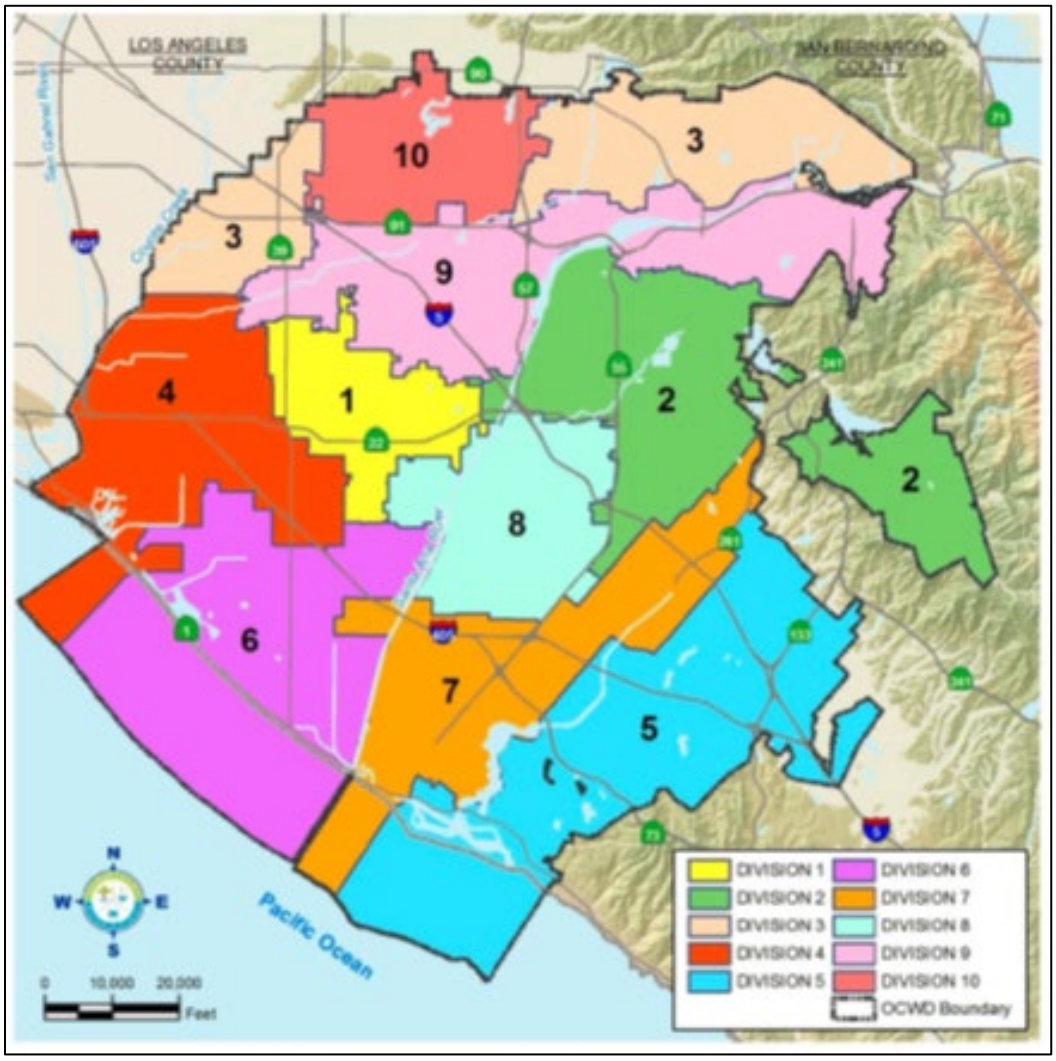
OCWD was formed in 1933 by a special legislative act of the California State Legislature to protect and manage the County's vast, natural groundwater supply using the best available technology and defend its water rights to the OC Basin. This legislation is found in the State of California Statutes, Water – Uncodified Acts, Act 5683, as amended. The OC Basin is managed by OCWD under the Act, which functions as a statutorily imposed physical solution. Groundwater levels are managed within a safe basin operating range to protect the long-term sustainability of the OC Basin and to protect against land subsidence. OCWD regulates groundwater levels in the OC Basin by regulating the annual amount of pumping (OCWD, Groundwater Management Plan 2015 Update, June 2015).

Figure 1. City of Newport Beach Location within the MWDOC Service Area



MWDOC Service Area
and Member Agencies

Figure 2. City of Newport Beach Location within Orange County Water District Division 5 Service Area



The OC Basin is not adjudicated and, as such, pumping from the basin is managed through a process that uses financial incentives to encourage groundwater producers to pump a sustainable amount of water. The framework for the financial incentives is based on establishing the BPP, the percentage of each Producer's total water supply that comes from groundwater pumped from the OC Basin. Groundwater production at or below the BPP undergoes a Replenishment Assessment. While there is no legal limit as to how much an agency pumps from the OC Basin, there is a financial disincentive to pump above the BPP. Agencies that pump above the BPP are charged the Replenishment Assessment plus the Basin Equity Assessment (BEA), which is calculated so that the cost of groundwater production is greater than MWDOC's full service rate for imported water. The BEA can be increased to discourage production above the BPP. The BPP is set uniformly for all Producers by OCWD on an annual basis. The BPP is set based on groundwater conditions, availability of imported water supplies, and Basin management objectives. The supplies available for recharge must be estimated for a given year. The supplies of recharge water that are estimated are 1) Santa Ana River stormflow, 2) natural incidental recharge, 3) Santa Ana River baseflow, 4) Groundwater Replenishment System supplies, and 5) other supplies, such as imported water and recycled water purchased for the Alamitos Seawater Barrier. The BPP is a major factor in determining the cost of

groundwater production from the OC Basin for that year. In some cases, OCWD encourages treating and pumping groundwater that does not meet drinking water standards in order to protect water quality. This is achieved by using a financial incentive called the BEA Exemption. A BEA Exemption is used to clean up and contain the spread of poor-quality water. OCWD uses a partial or total exemption of the BEA to compensate a qualified participating agency or Producer for the costs of treating poor-quality groundwater. When OCWD authorizes a BEA exemption for a project, it is obligated to provide the replenishment water for the production above the BPP and forgoes the BEA revenue that OCWD would otherwise receive from the Producer (OCWD, Groundwater Management Plan 2015 Update, June 2015).

In 2018, the City supplemented its local groundwater with 3,677 AFY of imported water purchased wholesale from MWD through MWDOC. Imported water represents approximately 25% of the City's total current potable water supply. MWD's current principal sources of water are the Colorado River via the CRA and the Lake Oroville watershed in Northern California through the SWP. The water obtained from these sources is treated at the Robert B. Diemer Filtration Plant located north of Yorba Linda. Typically, the Diemer Filtration Plant receives a blend of Colorado River water from Lake Mathews through the MWD Lower Feeder and SWP water through the Yorba Linda Feeder. The City currently maintains six connections to the MWD system along the Orange County Feeder and the East Orange County Feeder No. 2 with a total available capacity of 104 cubic feet per second (cfs), or 67 million gallons per day.

The City's existing recycled water distribution system provides its large irrigation customers with supplemental water for irrigation purposes. The City purchases between 300 and 800 AFY of recycled water from OCWD through the Green Acres Project. The City owns and operates two site-specific recycled water pump stations for Big Canyon Country Club and the Newport Beach Country Club. In addition to these two sites, there are 15 recycled water connections with five customers, as well as median strips and two City-owned parks using water from the Green Acres Project.

Water Supply and Demand

In FY 2018, the total water supply for the City was approximately 15,384 AF (Table 1, *City of Newport Beach Actual Water Supplies*). In 2018, the City served a population of 66,939 within 35.77 square miles through 26,576 service connections, including potable and recycled water meters. The City's potable demand was met through 11,094 AF of groundwater and 3,677 AF of imported water; the remaining non-potable demand was met through recycled water. The City projects over 5% increase in total potable and non-potable demand in the next 25 years accompanied by a projected 13% population growth (2015 UWMP, p. i), considering its active efforts to promote water conservation and water use efficiency to residents. Table 1 summarizes the City's actual water supplies for FY 2017-18.

Table 1. City of Newport Beach Actual Water Supplies

Retail: Water Supplies — Actual (AF)			
Water Supply	**Source**	**2018 Actual Volume**	**Water Quality**
Imported Water	Metropolitan Water District of South California	3,677	Drinking Water
Recycled Water	Orange County Water District	577	Recycled Water
Groundwater	Orange County Groundwater Basin	11,094	Drinking Water
Total		15,348	

Source: 2015 City of Newport Beach UWMP, Table 3-3, p. 3-13 and City staff based on best available data received via email 2/26/19.

Current Water Uses

In FY 2017-18, there were 26,529 current customer active and 30 inactive service connections in the City's potable water distribution system, for a total of 26,559 potable connections, with all existing connections metered. Approximately 56% of the City's potable water demand is residential (single/multifamily); commercial/industrial/institutional accounts for 19% and dedicated landscape accounts for 19% of the potable water demand. Nonresidential potable water demands include commercial and dedicated landscape use. The City has a mix of commercial uses (markets, restaurants, etc.), public entities (schools, fire stations, and government offices), office complexes that account for 20% of total potable demand. Dedicated landscape for public park facilities and a golf course accounts for 20% of total potable demand (2015 UWMP, 2.3.1–2, pp. 2-3–4). The City is a tourist destination, which creates demand fluctuations primarily during the summer months for commercial sector accounts.

Nonrevenue water volume consists of unbilled authorized consumption (e.g., hydrant flushing, firefighting, and blow-off water from well start-ups), real losses (e.g., leakage in mains and service lines and storage tank overflows), and apparent losses (unauthorized consumption, customer metering inaccuracies and systematic data handling errors). Based on the American Water Works Association (AWWA) Water Loss Audit for Reporting Year 2017 conducted for the City, water losses were 1,079.77 AF for apparent and real losses, equaling 7.6% loss of total water supplied in 2017 (14,119 AF). Total nonrevenue water volume accounted for 7.9% of the City's water supplies in 2017. Note that the 2017 AWWA water audit is calculated based on calendar year 2017 while the City's water loss of 699 AF in Table 3 is calculated based on fiscal year 2017-18.

Number of Water Users Served

The City's service area includes residential, commercial/industrial/institutional, and dedicated landscape customers. Growth has increased slightly since the 2010 UWMP as housing is becoming denser and new residential units are multi-storied. The City had a 2015 population of 66,219 according to the California State University at Fullerton's Center for Demographic Research (CDR). The City's population is projected to increase by 12.5% by 2040, representing an average growth rate of 0.5% per year (according to CDR and the Department of Finance [DOF]). The influx of tourists during the summer months creates higher demands within the City especially at the beach facilities, hotels, and restaurants. Table 2, *City of Newport Beach Service Area Population – Current and Projected*, shows population projections in 5-year increments to the year 2040 within the City's service area (2015 UWMP, 2.2.2 Demographics, p. 2-2).

Table 2. City of Newport Beach Service Area Population – Current and Projected

Retail: Population - Current and Projected							
Population	2015	2018	2020	2025	2030	2035	2040
Served	66,219	66,939	67,874	69,571	71,311	73,093	74,921
NOTE: Center for Demographic Research, California State University, Fullerton 2015							

Current and Projected Water Demand

The City's 2018 potable water demand was 14,771 AF, met through locally extracted groundwater and purchased imported water from MWDOC. Table 3, *City of Newport Beach Potable and Raw Water Demand – Actual and Projected (AF)*, shows actual (current) and projected water demand for the City's service area for the next 25 years.

Table 3. City of Newport Beach Potable and Raw Water Demand – Actual and Projected (AF)

Retail: Demands for Potable– Actual and Projected						
Use Type	Actual Water Use	Projected Water Use				
Year	2018	2020	2025	2030	2035	2040
Single Family	6,495	6,332	6,808	6,850	6,842	6,846
Multi-Family	1,835	1,953	2,100	2,112	2,110	2,111
Commercial	2,828	3,017	3,244	3,264	3,260	3,262
Landscape	2,793	2,989	3,214	3,233	3,230	3,231
Other	121	103	110	111	111	111
Losses	699	746	803	808	807	807
TOTAL	14,771	15,140	16,278	16,378	16,359	16,368
NOTE: Data retrieved from MWDOC Customer Class Usage and Retail Water Agency Projections						

Potential Shortfalls in Water Supply

Although all of California has been experiencing extreme drought and continued water use efficiency and conservation efforts, the City does not anticipate a shortfall in supply to meet demands. A comparison between the projected demands (Table 3) and the projected supplies (Table 4, *City of Newport Beach Projected Water Supplies*) show there will be adequate supply. However, the current drought and anticipated future drought conditions make imported water supplies unreliable, with looming shortfalls in imported water supply.

Table 4. City of Newport Beach Projected Water Supplies

Retail: Water Supplies — Projected AF						
Water Supply	Source	**Projected Water Supply** *Report to the Extent Practicable*				
		2020	**2025**	**2030**	**2035**	**2040**
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater	Orange County Groundwater Basin	10,980	11,787	11,867	11,864	11,881
Purchased or Imported Water	Metropolitan Water District of Orange County	4,161	4,491	4,511	4,496	4,487
Recycled Water	Orange County Water District	545	560	575	590	605
	Total	15,685	16,838	16,953	16,949	16,973
NOTES: Source: City of Newport Beach, 2015 UWMP, Table 3-4.						

Water Delivery System

The City is 72% dependent on groundwater; the remaining 28% of its demand is met with imported and recycled water. MWDOC provides imported water to the City from MWD. Most of MWD's imported water supply is provided through the SWP and CRA and is treated at the Diemer and Weymouth plants. All of the

water supplied by the City is sold to its retail customers (residential and commercial). The City maintains its own retail distribution system. The City delivers potable water through a water system that consists of approximately 299 miles of pipelines ranging in size from 4-inch to 30-inch with various pipe materials. The City's extensive distribution system includes five pressure zones and six connections along the Orange County Feeder and the East Orange County Feeder No. 2. The total available capacity is 104 cfs. The City has five pump stations that deliver water to the upper zones; backup generation facilities ensure that the City can still deliver water to all zones during a rolling blackout.

Groundwater Facilities

The City receives a large percentage of its supply from groundwater. Groundwater is pumped from four wells within the City of Fountain Valley and travels through more than 6 miles of the 30-inch Groundwater Transmission Main in the cities of Fountain Valley, Huntington Beach, and Costa Mesa. In addition, a pump station, a treatment facility, and a 3-million-gallon reservoir assist in the transmission and treatment effort. The City meets up to 75% of its demand through groundwater subject to regulation under OCWD's BPP.

Recycled Water Facilities

The City has no capability to treat water to produce recycled water, but through an agreement with OCWD, the City purchases between 300 and 800 AFY of recycled water for some large irrigation users. OCWD provides water through the Green Acres Project, which has the capability to deliver up to 1,000 AFY. The City began serving recycled water in 1999 and currently has approximately 10 miles of recycled water distribution pipe that supplies 12 sites. The City has investigated future sites or locations for recycled water, but there are limitations to the availability of recycled connections. The City is considering the possibility of inter-district recycled water transfers to provide recycled water to some associations and recreation facilities. The City is in the process of expanding its recycled water network by adding new developments and structures to the recycled water system within the City's service area.

Water Transmission System

Water is delivered to the City's customers from the Groundwater Transmission Main and from diversions off of the Orange County Feeder and the East Orange County Feeder No. 2. The transmission system consists of pipelines, booster pump stations, and storage reservoirs and tanks. The current capacity of the City's potable water supply is 104 cfs.

Number of Connections and Water Users Served

As discussed above under "Current Uses," in FY 2017-18 there were 26,529 current customer active and 30 inactive service connections in the City's potable water distribution system with all existing connections metered. In addition, there are 17 connections for recycled water use. The total population served in 2018 was 66,939. Note that the Phase 2 AMI Project proposes upgrading a total of 26,309 meters.

Energy Efficient Element of the Project

Implementation of the AMI Project will result in energy savings; therefore, the Project includes an energy efficiency element. The City primarily relies on energy provided by Southern California Edison and the Southern California Gas Company, according to the City of Newport Beach Energy Action Plan (available online, 4/19/18, at http://www.newportbeachca.gov/how-do-i-/learn-more-about/energy-conservation). The City does not produce any renewable energy. The AMI Project would modernize the City's water management facilities and equipment to increase energy efficiency by installing AMI technology throughout the City's service area. The proposed Phase 2 AMI Project would promote energy efficiency by reducing fuel consumption and maintenance frequency for City vehicles (mopeds) previously used to collect monthly meter readings and would quantifiably reduce energy consumption through significant improvements in water use efficiency and conservation that would reduce pumping and imported water from MWD, which receives its

supply from the SWP and the CRA. Importing water is extremely energy intensive; much of the state's energy consumption is attributed to water conveyance. Any reduction in water loss and overall consumption would impact the increasing energy efficiency of overall system operations. Based on the publication, "California's Water – Energy Relationship," prepared by the California Energy Commission (November 2005, p. 51), the amount of electrical energy required to transfer 1 AF of water from Northern California to an area just north of the City requires an estimated 3,000 kWh. The same publication also estimates 2,000 kWh for each AF 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. The City's system is described above under the Water Delivery System section.

Therefore, it is estimated that an average of 2,500 kWh/AF is used in conveying imported water from SWP and CRA to the City and to distribute the water throughout the City's service area. City staff estimate that 434 kwh/AF is required to pump groundwater from the City's wells. The proposed Phase 2 AMI Project will result in a savings of 1,157.32 AFY, of which 25% or 289.33 AFY will be saved imported water, resulting in 981,006.25 kWh/year energy savings, while 75% or 867.99 AFY will be saved groundwater, resulting in 512,810.06 kWh/year energy savings. Combined, this results in 1,100,032.66 kWh/year energy saved.

1,1578.32 AFY total water savings from Project:
25% imported water= 289.33 AFY * 2,500 kWh/AF = 723,325 kWh/year
75% groundwater = 867.99 AFY * 434 kwh/AF = 376,707.66 kWh/year

Total energy savings = 723,325 kWh/year + 376,707.66 kWh/year = 1,100,032.66 kWh/year

Conserving energy results in reducing greenhouse gas (carbon) (GHG) emissions. Carbon emission estimates are 0.61 lb CO_2/kWh based on the United States Environmental Protection Agency's 9th edition of eGRID, "Year 2010 eGRID Subregion Emissions - Greenhouse Gases." The Project will avoid GHG emissions of approximately 910,067.73 pounds of CO_2 per year. The calculation includes 1,100,032.66 kWh/year * 0.61 lb CO_2/kWh = approximately 671,019.92 pounds of CO_2 per year.

Over the 20-year lifespan of the AMI Project, approximately 13,420,398.45 total pounds of carbon emissions will be avoided. The AMI Project will reduce imported and groundwater pumping requirements by reducing the demand on these water supplies.

Past Working Relationships with Reclamation

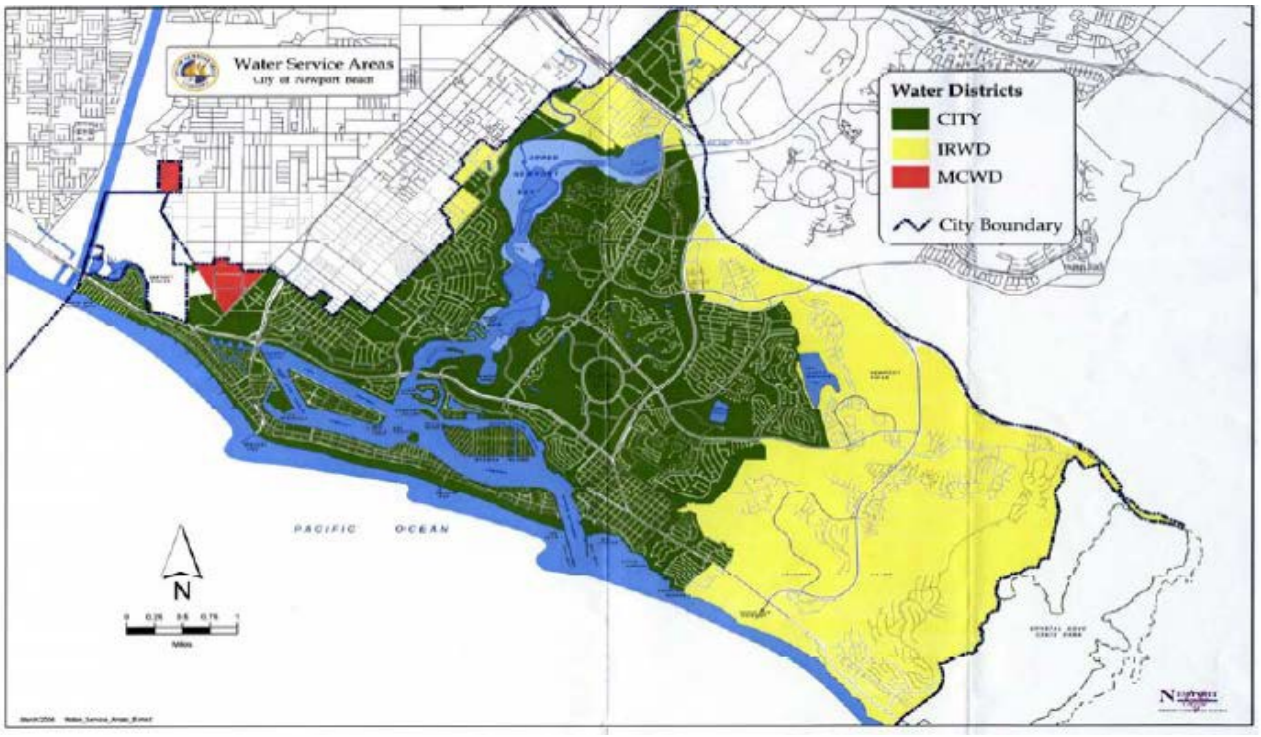
The City received a 2006 CALFED Grant from Reclamation in the amount of $300,000 for the Newport Beach Watershed Rehabilitation and Protection program, which included a direct installation program for weather-based irrigation controllers.

Project Location

The Phase 2 AMI Project is located in the City of Newport Beach in Orange County, California. The Project latitude 33.62319°N and longitude 117.88440°W indicate the center of City of Newport Beach. The Project includes replacing and retrofitting existing water meters throughout the City's service area, shown in green in Figure 3, *City of Newport Beach Service Area*. As shown in Figure 3, Irvine Ranch Water District and Mesa Water District also serve portions of the City of Newport Beach. Located along the Orange County coast of Southern California, the City is bounded to the west by the Pacific Ocean. To the north, south, and east, the City is surrounded by the cities of Huntington Beach, Laguna Beach, and Irvine and Costa Mesa, respectively. The City water service area is a portion of the City's total boundaries and is shown on Figure 3. The City

does not supply water to any other agency customers. Refer to the attached Exhibit A for a detailed map of the Project's preliminary network design.

Figure 3. City of Newport Beach Service Area



Technical Project Description

The City is proposing to implement the Phase 2 AMI Project as part of its long-term goal of water supply reliability and efficient water management. The Phase 2 AMI Project includes the upgrade of 26,309 existing water meters, ranging from 5/8" meters to 8" meters, (including 25,467 manually read meters and 842 AMR vehicle drive-by read meters), with an AMI fixed-base network system, Mi.Net AMI 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. A total of 132 meters will be retrofitted and 26,177 meters will be replaced. This Project builds upon the success of a current pilot program and will follow an initial implementation phase (Phase 1 – 250 meters). Phase 2 of the AMI Implementation Program would expand the program to include the remaining 26,309 potable and recycled water meters. It is the goal of the City to fully implement the Mi.Net AMI System to maximize benefits to both the City and its customers citywide.

The City has secured a qualified contractor, Mueller Systems, through a competitive bid process in compliance with the City's Procurement Policy. A copy of Mueller Systems' proposal for Phase 2 is available in Exhibit A. A contract with Mueller Systems will be used to implement Phase 2, as proposed in this grant application. The City awarded Mueller Systems a contract based on the quality and content of its proposal, including proposed scope and fee.

The work to be performed as part of the Technical Project Description shall consist of Mueller Systems, the selected qualified contractor, to install a turn-key AMI fixed-base network technology, retrofit recently installed meters (3- to 8-inch meters) with AMI equipment, and install new AMI water meters for 5/8-inch meters to 2-inch meters. The Mueller Systems' Mi.Net AMI system proposed by the selected contractor and accepted by the City will only include City-approved equipment, technologies, and capabilities that are currently commercially available, have been implemented by other agencies, and have a proven history of success.
The work will include, but will not be limited to, procurement of water meters, procurement of AMI radio transmitters, software, a web-based utility management portal, and a web-based customer portal for utility users to access consumption data. Additional work will include the integration of the AMI fixed-base system into the City's customer information system and billing software (MUNIS CIS Software from Tyler Technologies). All work will be conducted in compliance with all applicable local, State, and federal regulations for the prevention of water and air pollution.

Project Tasks

Task 1: Project Management and Reporting

The City Project Manager will execute the grant agreement with Reclamation, coordinate with Reclamation's environmental reviewer, and complete required reporting. 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 grant agreement. Performance Reports will include information regarding the status of the Project's Performance

Figure 4. City of Newport Beach Location within Orange County, California

Measures. The City Project Manager will monitor performance of the Project and will submit Project Performance Reports to Reclamation semiannually as per the grant 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 detail in this technical proposal under Subcriterion No. F.2 – Performance Measures.

The City Project Manager will also oversee the Contractor, including coordination of City staff training, ensure site conditions are prepared and ready for installation of collectors and repeaters in accordance with the final network design, provide access to all work sites, provide storage facilities for project materials, and facilitate parking and office space for the Contractor team.

Deliverables: grant agreement and reports.

Task 2: Environmental Review

The City has filed a Categorical Exemption pursuant to CEQA Title 14 (California Code of Regulations), Chapter 3, Article 19, Section 15302c for the Project, as shown in Figure 7, *CEQA Notice of Exemption Filed for City of Newport Beach AMI Project*. It is anticipated that a Categorical Exclusion or Finding of No Significant Impact (FONSI) under NEPA will be issued by Reclamation given the nature of the Project that includes simply replacing existing meters with upgraded AMI meters. U.S. Bureau of Reclamation staff will perform the necessary environmental review and compliance for the Project.

Deliverables: Categorical Exemption, Categorical Exclusion.

Task 3: Procurement and Installation of AMI System

Subtask 3.1 Installation of AMI Infrastructure and Training to Support AMI System

Subtask 3.1 includes AMI Network infrastructure, AMI Network and deployment tools, and professional services/training. Mueller Systems will develop a detailed Project Plan and Schedule to guide procurement and installation of the AMI System.

AMI Network Infrastructure. The City will collaborate with the Contractor to select the appropriate equipment for the AMI Project. The City will approve the use of only equipment, technologies, and capabilities that are currently commercially available, have been implemented in other agencies, and have a proven history of success.

A preliminary network design has been completed based on the inputs provided to Mueller Systems and is attached as Exhibit A. Mueller Systems will conduct final site surveys and develop a Final Network Design following contract execution. Both parties will review network design inclusive of locations, assumptions, etc. prior to installation of network equipment. If any City assets are needed for coverage, Mueller Systems will request City approval to adjust the design accordingly, and then request City approval of the Final Network Design.

Mueller Systems will complete the installation of all required Collectors and ancillary equipment no later than 90 days from Effective Date of Phase 2 execution for locations where Data Collectors have been sited. The installed network will be tested for coverage as part of the Project.

AMI Network and Deployment Tools. This work will involve using a handheld programmer to download the meter type, size, and start read into the new unit and then the unit will be programmed and synced to the AMI network. All customers can expect no service interruption since the exchange does not require turning off the water service**.**

Staff Training. Staff training includes training and documentation, AMI/MDMS System Integration, and Propagation Study. City staff will receive an introduction to the Mueller Systems AMI class describing the advantages of using an AMI system. The class covers the Mi.Net engineered system and its components. The Mi.Net User Interface is described in detail including creating reports, setting up alerts, generating on demand reads, and billing interface.

Training will be provided for a total of three training days to ensure competency of City-designated staff to provide for system operation and functionality, including classroom and field training. Mueller Systems will provide training and assess staff competency throughout the training process and provide feedback and direction regarding ongoing training requirements throughout the implementation.

Deliverable: AMI Network infrastructure, AMI Network and deployment tools, and professional services/training.

Subtask 3.2 Meter Equipment Procurement

Subtask 3.2 includes the procurement of water meters and electronic registers, water meter retrofit registers with endpoint, water meter lids, and other water meter related equipment.

The Mueller Systems' Mi.Net AMI system hardware will consist of the sizes and quantities shown in Table 5, *AMI Devices Installed in the City of Newport Beach Service Area*, of this proposal for a total of 26,309 existing water meters, ranging from 5/8" meters to 8" meters. A total of 145 meters will be retrofitted and 26,164 meters will be replaced. These are approximate quantities; actual values may differ and be handled via change order. All products, including third-party products such as boxes and lids, will be approved by the City prior to purchase by Mueller Systems.

Hardware delivery will be incorporated into the Project schedule at the time of order entry and as available. The City will issue purchase orders for product delivery to meet the installation schedule. A minimum of eight weeks' worth of product will be onsite during meter installations to avoid stock out. Shipment orders to be placed with full truck capacity to minimize freight costs. The City will consider maintaining stock of a minimum of 1% total project volume for spares.

Deliverable: Procurement of water meters and electronic registers, water meter retrofit registers with endpoint, water meter lids, and other water meter related equipment.

Subtask 3.3: Installation of AMI Meters

Subtask 3.3 includes installation of Water Meters, Registers, and Endpoint; Water Meter Retrofit with Endpoint, Water Meter Lids, and Professional Services.

Meter Installation. Mueller Systems preferred installation contractor Vanguard will develop an Installation Plan. Installation of all meters, registers, nodes and boxes, etc. will be managed by the Mueller Systems project team.

Installation procedures will include community outreach and customer communication and notification of homeowner at time of meter installation, through a variety of measures including, where appropriate and approved by the City, a consumer water bill insert one month prior to meter installations, website outreach via Frequently Asked Questions (FAQ) section on website for AMI Project, and social media. The City's Public Information Officer (PIO) will use the official City of Newport Beach Facebook/Twitter page alerting residents of the meter project.

Meters and MiNode equipment will be installed by Mueller systems preferred installer subcontractor, Vanguard. Mueller Systems will provide training for installation teams on the use of MiNet specific installation tools and procedures.

Meters will be installed by cycle/route order, following the meter reading sequence (Installation Plan) that's agreed upon by the City, working to ensure route efficiency. Most meters are outside in a pit location making appointments unnecessary. Less than 0.5% is estimated to require an appointment, which will be handled on a case-by-case basis. Work will be performed between 7:00 a.m. and 4:00 p.m. daily. After-hours work requests will be agreed upon in advance of work being perform between Mueller Systems and the City.

Installation Procedures. *Community Outreach and Customer Communication*

- Door knock canvassing will be performed seven days prior to meter installation. If the homeowner/business owner is not present, a door hanger will be left alerting of upcoming meter installation/change out, along with contact information for Mueller Systems for inquiries.

Vanguard Notification at Time of Meter Installation

- Knock on the homeowner's door. If the homeowner/business owner is present, alert them of the meter installation/change out that will take place.
- Installation tech will perform the change out, which will include but is not limited to; verify provided data info (old meter#, last read, if available), turn on water faucet/hose connection, verify the meter is moving and the information is correct, turn water off (if no back flow preventer and take picture of meter in box showing valve position before start), remove old meter, install the new meter (check to make sure the arrow is pointing in the correct direction), turn on the water and check for leaks, flush the air from hose connection (leave door hanger if hose connection not available), turn off the water, check for leaks and fill out needed paperwork/ update handheld data.
- After completion, installation tech will provide the homeowner/business owner with contact information for Mueller Systems should there be an issue that comes up after installation. Mueller Systems will have a dedicated phone number and email for this project.
- If the homeowner/business owner is not present, a door hanger will be left after the meter installation is complete informing the customer of the work performed and contact information for inquiries.
- All customer inquiries, complaints and field escalations will be handled by the installation team at the time of installation then referred to Mueller Systems or the City, if required.

Installation Project Team. *Install Project Manager:* Oversees the daily operations of the meter installation project. Deploys daily routes, instruction, inventory and supplies for install and QC. Distributes send-back problem accounts from previous day to be completed by installer prior to new installations for that day. Communicates daily with designated contacts from Mueller Systems and the City to address any issues. Tracks route allocation and scheduling with City, Mueller Systems, and Vanguard Project Support. Conducts daily field visits and support to team to audit install quality, progress, training, etc.

Vanguard Staffing Plan: Vanguard project staff will include Install Project Manager to oversee all project operations and planning, Assistant Install Project Manager to support the Project Manager during daily operations, Field Manager to oversee and assists with all field activity and issues, meter Installers to perform homeowner/business owner notification and meter installation, and QA/QC staff to field inspect all work the day following installation.

Assistant Install Project Manager: Assists the Project Manager with daily procedures and guidelines of the Project. Oversee the distribution and execution of the Send Back Manager (SBM) audits to the installers

(issues with meters that prohibit installation of meters is documented in an SBM report and followed up on the next day to correct the issue). Completes the exceptions list to follow up with issues due to location, access, etc., and completes the installation at the point of contact, if possible. Assist with daily installs as daily responsibilities allow. Conducts end-of-day check-ins with installers; collects installer daily field summary sheet, phones and paperwork; and ensures the Vanguard Work Order Management System data is uploaded successfully. Completes and submits a daily work summary to the Project Manager.

Deliverable: Installation of Water Meters, Registers, and Endpoint; Water Meter Retrofit with Endpoint, Water Meter Lids, and Professional Services.

Task 4: Final Implementation

As identified, complete software integration and install any additional infrastructure required to gather the hourly consumption data. The City will deploy the Consumer Portal and provide access by customers. Consumer Portal will provide customers with real-time consumption data and will assist them in managing their individual water usage more efficiently.

AMI Software Integration - Mi.Host

Mueller Systems and the City will complete the CIS and Billing software integration. This effort will consist of collaboratively determining requirements, creation of a Software Integration Plan including acceptance criteria that will be reviewed and approved by representatives of both Mueller Systems and the City.

The City is using MUNIS CIS Software from Tyler Technologies. After the project kick-off meeting, the CIS and billing software integration will begin. It is estimated that this process will take approximately 3 months working in cooperation with the City and subject matter experts knowledgeable in these systems.

Basic AMI capabilities will include utility user interface, list of installed meters with last uploaded reading, deployment wide consumption graph, meter detail page for each meter, basic graphing of consumer consumption, customer information, account management, hourly reading on all meters, billing interface, CIS interface–periodic imports of customer updates from City's billing system, and meter reading schedule–daily upload of consumption and hourly reading, on demand upon request.

AMI Software Integration – Consumer Portal

Mueller Systems and the City will complete the software integration necessary to provide the Consumer Portal with interval meter reads. This effort will consist of collaboratively determining requirements, creation of a Consumer Portal Integration Plan including acceptance criteria that will be reviewed and approved by representatives of both Mueller Systems and the City. Following completion of the MI.Host AMI software integration, workshops will begin. It is estimated that the entire process will take approximately 3 months and is predicated on the cooperation of the City and subject matter experts knowledgeable in these systems.

Software Hosting - Ongoing System Costs

Mueller Systems will provide Mi.Net AMI server hosting for an annual AMI Headend Software Hosting Fee.
Deliverable: AMI Software integration and Consumer Portal

Evaluation Criteria

Evaluation Criterion A: Quantifiable Water Savings (30 points)

Estimated Water Savings

For projects that conserve water, please state the estimated amount of water expected to be conserved (in acre-feet per year) as a direct result of this project. Include a specific quantifiable water savings estimate; do not include a range of potential water savings.

The Phase 2 AMI Project's total water savings estimate: **1,157.34 AFY**

Supporting documentation is included in the following sections.

Current Losses

Explain where the water that will be conserved is currently going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground)?

Current water losses were calculated in the City's AWWA Water Loss Audit for Reporting Year 2017. The Audit shows Apparent Losses of 199.16 AF – unauthorized consumption, metering inaccuracies, and systematic data handling errors – and Real Losses of 880.61 AF – leakages on transmission/distribution mains, storage tanks, and service connections – for a **total 2017 water loss of 1,079.77 AFY** . This equals a 7.6% loss of total water supplied in 2017 (14,119 AF) .

The City's 2017 AWWA Water Loss Audit also recognizes Unavoidable Annual Real Losses (UARL) of 491.82 AF. The UARL is a theoretical reference value representing the technical low level of leakage that could be achieved if all of today's best technology could be applied. It is a key variable in the calculation in the Infrastructure Leakage Index used in the Audit. Striving to reduce system leakage to a level close to the UARL is needed when the water supply is unusually expensive, scarce, or both. Applying this water loss as unavoidable to the total water losses, this would leave an **avoidable 2017 water loss of 587.95 AFY.**

Water lost from leakages (Real Losses) is reasonably concluded to be seeping back into the ground and/or draining to a storm drain or the Pacific Ocean. Other water that will be conserved is water that is being consumed without authorization or accurately measuring it (Apparent Losses) and water consumption that will be reduced through water use efficiency and conservation.

Support/Documentation of Estimated Water Savings

Provide sufficient detail supporting how the estimate was determined, including all supporting calculations. Note: Projects that do not provide sufficient supporting detail/calculations may not receive credit under this section. Consider questions associated with your project type when determining the estimated water savings, along with the necessary support needed for full review of your proposal. In addition, please note that the use of visual observations alone to calculate water savings, without additional documentation/data, are <u>not</u> sufficient to receive credit under this section. Further, the water savings must be the result of reducing or eliminating a current ongoing loss, not the result of an expected future loss.

Municipal Metering projects can provide water savings…when existing individual user meters are installed replaced with advanced metering infrastructure (AMI) meters…an applicant must provide a detailed description of the method used to estimate savings, including references to documented savings from similar previously implemented projects.

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.***

The AMI Project will achieve water savings through three independent measures: 1) Water loss reduction from leakages; 2) Water loss reduction from correcting meter inaccuracies; and 3) Water conservation through Customer Portal usage.

These measures will be accomplished by implementing the AMI Project resulting in 1) faster identification and correction of water leaks (currently meters are read every 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 (more than half the City's meters are at replacement age and are likely erroneously registering lower water use than actual water use), and 3) reduced potable water usage resulting from customer education and behavioral changes through the Customer Portal real-time data on water usage.

Additionally, the AMI meters will help the City reduce operational costs incurred through the manual meter reading process in which crews drive by neighborhoods to collect consumer water usage data, as well as reduce its carbon footprint resulting from driving nearly 100,000 miles per year to read meters.

Amount of average water saved/conserved (AFY) for Proposed Phase 2 AMI Project:
Total estimated water savings: **1,157.32 AFY**

This amount exceeds 2017 total avoidable water losses (587.95 AF) by 569.37 AF, nearly double the amount, demonstrating the value of implementing the AMI Implementation Program when linking the AMI meters and the Customer Portal to promote customer behavioral changes to conserve water.

Calculation:
(Water Loss Reduction–Leakages + Water Loss Reduction–Meter Inaccuracies + Reduction in Consumption–Customer Portal Use = Total Water Saved/Conserved)

238.02 AFY+ 208.96 AFY+ 710.34 AFY= **1,157.32 AFY Total Water Saved/Conserved**

This estimate is calculated by adding 238.02 AFY saved through early leak detection + 208.96 AFY saved from reduced metering inaccuracies + 710.34 AFY saved through water use behavioral changes through customer portal use, for a total of 1,157.32 AFY of water saved by implementing the proposed Phase 2 AMI Project.

Detail and Supporting Calculations for Estimate

Water Loss Reduction for Proposed Phase 2 AMI Project

Using the 2017 AWWA Water Loss Audit for the City, current water losses due to leaks, metering inaccuracies and unauthorized consumptions are 1,079.77 AFY or 7.6% of the total potable water demand. The AWWA Water Loss Audit is conducted annually to comply with California Senate Bill 1420 (September 2014), which requires urban water suppliers that prepare Urban Water Management Plans to calculate annual system water losses using the water audit methodology developed by AWWA. Water losses are defined by the International Water Association (IWA) as the difference between distribution systems input volume (i.e. production) and billed authorized consumption. The audit was developed by the IWA Water Loss Task Force as a universal methodology that could be applied to any water distribution system. The water loss summary was calculated over a 1-year period from available data.

The City could reduce the current audited water loss of 1,079.77 AFY, or 7.6% of total potable demand, by 1,157.32 AFY through implementation of the Phase 2 AMI Project. When applied to the 2020 estimated potable water demand of 15,140 AF (Table 3), without implementation of the AMI Project, audited water loss would likely result in 1,150.64 AF of water loss (15,140 x .076 = 1,150.64). With implementation of the AMI

Project, an estimated water savings of 1,157.32 AF would be realized. Based on calculations shown below, 39% would be realized through water loss reduction and 61% through behavioral changes. Applying 39% to the potential 1,150.64 AF of water loss in 2020, this would reduce the water loss percentage to 4.7% (1,150.64 – [1,150.39 x 0.39] = 706.24 / 15,140 = 4.7%).

Water Loss Reduction/Savings from Customer Leaks

Knowledge of customer water leaks with AMI data allows utilities to engage their customers and help them better understand the issue and identify the source. This, in turn, can lead to reduced time to correct the issue and increased water savings. Newport Beach currently reads meters manually and bills customers on a bimonthly basis. There is potential for smaller leaks to go undetected for as long as 60 days. With AMI, faster and quicker detection and customer notification is possible.

Valor Water Analytics partnered with Southern California Gas Company and two water utilities in 2016-2018 to track AMI utilization in water savings. Two pilot projects were commissioned by the California Public Utilities Commission; final submissions will be available for public viewing in April 2019, however, some early information can be found at http://www.cpuc.ca.gov/nexus_calculator/. Valor provided customer leaks analytics and the water utilities sent out leak notifications via phone and text to customers upon detection of leaks.

The first pilot, conducted at an Inland Empire Water utility, involved comparing 492 accounts with new meters and AMI hourly water reads (treatment group) and 492 accounts with existing meters and monthly water reads (control group) over a 12-month period. Over the course of the pilot, 172 water leaks were detected by AMI analytics and a total of 6,863,852 gallons of water savings due to leak reduction by AMI analytics was estimated. This equals an average water savings of 13,951 gallons/meter-year.

The second pilot, conducted at a coastal Southern California water utility, involved comparing 1,190 accounts with new meters and AMI hourly water reads (treatment group) and 1,190 accounts with existing meters and monthly water reads (control group) over a 12-month period. Over the course of this pilot, 188 water leaks were detected by AMI analytics and a total of 3,508,520 gallons of water savings due to leak reduction by AMI analytics was estimated. This equals an average water savings of 2,948 gallons/meter-year (3,508,520/1,190).

Aggregate water savings due to leak reduction by AMI analytics was estimated by examining the treatment group during the Post AMI period. The start and end time for each leak was recorded, and the flow rate of that leak was calculated by comparing the flow rate during the leak period to normal consumption periods. To calculate the water saved, it was assumed that the leak would have continued at this flow rate until the next bill date, at which point the customer is assumed to have identified the leak from the high bill and resolved the issue. This approach is an accepted way to estimate aggregate water savings; however, the approach does under-estimate water savings associated with leaks that span multiple months, since it assumes customers are prompted to action upon receipt of their bill which may not always be the case. Therefore, this assumption is consistent with the grant program requirement that water savings must be the result of reducing or eliminating a current ongoing loss, not the result of an expected future loss.

Newport Beach has selected and used the coastal Southern California utility as reference since it most closely represents the City's geography and climate. As a result, the following water savings from leaks is estimated with AMI:

Water Loss Reduction/Savings from Customer Leaks Calculations
26,309 meters * 2,948 gallons/meter-year = 77,558,932 gallons/year / 325,851 gallons/AF **= 238.02 AFY water saved**

Water Loss Reduction/Savings from Customer Metering Inaccuracies

The City's 2015 UWMP documented an opportunity to identify areas of high water loss and develop strategies to minimize those water losses.

Apparent water losses are the non-physical losses that occur in utility operations due to customer metering inaccuracies, systematic data handling errors in customer billing systems, and unauthorized consumption. This is water that is consumed but not properly measured, accounted for, or billed. Newport Beach has been using Valor Water Analytics to identify customer metering inaccuracies on an ongoing basis since January 2017. The analytics include detection and prioritization of meter under-registration, meter right sizing, and meter read errors issues. Meter under-registration involves the detection of mechanical meters whose accuracy is decreasing over time, causing the meters to register less water than is flowing through them. Meter right sizing detects if the customer has a water meter sized differently than their demand, and meter read errors detects errors with meters reads like negative, unexpected consecutive zeros, and implausible reads.

In a November 2018 webinar, Newport Beach and Valor co-presented the current state of customer metering inaccuracies at Newport Beach presenting results from the meter system analytics. Results showed 6% of meters at Newport Beach were identified as under-registering and needing replacement in the near term. The average monthly volume loss per residential meter was 3,013 gallons, and average monthly volume loss per non-residential meter was 8,828 gallons.

Assuming a split of 90% residential meters and 10% non-residential meters for 26,309 meters, the annual water loss from meter inaccuracies that will be saved by installing new meters through the AMI Project will be:

Water Loss Reduction/Savings from Customer Metering Inaccuracies

(26,309 meters x 0.06 x 0.9 x 3,013 gallons/month x 12 months/year = 51,386,323 gallons/year savings for Residential Meters) + (26,309 x 0.06 x 0.1 x 8,828 gallons/month x 12 months/year = 16,772,421 gallons/year for Non-Residential Meters) = 68,088,744 gallons/year / 325,581 gallons/AF = **208.96 AFY water saved**

Water Savings from Customer Portal Use

Savings will also result from the deployment of a Customer Portal through water use behavioral change on the part of customers who access the data for the purpose of monitoring their consumption. Customers will be able to independently access their hourly consumption data, and Newport Beach will be able to promote routine conservation messaging as well as any new programs (e.g. water efficient fittings and appliances) to save water. Using the online customer portal, consumers have an option to set daily, weekly or monthly water efficiency targets and receive notifications via an email or text message when their usage is continuous for a period of 72 hours.

Self-leak detection is not thought to be a major benefit of the Customer Portal; therefore, water savings associated with self-leak detection are projected in the earlier section *Water Loss Reduction/Savings from Customer Leaks* assuming Newport Beach will provide customers dedicated leak notifications.

Eastern Municipal Water District (EMWD), a wholesaler of water in Southern California, recently completed a demonstration project that included a Customer Portal like the proposed AMI Project. For the demonstration project, EMWD installed AMI units for a subset of its customer base, included daily water use information on customer water bills, and made flow data available to customers on EMWD's website. EMWD determined that implementation of the demonstration project realized an average annual savings of 0.027 AF per meter

across all meters. Since the City'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 26,309 AMI units through implementation of the Customer Portal.

Applying the same average savings of 0.027 AFY/meter to the proposed AMI Project, the following is the water savings calculation:

Water Savings from Customer Portal Use
0.027 AFY/meter * 26,309 meters = **710.34 AFY water saved**

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

The City's AWWA 2017 Water Loss Audit showed water losses totaled 1,079.77 AFY, which includes 199.16 AFY from apparent losses (metering inaccuracies and data handling errors) and 880.61 AFY from real losses (leaks and apparent losses). The City records daily production and demand data and reads all meters on a bimonthly basis to assess and manage distribution system real loss. All metered sales and other verifiable uses, such as backwash, flush water, and operation and maintenance, are recorded. The City does not have a formal program to detect and repair distribution system leaks; however, the City is considering developing a formal leak detection program. Much of the City's steel and ductile iron pipe is protected from early deterioration with a cathodic protection system. This system draws the negative current away from the pipe to a sacrificial anode that erodes instead of the piping. This prevents leakage on the piping and reduces water loss. Customer service field staff are available to assist customers with leak detection. If a customer suspects a leak on their property or experiences a higher than normal water bill, they are encouraged to contact the City's Customer Service Division and request that a staff member check the customer's water meter. City staff only assist customers in attempting to locate the problem, but the customer is responsible for fixing the leak or hiring someone to make repairs. In cases of water meter leaks, a Water Customer Service representative is sent to a customer's property to ascertain the cause of the leak and make repairs, such as replacing blown-out gaskets or replacing a damaged valve or meter. If the leak occurs on the service line from the meter to a home or business, it is the customer's responsibility to make repairs or hire a plumber. The City's water services replacement, valve maintenance, and hydrant maintenance programs help to prevent system losses by systematically inspecting, repairing and replacing (when needed) aging or failing infrastructure.

California Senate Bill (SB) 1420 signed into law in September 2014 requires urban water suppliers that submit UWMPs to calculate annual system water losses using the water audit methodology developed by the AWWA. The AWWA water loss methodology determines the City's current distribution system losses and/or the potential for reductions in water use by individual users. Water losses are defined by the IWA as the difference between distribution systems input volume (i.e. production) and billed authorized consumption. The audit was developed by the IWA Water Loss Task Force as a universal methodology that could be applied to any water distribution system. This audit meets the requirements of SB 1420. Understanding and controlling water loss from a distribution system is an effective way for the City to achieve regulatory standards and manage their existing resources.

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, as discussed in the City's 2015 UWMP.

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, including the EMWD's study on potential for reducing water use, are discussed above in sections (a) and (b).

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.).***

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 Phase 2 Project will upgrade 26,309 existing meters (including 25,467 manually read meters and 842 AMR vehicle drive-by read meters) with Mueller Systems' Mi.Net AMI system, a fixed-base technology system that will automatically collect and store hourly consumption data, aiding in water conservation and water use efficiency, improved water management, and energy savings. A total of 132 meters will be retrofitted and 26,177 meters will be replaced.

The hardware composing Mueller Systems' Mi.Net AMI system will be installed in the sizes and quantities shown in Table 5. These are approximations known at this time and actual values may differ. Any differences in quantities will be handled via change order. All meters, registers, nodes, and boxes, etc. will be installed by Mueller Systems. All products, including third-party products, such as boxes and lids, will be approved by the City prior to purchase by Mueller Systems. The AMI network and host software will be installed and managed by Mueller Systems.

Table 5. AMI Devices Installed in the City of Newport Beach Service Area

Size and Type of Meters	Quantity
5/8" Meters Mueller 420 Series	16,917
3/4" Meters Mueller 435 Series	4
1" Meters Mueller 452 Series	7,259
1-1/2" Meters Mueller 500 Series	553
2" Meters Mueller 500 Series	1,444
3" Neptune Tru/Flo Compound Meters (Retrofit)	32
3" Neptune HPT Compound Meters (Retrofit)	11
4" Neptune Tru/Flo Compound Meters (Retrofit)	52
4" Neptune HPT Compound Meters (Retrofit)	9
4" Neptune Proctectus III Compound Meters (Retrofit)	1
6" Neptune Tru/Flo Compound Meters (Retrofit)	13
6" Neptune HPT Compound Meters (Retrofit)	3
6" Neptune Proctectus III Compound Meters (Retrofit)	2
8" Neptune HPT Compound Meters (Retrofit)	7
8" Neptune Proctectus III Compound Meters (Retrofit)	2
Total	26,309

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

Actual water savings will be verified upon completion of the Phase 2 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.

The City's 2018 potable water demand of 14,771 AFY was met through locally extracted groundwater and purchased imported water from MWDOC. A total of 3,677 AFY of purchased imported water from MWDOC is currently being delivered to the City's service area for residential, commercial, and institutional customers. Water lost from any leakage is reasonably considered to be seeping back into the ground and/or flowing to a storm drain or ocean. A total of 1,157.32 AFY will be conserved by the proposed Phase 2 AMI Project. Water conserved as a result of the proposed Project's implementation represents a decrease in local water demand, which would decrease the amount imported by the City through MWDOC and MWD. Therefore, the conserved water will remain at its source, the Bay-Delta and Colorado River, for environmental and other uses.

Evaluation Criterion B: Water Supply Reliability (18 points)

Address how the project will increase water supply reliability. Proposals that will address more significant water supply shortfalls benefitting multiple sectors and multiple water users, will be prioritized. General water supply reliability benefits (e.g., proposals that will increase resiliency to drought) will also be considered. Provide sufficient explanation of the project benefits and their significance. These benefits may include, but are not limited to, the following:

1. Will the project address a specific water reliability concern?

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

California has been experiencing historic drought conditions across the state. California's drought conditions have been severe in the Project area, but are now shown to be moderate / abnormally dry. Governor Brown's declaration of a drought emergency on January 17, 2014, resulted in the City immediately issuing news releases and notices to 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, which has placed an immense strain on water supplies and has resulted some of the lowest water storage levels in history. Improvements in water use efficiency will free up additional supply to address shortages elsewhere. In response to the lowest Sierra snowpack in recorded history and ongoing drought conditions, Governor Brown signed Executive Order B-29-15 on April 1, 2015, directing the State Water Resources Control Board (SWRCB) to implement mandatory water reductions in cities and towns across California to reduce water usage by 25%. In response to the order, on May 5, 2015, the SWRCB adopted an emergency regulation requiring an immediate 25% reduction in overall potable urban water use statewide. To achieve the 25% reduction statewide, the SWRCB placed each urban water supplier into one of eight tiers that are assigned a conservation standard ranging between 4% and 36%. On November 13, 2015, Governor Brown issued Executive Order B-36-15 extending restrictions to urban potable water usage to reach the statewide goal of 25% reduction; this was the fifth in a series of executive orders by Governor Brown to address California's severe drought conditions. In 2016, the SWRCB adjusted the water reduction percentage to 22% based on a variety of hydrological conditions. In February 2017, the SWRCB ruled to extend the water reduction. 2015 was the fourth consecutive year of

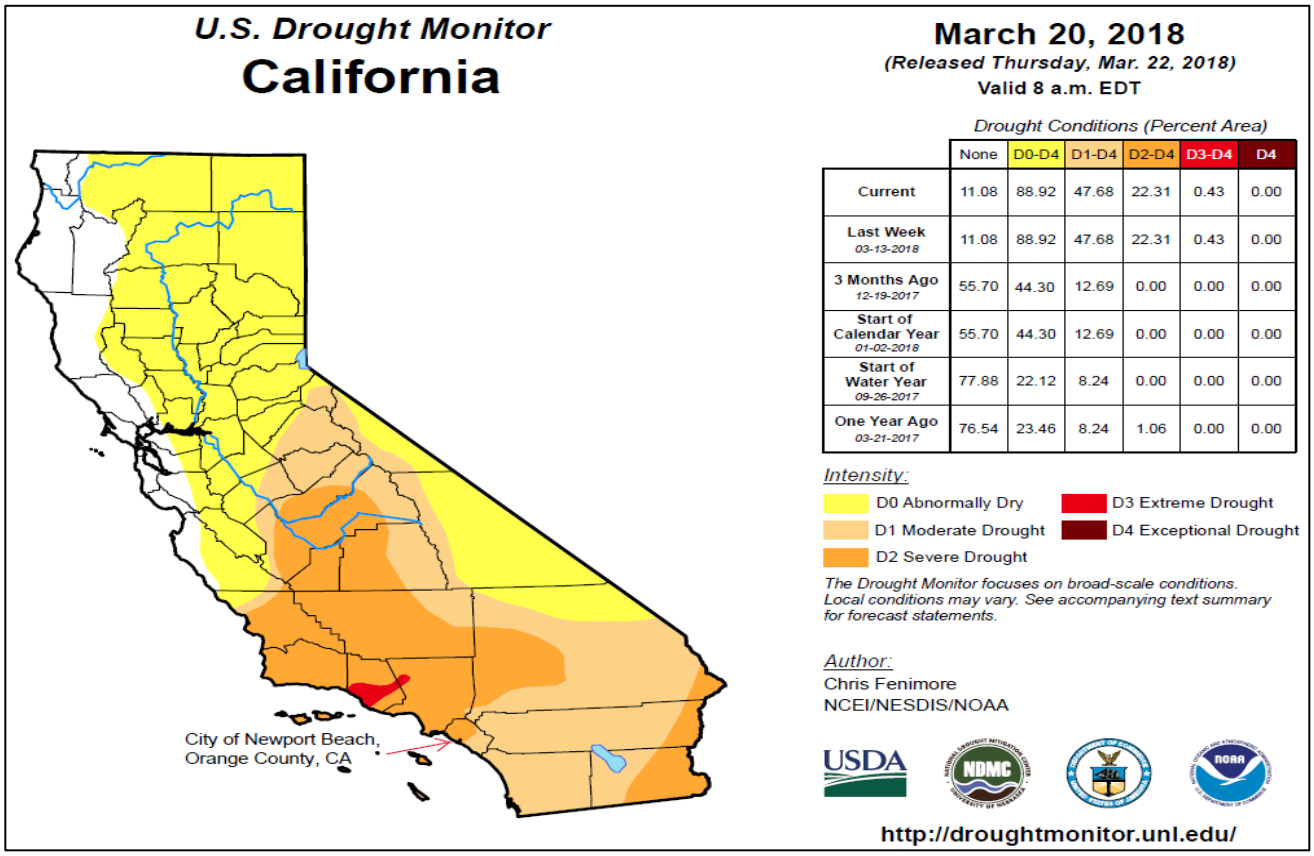
one of the worst droughts in California's history. 2014 was the hottest year and 2013 was the driest year on record in the state. Due to these unprecedented hot and dry conditions, nearly half of the water stored in regional reservoirs has been used and one wet year will not make up for the severe water shortage conditions. Despite moderate January 2018 precipitation in the Sierra Nevada after a historically dry December 2017, a California Department of Water Resources (DWR) manual snow survey conducted on February 1, 2018, east of Sacramento revealed only14 percent of the early-February average. As of February 28, the snowpack across California is "on par with the historical average for this time of year, thanks in no small part to an atmospheric river that brought heavy snowstorms to the Sierra Nevada; Typically, California relies on a handful of large storms like we saw earlier this year." said DWR Director Karla Nemeth. "It's a start, but the next two or three months will determine what it means for our reservoirs and overall water supply." (2/1/2018, available online: http://www.water.ca.gov/news/newsreleases/2018/020118snowsurvey.pdf). Statewide drought impacts are summarized in Table 6, *Summary of Drought Impacts*. On March 20, 2018, the U.S. Drought Monitor declared the County of Orange, California, to be severe" drought. (Figure 5, *U.S. Drought Monitor Map Depicting Orange County, CA*). Recent heavy storms have shifted the intensity to abnormally dry as of February 21, 2019.

Drought conditions result in a heightened competition for finite water supplies and over-allocation within MWD's service area. The Project addresses heightened competition for finite water supplies by increasing recycled water supplies to offset limited imported water supplies. The City is 100% reliant on imported water from MWD and MWDOC for 25% of its potable water supplies. 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. Imported water supplies are more expensive and more energy intensive than recycled water or other local supplies. This can result in competition for limited water supplies through the Delta and the Colorado River Basin. It was forecasted by Reclamation that projected demands will exceed available supply in the Colorado River, and to reduce the supply gap, increased conservation and water use efficiency measures will need to be implemented. The Project increases local water supply reliability by reducing the need for potable water and putting recycled water supplies to greater beneficial use. 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 City through MWDOC and MWD; thereby, the conserved water will remain at its source, in the Bay-Delta and in the Colorado River, for other uses. The Project will yield real water supply benefits to urban water users in the short term by conserving 1,157.32 AFY, directly offsetting approximately 25% or 289.33 AFY of imported water demand. This benefit will be realized annually, year-round for the 20-year life of the Project.

Table 6. Summary of Drought Impacts

Risk to Meeting Existing Drinking Water Demands	Risk to Meeting Existing Agricultural Demands	Risk to Meeting Ecosystem Water Demands	Risk to Groundwater Supplies and Economic Costs	Other Drought-Related Adverse Impacts
- County of Orange, declared in extreme drought in 2014; declared severe drought in 2018 - Region in danger of not receiving imported water supply for potable uses during catastrophic or drought conditions - 50% reliance on imported water for potable supply	- Reduced reliability on imported water supply for irrigation. - Agricultural demands are ~16% of Southern California's total water demand	- Coastal Sage Scrub does not tolerate repeated fire events - Oak trees show signs of stress	- During drought, Orange County Water District expended $80M on untreated imported water from MWD. Water was recharged into groundwater basin, which helped to partially refill the basin and offset drought impacts. Groundwater levels fell, but were within the normal historical operating range.	- Increased water quality issues - Increase in water demands for landscape use due to higher temperatures - Risk of catastrophic wildfires, including Holy Jim fire. - Limited imported water supply threatens residents, including disadvantaged communities, agriculture, and business, including real estate property values, if water is not available for irrigation - Tension over finite supplies

Figure 5. U.S. Drought Monitor Map Depicting Orange County, CA



- ***Describe how the project will address the water reliability concern. In your response, please address where the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.***

This AMI Project will help address the issue of threatened water reliability for the Orange County region by conserving 1,157.32 AFY of water, including 289.33 AFY of imported potable water. The City is reliant on imported water for 25% of its supply, while the rest of its supply comes from groundwater via OCWD. The water conserved by the Project will be used to offset groundwater pumping from OCWD's groundwater basin, and reduce demands on diversions from the SWP and CRA.

The greater South Orange County region is 50% dependent on imported water, which poses a great risk during a water shortage. Imported pipelines cross five faults over 200 times, posing a high vulnerability to the region during times of drought, earthquake, or other catastrophic event. The 2004/2013 South Orange County Reliability Studies identified the following Risks: Emergency shutdowns of outside facilities, prolonged drought, and lack of local project implementation. By implementing the Phase 2 AMI Project, approximately 23,146 AF of imported will be saved over the 20-year lifetime of the AMI Project, thereby decreasing the region's imported water dependency and increasing local reliability.

The AMI Project will improve the reliability of water supplies from both SWP and CRA, which would ultimately benefit people, agriculture, and the environment associated with both of these water supply sources. The City 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 1,157 AFY of water that would otherwise be lost and unavailable to the City, the Orange County Region, or the conserved water will remain at its source, in the Bay-Delta and in the Colorado River, for environmental and other uses.

The source of water for this AMI Project is imported water and groundwater 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. The SWP typically provides about a third of Southern California's water. Storage in the City's other supply source, the Colorado River, stood at less than 50% of capacity after 15 drought years in the Southwest in 2018. 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.

The AMI Project will directly contribute to building drought resiliency by implementing a high caliber and proven 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, given the increasing costs of imported water and the severe water supply challenges that Southern California constantly faces.

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

The conserved water will be reflected in reduced potable demands in the City's water management strategy. A portion of the conserved water will remain in the Bay-Delta or CRA, while the balance will remain in the OCWD's groundwater basin.

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

Up to 289.33 AFY will remain in the Bay-Delta or CRA, while 867.99 AFY will remain in the OCWD's groundwater basin.

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

- ***Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?***
  - ***Will the project benefit species (e.g. federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of particular recreational, or economic importance)? Please describe the relationship or the species to the water supply, and whether the species is adversely affected by a Reclamation project.***

The AMI Project provides environmental benefits and improves the status of the state listed species by making more water available in the Bay-Delta and Newport Back Bay to support the species and their habitats. Approximately 3,677 AFY of imported water is moved from the northern California Bay-Delta area through the SWP and the Colorado River Aqueduct to meet the City's demand for water, as shown in Table 1. With a reduction in this imported water demand by 289.33 AFY, the impact on the Delta Smelt, Salmon, and other state listed species currently impacted by water pumping activities will be alleviated to the extent of the AMI Project.

The City's water supply consists of imported water obtained from MWDOC via MWD. MWD typically blends supplies from its CRA with water allocated from the SWP before delivery to the City. As the AMI Project seeks to offset imported water deliveries to the City by 289.33 AFY, 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. Any reduction in water use from the SWP for this region has a positive impact on the species in and around the Bay-Delta area.

"Table A" water is the maximum entitlement of SWP water for each water contracting agency. In 2018, the combined maximum Table A amount is 4.17 million AFY. Of this amount, 4.13 million AFY was the maximum Table A water available for delivery from the Delta pumps as stated in the State Water Contract. However, deliveries commonly are less than 50% of the Table A. DWR has altered the SWP operations to accommodate species of fish listed under the Biops, and these changes have limited SWP deliveries. DWR's Water Allocation Analysis indicated that export restrictions are currently reducing annual deliveries to MWD as much as 150 trillion acre feet (TAF) to 200 TAF under median hydrologic conditions. The AMI Project will offset imported water deliveries to the City by 289.33 AFY, thereby alleviating stress on the Bay-Delta habitat.

The Project will protect the Delta Smelt. Endemic to the upper Sacramento-San Joaquin Estuary of California, Delta Smelt mainly inhabit the freshwater-saltwater mixing zone of the estuary, except during its spawning season, when it migrates upstream to freshwater following winter "first flush" flow events (around March to May). It functions as an indicator species for the overall health of the Delta's ecosystem. Because of its one-year lifecycle and relatively low fecundity, it is very susceptible to changes in the environmental conditions of its native habitat. Efforts to protect the endangered fish from further decline have focused on limiting or modifying the large-scale pumping activities of state and federal water projects at the southern end of the estuary thereby limiting water available to farming. However, these efforts have not prevented the species

from becoming functionally extinct in the wild. Historically, Delta Smelt were relatively abundant in the upper Sacramento-San Joaquin Estuary, with populations declining dramatically in the 1980s. They were listed as threatened by both federal and state governments in 1993, and sustained record-low abundance indices prompted their listing as endangered under the California Endangered Species Act in 2010.Critical habitat was listed for Delta Smelt on December 19, 1994.

Delta smelt are threatened with extinction due to anthropogenic alterations to their ecosystem, including urbanization, non-native species, water diversions, contaminants, and the conversion of complex tidal habitats to leveed channels. The Delta Smelt 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.

The AMI Project will upgrade (replace and/or retrofit) meters throughout the City of Newport Beach, which includes the Upper Newport Bay (known to locals as "The Back Bay"). Upper Newport Bay is a large coastal wetland (an estuary) in Newport Beach, Southern California and a major stopover for birds on the Pacific Flyway. Dozens of species, including endangered ones, can be observed here. Upper Newport Bay Nature Preserve and Ecological Reserve represent approximately 1,000 acres of open space. The Upper Newport Bay was purchased by the State of California in 1975 for its Fish and Wildlife Department's Ecological Reserve System. In 1985 the upper west bluffs and lands surrounding the bay became part of an Orange County regional park, which offers outdoor activities such as bird-watching, jogging, bicycling, hiking, and kayaking. An organization known as the Newport Bay Conservancy provides volunteers to answer visitors' questions and guide them through the various activities. The bay is protected by the California Bays and Estuaries Policy. The main tributary of the Upper Newport Bay is San Diego Creek, which flows past the San Joaquin Wildlife Sanctuary before entering the bay. The bay is connected to the Pacific Ocean through the lower Newport Bay, the harbor of Newport Beach. The AMI Project will have a positive impact on the Back Bay by conserving water and reducing leaks, thereby reducing runoff and nonpoint source pollutants that would otherwise make its way into to the Back Bay. The AMI Project includes retrofitting or replacing existing meters and will have no negative impact on the Back Bay; the Project may contribute to its protection by reducing the amount of nonpoint source pollution entering its waters.

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

A total of 1,157.32 AFY will be conserved by the proposed Phase 2 AMI Project benefitting the larger municipal initiative to achieve the statewide goal of 20% reduction in urban water use by 2020 as mandated by SBX7-7. The Project will directly reduce the City's water demand by 1,157.32 AFY through the Project's water savings. Twenty-five percent of the City's water supply consists solely of imported water obtained from MWD through MWDOC, amounting to 289.33 AFY of imported water savings. The City is limited in the amount of groundwater it can pump each year. Hence, potable water savings from the Project will directly reduce the amount of imported water production by the City and allow 289.33 AFY to be conserved to instream flows in the SWP (Bay-Delta) and CRA. As described above, the City's current potable water demand is 14,771 AFY, met through locally extracted groundwater and purchased imported water from MWDOC. A total of 3,677 AFY of purchased imported water from MWDOC is currently being delivered to the City's service area for residential, commercial, and institutional customers. Water lost through any leakage is likely seeping back into the ground and/or making its way into a storm drain or ocean. 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 City through MWDOC and MWD by 289.33 AFY; therefore, the conserved water will remain at its source, in the Bay-Delta and in the Colorado River, for other users.

MWD typically blends supplies from its CRA with water allocated from the SWP before delivery to MWDOC and the City. MWD has a basic entitlement of 550,000 AFY of Colorado River water, plus surplus water up to an additional 662,000 AFY when the following conditions exists (MWD, 2015 UWMP, June 2016). Unfortunately, MWD has not received surplus water for a number of years. The Colorado River supply faces current and future imbalances between water supply and demand in the Colorado River Basin due to long term drought conditions. Over the past 16 years (2000–2015), there have only been three years when the Colorado River flow has been above average (MWD, 2015 UWMP, June 2016). The long-term imbalance in future supply and demand is projected to be approximately 3.2 MAF by the year 2060. Approximately 40 million people rely on the Colorado River and its tributaries for water, with 5.5 million acres of land using Colorado River water for irrigation. Climate change will affect future supply and demand as increasing temperatures may increase evapotranspiration from vegetation along with an increase in water loss due to evaporation in reservoirs, therefore reducing the available amount of supply from the Colorado River and exacerbating imbalances between increasing demands from rapid growth and decreasing supplies.

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

The proposed Project is associated with the Colorado River Basin, and the City receives water from MWD via MWDOC, which currently relies on the CRA and the SWP as its primary sources of water. The 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 City purchases approximately 25% of its supply from MWD through MWDOC. Water is imported from the Colorado River and from northern California via the SWP. Imported water savings associated with the Project translate to more water remaining in the fragile systems of the Bay-Delta and the Colorado River. The proposed Project directly supports Reclamation's current efforts to further advance water use efficiency and conservation. The Project benefits Reclamation because it reduces imported water supplies from the Colorado River and northern California. The Project will not directly benefit tribes nor help Reclamation meet trust responsibilities to Tribes as there is no direct impact on tribes in the Project area. However, the Project may help Reclamation meet trust responsibilities in the SWP or CRA areas since the Project will be reducing demand on these sources. While the Project is not in the same basin as a Reclamation project or activity, it will contribute to a basin where a Reclamation project is located. The imported 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 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.

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

Integrating system-wide water conservation measures is critical for meeting water supply demands. The AMI Project is needed to ensure disadvantaged communities (DACs) have a reliable potable water supply. The Orange County region includes DACs, including areas in the City of Newport Beach, as shown in the Figure 6, *Disadvantaged Communities Map*. The Orange County region is highly reliant on imported water supply, with approximately 50% of its water supply coming from imported sources. The City receives imported water from MWDOC, whose service area includes DACs. The proposed AMI Project assists in reducing the region's reliance on imported water supply through saving 289.22 AFY. The City's 2015 UWMP includes water use projections for single-family and multi-family residential housing for lower income and affordable households.

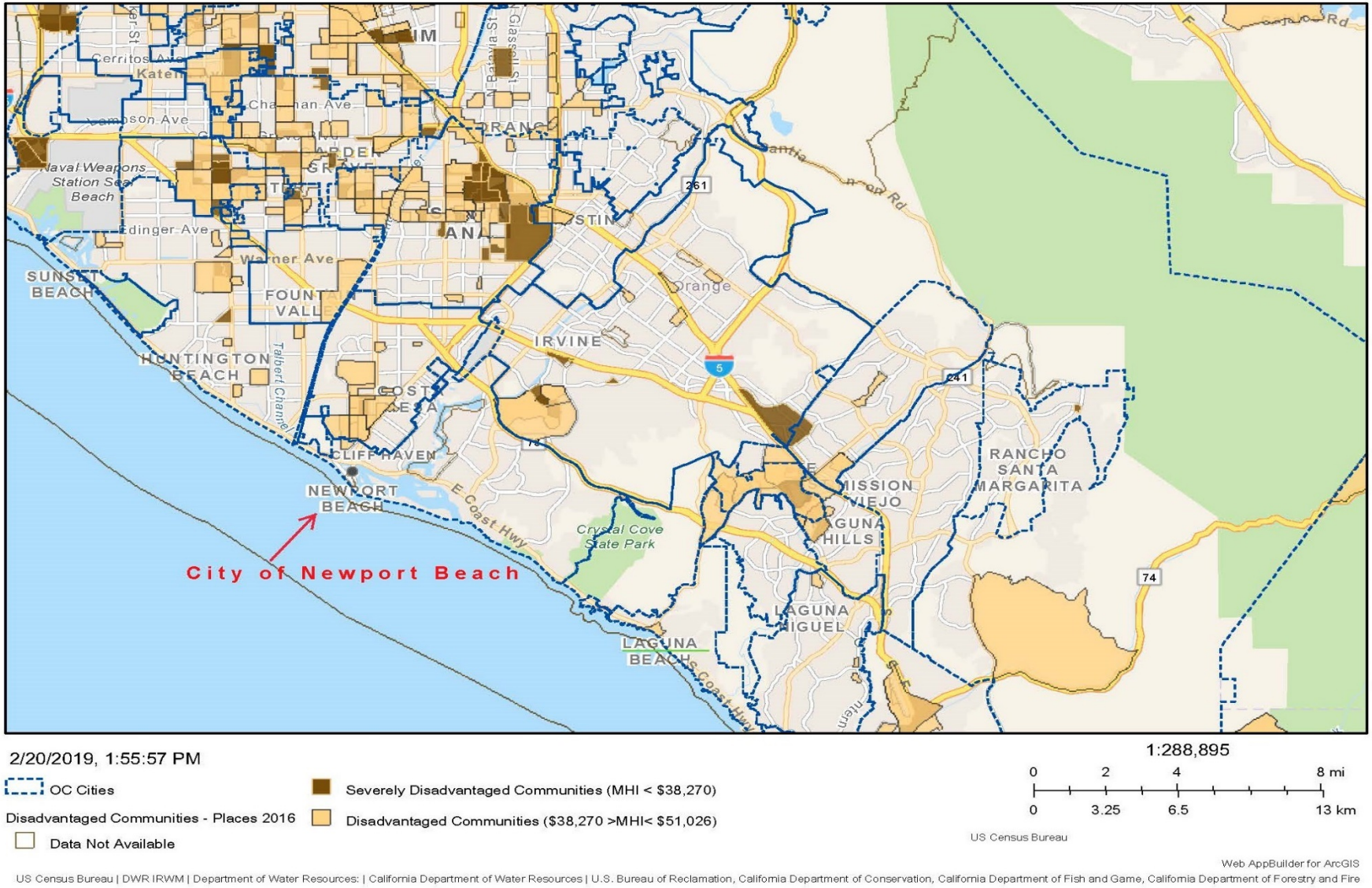
This assists the City in complying with the requirement under Government Code Section 65589.7 granting priority for providing water service to lower income households. A lower income household is defined as a household earning below 80% of the median household income (MHI). California Department of Water Resources (DWR) recommends retail suppliers rely on the housing elements of city or county general plans to quantify planned lower income housing with the City's service area (DWR, 2015 UWMP Guidebook, February 2016). The Regional Housing Needs Assessment (RHNA) assists jurisdictions in updating general plan's housing elements section. The RHNA identifies housing needs and assesses households by income level for the City through 2010 decennial Census and 2005-2009 American Community Survey data. The fifth cycle of the RHNA covers the planning period of October 2013 to October 2021. The Southern California Association of Governments (SCAG) adopted the RHNA Allocation Plan for this cycle on October 4, 2012, requiring housing elements updates by October 15, 2013.

The California Department of Housing and Community Development reviewed the housing elements data submitted by jurisdictions in the SCAG region and concluded the data meets statutory requirements for the assessment of current housing needs. All together the City has 28.22% low-income housing (SCAG, RHNA, November 2013). Table 7, *Projected Water Demands for Housing Needed for Low-Income Households (AF),* shows the projected water demand for low-income households in the City. The AMI Project's water savings of 1,569.61 AFY will ensure a reliable supply for the City's low-income households and DACs.

Table 7. Projected Water Demands for Housing Needed for Low-Income Households (AF)

	Fiscal Year Ending				
	2020	**2025**	**2030**	**2035**	**2040**
Total Residential Demand	8,285	8,908	8,962	8,952	8,957
SF Residential Demand – Low-Income	1,787	1,921	1,933	1,931	1,932
MF Residential Demand-Low Income Households	551	592	596	595	596
Total Low-Income Households Demand	*2,338*	*2,514*	*2,529*	*2,526*	*2,528*

Figure 6. Disadvantaged Communities Map



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

Yes, the Phase 2 AMI Project promotes and encourages collaboration to increase water supply reliability. The AMI Project will improve the reliability of water supplies from both the SWP and the CRA, which would ultimately benefit people, agriculture, and the environment associated with these water supply sources. The AMI Project enhances its partnership and collaboration with MWDOC, MWD, and OCWD toward greater regional water conservation and reliability efforts throughout Southern California. The City 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 1,157.32 AFY of water that would otherwise be lost and unavailable to the City, the region, or in the Bay-Delta and Colorado River for environmental and other uses.

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

Widespread support for the AMI Project from all water agencies across the region is demonstrated through the partnerships and collaborations, as it aims to enhance water reliability for the region. Letters of support were provided by MWDOC and OCWD (Exhibit B, *Letters of Support*). The City consulted with other local agencies who have implemented an AMI Project, including EMWD, about the results of AMI pilot studies and Laguna Beach County Water District, who was a recipient of a WaterSMART: Water and Energy Efficiency Grant from Reclamation in FY 2016. Laguna Beach County Water District is an MWDOC member agency and a neighboring agency to the City. The district's funded project is similar in nature to the proposed AMI Project and therefore aided the City in gaining insight about the AMI system and provided support for the City's AMI Project.

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

Collaboration in support of implementation of the AMI Project advances measures toward water reliability in the region. The proposed Phase 2 AMI Project, if funded, could make available approximately 1,157.32 AFY of water that would otherwise be lost and unavailable to the City and the Orange County region. Increased collaboration between the City and its customers will also demonstrate acknowledgement of the City's progressive approach to increasing conservation through improved water management.

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

The potential for future water conservation improvements by other water users throughout the region would result by completion of the City's AMI Project. 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 based on beneficial results. The City's customers are already committed to and have been successful in maximizing water conservation. The AMI Project would assist the City in serving as an example of effective water use efficiency and water conservation to other water agencies that are nearly 100% dependent on imported water supplies. The region includes many other water suppliers that could use the collective results of the Project to advance water conservation improvement measures.

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

There is a water-related conflict within the Bay-Delta and the Colorado River (over limited water supplies) from which the City 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 City is 100% reliant on imported water supplies from the Bay-Delta and CRA for 25% of its potable water supply. The Orange County region is 50% 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. The AMI Project receives water from the Colorado River Basin, which experiences frequent tension over the water in the Colorado River Basin.

- ***Describe the roles of any partners in the process. Please attach any relevant supporting documents.***

There are no specific partners for this Project.

4. Will the project address water supply reliability in other ways not described above?

The Project will address water reliability in other ways not described above, including providing the public with enhanced water use awareness and water conservation education. The Project's water conservation will assist with the response to climate change, which has recreational, social and economic impacts. Changing climate patterns are expected to shift precipitation patterns and affect water supply. Unpredictable weather patterns will make water supply planning more challenging. The areas of concern for California include a reduction in Sierra Nevada Mountain snowpack, increased intensity and frequency of extreme weather events, and rising sea levels causing increased risk of Delta levee failure, seawater intrusion of coastal groundwater basins, and potential cutbacks on the SWP and CVP. In addition, the Colorado River Basin supplies have been inconsistent since about the year 2000, resulting in the upper basin runoff being below normal. Climate models are predicting a continuation of this pattern whereby hotter and drier weather conditions will result in continuing lower runoff. Legal, environmental, and water quality issues may have impacts on MWD supplies. The AMI Project will help alleviate the impacts of climate change by reducing the demand on imported water supplies.

Evaluation Criterion C: Implementing Hydropower (18 points)

The proposed Phase 2 AMI Project does not include hydropower components.

Evaluation Criterion D: Complementing On-Farm Irrigation Improvements (10 points)

The proposed Phase 2 AMI Project indirectly complements on-farm irrigation improvements in the Bay Delta region by reducing imported water demand on the Bay Delta (via the SWP) by approximately 289.33 AFY, making this same amount of water available for farm and agricultural practices in the Bay Delta. Through the Bay Delta Initiative (BDI), the Natural Resources Conservation Service (NRCS) and its local partners aim to address the critical water quantity, water quality, and habitat restoration needs of the Bay Delta region. The Bay Delta region encompasses more than 38 million acres and is one of the most important estuary systems in the nation. This region provides drinking water for more than 23 million people and irrigation water to 4 million acres of farmland. More than $400 billion in economic activities occur in the region. America's stewardship of the Bay Delta is critical. Increased demand for limited water resources and declining water quality threaten the continued economic and environmental wellbeing of the region. For more than 75 years, the U.S. Department of Agriculture and NRCS have partnered with agricultural producers, forest landowners, urban and suburban residents, and other conservation partners to restore wetlands and enhance aquatic and other wildlife habitat on working agricultural land and private non-industrial forest land in the Bay watershed. The proposed AMI Project will support the BDI and on-farm water use efficiency, conservation, and overall irrigation improvements by allowing more water to remain in the Bay Delta.

Evaluation Criterion E: Department of the Interior Priorities (10 points)

The following demonstrates that the AMI Project supports the Department of the Interior priorities. Only the priorities applicable to the AMI Project have been addressed.

1. Creating a Conservation Stewardship Legacy Second Only to Teddy Roosevelt

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

The proposed AMI Project utilizes science to manage water resources by implementing AMI technology as a best practice for improved leak detection, reduced meter inaccuracies, and reduced water consumption through the customer portal. Reduced water consumption and improved water savings will positively impact land and water management by reducing non-point source pollutants from entering the Upper Newport Bay Ecological Reserve, which spans 752 acres and is one of the largest natural estuaries remaining in California. According to Brian Shelton, of the California Department of Fish and wildlife, less than 5% of California's original coastal estuaries exist today. Therefore, the AMI Project will manage land and water resources, and allow the City of Newport Beach to adapt to changes in the environment, including drought conditions currently impacting the water supply.

b. *Examine land use planning processes and land use designations that govern public use and access*

The AMI Project area is located throughout the City of Newport Beach's water service area. The City of Newport Beach Local Coastal Program Coastal Land Use Plan (Amended by the California Coastal Commission on June 7, 2017, adopted July 26, 2016, Resolution No. 2016-90) was derived from the Land Use Element of the City's General Plan and is intended to identify the distribution of land uses in the coastal zone. The Land Use Element may contain more precise development limits for specific properties. Should a conflict exist, the land use intensity or residential density limit that is most protective of coastal resources shall take precedence. The AMI Project integrates the Coastal Land Use Plan by reducing leaks and unaccounted for water that would potentially contribute to nonpoint source pollution making its way to coastal water resources, including the Newport Beach Back Bay. The Back Bay is the colloquial term for the inland delta in Newport Beach, California. It connects the Upper Newport Bay with the Newport Harbor. It is a nature reserve home to several species of birds with hiking and biking trails. The bay is recognized for protection by the California Bays and Estuaries Policy. The AMI Project implements water conservation into land use throughout the City's water service area across all land uses with metered water accounts.

c. *Revise and streamline the environmental and regulatory review process while maintaining environmental standards*

The AMI Project is an example of the streamlined environmental and regulatory review process in that it has filed a Categorical Exemption per CEQA Title 14 (California Code of Regulations), Chapter 3, Article 19, Section 15302c (see Figure 7), and it is anticipated that a Categorical Exclusion or Finding of No Significant Impacts under NEPA will be granted given the nature of the Project that includes simply replacing or retrofitting existing meters with upgraded AMI meters. A Categorical Exclusion seems appropriate since the AMI Project will likely not have a significant effect on the human environment and, therefore, neither an environmental assessment nor an environmental impact statement would be required.

d. *Review DOI water storage, transportation, and distribution systems to identify opportunities to resolve conflicts and expand capacity*

The AMI Project will result in water savings and therefore, reduce imported water demand, which is supplied

by MWDOC via MWD, which receives water from the SWP and CRA. The Project will help reduce water-related conflict (over limited water supplies) within the Bay-Delta and the Colorado River by leaving additional supplies in those systems.

e. *Foster relationships with conservation organizations advocating for balanced stewardship and use of public lands*

The AMI Project fosters relationships with conservation organizations that are involved with the Newport Beach Back Bay, which includes community education programs, by increasing water conservation and reducing nonpoint source pollution entering the Bay. Educating the youth is one of the most important ways to the preservation of nature, and at the Newport Back Bay there are many organizations and groups that seek to educate members of the community about the importance of nature preserves. The Newport Bay Conservancy, in cooperation with OC Parks, California Department of Fish and Wildlife, the City of Newport Beach, the Newport Aquatic Center, the California Coastal Commission, along with several other organizations, aims to reach out to the public regarding their goal. Their goal is "to increase environmental awareness and promote environmental stewardship at the Bay, in the watershed and beyond so as to protect and preserve not just Upper Newport Bay, but the planet." The Newport Back Bay Science Center is located in Newport Beach, California, on Shellmaker Island. This center's main focus is to supply information on estuarine and marine biology through activities and lectures in a year-round program. This science center is connected to the watershed, which is home to around 175,000 people in urban cities. The Newport Back Bay Science Center's goal is to educate the citizens on how they can aid in keeping the Back Bay area clean and how they affect the watershed. They strive to educate this generation and generations to come to keep the movement for a clean environment on an incline.

f. *Identify and implement initiatives to expand access to DOI lands for hunting and fishing*

This is not applicable.

g. *Shift the balance towards providing greater public access to public lands over restrictions to access*

The AMI Project supports preserving the water quality of the Back Bay and its public access to activities that are open to the public, including kayaking, canoeing, picnicking, horseback riding, biking, hiking and bird watching.

2. Utilizing Our Natural Resources

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

As previously described, the AMI Project will result in 1,157.32 AFY of water savings, which translates to a savings of energy by reducing the amount of energy required to distribute imported water and groundwater. The total reduced water demand results in energy savings that equates to a total of 1,491,914.31 kWh/year, making this same amount of energy available to meet security and economic needs.

b. *Ensure access to mineral resources, especially the critical and rare earth minerals needed for scientific, technological, or military applications*

This is not applicable.

c. *Refocus timber programs to embrace the entire 'healthy forests' lifecycle*

This is not applicable.

d. *Manage competition for grazing resources*

This is not applicable.

3. Restoring Trust with Local Communities

a. *Be a better neighbor with those closest to our resources by improving dialogue and relationships with persons and entities bordering our lands*

The AMI Project restores trust with local communities through the Customer Portal, which will allow customers in the water service area communities to better understand and monitor their water usage. The Customer Portal will allow the City's water customers to have real-time access to their account information and gives them the ability to set up water usage alerts, including leak reports and water budgeting, on an internet-based platform.

AMI Project installation procedures will include community outreach and customer communication and notification of homeowner at time of meter installation, through a variety of measures including, where appropriate and approved by the City, a consumer water bill insert one month prior to meter installations, website outreach via the FAQ section on website for AMI Project, and social media - Utility Facebook/Twitter page alerting residents of the meter project. The public outreach component of the Project will also serve to better educate customers on water resources, management, and conservation.

b. *Expand the lines of communication with Governors, state natural resource offices, Fish and Wildlife offices, water authorities, county commissioners, Tribes, and local communities*

The City of Newport Beach works closely with MWDOC, as a member agency, to ensure imported water supply needs are met. The City also works with OCWD, as a member agency, to provide groundwater supply to its service area. As shown in Figure 4, Irvine Ranch Water District and Mesa Water District also serve portions of the City of Newport Beach. As water suppliers, all of these agencies work together with local communities to meet water supply needs. The AMI Project will result in water savings, which benefits the region and nearby water suppliers by increasing water supply reliability by 1,157.32 AFY.

4. Striking a Regulatory Balance

a. *Reduce the administrative and regulatory burden imposed on U.S. industry and the public*

This is not applicable.

b. *Ensure that Endangered Species Act decisions are based on strong science and thorough analysis*

The proposed AMI Project will reduce imported water demand on the SWP by up to 289.33 AFY, making this same amount of water available for the Delta Smelt and other listed species located in the Delta habitat. The Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes (November 26, 1996) includes the Delta Smelt and monitoring endangered species and potential recovery rates (the Plan is available at the following link: https://www.fws.gov/sfbaydelta/species/delta_smelt.cfm). On December 15, 2008, the Sacramento Fish & Wildlife Office issued a biological opinion (BO) on the Long-Term Operational Criteria and Plan (OCAP) for coordination of the Central Valley Project and SWP. The Service determined that the continued operation of these two water projects, as described in the plan, was likely to jeopardize the continued existence of the delta smelt and adversely modify its critical habitat.

The AMI Project will provide benefits to federally-recognized endangered species by making up to 289.33 AFY available to the CRA and SWP habitats. The City's water supply consists 25% of imported water obtained from MWD through MWDOC. MWD typically blends CRA supplies with water allocated from the SWP before delivery to MWDOC and ultimately to the City. As the AMI Project seeks to offset imported water

deliveries to the City, 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. Science concludes that 29 known species of fish once populated the estuary and currently 12 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. The species' habitat, life cycle, and reproduction rates are adversely affected by water imported via the SWP. 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 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.

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 Project. The Project improves the status of the listed species by making more water available in the Bay-Delta to support the species and their habitats. Any reduction in water use from the SWP for this region has a positive impact on the species in and around the Bay-Delta area. The AMI Project will not result in negative impacts to endangered, threatened, or candidate species and/or the critical habitats in the SWP or CRA.

5. Modernizing Our Infrastructure

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

The AMI Project supports the public/private partnership between the City of Newport Beach, a public entity, and the Mueller Systems Inc., the private contractor selected to implement the proposed AMI Project. Installing new meters within the distribution system will result in savings through improved leak detection/correction. Replacing existing meters will also result in water savings when new technologies are employed. For example, AMR and AMI devices provide real time measurement to the operator and to the customer as well. This allows for improved management by the operator, more conscientious use by the customer, and improved leakage detection by both. Therefore, the Project implements a public private partnership to upgrade existing meter systems to AMI and will modernize existing water metering infrastructure.

b. *Remove impediments to infrastructure development and facilitate private sector efforts to construct infrastructure projects serving American needs*

This is not applicable.

c. *Prioritize DOI infrastructure needs to highlight:*

1. **Construction of infrastructure**
2. **Cyclical maintenance**
3. **Deferred maintenance**

The AMI Project will assist in deferred maintenance of meters because it will upgrade (replace or retrofit) existing meters to AMI meters. Many of the City's meters are at replacement age and are likely erroneously registering lower water use than actual water use. Therefore, more accurate meter readings compared to aging meters will defer maintenance.

Evaluation Criterion F: Implementation and Results

Subcriterion No. F.1—Project Planning

Planning efforts are included that provide support for the proposed project.

Water Conservation Plan and/or System Optimization Review (SOR) in Place
The AMI Project is identified as a priority demand management measure in Chapter 4, Demand Management Measures, Section 4.2 Metering, in the City's 2015 UWMP (June 2016). A copy of the City's 2015 UWMP is available upon request and/or may be downloaded on the City's website located at http://www.newportbeachca.gov/home/showdocument?id=58831. The AMI Project is listed as a priority in the City's 2019 Capital Improvement Program on page vi and 73, and is identified as Project No. 19W12 in the allocated budget, available online at:
http://ecms.newportbeachca.gov/Web/0/edoc/1316396/Capital%20Improvement%20Program%202019.pdf

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

The AMI Project is listed as a priority in the City's 2019 Capital Improvement Program on page vi and 73, and is identified as Project No. 19W12 in the allocated budget, demonstrating the City's financial commitment to implementing this Project as a priority compared to other projects in the City. The City's 2019 CIP may be downloaded from the City's website located at: http://ecms.newportbeachca.gov/Web/0/edoc/1316396/Capital%20Improvement%20Program%202019.pdf.

The AMI Project is identified in and is supported by the City-wide 2015 UWMP (June 2016), which details water use, water loss, and water conservation measures required to reduce water loss throughout the City of Newport Beach's service area (also known as demand management measures). The City's 2015 UWMP includes demand management and water conservation measures in Chapter 4 and mentions the AMI Project: Page 4-2, Section 4.2 Metering of the 2015 UWMP states, "The City is currently running an Advanced Metering Infrastructure (AMI) Pilot Program. There are 100 meters scattered throughout the City with this new AMI technology. City staff is monitoring the information these meters provide while researching full-scale implementation feasibility." Since the 2015 UWMP was completed, the City has completed the pilot program and determined full AMI Implementation throughout the City's service area is a priority. Page 4-6 Section 4.5 Programs to Assess and Manage Distribution System Real Loss of the 2015 UWMP states, "A Water Loss Audit was completed for the City which identified areas for improvement and quantified total loss. Based on the data presented, the three priority areas identified were volume from own sources, billed metered, and customer metering inaccuracies." The proposed AMI Project implements these priority areas by providing leak detection, water loss reduction, and increased customer metering accuracy through real time water use data, including the customer portal.

In addition, the City is currently drafting a Water Master Plan that will include the proposed the AMI Project specifically as a key component. The City anticipates that the Water Master Plan will be completed in Spring 2019.

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 2015 UWMP Water Conservation goals and planning efforts by contributing to leak detection, water loss reduction, and increased customer metering accuracy. The 2015 UWMP Water Conservation goal includes the statewide goal of 20% reduction in urban water use by 2020 as mandated by SBX7-7. As detailed on page 1-1 of the 2015 UWMP, SBx7-7, or the Water Conservation Act of 2009, is part of the Delta Action Plan that stemmed from the Governor's goal to achieve a 20 percent statewide reduction in urban per capita water use by 2020 (20x2020). Reduction in water use is an important part of this plan that aims to sustainably manage the Bay Delta and reduce conflicts between environmental conservation and water supply; it is detailed in Section 3.2.2 of the 2015 UWMP. Page 4-6 Section 4.5 Programs to Assess and Manage Distribution System Real Loss of the City's 2015 UWMP states, "A Water Loss Audit was completed for the City which identified areas for improvement and quantified total loss. Based on the data presented, the three priority areas identified were volume from own sources, billed metered, and customer metering inaccuracies." The AMI Project serves as a water conservation measure that helps the City achieve 20% reduction in urban water use by 2020.

The 2015 UWMP states that in its 5-year capital improvement program, the City plans to advance to AMI cellular technology. The proposed Project implements this planning statement by now being listed as a priority in the City's 2019 Capital Improvement Program on page vi and 73, and is identified as Project No. 19W12 in the allocated budget, demonstrating the City's financial commitment to implementing the priority Project. The City's 2019 CIP may be downloaded from the City's website located at: http://ecms.newportbeachca.gov/Web/0/edoc/1316396/Capital%20Improvement%20Program%202019.pdf.

Subcriterion No. F.2—Performance Measures

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 or better managed, energy generated or saved). All Water and Energy Efficiency Grant applicants are required to propose a "performance measure" (a method of quantifying the actual benefits of their project once it is completed).

The AMI Project will allow for accurate measurement for demands assessment, customer billing, diagnostic testing, locating and quantifying leakage, and other management needs. Installing new meters within the distribution system will also result in savings through improved leak detection/correction. Replacing existing meters can also result in water savings when new technologies are employed. For example, AMI devices provide real time measurement to the operator and, in some cases, to the customer as well. This allows for improved management by the operator, more conscientious use by the customer, and improved leakage detection by both. Quantifying savings associated with meter installation and/or replacement requires analysis of pre- and post-installation measurements from existing meters at strategic locations within the system.

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 City that they have a leak and for all customers who view their flow data through the Customer Portal on the City's website. Water consumption at each of the improved meter 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.

Table 8, *City of Newport Beach AMI Project Performance Measures*, 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 Reclamation throughout the reporting period and included in the final report. Water use monitoring will continue beyond the grant term to make a valid assessment of the actual water savings from this AMI Project for the life of the Project (20 years).

Table 8. City of Newport Beach AMI Project Performance Measures

Performance Measure	Target	Measurement Tools and Methods
Water Savings: Reduction in Consumption	710.34 AFY	• Water consumption reported by the cellular technology for each customer who is provided by the City with access to or who accesses independently real-time flow data produced by the new water metering units will be analyzed over an initial 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 (Leakages)	238.02 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.
Water Savings: Water Savings from Reduced Meter Inaccuracies	209.96 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: 1,100,032.66 kwh/year	• Water savings will be converted to energy savings using the calculation of 2,500 kWh/AF of water conserved.
Carbon Emissions Savings	671,019.92 lb CO_2/year from water savings	• 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 = 2,500 kWh/AF and CO_2 emissions= 0.61 lb of CO_2/kWh.

Installing the meters will result in approximately 1,157.32 AFY of water saved. As part of the monthly meter reading process, City staff checks for any signs of water leaks at the meter along with a visual system check. As part of the billing process, water consumption is compared to prior months and years usage. If a leak is evident on the customer's side of the meter, the customer is notified of the leak either in person on their bill or both depending on the severity of the leak. The City conducts monthly water loss audits and system integrity, as well as conducts leak detection using in-house City staff in addition to using outside consultants for leak detection services on an as-needed basis to detect and repair distribution system leaks. Senate Bill 1420 signed into law in September 2014 requires urban water suppliers that submit UWMPs to calculate annual system water losses using the water audit methodology developed by the AWWA.

The following studies provide baseline data for the AMI Project: The City's AMI pilot program and the City's 2015 UWMP, which includes water conservation by replacing the City's meters with an upgraded AMI meter

program and the complete AWWA audit. Implementation of the AMI Project in the neighboring water service area of LBCWD has resulted in significant water savings and the EMWD's research results prove tremendous savings through the Customer Portal, as described in Evaluation Criterion A: Quantifiable Water Savings.

The City 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 City in analyzing the data collected as part of the AMI Project. It is the goal of the City to equip City 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 City 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.

Subcriterion No. F.3 – Readiness to Proceed

Describe a detailed plan (e.g., estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates).

- ***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.***

The Project's implementation plan is shown in Table 9, *City of Newport Beach AMI Project Schedule with Dates* below, including stages and duration of the proposed work, including major tasks, milestones, and dates.

Table 9. City of Newport Beach AMI Project Schedule with Dates

Project Schedule by Task / Milestone	Start Date	End Date	Duration
Funding Award (estimated date)	9/30/19	9/30/19	1 day
Project Management and Reporting	9/30/19	9/30/22	3 years
Environmental Review	10/01/19	11/1/19	1 month
Procurement and Installation of AMI System	11/1/19	11/1/20	1 year
Meter Equipment Procurement	11/1/19	4/1/20	5 months
Installation of AMI Meters	2/1/20	8/1/22	2.5 years
Final Implementation	1/2/20	8/1/22	2 years, 7 months

- ***Describe 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 on City property. Final approval from the City Council would be required prior to proceeding with the AMI Project.

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

A preliminary network design has been completed based on the inputs provided to Mueller Systems and is attached as Exhibit A. Mueller Systems will conduct final site surveys and develop a Final Network Design

following contract execution. Both parties will review network design inclusive of locations, assumptions, etc. prior to installation of network equipment.

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

The City of Newport Beach City Council will pass a resolution of support and adoption of the Project after notification of grant award. No new policies are required to implement the Project.

- ***Describe how the environmental compliance estimate was developed. Has the compliance cost been discussed with the local Reclamation office?***

The City has filed a Categorical Exemption pursuant to CEQA Title 14 (California Code of Regulations), Chapter 3, Article 19, Section 15302c for the Project, as shown in Figure 7, *CEQA Notice of Exemption Filed for City of Newport Beach AMI Project*. It is anticipated that a Categorical Exclusion or Finding of No Significant Impact (FONSI) under NEPA will be issued by Reclamation given the nature of the Project that includes simply replacing existing meters with upgraded AMI meters. A Categorical Exclusion or FONSI is anticipated since the AMI Project will likely not have a significant effect on the human environment and, therefore, neither an Environmental Assessment nor an Environmental Impact Statement would be required. In addition, neighboring water suppliers, the LBCWD and South Coast Water District, were awarded a $300,000 grant via cooperative agreement with Reclamation for their AMI Projects under the WaterSMART WEEG FOA for FY 2016 and 2017, respectively. Per their grant agreements, the total budget for Reclamation's environmental compliance review was $1,000. Based on the City's experience and these facts from nearby water suppliers, a total of $1,000 has been budgeted for environmental compliance costs. The amount of the line item is based on the actual expected environmental compliance costs for the project, including Reclamation's cost to review environmental compliance documentation. The compliance cost of $1,000 was discussed with Doug McPherson, Environmental Protection Specialist Bureau of Reclamation, Southern California Area Office on February 28, 2019 via phone call. He concurred with this cost.

Evaluation Criterion G: Nexus to Reclamation Project Activities (4 points)

1. Is the proposed project connected to Reclamation project activities? Does the applicant receive Reclamation project water? Is the project on Reclamation project lands or involving Reclamation facilities? Is the project in the same basin as a Reclamation project or activity? Will the proposed work contribute water to a basin where a Reclamation project is located?

The proposed AMI Project is associated with the Colorado River Basin, as the City receives water from MWD via MWDOC, which currently relies on the CRA and the SWP as its primary sources of water. The AMI Project itself does not directly involve Reclamation project lands, Reclamation facilities or in a common basin, 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 City purchases 25% of its supply imported from the Colorado River and from northern California via the SWP. 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 water reliability activities because it reduces imported water supplies from the Colorado River and northern California, the Bay-Delta.

The water savings attained will be the result of reduced imports from the Bay-Delta and the Colorado River, thereby contributing water to 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.

2. Will the project benefit any Tribes?

The AMI Project will indirectly help Reclamation meet trust responsibilities to Tribes as there is no direct impact to tribes in the Project area. However, the Project may help Reclamation meet trust responsibilities in the SWP or CRA areas since the Project will be reducing demand on these sources. Any increase in water reliability and greater availability in overall water supply resulting from water use efficiency efforts would 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, of the tribes.

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

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

The Non-federal cost-share is 83.674% to be provided through cash contributions, shown as follows:

$ 7,688,009 Non-Federal Funding
$ 9,188,009 Total Project Cost
= 83.674%

PROJECT BUDGET

The project budget includes:
(1) Funding plan and letters of commitment
(2) Budget proposal
(3) Budget narrative

The complete AMI Project Budget includes a Funding Plan, Budget Proposal, Budget Narrative, and the SF 424 Budget Form.

Funding Plan and Letters of Commitment

Non-Federal Share of Project Costs
The non-Federal share of the AMI Project costs will be funded through the City's Reserves Fund, which is funded by City Potable Water Rates and Charges, including costs and services covered by the City water customers' bills.

Cost Share Contribution
The estimated City contribution (non-Federal subtotal) is $7,688,009. The City will provide its cost share in monetary (cash) contributions.

Any Costs Incurred Before the Anticipated Project Start Date
The City does not anticipate any costs prior to the Project start date, anticipated after September 30, 2019.

Funding Partners
None.

Letters of Commitment
None. Funding (cost share) will not be provided by an entity other than the City of Newport Beach.

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

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

Budget Proposal

The total AMI Project costs are shown in Table 10, *City of Newport Beach AMI Project Total Project Cost.* The City will fund approximately 83.674% of the AMI Project costs, and the City is requesting approximately 16.325% ($1,500,000) of Federal funding from Reclamation. *Table 11, City of Newport Beach AMI Project Budget Proposal* below shows the budget detail for the Project.

Table 10. City of Newport Beach AMI Project Total Project Cost

Source	Amount
Costs to be reimbursed with the requested Federal funding	$1,500,000
Costs to be paid by the applicant	$7,688,009
Value of third-party contributions	$ 0
TOTAL PROJECT COST	$9,188,009

Table 11. City of Newport Beach AMI Project Budget Proposal

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	$/Unit	Quantity		
SALARIES AND WAGES				
Steffen Catron, Project Manager - Reporting	$72.55	60.00	Hour	$ 4,353
		Subtotal		**$ 4,353**
FRINGE BENEFITS - See proposal in official file for detailed calculations				
All staff are Full Time Employees (25.09%)	$18.20	60.00	Hour	$ 1,092
		Subtotal		**$ 1,092**
TRAVEL				
				$ -
		Subtotal		**$ -**
EQUIPMENT - Leased Equipment use rate + hourly wage/salary x est. hours for assisted activity—Describe equipment to be purchased, unit price, # of units for all equipment to be purchased or leased for assisted activity:				
Costs included under Contractual				$ -
		Subtotal		**$ -**
SUPPLIES/MATERIALS - Describe all major types of supplies/materials, unit price, # of units, etc., to be used				
Costs included under Contractual				$ -
		Subtotal		**$ -**
CONTRACTUAL/ CONSTRUCTION				
Mueller Systems Contract				$ 8,744,347
		Subtotal		**$ 8,744,347**
THIRD-PARTY CONTRIBUTIONS				
				$ -
		Subtotal		**$ -**
OTHER				
Environmental Review by Reclamation	$1,000.00	1	Lumpsum	$ 1,000
Construction Contingency (5% of total construction cost)	5%	$ 8,744,347	Percent	$ 437,217
		Subtotal		**$ 438,217**
TOTAL DIRECT COSTS:				**$ 9,188,009**
INDIRECT COSTS -	**Basis**			
TOTAL ESTIMATED PROJECT COSTS:				**$ 9,188,009**

Budget Narrative

Salaries and Wages

[redacted]

Fringe Benefits

[redacted]

Travel
No travel costs are included for the AMI Project.

Equipment
The equipment will be furnished and installed under a construction contract and is therefore included in the Contractual/Construction cost estimate. There will be no additional equipment required outside of the Contractor-supplied equipment. A detailed list of work and related equipment provided under that Contract is shown in Table 12, *Contractual Construction Costs*.

Equipment installed as part of the AMI Project includes the AMI Network Infrastructure and complete communication system – collectors and repeaters, and approximately 26,309 AMI meters and meter box lids. The communication system collects the meter consumption reads on an hourly basis, along with the meter reads from repeaters, and then wirelessly transmit the information to a web-based center where the data is tabulated, stored, and made available to the end user. The Customer Portal will allow the City's water customers to have real-time access to their account information and gives them the ability to set up water usage alerts, including leak reports and water budgeting, on an internet-based platform.

Materials and Supplies
Materials and supplies are included under Contractual in Table 11.

Contractual/Construction
Through a competitive bid process, a qualified Contractor, Mueller Systems (Contractor), was selected for the AMI Project implementation. Total Contractual/Construction costs for the Project are estimated at $8,744,347, as provided by the Contractor, and as included in the Cost proposal in Exhibit A. The budgeted costs for Contractual were determined to be fair and reasonable based on contractor estimates and experience with projects and estimates obtained from neighboring water districts for similar AMI upgrade projects. Contractor Task Budget estimate detail is discussed below and is shown in Table 12.

Contractual activities to be performed by Mueller Systems include: 1) project management; 2) procurement and installation of the network communication system and training; 3) public outreach, procurement and installation of the AMI meters; 4) AMI software integration for the Mi.Host and customer portal; and 5) hosting the server site for AMI Network data for five years.

Third-Party In-Kind Contributions
Not applicable. There are no third-party in-kind contributions.

Environmental and Regulatory Compliance Costs

[redacted]

AMI Project involves an upgrade to existing meters and should pose no impact to the surrounding environment. Work will be performed on property that is considered already disturbed, and no further environmental requirements are needed. There are no required permits anticipated for the AMI Project. All of the AMI Project work will be conducted at current meter locations and City property. All Project-related approvals will be handled by the City and will be executed in a timely and efficient manner. Final approval from the City Council would be required prior to proceeding with the AMI Project. The City has filed a Categorical Exemption pursuant to CEQA Title 14 (California Code of Regulations), Chapter 3, Article 19, Section 15302c for the Project, as shown in Figure 7, CEQA Notice of Exemption Filed for City of Newport Beach AMI Project. It is anticipated that a Categorical Exclusion or Finding of No Significant Impact (FONSI) under NEPA will be issued by Reclamation given the nature of the Project that includes simply replacing existing meters with upgraded AMI meters. A Categorical Exclusion or FONSI is anticipated since the AMI Project will likely not have a significant effect on the human environment and, therefore, neither an Environmental Assessment nor an Environmental Impact Statement would be required. [redacted] The amount of the line item is based on the actual expected environmental compliance costs for the project, including Reclamation's cost to review environmental compliance documentation.

Table 12. Contractual Construction Costs

TASK	BUDGET ITEM DESCRIPTION	COMPUTATION			TOTAL COST
		Price/Rate	Unit	Quantity	
Task 3	Procurement and Installation of AMI System				
	[redacted]				
Subtask 3.1	Installation of AMI Infrastructure and Training In Support of AMI System				
	[redacted]				
Subtask 3.2	Meter Equipment Procurement				
	[redacted]				

Subtask 3.3	Installation of AMI Meters ([redacted])				
	[redacted]				
Task 4	Final Testing and Implementation				
	[redacted]				
				Contractual Total	$8,744,346.65

Other Expenses
Environmental Compliance Costs are included under "Other" Expenses, as described above.

Indirect Costs
No indirect costs are included in this proposal.

Total Costs
The AMI Project total cost is proposed at $9,188,009.

Budget Form – SF-424C, Budget Information – Construction
The City has completed the SF-424C, Budget Information—Construction Programs form, submitted separately from this narrative.

Figure 7. CEQA Notice of Exemption Filed for City of Newport Beach AMI Project

Recorded in Official Records, Orange County
Hugh Nguyen, Clerk-Recorder

NO FEE

201885000449 1:04 pm 05/01/18
323 SC3 Z01
0.00 50.00 0.00 0.00 0.00 0.00 0.00 0.00

Notice of Exemption

To: County Clerk
County of Orange
P.O. Box 238
Santa Ana, CA 92702
(714) 834-2500

From: City of Newport Beach
949 West 16th Street,
Newport Beach, CA 92663
(949) 718-3402

Project Title: Advanced Metering Infrastructure Implementation Program

Project Location - Specific: The project location will be City-wide.

Project Location - City: City of Newport Beach, California

Project Location - County: Orange

Description, of Nature, Purpose, and Beneficiaries of Project: For the benefit of the ratepayers that are served by City of Newport Beach, the project will retrofit and/or replace 26,309 existing 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.

Name of Public Agency Approving Project: City of Newport Beach

Name of Person or Agency Carrying Out Project: City of Newport Beach

Exempt Status: Categorical Exemption per CEQA Title 14 (California Code of Regulations), Chapter 3, Article 19, Section 15302c.

Reasons why project is exempt: This work is replacement of existing infrastructure at the same locations with substantially the same purpose as the infrastructure being replaced.

Lead Agency
Contact Person: Steffen Catron **Area Code/Telephone/Extension:** 949-718-3402

If filed by applicant:
1. Attach a certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project?

Signature: _____ Date: 4/25/2018 Title: Project Manager

[✓] Signed by Lead Agency Date received for filing at OPR:

[ ] Signed by Applicant

FILED
MAY 0 1 2018
HUGH NGUYEN, CLERK-RECORDER
BY: NA DEPUTY

POSTED
MAY 0 1 2018
HUGH NGUYEN, CLERK-RECORDER
BY: NA DEPUTY

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

Answer the following questions to the best of your knowledge. If any question is not applicable to the project, please explain why.

- **Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. 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. A Categorical Exemption was filed pursuant to CEQA and a Categorical Exclusion or Finding of No Significant Impact under NEPA will be required given the nature of the Project that entail replacement of existing meters with upgraded AMI meters. A Categorical Exclusion seems appropriate since the AMI Project will likely not have a significant effect on the human environment and, therefore, neither an Environmental Assessment nor an Environmental Impact Statement would be required. Correspondence with Doug McPherson (Environmental Protection Specialist, Bureau of Reclamation, Southern California Area Office) confirmed that AMI Projects typically receive a Categorical Exclusion under NEPA (per phone conversation on February 28, 2019).

- **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.

- **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.**

The AMI Project will upgrade (replace and/or retrofit) meters throughout the City of Newport Beach. Therefore, the Project boundaries are entirely within the City of Newport Beach, which includes the Upper Newport Bay (known to locals as "The Back Bay"). Upper Newport Bay is a large coastal wetland (an estuary) in Newport Beach, Southern California and a major stopover for birds on the Pacific Flyway. Dozens of species, including endangered ones, can be observed here. Upper Newport Bay Nature Preserve and Ecological Reserve represent approximately 1,000 acres of open space. The Upper Newport Bay was purchased by the State of California in 1975 for its Fish and Wildlife Department's Ecological Reserve System. In 1985 the upper west bluffs and lands surrounding the bay became part of an Orange County regional park, which offers outdoor activities such as bird-watching, jogging, bicycling, hiking, and kayaking. An organization known as the Newport Bay Conservancy provides volunteers to answer visitors' questions and guide them through the various activities. The bay is recognized for protection by the California Bays and Estuaries Policy. The main tributary of the Upper Newport Bay is San Diego Creek, which flows past the San Joaquin Wildlife Sanctuary before entering the bay. The bay is connected to the Pacific Ocean through the lower Newport Bay, the harbor of Newport Beach.

The AMI Project will have a positive impact on the Back Bay by conserving water and reducing leaks, thereby reducing runoff and nonpoint source pollutants that would otherwise make its way into to the Back Bay. The AMI Project includes retrofitting or replacing existing meters and will have no negative impact on the Back Bay; the Project may contribute to its protection by reducing the amount of nonpoint source pollution entering its waters.

- **When was the water delivery system constructed?**

The City of Newport Beach installed approximately 1 mile of pipe in 1900 and another 10 miles of pipe between 1925 and 1930, but installation for the majority of the City's water system did not start until 1946.

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

No, the AMI Project will not result in any modification of or effect to individual features of an irrigation system.

- **Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.**

The following are listed on the National Register of Historic Places within the City of Newport Beach: Balboa Inn, Balboa Pavilion, Bank of Balboa – Bank of America, Wild Goose (yacht), Lowell Beach House and the Crystal Cove Historic District. Correspondence with Doug McPherson (Environmental Protection Specialist, Bureau of Reclamation, Southern California Area Office) confirmed this list and that AMI Projects typically are included as item #25 in Reclamation's list of undertakings that have no potential to cause effects on historic properties.

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

No, there are no known archeological sites in the AMI Project area.

- **Will the proposed 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 of water to that population as a result of water savings.

- **Will the proposed 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.

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

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

State 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 City property. All Project-related approvals will be handled by the City and will

be executed in a timely and efficient manner. Final approval from the City Council would be required prior to proceeding with the AMI Project.

LETTERS OF PROJECT SUPPORT

Include letters from interested stakeholders supporting the proposed project as an appendix.

There is widespread support for the AMI Project from MWDOC and OCWD, as it aims to enhance water reliability for the region. Letters of support from MWDOC and OCWD are included in Exhibit B.

OFFICIAL RESOLUTION

An official resolution of the Newport Beach City Council will be adopted at their meeting scheduled for March 26, 2019. A copy of the draft resolution is included in Exhibit C. The official adopted resolution will be submitted within 30 days of the grant application deadline. The resolution verifies the City's legal authority to enter into an agreement; that the City Council has reviewed and supports submittal of this application; the capability of the City to provide the amount of funding and in-kind contributions specified in the Funding Plan; and that the City will work cooperatively with Reclamation to meet established deadlines for entering into a cooperative agreement.

EXHIBITS

Exhibit A – Maps and Mueller Systems Cost Proposal
Exhibit B – Letters of Support
Exhibit C – Resolution

Exhibits are attached on the following pages.

Exhibit A – Maps and Mueller Systems Cost Proposal

Equipment Type

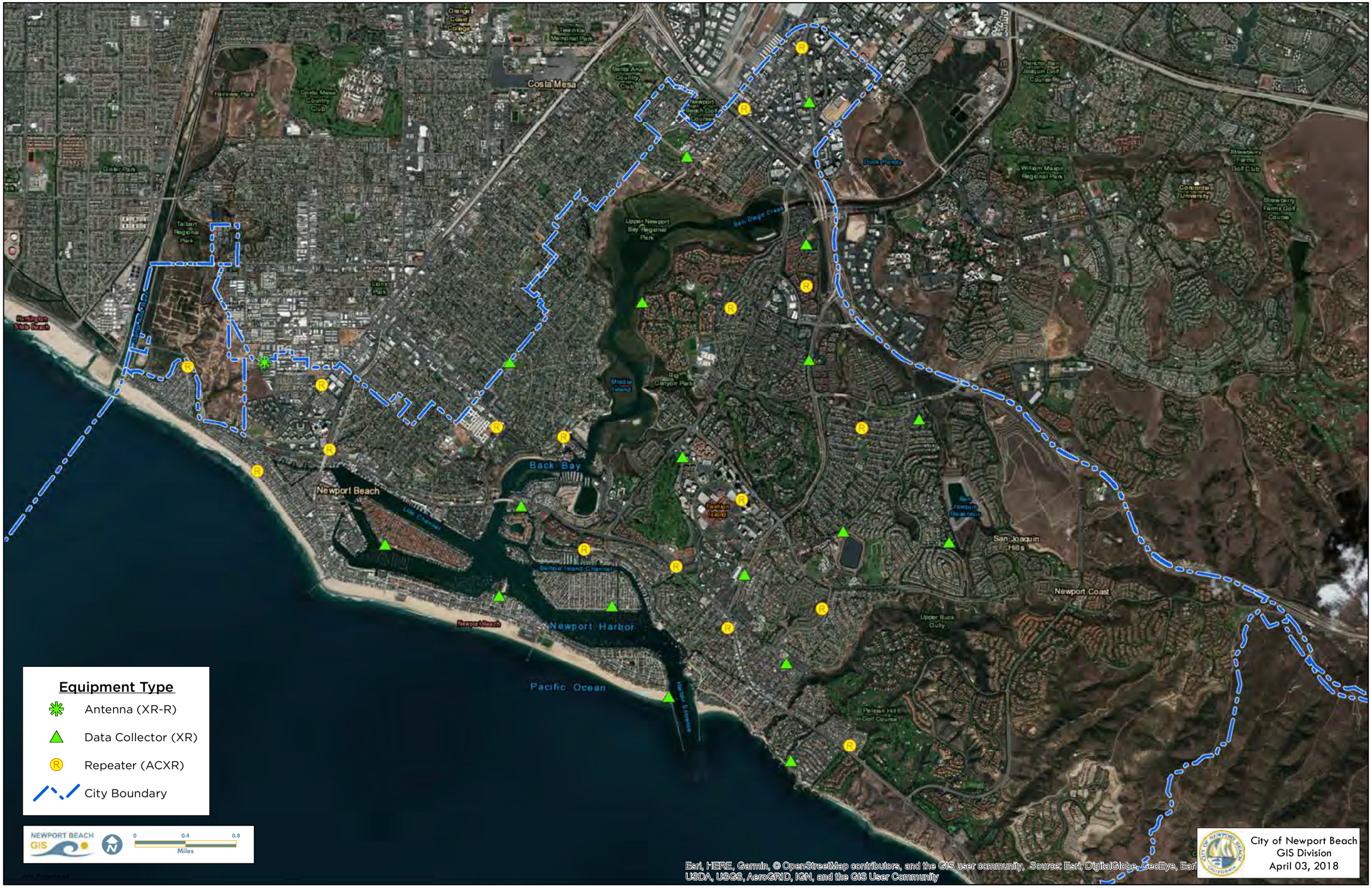
- Antenna (XR-R)
- Data Collector (XR)
- Repeater (ACXR)
- City Boundary

NEWPORT BEACH GIS

0 0.4 0.8
Miles

AMI_Project.mxd

City of Newport Beach
GIS Division
April 03, 2018


Costa Mesa
Newport Beach
Back Bay
Newport Harbor
Pacific Ocean
San Joaquin Hills
Newport Coast
Upper Newport Bay Regional Park
William Mason Regional Park
Fairview Park
Talbert Regional Park
Huntington State Beach
Big Canyon Park
Upper Buck Gully
Pelican Hill Golf Course
Concordia University
Equipment Type
Antenna (XR-R)
Data Collector (XR)
Repeater (ACXR)
City Boundary
NEWPORT BEACH GIS
0
0.4
0.8
Miles
AMI_Project.mxd
Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earl
USDA, USGS, AeroGRID, IGN, and the GIS User Community
City of Newport Beach
GIS Division
April 03, 2018

City of Newport Beach
Attachment 5 - Cost Proposal
Instructions

PROJECT COST PROPOSAL
The City identifies two potential implemenation schedules:
- Implemenation Plan #1 - 6 month pilot program as outlined in the Scope, followed by a 12-18 month full implementation.
- Implementaiton Plan #2 - 6 month pilot program as outlined in the Scope, followed by a 3 year full implementation.

Five Separate Tabs covering different cost areas of the proposal:
a - AMI Equipment & Services
b - Meter Equipment
c - Installation
d - MDMS
e - Optional Items

COST PROPOSAL AND HOURLY RATES
A. The Contractor agrees that for requested and/or required changes in the scope of work, including additions and deletions on work not performed, the Contract Sum shall be adjusted in accordance with the following unit prices, where the City elects to use this method in determining costs.

B. Contractor is advised that the unit prices will enter into the determination of the contract award. Unreasonable prices may result in rejection of the entire bid proposal.
The unit price quoted by the Contractor shall be those unit prices that will be charged or credited for labor be provided regardless of the total number units and/or amount of labor required for added or deleted items of work.

C. All work shall be performed in accordance with specifications described in the RFP.

D. In the event the City moves forward with the Implementation Plan # 2 , the contract will include language for a annual rate adjustment based on the Consumer Price Index. Upon the first July, following the first anniversary of the Effective Date [July 2017] and upon each July thereafter, the billing rates set forth in Exhibit B Schedule of Billing Rates ("Billing Rates") shall be adjusted in proportion to changes in the Consumer Price Index, subject to the maximum adjustment set forth below. Such adjustment shall be made by multiplying the Billing Rates in Exhibit B by a fraction, the numerator of which is the value of the Consumer Price Index for the calendar month three (3) months preceding the calendar month for which such adjustment is to be made, and the denominator of which is the value of the Consumer Price Index for the same calendar month immediately prior to Effective Date. The Consumer Price Index to be used in such calculation is the "Consumer Price Index, All Items, 1982-84=100 for All Urban Orange County Striping Service, Inc. Consumers (CPI-U)", for the Los Angeles-Riverside-Orange County Metropolitan Area, published by the United States Department of Labor, Bureau of Labor Statistics. If both an official index and one or more unofficial indices are published, the official index shall be used. If

To Complete Each Tab:

- Proposer to populate the following columns accordingly:
  - Item/Service - note that certain item information is pre-populated; however, Proposer can modify/add Items/Services accordingly.
  - Quantity - note that meter related quantities are pre-populated
  - Unit Price
  - Extended Price - this column is set to calculate automatically; however, Proposer must verify
  - Equipment Lead Time (in Weeks) - specify the expected lead time required to receive equipment
  - Notes/Comments - provide clarification/explanation accordingly
- Proposer to add a new category if required

Pricing Terms

Payment Terms and Discount – Terms of payment are 2% thirty days after invoice date; net amount due thirty-one days after invoice date.

Taxes – Pricing does not include sales or other taxes.

Freight – All shipments are F.O.B. point of shipment with freight allowed on each order having a net value of $500 or more. Minimum order value is $250.

Warehousing – Is to be provide per the RFP documents and Addedumns by the City of Newport Beach for the duration of this project.

Meters & AMR/AMI hardware – Pricing is valid for sixty (60) months. At the conclusion of initial contract period, and prior to the commencement of the next contract year or any subsequent contract extension period, Mueller Systems may request unit price increases. The price increase shall be the original purchase price plus the United States Department of Labor, Bureau of Labor Statics Producer Price Index (PPI) for Totalizing fluid meters and counting devices Series Id: PCU334514334514, 12 month Percent Change to year one.

Software support, maintenance, hosting and non-hosting – Pricing is valid for sixty (60) months. At the conclusion of initial contract period, and prior to the commencement of the next contract year or any subsequent contract extension period, Mueller Systems may request unit price increases. The price increase shall be the original purchase price plus the United States Department of Labor, Bureau of Labor Statics Producer Price Index (PPI) for Data processing and related services, Hosting, ASP and other IT infrastructure provisioning services Series Id: PCU5182105182105, 12 month Percent Change to year one.

Contractual Language Disclaimer
Contractual language provided is generally acceptable; however, it is the intent of Mueller Systems, if selected, to cooperate with the The City of Newport Beach, CA to find mutually agreeable contract terms covering the entire AMI project and system, including target dates, error corrections, clarifications, omissions, etc.

Warranty/Bond Disclaimer
Any bond provided is excluded from the standard warranty terms. Any warranty item in excess of one year for this project must be specified as pass-thru warranties direct from Mueller Systems to the owner and not made a subject of the final contract or associated bonds. No bonding costs are included in pricing.

City of Newport Beach
Cost Proposal
Costs Remaining After POP

	Quantity	Implementation Plan 1 Unit Price	Implementation Plan 1 Extended Price	Implementation Plan 2 Unit Price	Implementation Plan 2 Extended Price	Equipment Lead Time (in weeks)	Notes/Comments
Tab A- AMI Equipment & Services							
AMI Network Infrastructure							
Collectors	14	$ 4,000.00	$ 56,000.00	$ 4,000.00	$ 56,000.00	4	Mi.Hub (Reduced Qty - Bid no tower) Customer would like to use Tower Prop
Installation- Collectors	14	$ 1,500.00	$ 21,000.00	$ 1,500.00	$ 21,000.00		Mi.Hub Install (Reduced Qty - Bid no tower) Customer would like to use Tower Prop
Repeater	13	$ 960.00	$ 12,480.00	$ 960.00	$ 12,480.00	4	Mi.Repeater (Reduced Qty - Bid no tower) Customer would like to use Tower Prop
Installation- Repeaters	13	$ 1,500.00	$ 19,500.00	$ 1,500.00	$ 19,500.00		Mi.Repeater Install (Reduced Qty - Bid no tower) Customer would like to use Tower Prop
Collector- XXR	-	$ 4,975.00	$ -	$ 4,975.00	$ -		Added due to customer wanting to use tower prop
Installation- XXR Tower	-	$ 11,945.00	$ -	$ 11,945.00	$ -		Added due to customer wanting to use tower prop
AMI Network and Deployment Tools							
RF installation hand-held	2	$ 4,800.00	$ 9,600.00	$ 4,800.00	$ 9,600.00	4	Mi.Tech
Professional Services							
Training and Documentation	3	$ 3,000.00	$ 9,000.00	$ 3,000.00	$ 9,000.00		Recommended 3 days. Each additioanl day $3000
AMI/MDMS System Integration	-	$ 24,000.00	$ -	$ 24,000.00	$ -		Tyler/ MUNIS or other provider
Propogation Study	-	$ 4,500.00	$ -	$ 4,500.00	$ -		
Ongoing System Costs							
Annual AMI Headend Software Hosting Fee	1	$ 37,200.00	$ 37,200.00	$ 37,200.00	$ 37,200.00		5 year contracted price (price held for 5 years
Tab B- Meter Equipment							
Water Meters + Electronic Registers							
5/8" Meters	16,917	$ 127.00	$ 2,148,459.00	$ 127.00	$ 2,148,459.00	4	5/8" X 3/4" 420 Bronze, PB, Solid State digital Reg with Mi.node Radio
3/4" Meters	4	$ 160.00	$ 640.00	$ 160.00	$ 640.00	4	3/4" 435 Bronze, Solid State Digital Reg with Mi.node Radio
1" Meters	7,259	$ 180.00	$ 1,306,620.00	$ 180.00	$ 1,306,620.00	4	1" 452 Bronze, Solid State Digital Reg with Mi.node radio
1-1/2" Meters (LOW FLOW)	478	$ 429.26	$ 205,186.28	$ 429.26	$ 205,186.28	4	1 1/2" 562 Bronze Meter with Solid State Reg and Mi.node Radio
1-1/2" Meters (HIGH FLOW)	75	$ 455.27	$ 34,145.25	$ 455.27	$ 34,145.25	4	1 1/2" MVR 100 Bronze Meter 2 bolt flange in standard lay length and Mi.node Radio
2" Meters (LOW FLOW)	1,139	$ 525.20	$ 598,202.80	$ 525.20	$ 598,202.80	4	2" 572 Bronze Meter with Solid State Reg and Mi.node
2" Meters (HIGH FLOW)	305	$ 531.93	$ 162,238.65	$ 531.93	$ 162,238.65	4	2" MVR 160 Bronze Meter 2 bolt flange in standard lay length and Mi.node Radio
Water Meter Retrofit Registers with Endpoint							
3" Neptune Tru/Flo Compound Meters	32	$ 258.82	$ 8,282.24	$ 258.82	$ 8,282.24	4	3" Neptune TruFlo Compound E-Coder Retrofit Registers w/3' Nicor Connector, CF
3" Neptune HPT Compound Meters	11	$ 129.41	$ 1,423.51	$ 129.41	$ 1,423.51	4	3" Neptune HPT E-Coder Retrofit Register w/3' Nicor Connector, CF
4" Neptune Tru/Flo Compound Meters	52	$ 258.82	$ 13,458.64	$ 258.82	$ 13,458.64	4	4" Neptune TruFlo Compound E-Coder Retrofit Registers w/3' Nicor Connector, CF
4" Neptune HPT Compound Meters	9	$ 129.41	$ 1,164.69	$ 129.41	$ 1,164.69	4	4" Neptune HPT E-Coder Retrofit Register w/3' Nicor Connector, CF
4" Neptune Proctectus III Compound Meters	1	$ 258.82	$ 258.82	$ 258.82	$ 258.82	4	4" Neptune Protectus III E-Coder Retrofit Registers w/3' Nicor Connector, CF
6" Neptune Tru/Flo Compound Meters	13	$ 258.62	$ 3,362.06	$ 258.62	$ 3,362.06	4	6" Neptune TruFlo Compound E-Coder Retrofit Registers w/3' Nicor Connector, CF
6" Neptune HPT Compound Meters	3	$ 129.41	$ 388.23	$ 129.41	$ 388.23	4	6" Neptune HPT E-Coder Retrofit Register w/3' Nicor Connector, CF
6" Neptune Proctectus III Compound Meters	2	$ 258.82	$ 517.64	$ 258.82	$ 517.64	4	6" Neptune Protectus III E-Coder Retrofit Registers w/3' Nicor Connector, CF
8" Neptune HPT Compound Meters	7	$ 129.41	$ 905.87	$ 129.41	$ 905.87	4	8" Neptune HPT E-Coder Retrofit Register w/3' Nicor Connector, CF
8" Neptune Proctectus III Compound Meters	2	$ 258.82	$ 517.64	$ 258.82	$ 517.64	4	8" Neptune Protectus III E-Coder Retrofit Registers w/3' Nicor Connector, CF
Water Meter Lids							
3/4 " DFW Meter Lid	16,921	$ 30.88	$ 522,520.48	$ 30.88	$ 522,520.48	4	15X9X1-3/16 "C" GRAY TR NO HOOK *NEWPORT* POLYMER LID
1" DFW Meter Lid	7,259	$ 40.73	$ 295,659.07	$ 40.73	$ 295,659.07	4	18X11 "C" GRAY TOUCH READ *NO HOOK* *NEWPORT* POLYMER LID
2" DFW Meter Lid	1,972	$ 71.78	$ 141,550.16	$ 71.78	$ 141,550.16	4	15X9X1-3/16 "C" GRAY TR NO HOOK *NEWPORT* POLYMER LID
Other Water Meter Related Equipment							
10,000 Meter Bushings	10,000	$ 13.00	$ 130,000.00	$ 13.00	$ 130,000.00	4	Provide pricing for 10,000 James Jones Meter Bushing Part #E-128H
Mi.node Radio w/ Nicor for Reg. Retro	757	$ 60.00	$ 45,420.00	$ 60.00	$ 45,420.00	4	Mi.node 4 Radio with Nicor Connector
Through the Lid Mi.node Mounting Brackets	26,286	$ 3.95	$ 103,829.70	$ 3.95	$ 103,829.70		TTL
Tab C- Installation							
Installation of Water Meter, Register, and Endpoint							
5/8" Meters	16,917	$ 75.00	$ 1,268,775.00	$ 75.00	$ 1,268,775.00		Prevailing Wage Rate Priced at Residental Laborer Rate
3/4" Meters	4	$ 75.00	$ 300.00	$ 75.00	$ 300.00		Prevailing Wage Rate Priced at Residental Laborer Rate

1" Meters	7,259	$	75.00	$	544,425.00	$	75.00	$ 544,425.00		Prevailing Wage Rate Priced at Residental Laborer Rate
1-1/2" Meters	553	$	365.00	$	201,845.00	$	365.00	$ 201,845.00		Prevailing Wage Rate Priced at Residental Laborer Rate
2" Meters	1,444	$	365.00	$	527,060.00	$	365.00	$ 527,060.00		Prevailing Wage Rate Priced at Residental Laborer Rate
Water Meter Retrofit with Endpoint										
3" Neptune Tru/Flo Compound Meters	32	$	158.81	$	5,081.92	$	158.81	$ 5,081.92		
3" Neptune HPT Compound Meters	11	$	158.81	$	1,746.91	$	158.81	$ 1,746.91		
4" Neptune Tru/Flo Compound Meters	52	$	158.81	$	8,258.12	$	158.81	$ 8,258.12		
4" Neptune HPT Compound Meters	9	$	158.81	$	1,429.29	$	158.81	$ 1,429.29		
4" Neptune Proctectus III Compound Meters	1	$	158.81	$	158.81	$	158.81	$ 158.81		
6" Neptune Tru/Flo Compound Meters	13	$	158.81	$	2,064.53	$	158.81	$ 2,064.53		
6" Neptune HPT Compound Meters	3	$	158.81	$	476.43	$	158.81	$ 476.43		
6" Neptune Proctectus III Compound Meters	2	$	158.81	$	317.62	$	158.81	$ 317.62		
8" Neptune HPT Compound Meters	7	$	158.81	$	1,111.67	$	158.81	$ 1,111.67		
8" Neptune Proctectus III Compound Meters	2	$	158.81	$	317.62	$	158.81	$ 317.62		
Water Meter Lids										
3/4 " DFW Meter Lid	16,921	$	3.00	$	50,763.00	$	3.00	$ 50,763.00		
1" DFW Meter Lid	7,259	$	3.00	$	21,777.00	$	3.00	$ 21,777.00		
2" DFW Meter Lid	1,972	$	3.00	$	5,916.00	$	3.00	$ 5,916.00		
Meter Lid Drilling	-	$	10.00	$	-	$	10.00	$ -		Removed for 1.5" and 2" upgrade
Professional Services										
Project Management	26,624	$	4.54	$	120,872.96	$	8.00	$ 212,992.00		
Total				**$ 8,652,227.61**				**$ 8,744,346.65**		

Exhibit B – Letters of Support

SINCE 1933

ORANGE COUNTY WATER DISTRICT

ORANGE COUNTY'S GROUNDWATER AUTHORITY

March 5, 2019

Mr. Mark Vukojevic
Utilities Director, Utilities Department
City of Newport Beach
949 West 16th Street
Newport Beach, CA 92663

Re: Letter of Support for Funding the City of Newport Beach's Advanced Metering Infrastructure Implementation Program Phase 2 Project (Project) grant application for the United States Department of the Interior, Bureau of Reclamation's WaterSMART: Water and Energy Efficiency Grants for Fiscal Year 2019 – FOA No. BOR-DO-19-F004.

Dear Mr. Vukojevic:

We understand that the City of Newport Beach (City) is submitting a WaterSMART: Water and Energy Efficiency Grant application for consideration by the United States Bureau of Reclamation for Fiscal Year 2019. This grant would help fund the **Advanced Metering Infrastructure Implementation Program Phase 2 Project**, as part of its long-term goal of water supply reliability and efficient water management. The Phase 2 AMI Project includes the upgrade of existing manually-read (via vehicle drive-by) with an AMI fixed base network system that will automatically collect and store hourly consumption data, aiding in water conservation and water use efficiency and improved water management. The Orange County Water District fully supports the project and the City'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 mmarkus@ocwd.com or via telephone at (714) 378-3200

Sincerely,

Michael R. Markus, P.E.D. WRE, BCEE, F.ASCE
General Manager
Orange County Water District

MWDOC

Street Address:
18700 Ward Street
Fountain Valley, California 92708

Mailing Address:
P.O. Box 20895
Fountain Valley, CA 92728-0895

(714) 963-3058
Fax: (714) 964-9389
www.mwdoc.com

March 5, 2019

Mark Vukojevic
Utilities Director, Utilities Department
City of Newport Beach
949 West 16th Street
Newport Beach, California 92663
Attention: Steffen Catron
scatron@newportbeachca.gov
(949) 644-3011 Office

Re: Letter of Support for Funding the City of Newport Beach's Advanced Metering Infrastructure Implementation Program Phase 2 Project (Project) grant application for the United States Department of the Interior, Bureau of Reclamation's WaterSMART: Water and Energy Efficiency Grants for Fiscal Year 2019 – FOA No. BOR-DO-19-F004.

Dear Mr. Vukojevic:

We understand that the City of Newport Beach (City) is submitting a WaterSMART: Water and Energy Efficiency Grant application for consideration by the United States Bureau of Reclamation for Fiscal Year 2019. This grant would help fund the **Advanced Metering Infrastructure Implementation Program Phase 2 Project**, as part of its long-term goal of water supply reliability and efficient water management. The Phase 2 AMI Project includes the upgrade of existing manually-read (via vehicle drive-by) with an AMI fixed base network system that will automatically collect and store hourly consumption data, aiding in water conservation and water use efficiency and improved water management. The Metropolitan Water District of Orange County fully supports the project and the City'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 rhunter@mwdoc.com or via telephone at (714) 593-5026.

Sincerely,

Robert J. Hunter
General Manager
Municipal Water District of Orange County

Exhibit C – Resolution

CITY OF NEWPORT BEACH

RESOLUTION NO. 2019-XX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF NEWPORT BEACH, CALIFORNIA, AUTHORIZING THE SUBMITTAL OF AN APPLICATION FOR THE WATERSMART: WATER AND ENERGY EFFICIENCY GRANTS FOR 2019

WHEREAS, the United States Bureau of Reclamation is currently offering grant opportunities through the WaterSMART: Water and Energy Efficiency Grants for Fiscal Year ("FY") 2019;

WHEREAS, said WaterSMART: Water and Energy Efficiency Grants for FY 2019 is a cost-shared program emphasizing water and energy efficiency;

WHEREAS, the City Council of the City of Newport Beach supports the submission by the City of Newport Beach ("City") of a grant application, prepared and approved by the City, to the WaterSMART: Water and Energy Efficiency Grants for FY 2019; and

WHEREAS, under the WaterSMART: Water and Energy Efficiency Grants for FY 2019 program, the United States Bureau of Reclamation may award up to One Million Five Hundred Dollars and 00/100 ($1,500,000.00) towards the maximum 50/50 cost sharing to pay for the Project costs and the City is capable of providing an additional Seven Million Six Hundred Eighty-Eight Thousand Nine Dollars and 00/100 ($7,688,009.00) in cash and/ or in-kind contributions specified in the grant application' s funding plan to pay for all remaining Project costs.

WHEREAS, if selected for a WaterSMART: Water and Energy Efficiency Grant for FY 2019, the City will work with the United States Bureau of Reclamation to meet established deadlines for entering into a cooperative agreement regarding funding for the Project.

NOW, THEREFORE, the City Council of the City of Newport Beach resolves as follows:

Section 1: The City Council does hereby approve the submission of the application for the WaterSMART: Water and Energy Efficiency Grants for FY 2019 for the Advanced Metering Infrastructure Implementation Project by the City for FY 2019-20.

Section 2: In the event grant funding is provided by the United States Bureau of Reclamation, the City Council authorizes the City Manager or her designee to accept the grant and sign any contract for administration of the grant funds and delegate the City's Finance Director to act as a fiscal agent for any grant funding received.

Section 3: The recitals provided in this resolution are true and correct and are incorporated into the operative part of this resolution.

Section 4: If any section, subsection, sentence, clause or phrase of this resolution is, for any reason, held to be invalid or unconstitutional, such decision shall not affect the validity or constitutionality of the remaining portions of this resolution. The City Council hereby declares that it would have passed this resolution, and each section, subsection, sentence, clause or phrase hereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be declared invalid or unconstitutional. The City Clerk shall certify to the adoption of this resolution and henceforth and thereafter the same shall be in full force and effect.

Section 5: The City Council finds the adoption of this resolution is not subject to the California Environmental Quality Act ("CEQA") pursuant to Sections 15060(c)(2) (the activity will not result in a direct or reasonably foreseeable indirect physical change in the environment) and 15060(c)(3) (the activity is not a project as defined in Section 15378) of the CEQA Guidelines, California Code of Regulations, Title 14, Chapter 3, because it has no potential for resulting in physical change to the environment, directly or indirectly.

Section 6: This resolution shall take effect immediately upon its adoption by the City Council, and the City Clerk shall certify the vote adopting the resolution.

PASSED AND ADOPTED this 26th day of March, 2019.

_____
Diane Dixon
Mayor

ATTEST:

_____
Leilani I. Brown
City Clerk

APPROVED AS TO FORM:
CITY ATTORNEY'S OFFICE

_____
Aaron C. Harp
City Attorney

Attachment 14. Areas Affected by Project

City of Newport Beach

2019 WaterSMART: Water and Energy Efficiency Grant Application

---

Areas affected by the Advanced Metering Infrastructure Implementation Program Phase 1 Project include the service areas of the City of Newport Beach, Orange County Water District (OCWD), the Municipal Water District of Orange County (MWDOC), and Metropolitan Water District of Southern California (Metropolitan). The City provides water to a population of 66,219 throughout its service area. The City is located along the Orange County coast of southern California .The City receives its water from several sources, local groundwater from the Lower Santa Ana River Groundwater Basin, imported water purchased from the MWDOC, and recycled water purchased from OCWD. The majority of the City's water supply is groundwater, pumped from four wells within the City of Fountain Valley. Imported water is treated at the Diemer Filtration Plant operated by Metropolitan. The Project's water savings will reduce the City's demand on water supplies.

County: Orange

State: California