WaterSMART:
Water and Energy Efficiency Grants for FY 2017

Azusa Light & Water:
Advanced Metering Infrastructure Project

Prepared For:
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January 18, 2017

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TECHNICAL PROPOSAL

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1. EXECUTIVE SUMMARY

Date: January 18, 2017
Applicant Name: City of Azusa – Azusa Light & Water
City, County, State: Azusa, Los Angeles County, California
Project Summary:

Work Proposed and Use of Project Funds:

The City of Azusa, and its municipal utility, Azusa Light & Water (ALW), proposes to install an Advanced Metering Infrastructure (AMI) fixed wireless network to read 23,062 water meters remotely, and replace 80% of these outdated water meters with AMI "smart" meters and retrofit the remaining 20% of these water meters with registers and transceivers to communicate with the AMI network. All meters will transmit information through the wireless network using a flexible two-way communication system for residential, commercial, industrial, and public agency connections throughout ALW's 14.2-square mile service area, which includes consumers in five cities (including Azusa and portions of the Cities of Covina, Glendora, Irwindale, West Covina), as well as a small number of consumers in unincorporated areas of Los Angeles County. Approximately 15% of the homes that will benefit from this project are located in disadvantaged communities. ALW respectfully requests $1,000,000 in grant funding from the Bureau of Reclamation (BOR) towards the total estimated project cost of $11.5 million.[1] The balance of costs will be borne by ALW's utility reserve funds. The proposed project will be ALW's first use of AMI technology in its service area and will be supported on an ongoing basis through a software-and-as-service (SaaS) 10 year contract. Preliminary cost benefit analyses indicate possible benefits to ALW and its customers valued at $16.8 million over the next 10 years. Most of the costs for the project will be incurred during the first three years, after which the project is expected to be cash flow positive on an annual basis. The proposed project is poised for a quick launch due to prior groundwork performed by ALW since 2014, which included issuance of a Request for Proposals, technical evaluation of proposals received, and due diligence review of short listed vendors. Following this process, ALW provisionally selected Sensus USA as the prime contractor to carry out this project, which has over 500 successful deployments. ALW is in the final stages of contract negotiations with the prime contractor. ALW has been an area leader in promoting water conservation since 2007 and believes that this project will significantly add advanced water

ALW'S AMI PROJECT HIGHLIGHTS:

Total Project Cost: $11,469,082
Water-Related Costs: $7,800,116 (100%)
Local Cost Share: $6,800,116 (87%)
Grant Request: $1,000,000 (13%)

AFY Conserved: 4,014
kWh Conserved: 3,553,093
Energy Savings: $470,429

[1] This is a 3-year project budget. The larger 3-year project also includes replacing 16,218 outdated electric meters with smart meters (in tandem with the installation of new smart water meters) which will provide our larger consumers the opportunity to monitor and conserve energy-related water use. Project costs are estimates and could change after the contract is negotiated with the prime contractor.

conservation capabilities to the utility to manage severe drought conditions. ALW estimates that the proposed AMI project will result in conservation of 4,014 AFY.

Project Contribution to the Goals of this Program:

***Improved Water Conservation and Water Management*:** ALW estimates that the proposed project will save 4,014 AFY of water through: 1) Consumer leak detection, notification and repairs; 2) 24/7 monitoring of residential compliance with water use/drought restrictions; 3) 24/7 monitoring of commercial and public agency compliance with outdoor watering restrictions; and 4) Distribution system leak detection and repairs. Water conserved will alleviate the severity of cyclic drought conditions over time and result in greater basin groundwater retention and recharge; this project is vital at this time due to historically low elevations of groundwater.

Improved Energy Efficiency: The AMI project will help improve energy efficiency in five ways. First, reducing consumer demand through leak detection/repair and 24/7 drought surveillance will reduce energy usage necessary to pump or treat over 4,000 acre feet of water per year. This will save an estimated 1.8 million kWh of electricity annually. Second, because of over production of basin groundwater by local water purveyors, basin groundwater must be replenished by importing water. This project will alleviate the need to import additional water to the basin and this will conserve another 1.8 million kWh of electricity annually. Third, automation and remote operating capabilities enabled by the AMI system will allow ALW to conduct manual field work remotely from the office thereby significantly reducing City staff time traveling to field locations saving about 100,345 kWh per year. This will save staff time and reduce emissions. Fourth, the AMI wireless network will be used to read both water and electric meters and provide time interval/cost data to customers on energy use. Large customers are likely to use this data to shift load to off peak times when energy costs are lower. This will save customers money and reduce peak demand which will help stabilize the power grid and reduce the need for energy from facilities which can have higher emissions than renewable forms of energy such as solar. Fifth, the AMI network can also help power resource operators better manage load by matching energy supplied to circuits with demand. This can reduce load by up to 1% of annual kWh retail sales.

Benefit/Support Endangered Species: The AMI project will help reduce overdraft purchases from the State Water Project as a recharge resource, which will help contribute to the protection of endangered species in the Bay Delta Estuary such as the endangered Delta Smelt, as well as four endangered species in the Colorado River Aqueduct.

Project Schedule**:**

ALW will complete the Project in two phases over a 36-month period, with an estimated start date of October 1, 2017, and all work will be completed by September 30, 2020.

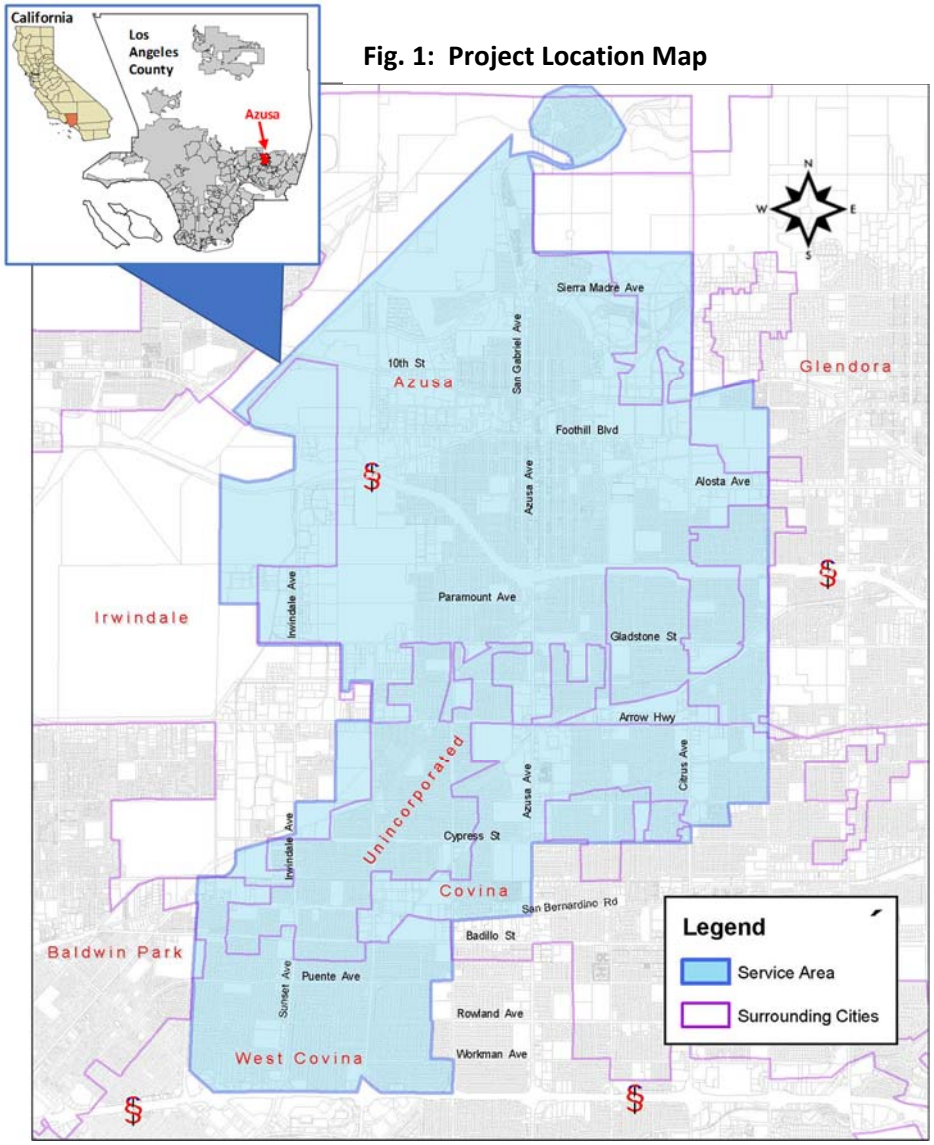
Project Location**:**
The project will be implemented across ALW's 14.2-square mile service area located in eastern Los Angeles County, California. No portion of the project will be located on a Federal facility.

2. BACKGROUND DATA AND WATER SYSTEM

Location (including map)

Figure 1 illustrates the span of Azusa Light & Water's (ALW) service area and location within the state and county. ALW is located in the San Gabriel Valley in eastern Los Angeles County, California, approximately 27 miles east of the City of Los Angeles. Its service area is approximately 14.2 square miles providing water to about 26,000 customers through about 23,000 service connections within the City limits of Azusa, portions of the surrounding cities of Covina, Glendora, Irwindale, and West Covina, and unincorporated areas. ALW also supplies electric service to approximately 16,000 customers in Azusa. ALW's customers include residential, commercial, industrial, and public agency users.

Fig. 1: Project Location Map



ALW is responsible for construction, maintenance and operation of electric and water utilities owned or operated by the City. ALW's water system comprises the largest municipal water utility in the San Gabriel Valley and includes 11 active wells, 9 booster pump stations, 13 reservoirs and 1 filtration plant.
ALW's filtration plant is a modern facility designed to exceed current water quality requirements, thereby enabling the City to treat San Gabriel River water, imported water from the Colorado River, and water from the State Water Project (the latter two are BOR facilities).

The water system includes 281 miles of transmission and distribution mains ranging from 2 to 30 inches in size, and includes three emergency interconnections, and a fourth planned with San Gabriel Valley Municipal Water District (SGVMWD). The distribution system is divided into five pressure zones and its 13 storage reservoirs have a capacity of 38 million gallons. The proposed AMI system will integrate seamlessly with existing facilities and equipment to ensure continued reliable service while enhancing water conservation capabilities.

ALW Water Rights and Supply

The ALW service territory is located in the Main San Gabriel Valley Basin, which is an adjudicated water basin that was formed in 1972**.** Beginning in the 1940s, the San Gabriel Valley experienced a period of rapid urbanization, which led to an increased demand for water drawn from the Main San Gabriel Basin. The ensuing rise in water consumption—along with an extended period of drought—had, by the 1950s, put the Basin into a state of overdraft, where water production from the Basin exceeded the amount that could be replaced.

As a result, legal action was initiated that culminated in a court decision in 1973, which requires the Upper Area (Main San Gabriel Basin) users to guarantee a source of water to the Lower Area or downstream users. The Judgment defined the water rights of 190 original parties to the legal action, created a new governing body, the Main San Gabriel Basin Watermaster, and described a program for management of water in the Basin. The Judgement requires the Watermaster to set an "Operating Safe Yield" for pumpers in the basin, monitor water usage, and arrange for importation of replenishment water when water is pumped in excess of the Operating Safe Yield. The Watermaster is also charged with imposing assessments on water purveyors to pay for replenishment water and administrative costs.

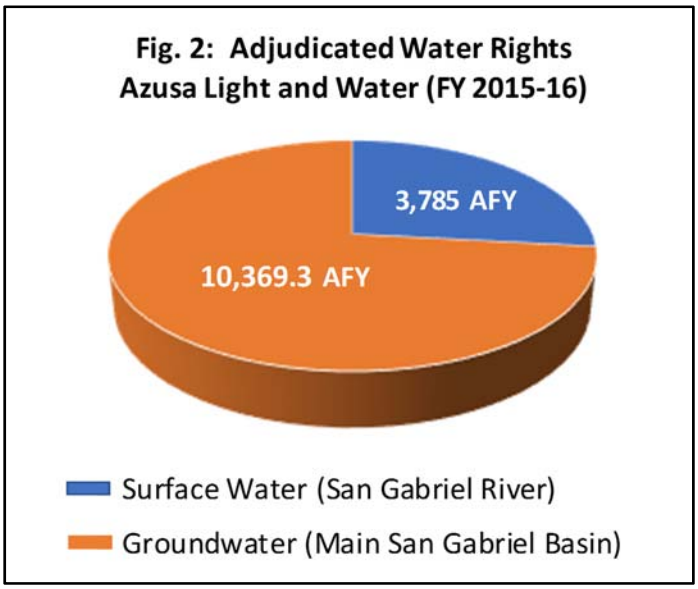
Through the 1973 Judgment, along with the purchase of the Azusa Valley Water Company in 1993, ALW has both pumping rights and diversion rights which allow it to divert surface water from the San Gabriel River. The pumping rights vary depending on the Operating Safe Yield as set by the Watermaster. Table 1 shows the Operating Safe Yield for the past 5 years along with ALW's combined pumping and division water rights, and water production figures in Acre Feet:

Table 1: Operating Safe Yields for the Past 5 Years

FY End	Acre Feet (AF)			
30-Jun	Safe Yield	Water Rights	Production	Shortfall
2012	210,000	18,302	20,136	-1,834
2013	200,000	17,611	21,117	-3,506
2014	180,000	16,228	20,660	-4,432
2015	150,000	14,154	18,260	-4,106
2016	150,000	14,154	16,461	-2,307

As shown above, the Operating Safe Yield in recent years has been declining. This is due to persistent drought conditions since 2013, the second significant drought in the last 10 years. As shown above, the lower Operating Safe Yield also reduced ALW's pumping rights. ALW responded to both droughts with rather significant drought enforcement actions, which are reflected in the decreases in production figures noted above for the recent drought.

ALW diversion rights allow it to divert 3,785 AFY of surface water from the San Gabriel River. The San Gabriel River receives water from creeks and streams in the Angeles National Forest, which is located in the San Gabriel Mountains north of the City of Azusa, and provides approximately 230 square miles of watershed that drains into the San Gabriel River before entering the San Gabriel Valley. The river is dammed in three locations along its course to provide for water supply, flood control protection, and power generation. ALW's surface water flows from the river to an inlet structure via a short diversion channel approximately 30 feet long and approximately five to six feet wide. The diverted water is conveyed to the Joseph F. Hsu Water Filtration Plant and to spreading grounds.



ALW's groundwater rights allow it to pump water from the San Gabriel Basin, and at an Operating Safe Yield of 150,000 AFY, ALW is able to pump 10,369.3 AFY. Groundwater is ALW's largest water right source as shown above in Fig. 2.

In addition to the two sources mentioned above, ALW is one of four members of the San Gabriel Valley Municipal Water District (SGVMWD). The SGVMWD has a contract with the State of California Department of Water Resources (DWR) to import 28,800 acre-feet of water

through the State Water Project (SWP) at a discounted cost per AF, subject to allocation limits as set by the DWR. Water from this source is conveyed from the Sacramento-San Joaquin Delta to Silverwood Lake, which serves as a foreby to the Devil Canyon Powerplant where SWP water is conveyed to ALW for groundwater recharge or treatment. This third resource is vital to ALW when local sources of water supply are impacted by drought conditions as refected in a reduced Operating Safe Yield.

The fourth water source that ALW may access, if needed, is water through the Upper San Gabriel Valley Municipal Water District. Upper District is a member agency of the Metropolitan Water District of Southern California (MWD) which operates the Colorado River Aqueduct and represents Southern California's stake in the State Water Project that brings water south from Northern California. Currently, ALW lacks the infrastructure needed to produce and use recycled water. The SGVMWD has completed several studies to determine potential uses for recycled water in Azusa, including groundwater recharge and the irrigation of parks and schools, and ALW will continue to explore options periodically as well as funding opportunities.

Current Water Uses

Over the past five years, ALW has produced an average of 19,300 AF of water on an annual basis. During the most recent fiscal year (ending June 30, 2016), ALW's total water usage was 14,172 AF, which reflects aggressive conservation as a result of drought conditions. The residential market comprises approximately 90% of ALW connections and 48% of demand. Large industrial and institutional consumers, such as Miller-Coors, Azusa Pacific University, and municipalities are the next largest user group. Other commercial customers make up the remainder of the water connections and demand. The 10 largest consumers are a mixture of commercial, institutional, and industrial users (see Table 2).

Table 2: Ten Largest Water Consumers – Azusa Light and Water (FY 2015-16)

	Customer	Business Type	Usage (CCF)	Percent of System
1	Miller Breweries	Food	544,342	8.8%
2	Ready Pac	Food	265,501	4.3%
4	Azusa Western	Mining	206,284	3.3%
3	Azusa Unified School District	Educational Institution	155,632	2.5%
6	Azusa Greens Country Club	Golf	95,013	1.5%
5	City of Azusa	Municipal Government	87,306	1.4%
8	Azusa Pacific University	Educational Institution	84,193	1.4%
7	Covina Valley Unified School District	Educational Institution	70,326	1.1%
9	S & S Foods LLC	Food	61,584	1.0%
10	Mountain Cove	Homeowners Assoc.	36,841	0.6%
		Total	1,607,022	26.0%

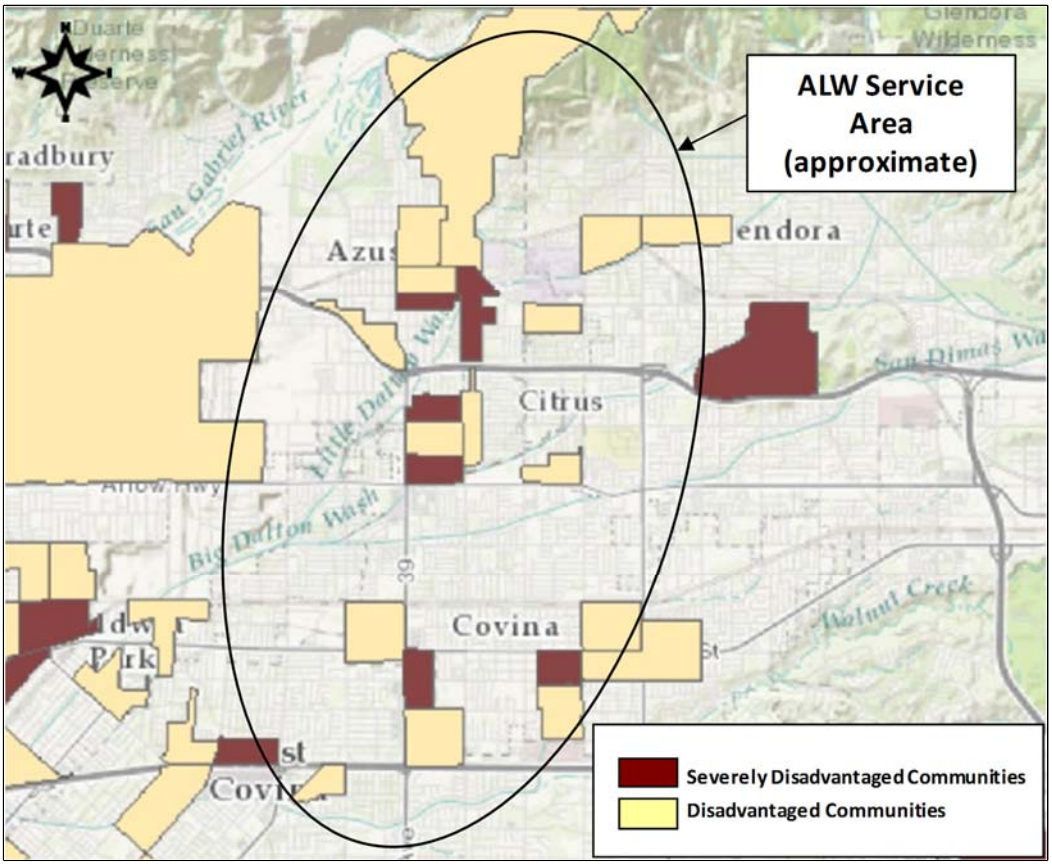
Number of Water Users Served

ALW's service territory includes the City of Azusa and adjoining portions of surrounding cities and unincorporated areas of Los Angeles County. The system serves approximately 26,000 customers through 23,000 service connections with an estimated population of 106,000 persons. Approximately 45% of the system's customers are located in Azusa, with the remainder in the Cities of Covina, Glendora, Irwindale, West Covina, and unincorporated areas of Los Angeles County.

Water Users Served - Disadvantaged Communities

Approximately 15,493 of ALW's population (an estimated 15%) are located in severely disadvantaged or disadvantaged communities (DACs), according to the Department of Water Resources Disadvantaged Communities Mapping Tool (see Fig. 3). The community along the eastern boundary of the City of Azusa and the City of Glendora has an average Median Household Income (MHI) of $29,032, or 47% of the State average ($61,400). Furthermore, the *Azusa SB 244 Built Environment Chapter (Infrastructure Element)* prepared by the City of Azusa for its *General Plan*, identified **three** additional disadvantaged unincorporated communities within the City's sphere of influence with an annual MHI that is less than 80% of the statewide annual MHI. The ability for customers to directly engage with their water system to find near real-time information about water leaks will help them to conserve water usage and avoid paying higher tiered rates for large quantities of consumption. This will help customers proactively manage their water consumption and save money. Future service features that can be offered through the AMI system include

Fig. 3: Disadvantaged Communities in the ALW Service Area



prepaid utility billing, which can help certain customers avoid having to pay the utility a large deposit. Prepayment arrangements can also reduce the number of disconnects for low-income customers.

As noted in the Bureau of Reclamation's *Overview of Disadvantaged Communities and Native American Tribes in the Santa Ana River Watershed*, residents living in severely disadvantaged or disadvantaged communities are often disproportionally impacted by high infrastructure costs, poor water quality, and failing septic systems. ALW wants to ensure that all community members, especially those with fewer resources, have access to information that can teach them how to proactively save money and precious water resources via water conservation and leak detection practices. With the new AMI management system, both the customer and ALW will be alerted to leaks or potential problems, giving everyone the ability to react as quickly as possible to mitigate losses and conserve our invaluable water resources.

Projected Growth and Water Demand

In 2015, California was tied with Oregon as the fastest growing economy in the nation (U.S. Bureau of Economic Analysis). Although ALW's service territory is largely built out, population within ALW's service area is expected to grow by 9% over the next 20 years, from 109,200 in 2020 to 119,200 in 2040, with water demand increasing proportionally (see Table 3).

Table 3: Projected Population Increase and Water Demand, 2020 through 2040

Sector	2020	2025	2030	2035	2040
Projected Service Area Population	109,200	111,600	114,100	116,600	119,200
Projected Demands (AFY)					
Single Family/Multi-Family Residence	9,658	9,871	10,092	10,313	10,543
Commercial/Institutional	4,110	4,200	4,294	4,388	4,486
Industrial	3,904	3,990	4,080	4,169	4,262
Other/Landscape Irrigation	411	420	429	439	449
Other	2	2	2	2	2
Total Water Sales	***18,084***	***18,481***	***18,895***	***19,309***	***19,740***
Unaccounted for Water	2,466	2,520	2,577	2,633	2,692
Total Water Consumption (AFY)	***20,550***	***21,001***	***21,472***	***21,942***	***22,432***

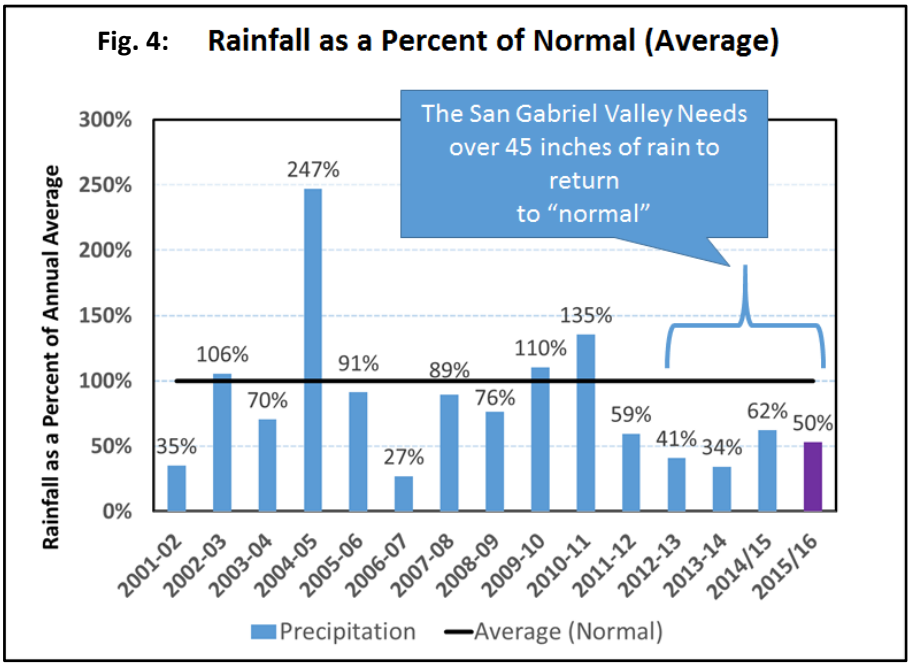
ALW is confident that the current capacity of its water supply infrastructure can meet this demand through 2040, though water supply conditions remain somewhat uncertain, and can, at times, be unpredictable due to drought conditions. For example, continuation of the state's historic drought and changing climate patterns could result in increased demand concurrently with population growth. The time to address these projections is now, using proven technology such as the proposed AMI system.

Challenges to Water Supply

Vulnerability to Drought. Since 2006-07, the San Gabriel Valley has been impacted by severe drought conditions. Fig. 4 shows annual rainfall as a percentage of average rainfall since 2001-02. With most of its water coming from local groundwater supplies, ALW is especially vulnerable to California's ongoing drought situation. While the state's average yearly rainfall in the Basin area is approximately 19 inches, the precipitation in 2015 was less than half of the average (9 inches). Moreover, in April 2015, the Sierra Nevada Mountain's snowpack, which provides approximately one third of the state's water, was 5% of its average according to the California Department of Water Resources (DWR), (See: http://www.water.ca.gov/newsreleases/2015/040115snowsurvey.pdf).

Although rainfall in 2017 is helping to alleviate drought conditions currently, the drought has been so widespread in California and Southwestern United States during the past 10 years that regional resource allocations from the State Water Project and Colorado River were limited. Also, the Governor in California issued an Executive Order requiring a 25% reduction in consumption statewide in April 2015. Moreover, during this same period, the endangered Delta Smelt Fish also limited pumping from the Delta into the State Water Project Aqueduct. The combination of these water supply shortage pressures resulted in the Main San Gabriel Basin groundwater level reaching its lowest point in over 100 years. See Fig. 5 on next page for groundwater elevations for the past 20 years.

Fig. 4: Rainfall as a Percent of Normal (Average)



In response to these conditions, ALW declared a Phase 1 Drought in May 2007 calling for voluntary water conservation. In June 2008, ALW sought to reduce consumption by 10% through declaration of a Phase 2 Drought. In May 2009, the Main Basin Watermaster urged all cities to reduce consumption by 20%. ALW aggressively implemented various water conservation strategies and reduced consumption by 25.9% during this time. By December 2010, water supply conditions improved and in March 2011, the Governor declared an end to a 3 year drought. By May 2011, consumption climbed by 9%, however, by June 1, 2013, ALW had to declare another Phase 2 Drought and by May 2014, ALW declared a Phase 3 Drought

restricting outdoor water use to two days per week. Warnings and citations were issued through part time drought patrol staff, and enforcement actions continue to this day. Fig. 6, on p. 13, shows locations where warnings and citations were issued for violations of ALW's water use restrictions from 2007 through 2015 along with counts of warning/citations issued.

Fig. 5: Declines in Groundwater Levels in the Main San Gabriel Basin

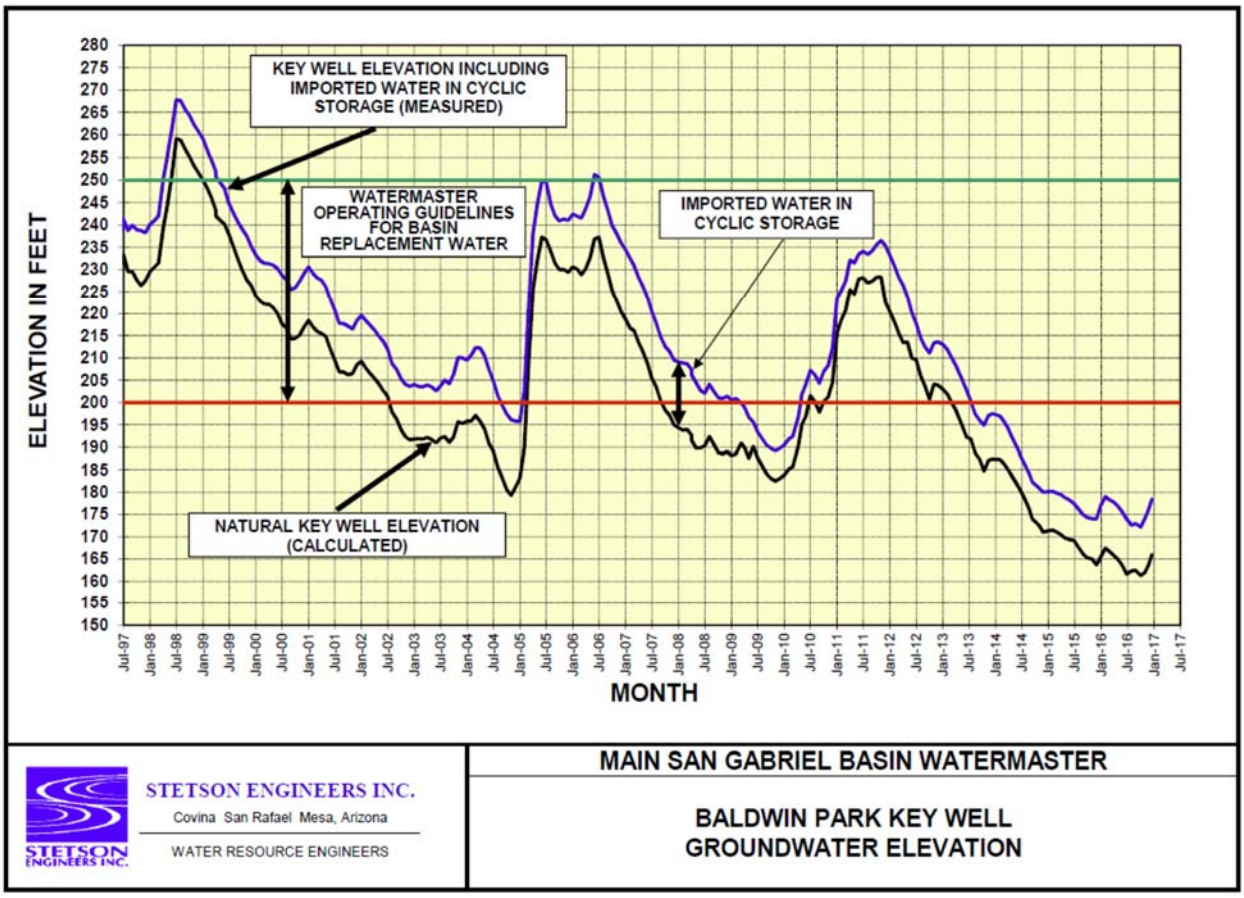
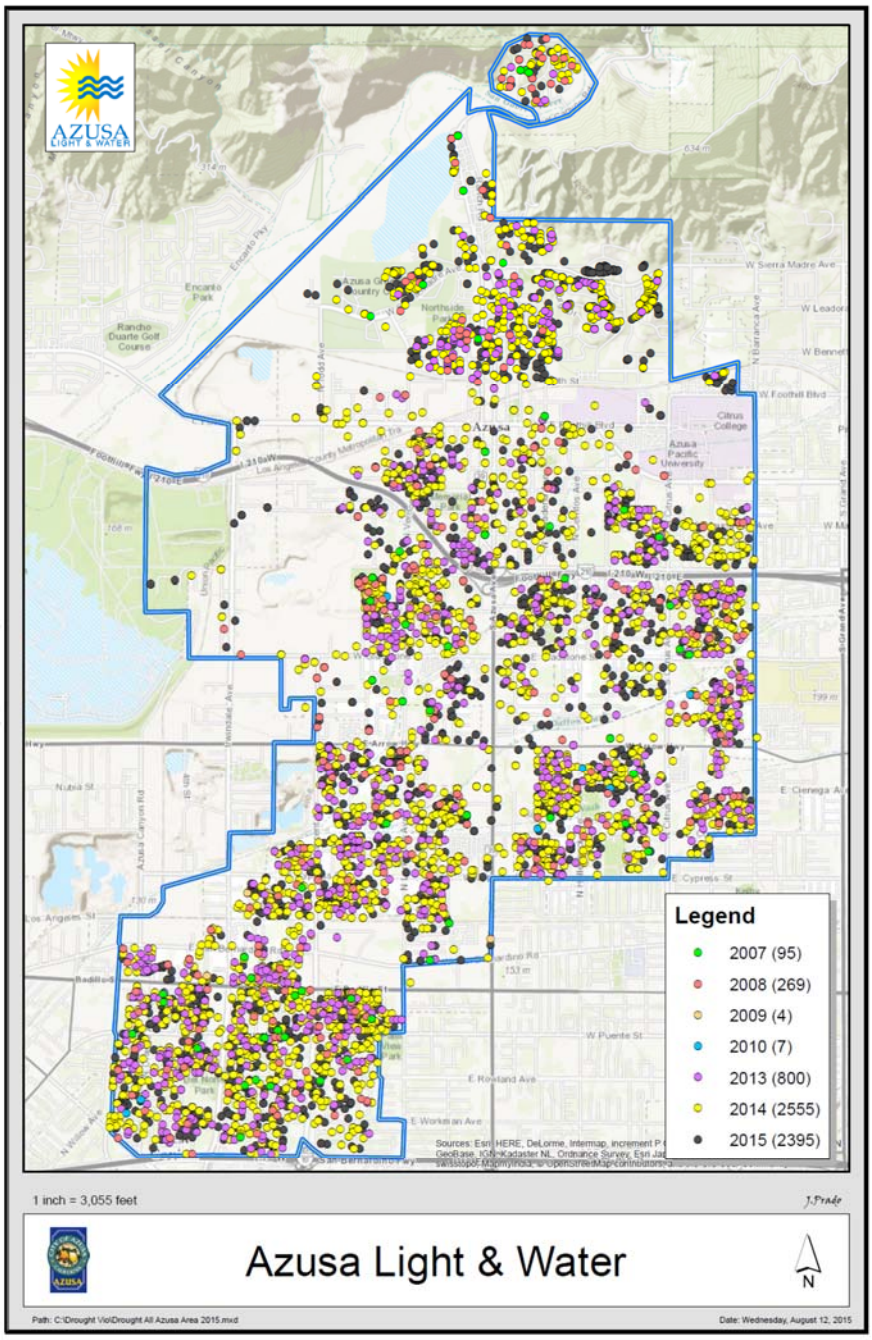


Fig. 6: Location and Counts of Violations of ALW's Water Use Restrictions, 2007-15



The above enforcement actions and other public education provided by ALW to customers reduced annual consumption by 22% from June 2013 to June 2016. ALW believes that with 24/7 surveillance of drought violations as provided through this project, that this project will significantly enhance ALW's ability to enforce water use restrictions much more efficiently and will result in much greater water conservation. An assessment of a sample of violations from 2013-15 found that most violators who were issued warnings reduced their consumption by 26% on average. These results were used to estimate what could be achieved by this project using 24/7 AMI surveillance.

Reliance on Imported Water. Since 1953, surface and ground water have been taken by ALW and other water purveyors in the San Gabriel Valley at a rate greater than natural precipitation and runoff can replenish them. To maintain the productivity of wells in spite of this overdraft condition, ALW purchases replacement water from the Main San Gabriel Watermaster and through the SGVMWD. Although ALW reduced its water demand through conservation over the past several years, these decreases were not enough to alleviate the need for ALW to purchase replacement water to recharge the Basin. During Fiscal Year 2014, ALW purchased 3,959 AF of replacement water from the SGVMWD at a price of $130 per AF. The need to purchase replenishment water is not only expensive in terms of total dollars, it is also costly in terms of energy consumption required to transport water 400 miles over the mountains into Southern California. Every acre foot of water conserved at its local source correlates not only to direct monetary and water savings, but also to energy savings that benefits the entire state.

Water Loss, Unaccounted for Usage, and Unauthorized Usage. As indicated in Table 4 below, unaccounted for water usage and/or water losses account for approximately 13% of the total water usage on average or about 2,918 AFY. These include: distribution and storage system leaks, unmetered use (theft), meter inaccuracies, and other types of losses.

Table 4: Summary of Unaccounted for Water Usage and Water Losses

Year	Produced Water (gpm)	Billed Consumption (gpm)	Water Losses (gpm)	Water Losses (ccf)	Water Losses (% of production)
2006	16,144	13,595	2,549	1,792,180	16%
2007	15,616	13,160	2,456	1,726,792	16%
2008	13,659	11,682	1,977	1,390,011	14%
2009	13,349	11,552	1,797	1,263,455	13%
2010	12,265	10,681	1,584	1,113,697	13%
2011	12,172	10,647	1,525	1,072,214	13%
2012	12,906	11,318	1,588	1,116,509	12%
2013	12,079	10,636	1,443	1,079,201	12%
2014	11,429	10,245	1,184	885,980	10%
Average	**13,291**	**11,502**	**1,789**	**1,271,115**	**13%**

Source: Data provided by ALW.

By replacing aging meters, this project will eliminate the water losses from meter inaccuracies, which one consultant study estimated make up to 75% of the water loss total. Following deployment of this project, ALW will be better able to measure the accuracy of this consultant estimate and analyze what proportion of losses are attributable to system leaks.

Renewable Energy and Energy Efficiency
As referred to throughout this application, this project has the potential to reduce water consumption in the following areas:

1) Consumer leak detection and repairs
2) 24/7 Drought Surveillance / Enforcement
    a) Residential customers
    b) Commercial – outdoor irrigation meters
3) Distribution System Water Losses

By reducing water consumption and water losses, this project harbors the potential to (1) reduce energy consumption expended to import water into the basin, (2) reduce energy consumption associated with pumping/boosting groundwater into the water distribution system, and (3) reduce energy consumption associated with treating water. ALW estimates that the combined energy savings from the above actions will be about 3,553,093 kWh per year, assuming conservation of 4,014 acre feet per year, and reduction of imports by 3,959 AFY.

Table 5: Summary of the Proposed Project's Water and Energy Savings

Conservation Opportunity	**AFY**	**kWh/Yr**
Consumer Leaks/Repairs	781.10	348,110
Residential Drought Enforcement	1,689.73	753,056
Commercial Drought Enforcement	813.21	362,420
Distribution System Losses	729.50	325,114
Totals	4,013.54	1,788,700
Energy Saving Opportunity	**AFY Factor**	**kWh/Yr**
Importation of Water	3,959.00	1,764,393
Total Energy Savings		**3,553,093**

***Total Estimated Energy Savings*.** The cumulative potential energy savings from this project as noted above can be used to quantify a public benefit from this project. Using U.S. Energy Information Administration Form EIA-361 Annual Electric Power Industry Report, 2009, average California energy cost of $.1324 per kWh results in the following savings:

$.1324 x 3,553,093 kWh = $470,429 Savings/Annually

The assumptions and calculations for these estimates are provided in Section 4, Evaluation Criteria.

Past Working Relationship with the Reclamation
As noted previously, ALW replenishes Basin groundwater mainly from the State Water Project through purchases from the San Gabriel Valley Municipal Water District, and may obtain replacement water from the Colorado River from the Upper District through MWD. Both the State Water Project and Colorado River are BOR facilities.

3. PROJECT DESCRIPTION

The City of Azusa, and its municipal utility, Azusa Light & Water (ALW) proposes to install an Advanced Metering Infrastructure (AMI) fixed wireless network to read 23,062 water meters remotely, and replace 80% of these outdated water meters with AMI "smart" meters and retrofit the remaining 20% of these water meters with registers and transceivers to communicate with the AMI network. The project includes network software, a meter data management system, and systems integration services to deliver enhanced software functions to end users and customers. All meters will transmit information through the wireless network using a flexible two-way communication system for residential, commercial, industrial, and public agency connections throughout ALW's 14.2-square mile service area, which includes consumers in five cities (including Azusa and portions of the Cities of Covina, Glendora, Irwindale, West Covina), as well as a small number of consumers in unincorporated areas of Los Angeles County.

The scope of work for this project includes the following:

Pre-Award Activities

Task 1 – Complete Contract Negotiations with Prime Contractor: This task is "in-progress" at the writing of this grant application. It involves ALW finalizing a contract with the Prime Contractor (Sensus USA), two principal subcontractors, and finalizing a separate agreement with ALW's billing system vendor for integration services. The contract statement of work with the Prime Contractor will encompass the central scope of work for this project.

Pre-Award Deliverables:

- Development of Final Contract Documents with Prime Contractor
- Development of Final Scope of Work/Proposal for Integration Services
- Preliminary work to obtain licensed frequency for ALW AMI network
- Preliminary project planning activities and scheduling

Post-Award Activities

Most activities take place during the first three years of this project, and these activities are outlined below:

Year 1 Activities

A. Prime Contractor to establish licensed frequency for ALW's AMI network;
B. Prime Contractor to install and configure AMI network software (Regional Network Interface or RNI and Headend software) at offsite hosting facility to operate AMI network in ALW's service territory;
C. Subcontractor to install and configure Meter Data Management System (MDMS) at offsite hosting facility managed by Prime Contractor;
D. Prime Contractor to install 3 base stations at two locations in ALW's service territory;
E. ALW to install a limited number of water meters (77) to test network propagation, MDMS and configuration and software functionality (more meters may be added by ALW as an option during year 1);
F. Prime Contractor, Subcontractor, and ALW's billing system vendor, to integrate RNI and MDMS with ALW's information systems, including geographic information system (GIS) customer information system (CIS), and web portal;
G. Subcontractor and ALW's utility billing vendor to complete enhancements of CIS to deliver functionality to remotely read and control AMI meters and process MDMS data for utility billing; other functions to include leak detection and alerts, reports on drought violations for follow up enforcement action;
H. Subcontractor and ALW's utility billing vendor to complete development of webpages to display customer usage information, including leak alerts in near real time to customers
I. Prime Contractor, Subcontractor and ALW's utility billing vendor to complete training of ALW staff on use of all field devices and information systems and functions;
J. Functional Acceptance Testing of AMI network, MDMS, integration with CIS, and webpage functions; and
K. Network-as-a-Service (NaaS) and Software-as-a-Service (SaaS) commence and continue under 10 year Maintenance and Support Services Addendum.[2]

Year 2 Activities

A. Public outreach about AMI project and scheduling of mass meter replacements; and
B. Subcontractor to complete two-thirds of mass meter replacements of all water meters.

[2] The Addendum for ongoing NaaS and SaaS includes cost for software licensing fees and services to operate and maintain AMI network, AMI headend software (RNI), and MDMS, including hosting services. These services will commence after functional acceptance testing (FAT) which is expected to be completed before the end of year 1.

Year 3 Activities

A. Subcontractor to complete remaining one-third of mass meter replacements; and
B. Final system acceptance testing.

Most of the water meters in the proposed ALW service area are beyond their useful life, with diminished capacity to accurately meter or report water usage. The totality of thousands of meter inaccuracies leads to costly unregistered water flow and undetected leaks and unaccounted for water use. The AMI technology will mitigate these losses by enabling ALW to remotely manage metering assets, and address losses in a timely and efficient manner. ALW customers will also benefit from the AMI customer portal, with real-time water usage data, the capability to set alerts, and gather personalized water system reports. Additionally, reports will be configured to run automatically to detect drought violations by customers with high water usage. Drought enforcement staff will be assigned to review these reports and take follow-up action to issue warnings and citations based on these reports.

This project will conserve and use water more efficiently and improve energy efficiency, in direct alignment with BOR's overarching goals to support water sustainability and address climate-related impacts on water.

The post-award tasks include:

Task 1: Approval by ALW of Contract Documents with Prime Contractor and Integration Service Vendor: Approval of contract documents with Prime Contractor will mobilize Contractor and Subcontractors to initiate installation activities associated with networking devices, software, and configuration services. Approval of contract with Integration service provider will ensure that changes are made to customer information system early on in process so that database fields are set up to enter new information required by AMI meter replacements, transceivers, RNI and MDMS. Approval of these contract documents will also obligate ALW to using its reserve funds to support this project.

Deliverables will include:

- Executed agreement with Prime Contractor and Subcontractors; and
- Approval of proposal by Systems Integrator to modify utility billing system and integrate AMI systems.

Task 2: Project/Grant Management: This task focuses on establishing the grant agreement with the BOR, attending and preparing for requested meetings with BOR, overseeing the contract and implementation progress, completing reporting requirements, closing out the grant, and maintaining all records for at least three years after project closeout. This process will establish supplemental funding for this project for the water utility portion of the overall project.

Deliverables will include:

- Executed grant agreement;
- Meeting agendas and minutes;
- Requests for reimbursement;
- Quarterly and final reports; and
- Audit reports (if applicable).

Task 3: Environmental Compliance: The project will be evaluated for CEQA and NEPA compliance upon grant award, and it is expected that the project will be designated a Categorical Exemption for CEQA and a Categorical Exclusion for NEPA because the project will result in minor retrofit activities and will utilize existing facilities.

- CEQA: ALW expects the project to be classified as a Class I project which consists of the "operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public and provide structures, facilities, mechanical equipment, etc." (Section 15301, Existing Facilities, part b). Section 15301 states that "existing facilities" includes "…publicly-owned utilities used to provide electric power, natural gas, sewage, or other public utility services."
- NEPA: ALW expects the project to meet the definition of Categorical Exclusion: "minor construction activities associated with authorized projects which…merely augment or supplement…" and "maintenance, rehabilitation, and replacement of existing facilities…"

A Notice of Exemption will be filed after grant award and after execution of contract with Prime Contractor.

Deliverables will include:

- Approved and adopted CEQA documentation (Categorical Exemption); and
- Approved and adopted NEPA documentation (Categorical Exclusion).

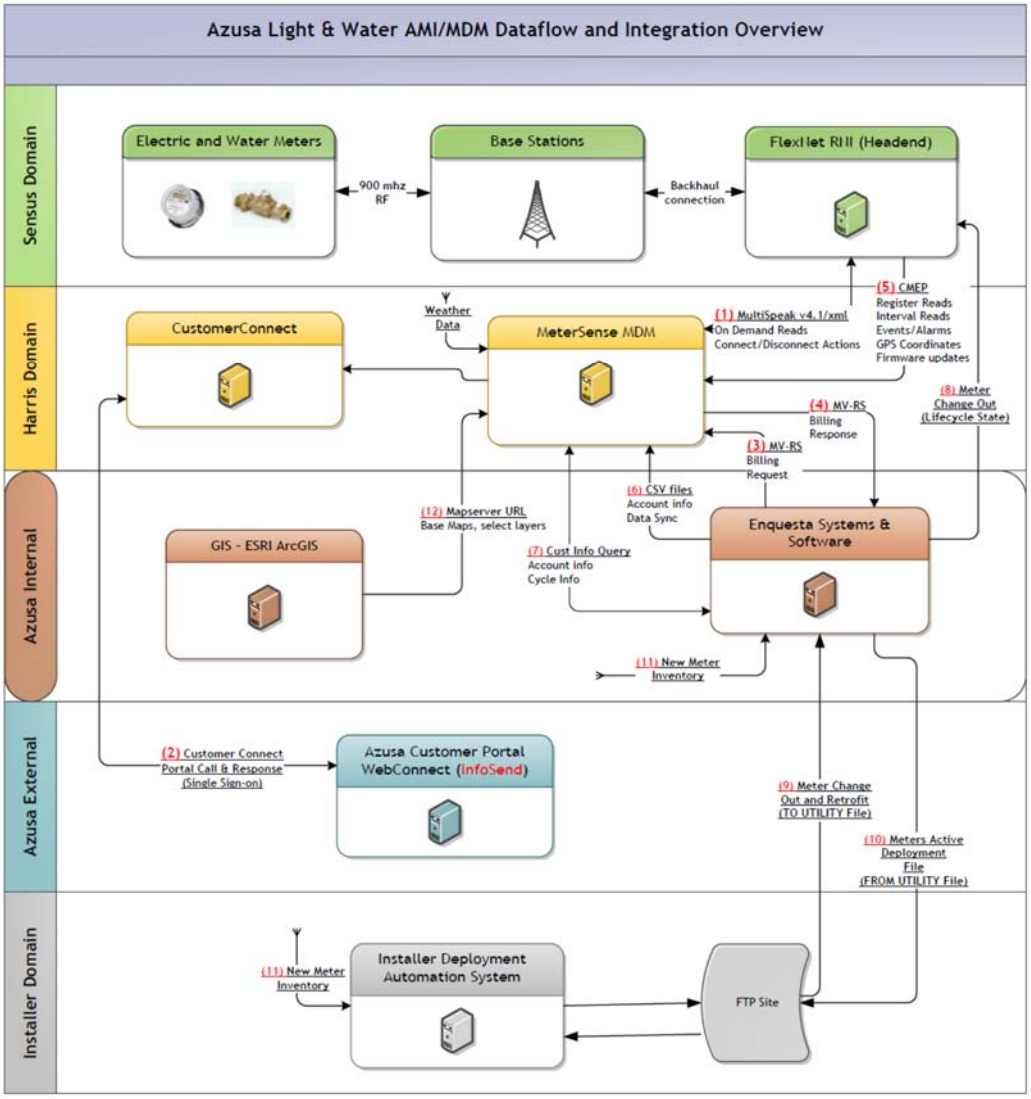
Task 4: Project Initiation - AMI Network / Software / Test Meter Installation: The proposed AMI system will be completed by the selected prime contractor (Sensus USA) its subcontractors, and ALW's utility billing system vendor. The implementation plan is simple and straightforward, as follows:

Task 4.1: Kick-Off Meeting. ALW will hold a kick-off meeting with the selected contractor, subcontractors, and ALW's utility billing vendor to review the schedule (and make refinements, if necessary), on the detailed project management plan and expectations of each vendor. The BOR will be invited to participate in this meeting.

Task 4.2: Install-Configure AMI Network / Related Software / Test Meters. The prime contractor will install base stations to wirelessly communicate with water meters and transmit meter data through secure connection to offsite servers. Prime contractor will install and

configure server software to manage network and meter data remotely. The Meter Data Management System (MDMS) will be installed on a separate sever and a subcontractor will develop and deploy various software functions and deliver them to ALW's users and customers. ALW's billing system vendor will integrate network information and MDMS with customer information system (CIS), develop process to upload mass information on meter exchanges to CIS, and develop functional enhancements to provide users with capabilities to read meters remotely, download reads by route for billing purposes, and shut off some meters remotely. As part of this task, ALW will install 77 test meters at dispersed locations throughout its service territory to test the propagation of network signal strength and to ensure that meters can be read through the network and software configurations. Fig. 7 illustrates devices and applications that comprise the AMI system:

Fig. 7: Proposed AMI System - Devices and Applications



The proposed system will utilize state-of-the art smart meters, equipped to wirelessly transmit water-usage data to base stations via licensed frequency. Data received by the base stations will be transmitted via secure connection to Prime Contractor's hosting facility where data will pass into the MDMS. The MDMS will store and analyze data and make information available to ALW staff through user interfaces and integrations with ALW's CIS, "enQuesta". The MDMS will also be integrated with an application called Customer Connect, which will provide a web portal to customers through ALW's CIS module, "webconnect".

The AMI/MDMS analytical tools will translate complex data into easily understood information, which will allow customers to analyze their personalized water use patterns. Automation and remote operating capabilities will enable ALW to execute field tasks remotely and automatically, which will save staff time and significantly reduce vehicle emissions. Some examples of remote tasks performed by the AMI/MDMS system in near real-time include:

- Hourly Consumption/Interval Data: The AMI system will log water consumption every hour, correlated to the actual date of consumption and render info to customers.
- Drought Monitoring/Enforcement: Residential and Commercial meters will be automatically monitored for compliance with ALW's drought restrictions and violation reports will be automatically generated. This includes monitoring of irrigation meters, most of which include municipal meters, school district meters, HOA meters, and State Department of Transportation meters installed along the 210 Freeway running through Irwindale, Azusa and Glendora. Reports will be written to query the MDMS to provide documentation of violations.
- Leak Detection: The system analytics will identify and notify both the City and the customer of a leak within 24 hours of occurrence. This allows a leak to be identified and repaired prior to billing.
- Leak Analysis: Once a leak is identified by the system, easy-to-read bar graphs and tabular data will depict the duration and rate of flow for a leak, and the total water loss can be determined and follow-up drought enforcement action can be considered.
- On-Demand Meter Reads: The AMI system will enable remote on-demand reads of meters, which helps avoid truck rolls for new service turns ons and bill disputes.
- Unauthorized Consumption and Tampering Alerts: The system is capable of recognizing potential theft or excessive use of water at any volumetric threshold for any specific meter, group of meters, or the system as a whole during specified or unspecified times, and can be set to alert the consumer and ALW.
- Continuous Backflow Monitoring: Any reverse flow of water into the system from a connection point triggers an alert 24 hours a day to prevent contamination of the water supply.

Deliverables will include:

- Installation of 77 test water meters;
- Installation of three base stations with secure communication to AMI Headend/RNI;

- Installation of software, including RNI and MDMS;
- Integration of RNI, MDMS, GIS, CIS, and City website;
- Deployment of Enhanced CIS/MDMS functionality; and
- Agreement by ALW and Contractor on test scripts for functional acceptance testing.

Task 4.3: Functional Acceptance Testing (FAT). ALW will conduct functional acceptance testing of AMI network, RNI, MDMS, integration with CIS and web portal, and enhanced functionality of MDMS required by contract with Prime Contractor.

- Test results of FAT testing; and
- Letter to Prime Contractor accepting test results.

Task 4.4: Training for ALW Staff. Contractor, MDMS subcontractor, and utility billing vendor will provide extensive, hands-on, onsite training to ALW staff on AMI network and software systems.

Deliverables will include:

- Kick-off meeting agenda, including training plan and manuals/materials; and
- Training agendas and participant lists.

Task 5: Customer Outreach: Following successful FAT testing (Task 4.3), ALW will work with Subcontractor to identify meter reading routes where mass meter replacements will occur, and to schedule the routes for mass replacements. This process will involve a customer outreach component. ALW and/or Subcontractor will notify all customers scheduled for meter replacements and inform them about this important system upgrade and provide user-friendly materials/information about the use and benefits of the new system, along with scheduled date when customer meters will be replaced. Customer outreach will be multi-faceted, including direct mailings, customer telephone hotline, flyers in both English and Spanish, news articles in the local *San Gabriel Valley Tribune* newspaper, and social media postings to the City's Facebook and Twitter accounts.

Deliverables will include:

- Schedule of meter replacements by route; and
- Public information to be distributed to customers.

Task 6: Mass Meter Installations: The project will install 23,062 smart water meters and transceivers in the service area over the 36-month project period. Approximately two-thirds of these meters will be installed in Year 2 of project and about one-third will be installed in Year 3 of the project. Meters replaced in Years 2 and 3 will be installed by a Subcontractor, operating out of a staging area owned by ALW on Paramount Avenue in Azusa, and ALW will perform troubleshooting and support throughout installation process. As described above, 77 test meters will be installed in Year 1, and these will be installed by ALW staff.

Deliverables will include:

- Staging area set up for Subcontractor to perform meter installations;
- Approximately 15,324 meters installed in Year 2 of project; and
- Approximately 7,661 meters installed in Year 3 of project.

Task 7: Performance Monitoring:

ALW will conduct a pre and post assessment of the water and savings resulting from the project. The water saving estimates outlined in Section 4 (Evaluation Criteria) will serve as the baseline. ALW will examine water savings at one interim point (interim assessment at the end of Year 2) and will examine both water and energy savings at the end of Year 3 (post assessment after project completion). For the interim and post assessments, ALW will run internal reports from the AMI system to quantify water and energy consumption. Results of the scheduled assessments, as well as any other ad hoc measures of performance, will be included in the quarterly reports (Task 2) at the end of Years 2 and 3.

Deliverables will include:

- Interim assessment of water savings in the quarterly report at the end of Year 2; and
- Post assessment of water and energy savings in the quarterly report at the end of Year 3.

Schedule

The 36-month program schedule is shown in Table 6 below.

Table 6: Project Schedule

Task No.	**Timeline Major Project Tasks**	***Federal Quarters 2016-2017***		***Federal Quarters 2017-18***				***Federal Quarters 2018-19***				***Federal Quarters 2019-20***			
		3	*4*	*1*	*2*	*3*	*4*	*1*	*2*	*3*	*4*	*1*	*2*	*3*	*4*
Pre-Award Activities															
1	Finalize Contract with Prime Contractor	■													
Post-Award Activities															
1	ALW Board Approval of Contract with Prime Contractor	■													
2	Project/Grant Management (1)		■	■	■	■	■	■	■	■	■	■	■	■	■
3	Environmental Compliance	■													
4.0	Project Initiation - AMI Network / Software / Test Meter Installation														
4.1	Kick-off Meeting	■													
4.2	Install-Configure AMI Network / Related Software / Test Meters		■	■											
4.3	Functional Acceptance Testing (FAT)			■	■										
4.4	Training for ALW Staff			■	■	■									
5	Customer Outreach						■	■	■	■	■	■	■	■	■
6	Mass Meter Installations														
	Two-Thirds of Meters Installed							■	■	■	■				
	One-Third of Meters Installed											■	■	■	■
7	Performance Monitoring	■	■	■	■	■	■	■	■	■	■	■	■	■	■
		*****Project completion expected by September 30, 2020*****													

Notes:
(1) Includes negotiating the grant agreement with BOR.

4. EVALUATION CRITERIA

4.1 Criterion A: Quantifiable Water Savings

MUNICIPAL METERING

A. How has the Estimated Average Annual Water Savings been Determined?

Funding for this grant is part of a larger project which aims to replace/retrofit all ALW water meters with AMI meters. ALW estimates this project will conserve approximately 4,014 AFY as a direct benefit of the AMI upgrade of 23,062 water meters and the installation of the AMI network throughout the service area. The installation of the AMI system's network (which will provide near real-time notification of water use) will result in water savings from four sources:

1. Improved detection of residential water use/drought violations:	1,689.73 AFY
2. Improved detection of commercial water use/drought violations:	813.21 AFY
3. Improved leak detection behind the meter:	781.10 AFY
4. Improved leak detection in the distribution system:	729.50 AFY
TOTAL	***4,013.54 AFY***

Conserved water will remain in the Main San Gabriel Water Basin and the San Gabriel River, and conservation will likely reduce ALW's need to purchase replenishment water from the SGVMWD, which imports water from the Sacramento-San Joaquin-Delta region via the SWP. This project will also reduce the likelihood that ALW would have to purchase water from the Upper District, which comes from the Colorado River and SWP.

The details about each of the four sources of water savings is provided below.

WATER SAVINGS SOURCE #1: Improved Residential Drought Enforcement = 1,689.73 AFY

The new AMI system will allow ALW to quickly identify residential customers who violate water use restrictions, most of which are related to landscape irrigation using automated systems. ALW currently has water use restrictions at two days per week, and one part-time enforcement officer. ALW enforcement efforts usually have a great impact on water consumption. An assessment of a sample of 250 violations from 2014-15 found that violators who were issued warnings reduced their consumption by an average by 26%. These water savings will be amplified after installation of the AMI system, which will allow ALW to identify all violations via the AMI system (not just those that are identified by sight by the part-time enforcement officer). The savings noted here are based on a survey of residential customers, 88% of which were found to have automated irrigation systems.

Table 7: Potential Water Savings from Improved RESIDENTIAL Drought Enforcement

Drought Enforcement Activities [1]	FY 2016			
Customer Types	Consumption (CCF)	Acre Feet (AF)	Reduction Factor	Water Savings from AMI Enforcment (AF)
Residential	3,216,984	7,385	88% X 26%	1,689.73

Notes
(1) 88% of customers have automated systems. 26% actual water consumption reduction from drought enforcement effort by part time staff.

WATER SAVINGS SOURCE #2: Improved Commercial Drought Enforcement = 813.21 AFY

The new AMI system will also allow ALW to quickly identify commercial customers who violate water use restrictions related to landscape irrigation. Commercial customers are also limited to outdoor water use of no more than two days per week, and enforcement is also conducted by ALW's part-time drought enforcement officer. Similar to residential enforcement, the automated AMI system will allow ALW to identify commercial violators in near real-time. ALW estimates that the new AMI system could result in reduced consumption by 40%.

Table 8: Potential Water Savings from Improved COMMERCIAL Drought Enforcement

Commercial Drought Enforcement [1]	FY 2016			
Customer Types	Consumption (CCF)	Acre Feet (AF)	Reduction Factor	Water Savings from AMI Enforcment (AF)
Public Agencies [1]	324,987	746	75% X 40%	223.82
Commercial [2]	1,283,677	2,947	50% X 40%	589.38
TOTALS	**1,608,664**	**3,693**		**813.21**

Notes
(1) This assumes that 75% of all water use is for outdoor irrigation and that consumption could be reduced by 40%
(2) This assumes that 50% of all water use is for outdoor irrigation and that consumption could be reduced by 40%
(2) Commercial water use includes homeowner associations and multifamily complex irrigation systems

WATER SAVINGS SOURCE #3: Improved Residential Leak Detection = 781.10 AFY

The AMI system will recognize if there is an increase in consumption that might indicate a leak, leading to faster detection and repair. Water savings due to improved detection of residential leaks (behind the meter) was calculated using reduction factors and data from the EPA's WaterSense website[3]. The average household's leaks can account for 10,000 gallons of water wasted every year. Furthermore, 10% of homes have leaks that waste 90 gallons or more per day (or 32,850 gallons per year). ALW plans to retrofit AMI meters for 20,718 homes.

[3] http://www.epa.gov/WaterSense/pubs/fixleak.html

Table 9: Potential Water Savings from Improved Residential Leak Detection

Leak Detection/Correction behind the Meter [1]						
		Households	% of Households	Loss/HH /Gallons/Yr	Loss/Gallons /Total/Yr	AF Saved Thru Repairs
		20,718	90%	10,000	186,462,000	572.23
		20,718	10%	32,850	68,058,630	208.86
	TOTALS				**254,520,630**	**781.10**
Notes						
[1]	Uses EPA metholodgy for forecasting water saved from leak repairs					

WATER SAVINGS SOURCE #4: Improved Leak Detection in the Distribution System = 729.50 AFY

As noted previously, ALW's water losses are about 13% on average of production which equates to about 2,918 AFY. In a report prepared by UtiliWorks (July 2016) for ALW, it was estimated that as much as 75% of this amount was due to old inaccurate meters under registering water flow. This suggests that about 25% of these losses would be attributable to leaks in water storage or distribution mains. This project will help to determine what percent is attributable to meter inaccuracies and leaks; however, assuming that 25% is attributable to leaks and that this project will help to identify system leaks, this project has the potential to reduce 729.5 AFY in water system losses. This figure could be much higher if the losses due to leaks amount to more than 25% of system losses.

B. How have Current Distribution System Losses and/or Potential for Reductions in Water Use by Individual Users been Determined?

Water savings due to faster detection of system leaks, faster detection of leaks behind residential customers' meters, and faster detection of water use violations are described qualitatively and quantitatively above.

C. For Individual Water Meters, Refer to Regional or Area Studies that Discuss the Potential for Reducing Use or Explain How Water Use Reductions have been Estimated.

There are no regional or area studies of AMI systems; however, ALW has identified four potential sources of water savings and has estimated reduction factors for each.

1. **Improved detection of <u>residential</u> water use/drought violations**

   Estimated savings 1,689.73 AFY

   <u>Reduction Factor</u>: An assessment of a sample of violations from 2014-15 found that violators who were issued warnings reduced their consumption by an average of 26% (reduction factor). Approximately 88% of residential customers

have automated irrigation systems that would be subject to the detection capabilities of the AMI system.

2. **Improved detection of commercial water use/drought violations**
   Estimated savings 813.21 AFY
   Reduction Factor: See Table 8 in Section A, above. Savings were calculated based on irrigation-related consumption for commercial customers (75% of consumption for public agencies and 50% for other commercial customers) and a reduction factor of 40%.

3. **Improved leak detection behind the meter**
   Estimated savings 781.10 AFY
   Reduction Factor: See Table 9 in Section A, above. Savings were calculated using reduction factors and data from the EPA's WaterSense website[4]. The average household's leaks can account for 10,000 gallons of water wasted every year. Furthermore, 10% of homes have leaks that waste 90 gallons or more per day (or 32,850 gallons per year). These percentages (reduction factors) were applied to the number of residential/household connections.

4. **Improved leak detection in the distribution system**
   Estimated savings 729.5 AFY
   Reduction Factor: ALW's water losses are about 13% on average of production, which equates to about 2,918 AFY. In a report prepared by UtiliWorks (July 2016) for ALW, it was estimated that as much as 75% of this amount was due to old inaccurate meters under registering water flow. This suggests that about 25% of these losses (reduction factor) would be attributable to leaks in water storage or distribution mains.

D. Distribution Main Meters: Not applicable.

E. What Types (Manufacturer and Model) of Devices will be Installed and What Quantity of Each?

ALW's overall AMI project is seeking to install/retrofit 23,062 smart water meters (at September 2016 count). About 80% of these meters will be replaced and 20% retrofit with transceivers to communicate with AMI network. ALW has provisionally selected Sensus USA through a competitive procurement process. The project seeks to make use of Sensus' iPERL meter to replace 5/8", ¾" and 1" meters, and Sensus' OMNI R2 meter to replace 1 ½" and 2" meters. Other larger meters will be retrofit with transceivers. There are currently 17,102 iPERL

[4] http://www.epa.gov/WaterSense/pubs/fixleak.html

meters slated to be installed, and 975 OMNI meters based on September 2016 counts.[5] Sensus has installed over 2 million iPERL meters worldwide.

iPERL Description/Capacity:

- Operating range of 0.11 gpm (0.025 m^3/hr) to 55 gpm (12.5 m^3/hr)—registers flow as low as 0.03 gpm (0.007 m^3/hr);
- Sizes include: 5/8" (DN 15mm), 3/4" (DN 20mm) and 1" (DN 25mm);
- The iPERL meters can be installed horizontally, vertically or diagonally;
- 15-20-year service life;
- The iPERL does not use mechanical measuring elements (i.e., no moving parts). The iPERL meter body is made of composite alloy and contains no metal material. Inside the meter body is an electronic register and a measuring device that is comprised of a composite alloy flow tube. Embedded in the flow tube are coated silver electrodes. iPERL utilizes these to measure the fluid velocity through the flow tube – enabling less power consumption and predictable meter performance.
- Equipped with smart water alarms including leak detection, reverse flow, empty pipe, magnetic tamper and low battery. These alarms will be integrated with Sensus's FlexNet communication network, which will allow remotely gathering and transmitting data which is the cornerstone of the project's water savings benefit.

OMNI R2 Description/Capacity:

- Sizes include: 1-1/2" and 2"
- Operating range of 2 gpm (0.45 m3/hr) to 150 gpm (34 m3/hr)for 1-1/2" meter, and 2.5 gpm (0.56 m3/hr) to 200 gpm (45 m3/hr) for 2" meter
- The OMNI R2 meter consists of two basic assemblies: the maincase and the measuring chamber. The measuring chamber assembly includes the "floating ball" impeller with a coated titanium shaft, hybrid axial bearings, integral flow straightener and an all electronic programmable register with protective bonnet.
- Meter registration is achieved by utilizing a fully magnetic pickup system. This is accomplished by the magnetic actions of the embedded rotor magnets and the ultra sensitive register pickup probe. The only moving component in water is the "floating ball" impeller.
- The revolutionary thermoplastic, hydro dynamically balanced impeller floats between the bearings. The Floating Ball Technology (FBT) allows the measuring element to operate virtually without friction or wear, thus creating the extended upper and lower flow ranges capable on only the OMNI R2 meter.

[5] http://sensus.com/products/iperl-north-america/

F. How will Actual Water Savings be Verified Upon Completion of the Project.
ALW will conduct a pre-post assessment of the water savings resulting from the project. The water saving estimates outlined in Section A (above) will serve as the baseline. ALW will examine savings at one interim point (interim assessment at the end of Year 2) and at the end of Year 3 (post assessment after project completion). For the interim and post assessments, ALW will prepare assessment reports based on billing system sales data and MDMS reports to quantify alerts of residential and commercial drought violations and leaks, and assess changes in actual consumption compared to the baseline.

4.2 Criterion B: Water Sustainability Benefits Expected to Result from the Project

The proposed AMI project will help the Main Basin maintain its groundwater elevation, alleviate the need for imports, and reduce the need for ALW to divert surface water from the San Gabriel Rivers. Each of these benefits contribute to sustainability of the Main Basin's water supplies and help overcome some of the challenges described below.

Water Supply Sustainability Concerns in the San Gabriel Basin and California

Vulnerability to California's Historic Drought. Historic drought conditions continue to be a critical issue for ALW's and the state's water supplies. At the local level, most water supply comes from local surface and groundwater supplies. ALW is especially vulnerable to the ongoing drought situation. While the average yearly rainfall in the Basin area is approximately 19 inches, the precipitation in 2015 was less than half of the average (9 inches). The amount of precipitation in the San Gabriel Mountain watershed (which feeds the San Gabriel River and the Main San Gabriel Basin (ALW's two major water sources) is down by 48 inches over the last five years, highlighting the further importance and vulnerability of this water source.

At the State level, the Sierra Nevada Mountain's snowpack, which provides approximately one third of the state's water, was 5% of its average in 2015 (California Department of Water Resources (DWR). The snowpack increased in 2016, but DWR reports that the significant effects of previous dry years will remain for now. This is illustrated in the most recent allocations from the State Water Project. In December 2016, DWR announced that allocations for 2017 will be 45% of the requests by the 29 public agencies served by the State Water Project. The State Water Project's water resources continue to be severely affected by the drought:

- Lake Oroville, the SWP's principal reservoir, is holding 1,895,292 AF (54% of capacity);
- Shasta Lake is holding 3,327,257 AF (73% of capacity); and
- San Luis Reservoir is holding 1,155,838 AF (57% of capacity).

Water Supply Shortfall. Since 1953, surface and ground water have been taken by ALW and other water purveyors in the San Gabriel Valley at a rate greater than natural precipitation and runoff can replenish them. To maintain the productivity of wells in spite of this overdraft

condition, ALW purchases replacement water from the Main San Gabriel Watermaster and through the SGVMWD. Although ALW reduced its water demand through conservation over the past several years, these decreases were not enough to alleviate the need for ALW to purchase replacement water to recharge the Basin. During Fiscal Year 2014, ALW purchased 3,959 AF of replacement water from the SGVMWD at a price of $130 per AF. The need to purchase replenishment water is not only expensive in terms of total dollars, it is also costly in terms of energy consumption required to transport water 400 miles over the mountains into Southern California. Every acre foot of water conserved at its local source correlates not only to direct monetary and water savings, but also to energy savings that benefits the entire state.

How the Project will Address the Water Supply Sustainability Concerns

The proposed AMI project will directly contribute to the sustainability of ALW's water supply due to improved detection of both leaks and water use violations (as described in Evaluation Criterion A, above), and improved ability for residential and commercial customers to monitor and adjust their water use in near real-time. As a result of the automation provided by the AMI project, reliance on the vulnerable water sources (also described above) will be reduced, resulting in decreased pressure on both local and State Water Project supplies. The conserved water will remain in the Main San Gabriel Water Basin and the San Gabriel River (ALW's main water supply sources), both of which are supplemented by the State Water Project and the Colorado River (BOR facilities). Water savings may also reduce the small amount of water that ALW purchases from SGVMWD (the source of which is also the State Water Project).

Impact on Federally Threatened/Endangered Species

The proposed AMI project will indirectly support and protect the Bay Delta Estuary (a source of water for the State Water Project). The Bay Delta is the largest estuary on the west coast of North America. It is a four-million acre watershed that supports over 700 plant, fish and wildlife species, including the endangered Delta Smelt. The endangered Delta Smelt is unique to the Bay-Delta. According to the U.S. Fish and Wildlife Service, the drought has pushed the Delta Smelt closer to extinction. Surveys by both federal and state agencies indicate the population is now at an all-time low. Service calculations estimate the current population to be about 13,000 fish, compared to a year ago when there were an estimated 112,000 fish, the lowest number ever at that time. Delta Smelt are considered an "indicator" species, and their abundance reflects how well the Delta's aquatic environment is functioning – meaning that as Delta Smelt decline, the Delta is changing in a way that does not support other species that are also dependent on the system (including Longfin Smelt, Green Sturgeon, Chinook Salmon, and Steelhead). Delta Smelt are protected under both the Federal and State Endangered Species Acts.

By reducing water draws on the San Gabriel River and the Main San Gabriel Basin, the City will place less demand on water purchased from the State Water Project (through SGVMWD) and on water in the San Gabriel River which is supplemented by the State Water Project.

The project will not make additional water available to Indian tribes, and/or rural or economically disadvantaged communities.

4.3 Criterion C: Energy-Water Nexus

A. Calculations of Energy Saving Resulting from the Project's Water Conservation Improvements.

Table 10 provides a summary of the water savings in AFY and the associated energy savings in kWh. The assumptions and calculations are provided below.

Table 10: Summary of the Proposed Project's Water and Energy Savings

Conservation Opportunity	AFY	kWh/Yr
Consumer Leaks/Repairs	781.10	348,110
Residential Drought Enforcement	1,689.73	753,056
Commercial Drought Enforcement	813.21	362,420
Distribution System Losses	729.50	325,114
Totals	4,013.54	1,788,700
Energy Saving Opportunity	**AFY Factor**	**kWh/Yr**
Importation of Water	3,959.00	1,764,393
Total Energy Savings		**3,553,093**

Assumptions

ALW's current energy factor to pump/boost water into the distribution system is 409/kWh per AF of water. More energy is used to treat surface water, about 519/kWh per AF of water. Water production is assumed to be 66% from groundwater and 33% from treatment. Additionally, approximately 3,236 kWh are required to pump 1 AF of SWP water from the Sacramento-San Joaquin Delta to the Devil Canyon Powerplant.

1. Consumer Leak Detection

Not fixing leaks within 48 hours is a violation of ALW's water use restrictions under Rule No. 21. Leaks will be detected by the AMI system monitoring water flow continuously at night when there should be no water usage except for irrigation purposes. The AMI Project will apply analytics to the meter data and generate leak alarms which will be used to inform customers about a leak and drought violation. Through early leak detection and repair, ALW estimates that 781 AFY (see Criterion A above for the calculations).

Energy Savings from Leak Detection

781 X 66% X 409 kWh = 212,980 / kWh / Yr
781 X 33% X 519 kWh = 135,110 / kWh / Yr
Total Annual Savings = 348,110 kWh

2. Residential Drought Enforcement

ALW's water use restrictions as set forth in Rule No. 21 prohibit outdoor watering between the hours of 9:00 a.m. to 6:00 p.m., and further restrict watering to two days per week depending upon customer street address number. In sampling the results of enforcement action on consumer behavior, consumers who receive drought violation warnings or citations are inclined to reduce consumption by 26%. Greater surveillance of water use on a 24/7 basis using the AMI meter data management system is likely to produce similar result. Based on estimate that 88% of households have automated sprinkler systems, the water savings of 1,689.73 AFY are anticipated (see Criterion A above for the calculations).

Energy Savings from Residential Drought Enforcement:

1,689.73 X 66% X 409 kWh = 460,733 / kWh / Yr
1,689.73 X 33% X 519 kWh = 292,323 / kWh / Yr

Total Annual Savings = 753,056 kWh

3. Commercial Drought Enforcement

ALW's water use restrictions as set forth in Rule No. 21 prohibit outdoor watering by public agencies, schools and commercial customers between the hours of 9:00 a.m. to 6:00 p.m., and further restrict watering to two days per week. Public Agencies and Commercial water users consume about half the water of residential customers. HOAs are considered commercial customers. The public agencies, including schools and park facilities, often water at night due to use of public facilities during the day. ALW does not provide night time drought patrol, and so ALW believes that there is higher potential for water conservation through 24/7 drought monitoring through the AMI system, potentially up to 40%. By discounting overall consumption for other commercial purposes, water savings are estimated at 813.21 AFY (see Criterion A above for the calculations).

Energy Savings from Commercial Drought Enforcement:

813.21 X 66% X 409 kWh = 221,735 / kWh / Yr
813.21 X 33% X 519 kWh = 140,685 / kWh / Yr

Total Annual Savings = 362,420 kWh

4. Distribution System Water Losses

As noted previously, ALW's water losses are about 13% on average of production which equates to about 2,918 AFY. In a report prepared by UtiliWorks (July 2016) for ALW, it was estimated that as much as 75% of this amount was due to old inaccurate meters under registering water flow. This suggests that about 25% of these losses would be attributable to leaks in water storage or distribution mains. This project will help to determine what percent is attributable to meter inaccuracies and leaks, however, assuming that 25% is attributable to leaks and that this project will help to identify system leaks, this project has the potential to reduce 729.5 AFY in water system losses. This figure could be much higher if the losses due to leaks amount to more than 25% of system losses.

Energy Savings by reducing distribution system leaks would be as follows:

729.5 X 66% X 409 kWh = 198,910 / kWh / Yr
729.5 X 33% X 519 kWh = 126,203 / kWh / Yr

Total Annual Savings = 325,114 kWh

5. Importing Water to the Main Basin

Through aggressive conservation, ALW has demonstrated that it can reduce consumption significantly. However, despite fairly aggressive efforts, ALW imported 3,959 AF in 2014 from the SWP through the SGVMWD, which comes to the Main Basin via the Silverwood Lake and Devil's Canyon. According to one study conducted in 2006 by Robert Wilkinson, et al ("An Analysis of the Energy Intensity of Water in California: Providing a Basis for Quantification of Energy Savings from Water System Improvements"), it requires 3,236 kWh to transport 1 AF of water from the Sacramento-San Joaquin Delta area to the Devil's Canyon Powerplant, which then produces 1,113 kWh of power from 1 AF of water. The net energy used to convey water to ALW from the Devil's Canyon facility is 2,123 kWh per 1 AF of water. This figure can be applied to the import AF for 2014, since the water reduction potential of this project exceeds this amount:

Energy Savings from Reduced Imports:

3,959 X 66% X 409 kWh = 1,079,486 / kWh / Yr
3,959 X 33% X 519 kWh = 684,906 / kWh / Yr

Total Annual Savings = 1,764,392 kWh

Other Opportunities

Reduced Fuel Consumption/Emissions by Vehicles

Automation and remote operating capabilities enabled by the AMI system will allow ALW to conduct manual field work remotely from the office thereby significantly reducing City staff time traveling to field locations saving about 100,345 kWh per year. The automation capabilities of the AMI system will result in a reduction of vehicle trips to field locations to: shut off and turn on water and/or electric services, conduct meter readings, and to confirm meter readings. ALW projects fuel cost savings of $82,250 over eight years, which equates to preventing approximately 411,250 pounds of carbon dioxide emissions.[6]

Reduction of Energy during Peak Periods

The larger project also includes replacing 16,218 outdated electric meters with smart meters (in tandem with the installation of new smart water meters). Since the AMI wireless network will be used to read both water and electric meters and provide time interval/cost data to customers on energy use, some large customers are likely to use this data to shift load to off peak times when energy costs are lower. This will save customers money and reduce peak demand which will help stabilize the power grid and reduce the need for energy from facilities which can have higher emissions than renewable forms of energy such as solar. It is difficult to forecast which companies will take advantage of this interval information and how they will use it so no estimate is provided on energy conservation.

Reduction of Energy Supplied to Customers by ALW

As noted above, the AMI network will be used to read both water and electric meters. The water utility's cost portion of the network is 65% because this is the historic ratio of water meters to electric meters. Eventually, power resource operators will be able to use the AMI network to better manage load by matching energy supplied to circuits with demand. This can reduce load supplied by up to 1% of annual kWh retail sales through what is referred to as load control or load optimization. ALW is not requesting BOR funding for the electric meter aspect of the AMI project, however, load optimization could result in savings of about 2,500,000 kWh per year once it is implemented. Arguably, 65% of this amount could be credited to the Water Utility's joint funding effort, or 1,625,000 kWh/year.

B. Description of Current Pumping Requirements, Type/Size of the Pumps, and how the Project would Impact Pumping Requirements.

Groundwater is ALW's primary source of water. As a reminder, ALW produces groundwater from 11 active groundwater wells that pump water from the Main San Gabriel Basin. The wells

[6] Based on the following assumptions: gasoline cost = $4/gallon; 19.64 pounds of CO2 (rounded to 20) produced from burning one gallon of non-ethanol gasoline (U.S. Department of Energy, U.S. Energy Information Administration (http://www.eia.gov/tools/faqs/faq.cfm?id=307&t=11)

range in capacity from 900 gpm to 3,000 gpm. All active wells are equipped with flowmeters to measure water production.

Table 11: Summary of ALW's 11 Active Wells

WELL No.	Type	Size/inches	Capacity /GPM
1	Centrifugal	14	3000
2	Centrifugal	12	2500
3	Centrifugal	14	3000
4	Centrifugal	12	2500
5	Centrifugal	10	2000
6	Centrifugal	12	3000
7	Centrifugal	12	2000
8*	Centrifugal	12	2500
10*	Centrifugal	12	3000
11	Centrifugal	12	2500
12	Centrifugal	12	2500

*Well #9 was taken out of service due to groundwater contamination issues.

The project's 4,014 AFY of conserved water will remain in the Main San Gabriel Water Basin and the San Gabriel River.

C. Do Energy Savings Estimates Originate from the Point of Diversion or An Alternate Site of Origin?

The centerpiece of the proposed project are the AMI smart meters, network, and customer interface. Each energy-savings element is addressed below.

Point of Diversion

- Reduced groundwater pumping due to improved leak detection and improved detection of water use violation as a result of the automated monitoring and alarm capabilities of the AMI system;
- Improved conservation which reduces reliance on imported water from the State Water Project and the Colorado River, which requires energy for transport from Northern California to Southern California;
- Reduced distribution system losses due to improved leak detection; and
- Increased opportunities for customers to monitor and adjust water-related energy use to take advantage of tiered energy rates.

Alternate Site of Origin

- Reduced energy in the form of vehicle trips due to the automation provided by the AMI system. The AMI system will nearly eliminate the need for many operations that are currently performed manually, on site (e.g. meter reading).

D. Do Calculations Include Energy Required to Treat the Water?
Yes, the calculations are based on kWh divided by AF produced by ALW's water filtration plant, and considers that 33% of water produced is from treatment. Booster pump energy kWh was equally divided between pumping and treatment.

E. Will the Project Result in Reduced Vehicle Miles Driven?
Yes, the automation capabilities of the AMI system will result in a reduction of vehicle trips to field locations to: shut off and turn on water and/or electric services (the larger project will replace both water and electric meters), conduct meter readings, and to confirm meter readings. ALW projects fuel cost savings of $82,250 over eight years, which equates to preventing approximately 411,250 pounds of carbon dioxide emissions by avoiding the use of 20,562.5 gallons of gasoline.

4.4 Criterion D: Addressing Adaptation Strategies in a Water SMART Basin Study

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

The Los Angeles Basin Study (2012) is an ongoing project by the Los Angeles County Department of Public Works and the U.S. Department of the Interior, Bureau of Reclamation. Los Angeles County accounts for the largest water demand of any urbanized county in California. The Basin Study encompasses 1,900 square miles and includes the San Gabriel River (which is ALW's second largest source of water) as well as other waterbodies including the Los Angeles River, North Santa Monica Bay, South Santa Monica Bay, Dominguez Channel/Los Angeles Harbor, and Ballona Creek watersheds. Among other objectives, the Study examined current infrastructure to assess vulnerability to climate change, and specifically evaluated and identified adaptation strategies to address these impacts.

Findings. The Basin Study concluded that the Main San Gabriel Basin (which accounts for the majority of ALW's water supply) is extremely vulnerable to climate change and the San Gabriel River (which is ALW's second largest source of water) is moderately vulnerable to climate change. The Study examined performance of these and other existing infrastructure, and facilities were rated according to levels of efficiency and resiliency in the face of climate change, and assigned Performance Level I, II, or III, with a Performance Level I indicating the

highest level of efficiency. The assessment of "spreading groundwater conservation performance" included examination of the San Gabriel Canyon Spreading Grounds, which recharges water to the Main San Gabriel Basin, which was rated Level III, indicating that this watershed has the lowest possible efficiency and resiliency to climate change. The assessment of "channel outlets" determined which of the five major outlets in the Basin have the highest potential for increasing stormwater capture and reducing runoff to the Pacific Ocean. The San Gabriel River was rated Level II, indicating moderate efficiency and resiliency in the face of climate change.

Strategy. The proposed AMI project aligns with the strategies described in the Basin Study Summary Report by focusing on conservation in the most vulnerable facilities. The AMI project will provide a substantial contribution to the sustainability of the region's water supply by conserving 4,014 AFY in the two of the facilities that the Basin Study deemed vulnerable to climate change, especially during times of severe drought when drought enforcement actions can be ramped up to require greater levels of conservation. As mentioned throughout this application, ALW consistently produces water in excess of its water rights when operating safe yields are lowered due to drought conditions, which means it must replenish groundwater via water purchases sourced from the State Water Project or the Colorado River Aqueduct. Not only are these purchases expensive, they also fail to address the underlying water loss and leak issues that are contributing to the overdraft condition. With the State's ongoing drought, severe water cutbacks, and ongoing issues with climate change and cyclic drought conditions, City leaders are eager to identify innovative strategies to conserve water and contribute to the sustainability of natural basin water supplies. As noted previously, ALW's consumption has actually dropped in the last five years due to ALW's significant conservation efforts focused on consumption, including water use restrictions/drought enforcement, citing customers with leaks and excessive runoff, as well as providing rebate incentives for customers who purchase water efficient appliances. The proposed AMI project will also make a significant additional impact on consumption by providing customers the ability to monitor and adjust their usage, detect leaks, and permit ALW to more efficiently enforce water use restrictions.

Additionally, ALW's industrial and commercial customers, who are major consumers of ALW's water supply, will have new tools. Because the new AMI system shows customers their actual water usage in near real time, these customers will be better able to evaluate their water use and conservation efforts at various locations throughout their facilities. Some customers may also utilize the advanced technology within the AMI system to better understand how use of water during peak hours affects their energy costs. These same customers are expected to shift water use or pumping operations to off-peak hours to reduce their energy costs. Such shifts of peak energy use are beneficial environmentally.

B. Describe how the adaptation strategy and proposed WaterSMART Grant project will address the imbalance between water supply and demand identified by the Basin Study.
The Basin Study found that the demand for water exceeds potential supply availability in the Study Area over the next 60 years. The report states, "…conservation measures will continue to play a critical and expanded role in Los Angeles Basin efforts to meet growing demands through future population growth with available supplies." The proposed project directly addresses both the demand and supply side of the equation. The AMI system will conserve water by installing infrastructure that automates activities which will greatly enhance efficiency at enforcing drought restrictions (i.e., conservation). The project's 4,014 AFY of conserved water will remain in the Main San Gabriel Water Basin, the San Gabriel River or stay in the Sacramento-San Joaquin Delta.

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

D. Describe whether the project will result in further collaboration among Basin Study partners.
The Basin Study was completed in February 2016, and no other collaboration with the partners for this particular effort is anticipated.

4.5 Criterion E: Expending Future On-Farm Irrigation Improvements

Not applicable.

4.6 Criterion F: Implementation and Results

Subcriterion No. F.1: Project Planning

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

The water conservation goals of the proposed project are reflected in the following planning efforts:

1. ALW's Water Conservation Plan
The water conservation plan is described in ALW's 2015 Urban Water Management Plan (UWMP), Section 6: Conservation Plan, where water metering is prioritized as Demand Management Measure (DMM) No. 2 out of 7 DMMs. Providing water meters and charging for services is a key component of ALW's water conservation policies. Furthermore, ALW identifies mandatory water restriction measures under UWMP Section 7: Contingency Planning, and in ALW's Water Utility Rule No. 21 (which outlines water use rules and regulations). For example,

not fixing leaks within 48 hours is a violation of ALW's water use restrictions. Leaks will be detected by the AMI system by monitoring water flow continuously at night when there should be no water usage except for irrigation purposes. ALW's water use restrictions as set forth in Rule No. 21 also prohibit outdoor watering by residents, public agencies, schools, and commercial customers between the hours of 9:00 a.m. to 6:00 p.m., and further restrict watering to two days per week depending upon customer street address. Using near real-time data, the AMI system will be able to detect restricted usage during these times.

ALW's water conservation plan in outlined in the UWMP (Sections 6 and 7) and includes a summary of the rules and restrictions in Rule 21. Due to the large size, the Plan is not included in this application, but can be found here:
http://www.ci.azusa.ca.us/1491/Urban-Water-Management-Plan.

2. State of California Water Plan (2013 Update)
The Water Plan is the State's strategic plan for managing and developing water resources statewide for current and future generations. It provides a collaborative planning framework for elected officials, agencies, tribes, water and resource managers, businesses, academia, stakeholders, and the public to develop findings and recommendations and make informed decisions for California's water future. The plan is updated every five years.

The 2013 State of California Water Plan outlines smart metering as a top Best Management Practice (BMP), see Section 3: Urban Water Use Efficiency. Due to the large size of the Plan is not included in this application, but can be found here:
http://www.waterplan.water.ca.gov/docs/cwpu2013/2013prd/Vol3_Ch03_UrbanWUE_PubReviewDraft_Final_PDFed_co.pdf.

B. 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 proposed project will meet the overall water conservation goals of the two above-noted Plans.

ALW Water Conservation Plan: The proposed AMI project will result in reduced water demand and consumption by approximately 4,014 AFY. As described above, the 2015 Urban Water Management Plan (UWMP) prioritizes water metering as Demand Management Measure (DMM) No. 2 out of 7 DMMs. The proposed project will also support mandatory water restriction measures that are called for under UWMP Section 7: Contingency Planning. ALW's Water Utility Rule No. 21, also outlines water use rules and restrictions. The enforcement of these rules restrictions will be enhanced by the proposed project by allowing for automated identification of violations instead of depending on the part-time drought technician to make

manual identification. As described early in the application, ALW's drought enforcement program has been very successful, resulting in water consumption by an estimated 26%.

State Water Plan: The reduced water consumption that results from the proposed project aligns with the State's objective for reducing per capita water consumption by 20 percent by the year 2020. The Plan indicates that AMI systems are Best Management Practices that assist in providing water conservation. The Plan cites the Pacific Institute and Single Family Water Use Study to show the significance of water loss due to residential leaks (averaging 7 to 10 GPCD). This study showed that if residential leaks could be identified and repaired earlier, the savings would be 6-7.5 GPCD.

Subcriterion No. F.2: Support and Collaboration

Describe the extent to which the project garners support and promotes collaboration. Does the project promote and encourage collaboration among parties? Consider the following:

ALW works in conjunction with multiple local and regional agencies to address local water supplies and sustainability, and coordinate operations and planning efforts. Below are examples of these collaborations:

ALW's Municipal Partners

ALW provides water to four municipal partners: the Cities of Irwindale, Covina, West Covina, and Glendora. ALW works closely with these municipal partners to provide information on supply and demand for municipal planning purposes, and works with these partners to solve emerging issues related to water use and supply. *The Cities of Glendora, Covina, West Covina, and Irwindale provided letters of support for the proposed project*, noting the importance of the proposed project for meeting their own local water and energy conservation goals and their efforts to meet the State's goal of reducing per capita water consumption by 20% by the year 2020.

ALW's Commercial Partners

ALW's commercial, industrial and public agency water customers represent only 10% of ALW water connections, but 52% of the demand. Pressures to conserve water and energy while simultaneously controlling costs has been a challenge for these customers who present commercial, institutional, and industrial interests. We have coordinated the AMI project design and planning with commercial customers to obtain their input and identify how an AMI system will help them meet their own planning objectives. For instance, our largest commercial customer, Miller Brewing Company, will be able to increase efficiency in their operations by timing water-related energy use to tiered energy billing. *Letters of support from Miller Brewing Company, Azusa Unified School District, and Azusa Chamber of Commerce are included in the application*.

San Gabriel Valley Municipal Water District (SGVMWD)
The SGVMWD provides supplemental water to ALW from imported sources, specifically the State Water Project (a BOR facility). The ALW coordinates closely with SGVMWD regarding their local supply and demand. *SGVMWD provided a letter of support for the proposed project* noting the importance of innovative strategies like AMI to reduce reliance on the State Water Project.

Metropolitan Water District of Southern California (Metropolitan).
ALW is currently working with Metropolitan to implement conservation measures within the framework of their Water Surplus and Drought Management (WSDM) Plan (http://www.mwdh2o.com/PDF_About_Your_Water/2.4_Water_Supply_Drought_Management_Plan.pdf). The plan addresses both surplus and shortage contingencies. The WSDM Plan guiding principle is to minimize adverse impacts of water shortage and ensure regional reliability. The plan guides the operations of water resources (local, state, and federal) to ensure regional reliability.

Is there widespread support for the project?
Support for the project is widespread. ALW's application includes nine letters of support from a wide range of stakeholders. These stakeholders include:

- Congresswoman Grace Napolitano (32nd District) who notes that the project is aligned with many of the House bills she has sponsored that promote water conservation;
- One of our large commercial customers, Miller Brewing Company, whose operations will benefit from the water and energy benefits of the project (described above;
- Our four municipal partners (described above);
- San Gabriel Valley Municipal Water District (described above) who supplies our imported water;
- The Azusa Chamber of Commerce, who recognizes the significant benefits that the project will have for area businesses, which account for 52% of ALW's water demand. When businesses are able to better manage their water use and energy consumption this translates into long-term profitability, sustainability, and job retention for our local workforce; and
- The Azusa Unified School District, one of ALW's many institutional customers, which will also realize cost savings from the project and help them meet their own water conservation goals.

In addition, several public meetings were held in 2014, 2015, and 2016 by the Azusa Utility Board to discuss the proposed AMI project design, benefits, costs, and to oversee the competitive procurement that resulted in the provisional selection of Sensus USA. The Utility Board meets monthly and represents the concerns and issues of community members (including our residential and commercial customers). The Board will continue to closely

monitor the AMI project's progress and provide input to ensure that the input of the community is considered in all phases of project implementation.

What is the significance of the collaboration/support?
The larger $11.5 million AMI project (which also includes a significant electric component that will involve installing smart electric meters in tandem with the smart water meters) is a significant undertaking for ALW and represents one of the largest capital projects in its history. Collaboration with and support from our local and regional partners, stakeholders, and customers will be key to ensuring an obstacle-free installation of the smart meters and the network infrastructures.

Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?
The project will alleviate strained relations about over pumping during years of severe drought, especially when conservation efforts vary by jurisdiction. In these situations this project will serve as an example too of what can be accomplished using AMI technology to reduce consumption.

Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?
It is possible that, through this project, users in other jurisdictions may be encouraged to shift to smart meter use to enhance their water conservation efforts. Often times, a lack of data from completed projects presents a barrier for jurisdictions researching AMI project feasibility. ALW will encourage others by publishing results of its conservation strategies on its website and through local media to help lead the way for other purveyors deciding whether to use AMI in their own systems.

Subcriterion No. F.3: Performance Measures
ALW will conduct a pre- and post-assessment of the water and savings resulting from the project. The water saving estimates outlined in Section 4 (Evaluation Criteria) will serve as the baseline. ALW will examine water savings at one interim point (interim assessment at the end of Year 2) and will examine both water and energy savings at the end of Year 3 (post assessment after project completion). For the interim and post assessments, ALW will run internal reports from the AMI system to quantify water and energy consumption. Additional details about the water and energy performance measures and benchmarks are summarized in Section 5, Performance Measures.

Evaluation Criterion G: Additional Non-Federal Funding

ALW's non-federal cost share of 87% exceeds the minimum 50%, as follows:

A. Total Water-Related Project Cost =	$7,800,116	(100%: B+C)
B. Local Non-Federal Cost Share =	$6,800,116	(87%: B/A)
C. BOR Grant Request =	$1,000,000	(13%: C/A)

Evaluation Criterion H: Connection to Reclamation Project Activities

A. How Is the Project Connected to Reclamation Project Activities?

The project's connection to Reclamation project activities is ALW use of imported water that comes from the State Water Project and the Colorado River. The State Water Project is operated together with the Central Valley Project, which is the federal water supply, and combined to operate under the umbrella of the Bay Delta. We have confirmed with the BOR Southern California Field Office that the SWP is classified as a federal water source.

B. Does the Applicant Receive Reclamation Water?

Yes. ALW purchases water from SGVMWD which imports up to 28,800 AF of State Water Project water depending on overdrafts and Main Basin groundwater elevations.

C. Is the project on Reclamation project lands or involving Reclamation facilities?

No. The project is not on Reclamation project lands and does not involve Reclamation facilities.

D. Is the project in the same basin as a Reclamation project or activity?

Yes. The AMI project will be located in the same area as the Los Angeles Basin Study (described above), which recently was completed. No other projects or facilities are located in the Los Angeles Basin based on an examination of the Projects & Facilities page on BOR's website (https://www.usbr.gov/projects/facilities.php?region=Lower%20Colorado).

E. Will the proposed work contribute water to a basin where a Reclamation project is located?

No. The water conserved by the project will remain in the Los Angeles Basin. Other than the BOR-funded Los Angeles Basin Study, there are no other BOR projects in the Los Angeles Basin.

F. Will the project help Reclamation meet trust responsibilities to Tribes?

No. The project is not connected to BOR's work with or trust responsibilities to Tribes.

5. PERFORMANCE MEASURES

Performance Measure No. A: Projects with Quantifiable Water Savings
Performance Measure No. A.2: Measuring Devices

Measuring Devices: No. A.2.a. Municipal Metering

Introduction. The project will replace existing dial water meters (residential and commercial users) with AMI smart meters and install the associated AMI network infrastructure and customer interface. ALW carefully considered the water savings that will result from the proposed project, and quantified these potential water savings (see below). ALW estimates that the project will save 4,014 AFY. The performance measures will be tied to each of the water conservation elements that will produce these savings.

Performance Measurement Methodology. ALW will conduct a pre-post assessment of the water savings resulting from the project. The water saving estimates outlined in this application will serve as the baseline. ALW will examine water savings at one interim point (interim assessment at the end of Year 2) and at the end of Year 3 (post assessment after project completion). For the interim and post assessments, ALW will run reports to quantify alerts of residential and commercial drought violations and leaks, and assess changes in actual consumption compared to the baseline.

Proposed Performance Measures. The primary performance measure is total water savings in AFY. ALW has identified four potential sources of water savings. These estimates will serve as the baseline against which performance will be measured at the end of Years 2 and 3.

Performance Measure	Performance Benchmark
1. Improved detection of residential water use/drought violations:	1,689.73 AFY
2. Improved detection of commercial water use/drought violations:	813.21 AFY
3. Improved leak detection behind the meter:	781.10 AFY
4. Improved leak detection in the distribution system:	729.50 AFY
TOTAL	***4,013.54 AFY***

Supporting Studies. There are no regional or area studies of AMI systems in the San Gabriel Valley; however the California Water Plan (2013) designated AMI as a Best Management Practice, and cites the "Pacific Institute and Single Family Water Use Study" to show the significance of AMI systems in mitigating water loss due to residential leaks. For example, after converting to an AMI system, the City of Santa Maria reduced their water losses from 6% to 2%. Likewise, an AMI system in the City of Sacramento detected leaks that the City then repaired, saving 236 million gallons of water over two years. At the federal level, an assessment the U.S. Department of Energy's Smart Grid Investment Grant program [7]examined 99 projects that are deploying smart grid technologies, tools, and techniques for electric transmission, distribution, advanced metering, and customer systems. Reductions in costs related to meter operations alone were as high as 77%.

[7] https://energy.gov/sites/prod/files/AMI_Savings_Dec2012Final.pdf

Performance Measure No. B: Projects with Quantifiable Energy Savings
Performance Measure No. B.2: Increasing Energy Efficiency in Water Management

Introduction. The proposed project's secondary performance measure is energy savings related to: 1) reduced water consumption (i.e., savings related to reduced pumping and treatment), 2) reduced reliance on imported water (i.e., the transport costs to acquire supplies from the State Water Project), 3) efficiencies as a result of installing smart electric meters in tandem with the water meters, and 4) savings related to reduce vehicle miles. ALW anticipates energy savings of 3,553,093 kWh annually valued at approximately $470,439 (based on an estimated cost of $0.1324 per kWh).[8] ALW has identified five potential sources of energy savings (the calculations are included under Evaluation Criterion C, above).

Performance Measurement Methodology. ALW will conduct a pre-post assessment of the energy savings resulting from the project. The energy saving estimates outlined in this application will serve as the baseline. ALW will examine energy savings at the end of Year 3 (post assessment after project completion). For the post assessment, ALW will run reports to collect the required data.

Proposed Performance Measures. The secondary performance measure is total energy savings in kWh. There are five energy efficiency elements associated with this project. These elements are described below and will serve as the baseline against which performance will be measured at the end of Year 3.

Performance Measure	Performance Benchmark
1. Consumer Leaks/Repairs	348,110 kWh annually
2. Residential Drought Enforcement	753,056 kWh annually
3. Commercial Drought Enforcement	362,420 kWh annually
4. Distribution System Losses	325,114 kWh annually
5. Importation of Water	1,764,393 kWh annually
	Total* 3,553,093 *kWh annually

*****(End 50-page Limit)******

[8] According to the U.S. Energy Information Administration Form EIA-361 Annual Electric Power Industry Report, 2009, average California energy costs are estimated at $.1324 per kWh.

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

The project will be evaluated for CEQA and NEPA compliance in Year 1 of the project, and it is expected that the project will be designated a Categorical Exemption for CEQA and a Categorical Exclusion for NEPA because the project will result in minor construction activities and will utilize existing facilities.

- CEQA: ALW expects the project to be classified as a Class I project which consists of the "operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public and provide structures, facilities, mechanical equipment, etc." (Section 15301, Existing Facilities, part b). Section 15301 states that "existing facilities" includes "…publicly-owned utilities used to provide electric power, natural gas, sewage, or other public utility services."
- NEPA: ALW expects the project to meet the definition of Categorical Exclusion: "minor construction activities associated with authorized projects which…merely augment or supplement…" and "maintenance, rehabilitation, and replacement of existing facilities…"

Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.
No, the project will not affect the surrounding environment. The AMI meters and network will be installed on existing infrastructure: the AMI base stations will be mounted on two existing poles and the new AMI meters will replace existing outdated meters. The selected contractor, Sensus USA, will use meters and technologies that fully comply with the FCC's standards and guidelines for environmental exposure to radio frequencies.

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?
At this time, there are no known endangered or threatened species in ALW's service territory.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under Clean Water Act (CWA) jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.
The San Gabriel River runs within the ALW's service territory. Surface water from the river accounts for 33% of the ALW's water supply. The project will benefit the San Gabriel River by strengthening the sustainability of ALW's total water supply, and potentially stabilizing the ALW's draws on this precious water resource. There are no wetlands in the project area.

When was the water delivery system constructed?
The water system began operation in 1899, the year after the incorporation of the City of Azusa. That same year, the City issued water bonds to finance construction of the water

system's facilities. Deep groundwater wells were drilled and their initial use was primarily for agricultural consumption. In the latter half of the 1940s, the wells were redeveloped for domestic production to benefit the City of Azusa. In 1993, Azusa acquired the outstanding shares and retired the outstanding debt of the Azusa Valley Water Company, substantially increasing ALW's water system service territory to include portions of the Cites of Glendora, Covina, Irwindale, and West Covina, and portion of unincorporated Los Angeles County.

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

The project will only affect metering of water distributed through ALW's potable water distribution system, including to a small number of municipal irrigation systems. The project will not modify the features of these irrigation systems. The new meters will improve monitoring of irrigation activities to ensure maximum efficiency and water conservation.

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

No, there are no structures on the National Register of Historic Places that will be impacted by the proposed project.

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

No, there are no known archeological sites in ALW's service territory that will be impacted by the proposed project.

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

No, the project will not adversely impact low income or minority populations. The project will actually benefit the 15% of ALW's population who are considered disadvantaged or severely disadvantaged by improving those customers' the ability to monitor their water usage, and receive near real-time information about usage.

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

No, there are no Indian sacred sites in ALW's service territory.

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 project will not introduce or contribute to the spread of invasive species.

CAPITOL OFFICE
1610 LONGWORTH BUILDING
WASHINGTON, DC 20515
(202) 225-5256
FAX (202) 225-0027

DISTRICT OFFICE
4401 SANTA ANITA AVE, #201
EL MONTE, CA 91731
(626) 350-0150
FAX: (626) 350-0450

www.napolitano.house.gov

Grace F. Napolitano
Congress of the United States
House of Representatives
32nd District of California

TRANSPORTATION AND INFRASTRUCTURE
WATER RESOURCES AND ENVIRONMENT—RANKING MEMBER
HIGHWAYS AND TRANSIT
RAILROADS, PIPELINES, AND HAZARDOUS MATERIALS

NATURAL RESOURCES
WATER AND POWER

CONGRESSIONAL YOUTH CHALLENGE CAUCUS
CO-CHAIR

CONGRESSIONAL HISPANIC CAUCUS

January 4, 2017

The Honorable Sally Jewell
Secretary, U.S. Department of the Interior
1849 C Street, NW
Washington, DC 20240

SUBJECT: City of Azusa, Azusa Light & Water Grant Application for the Bureau of Reclamation WaterSMART Program

Dear Secretary Jewell:

I write in strong support of the grant application submitted by the City of Azusa and their public utility, Azusa Light & Water, for funding from the Bureau of Reclamation (BOR) WaterSMART Program. The project they are proposing is aligned with Federal and State goals for water conservation and energy reduction measures.

Given the drought conditions in Southern California for the past several years, the project will provide vital improvements in the City's infrastructure to achieve greater control and management of our limited water resources. The project will install more than 15,000 new technologically advanced "smart" water meters with Advanced Metering Infrastructure (AMI) capabilities. These new meters will transmit information through a fixed network, flexible two-way communication system for its residential, commercial, industrial, and municipal irrigation customers. The upgraded infrastructure will allow for greater levels of conservation through a variety of strategic measures, including remote surveillance of water use by irrigation systems, and identification of water leaks more quickly.

Water and energy conservation is a prominent issue in our State and local communities. I have personally sponsored or supported several U.S. House Bills that demonstrate my commitment to environmentally sound policies related to water conservation, including the following recently-introduced Bills:

- H.R. 5313. Water Affordability, Transparency, Equity, and Reliability Act of 2016;
- H.R. 5303. Water Resources Development Act of 2016;
- H.R. 4954. Water Quality Protection and Job Creation Act of 2016; and
- H.R. 4615. Water Conservation Rebate Tax Parity Act of 2016.

I am fully aware of the concerns in my District and State related to water conservation and the need for improved strategies to reduce water usage and waste. The City of Azusa, Azusa Water and Light Utility, is proposing a project that meets the goals and objectives of the BOR. I firmly support this effort and hope the BOR agrees to fund the City's application.

Sincerely,

Grace F. Napolitano
Member of Congress

SAN GABRIEL VALLEY
MUNICIPAL
WATER DISTRICT
AZUSA · SIERRA MADRE · MONTEREY PARK · ALHAMBRA

copy

January 6, 2017

Mr. Josh German
U.S. Department of the Interior
Bureau of Reclamation
Denver Federal Center
Bldg. 67, Room 152
Denver, Colorado 80225

RE: Azusa Light and Water Grant Application

Dear Mr. German:

On behalf of the San Gabriel Valley Municipal Water District (SGVMWD), I am pleased to support the Bureau of Reclamation (BOR) water conservation grant application being submitted by City of Azusa's municipal utility, Azusa Light and Water (ALW). The SGVMWD provides reliable supplemental water for four communities, including Azusa, Alhambra, Monterey Park, and Sierra Madre, in a cost-effective and environmentally responsible manner. We procure water from the State Water Project (a BOR facility) that is used to supplement ground water supplies in these four member cities.

The City of Azusa's Advanced Metering Infrastructure (AMI) project - - that will replace outdated water meters with technologically "smart" meters throughout the service area - - is essential for achieving greater levels of water conservation. In addition, the project will help reduce the use of ground water supplies that are extremely limited and also help reduce the City's dependence on imported water from the State Water Project and Colorado River. By installing more than 15,000 upgraded "smart" meters, ALW's residential, commercial, industrial, and municipal consumers will be made aware of leaks or system inefficiencies much more quickly, thereby enabling a more efficient response to address and mitigate water losses, which has a benefitting energy savings as well. .

Thank you for the opportunity to provide this letter of support for the ALW grant application. I hope you agree this project is worthy of funding as it is directly aligned with the goals of the Bureau of Reclamation to support water conservation and energy efficiency.

Sincerely,

Thomas Wong
President, Board of Directors
San Gabriel Valley Municipal Water District

CITY OF COVINA
www.covinaca.gov
125 East College Street • Covina, CA 91723-2199

January 4, 2017

Mr. Josh German
U.S. Department of the Interior
Bureau of Reclamation
Denver Federal Center
Bldg. 67, Room 152
Denver, Colorado 80225

Subject: Azusa Light & Water Grant Application

Dear Mr. German:

The City of Covina, California, is a water customer of Azusa Light & Water (ALW), and we strongly support their application for the Bureau of Reclamation (BOR) WaterSMART grant. We recognize the regional benefits of their proposed project to install "smart" meters that will significantly improve our ability to monitor water use and identify leaks or system inefficiencies when they occur, thereby mitigating water losses and waste.

ALW's proposed project is directly aligned with the goals of Covina's local environmental plan to *"reduce water consumption within the City's jurisdiction through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within the City of Covina to avoid and minimize the effect and hardship of water shortage to the greatest extent possible."* As a water customer of ALW and a collaborative partner with the City of Azusa, the City of Covina offers its enthusiastic support for their grant application. We hope you will give favorable consideration to their application and proposed project that will greatly benefit the entire drought-ridden region of California.

Sincerely,

CITY OF COVINA

Brian Saeki
City Manager

CITY OF GLENDORA CITY HALL (626) 914-8200
116 East Foothill Blvd., Glendora, California 91741
www.ci.glendora.ca.us

January 6, 2017

Mr. Josh German
U.S. Department of the Interior
Bureau of Reclamation
Denver Federal Center
Bldg. 67, Room 152
Denver, Colorado 80225

Subject: Azusa Light & Water Grant Application

Dear Mr. German:

As a water customer of Azusa Light & Water (ALW), the City of Glendora, California is pleased to offer our support for ALW's application for the Bureau of Reclamation (BOR) WaterSMART grant. Glendora owns a water pumping facility that functions on a time-of-use rate, whereby certain times of day, or certain months of the year, electricity rates can vary depending on demand. I understand that when the ALW installs the proposed smart meter on our pumping facility, we will also be the recipient of a smart meter for the electric meter at the site. These two meters will enable us to view real-time rates for both water and electricity, and to make informed decisions that could save water, energy, and taxpayer money.

As such, the City of Glendora views the ALW proposed project as a win-win situation which provides a water-energy nexus that promotes conservation on multiple levels. Mitigating locally-sourced water losses will reduce reliance on imported replenishment water, thereby conserving more energy for each acre-foot of water pumped over the northern mountain ranges into Southern California. The ALW's project will help reduce Azusa's reliance on State Water Supply sources.

We are excited about this grant opportunity for our neighboring city, and hope you will find their application worthy of funding.

Sincerely,

CITY OF GLENDORA

Chris Jeffers
City Manager

January 6, 2017

Mr. Josh German
U.S. Department of the Interior
Bureau of Reclamation
Denver Federal Center
Bldg. 67, Room 152
Denver, Colorado 80225

SUBJECT: City of Azusa / Azusa Light and Water Grant Application for the Bureau of Reclamation

Dear Mr. German:

On behalf of the City of Irwindale, California, I am providing this letter to show my strong support for the City of Azusa's Light and Water Utility (ALW) application for the Bureau of Reclamation WaterSMART grant. The City of Irwindale is one of ALW's water customers and partners in environmentally sound conservation efforts. In our ongoing collaboration with the City of Azusa, we recognize the importance of community planning that emphasizes the urgent need for water conservation, especially in California, where we have experienced over five years of severe drought conditions.

ALW's proposed project will improve local infrastructure in a way that transforms water management by installing "smart water meters." These meters will provide real-time data and alert us to leaks and waste much faster than our current outdated meters. The City of Irwindale strongly supports the ALW's application for this grant, and is confident the proposed project will help ensure sound water conservation strategies and management oversight in ways that reflect the overall objectives of federal and state environmental goals. We hope you will agree and support funding for this timely project.

Sincerely,

John Davidson
City Manager

WEST COVINA
City Manager's Office

January 12, 2017

Mr. Josh German
U.S. Department of the Interior
Bureau of Reclamation
Denver Federal Center
Bldg. 67, Room 152
Denver, Colorado 80225

Subject: Azusa Light & Water Grant Application for the Bureau of Reclamation

Dear Mr. German:

On behalf of the City of West Covina, California, I strongly support the City of Azusa's Light and Water Utility (ALW) application for the Bureau of Reclamation (BOR) WaterSMART Grant.

The City of West Covina is one of ALW's water customers, and we recognize the importance of community planning that emphasizes the urgent need for water conservation in our State, as evidenced by our selection as one of three regional cities to receive the 2015 Award for the San Gabriel Valley Water Smart City Challenge.

ALW's proposed project will improve local infrastructure in a way that transforms water management by installing "smart water meters" that provide real-time data for its many customers to monitor water usage, and be alerted to leaks and waste, much faster than the current outdated meters.

The City of West Covina strongly supports the ALW's application for this BOR Grant, and we look forward to the regional benefits it will provide, should they be selected. We hope you will agree and support funding for this timely project.

Sincerely,

Chris Freeland
City Manager

15801 E. FIRST STREET
IRWINDALE, CA 91706-2069
626.969.6811
www.MillerCoors.com

January 3, 2017

Mr. Josh German, Water Resources and Planning
Bureau of Reclamation
Mail Code: 84-51000
P.O. Box 25007
Denver, Colorado, 80225

Subject: City of Azusa Grant Application for Advanced Metering Infrastructure

Dear Mr. German:

It is my understanding that the City of Azusa and its municipal utility, Azusa Light & Water, in California is submitting a grant proposal to your agency requesting funding to implement and install Advanced Metering Infrastructure (AMI). On behalf of the MillerCoors Irwindale Brewery, we look forward to the benefits of AMI project and we hope the City's application is selected for funding.

The Irwindale brewery broke ground in late 1977 and produced its first commercial production in January 1980. It sits on 227 acres of land in the San Gabriel Valley. The brewery has about 1 million square feet under roof. Azusa Light & Water provides our facility with water and I understand we are their largest water customer.

EMPLOYMENT

Salaried Employees	110	Average Age of Employees	45 years
Hourly Employees	425	Average Service of Employees	11 years

The hourly workforce is represented by four bargaining unions:

Teamsters Local 896	International Assoc. of Machinists Local 311
United Auto Workers Local 509	International Brotherhood of Electrical Workers Local 2295

We have a long history of implementing projects that advance environmental conservation and believe the AMI project will help advance our joint goals of water conservation and environmental stewardship. For example:

- We are currently in the process of removing turf grass and replacing it with drought-tolerant plants. These efforts were featured in the *Los Angeles Times* on December 16, 2016.
- In January 2015 we completed the largest solar panel installation at any U.S. brewery.
  - 10,000 plus panels across 10 acres
  - 3.2 MW DC capacity
- We are a zero waste to landfill facility certified through NSF.
- We use biogas created from our brewery wastewater to power two GE Jenbacher engines.

Water is critical to us at every point in our value chain and we have a three-part water stewardship strategy that includes reducing our water-to-beer ratio across all direct operations. We do this, in part, by employing innovative monitoring and processing systems. Real time water usage information helps with:

- All decisions are based on data, not opinion.
- Increased rate of improvements.
- Increased employee engagement.
- Continuous improvement is embedded into daily work.

The AMI system will help the City to better manage water usage by customers to achieve greater levels of conservation through a variety of strategic measures that include remote surveillance of water use by irrigation systems and ways of quickly identifying leaks. Given the drought conditions in Southern California, the benefits of the AMI system in achieving greater control and management of our limited water resources will add value.

Again, I am happy to provide this letter of support for Azusa's application and I hope you will give it favorable consideration during your review.

Sincerely,

Edward Gharavi
Technical Services Manager
MillerCoors Irwindale Brewery - 15801 East First Street Irwindale, CA 91706-2069
Office: (626) 969-6316

Azusa Unified School District

546 South Citrus Avenue . P.O. Box 500 . Azusa, CA 91702-0500
Phone (626) 967-6211; FAX (626) 858-6123

January 6, 2017

Mr. Josh German
U.S. Department of the Interior
Bureau of Reclamation
Denver Federal Center
Bldg. 67, Room 152
Denver, Colorado 80225

SUBJECT: City of Azusa Light and Water Grant Application

Dear Mr. German:

The Azusa Unified School District (AUSD) enthusiastically supports the Azusa Light and Water (ALW) application for the Bureau of Reclamation's WaterSMART grant. The AUSD serves 9,659 local students in 20 District schools, making it the fourth largest water customer in the ALW service area.

We understand the importance of utilizing improved technology to reduce water usage and mitigate water waste, as evidenced by our recently-awarded $70,000 grant from the San Gabriel Valley Municipal Water District to implement a pilot Drought-Tolerant Landscaping Water Conservation project that emphasizes conservation and student/family education. We are also seeking to reduce water use by as much as 50-70 percent in two of our AUSD elementary schools.

The ALW project will replace outdated water meters with new, state-of-the-art, smart meters that allow us to monitor real-time use and also identify leaks and waste much earlier than the current system's capability. The AUSD recognizes that any water saved through leak detection and real-time monitoring is cost effective for the District. A reduction in our operating costs allows us to increase funding for educating children and enrichment activities. We strongly support the ALW's planned project and hope you will give their grant application favorable consideration.

Sincerely,

Dr. Linda Kaminski
Superintendent, Azusa Unified School District

AZUSA CHAMBER OF COMMERCE

January 6, 2017

Mr. Josh German

U.S. Department of the Interior

Bureau of Reclamation

Denver Federal Center

Bldg. 67, Room 152

Denver, Colorado 80225

Subject: City of Azusa Light & Water Grant Application

Dear Mr. German:

On behalf of the Azusa Chamber of Commerce, I am happy to provide this support letter to demonstrate our enthusiasm for the Azusa Light & Water grant application that will help conserve water in our region. Our main mission is to help transform Azusa's business and economic climate and we know that in our State, institutions and commercial businesses account for approximately 23 percent of California's urban water use and another 6 percent is used by industry to manufacture a wide range of products like chemicals, electronics, and beverages.

The City's proposed project will allow our businesses to see their water use in near real-time which will help them identify water leaks more quickly or make decisions about water use. Reducing waste is a key profitability strategy for our businesses but reducing waste is also a key solution to California's long-term water challenges. We are experiencing unprecedented drought conditions and there is growing tensions over limited supplies. We are proud to learn that the City of Azusa, through their municipal Light & Power division, is aggressively working toward smart meters (or advanced metering infrastructure). We know this initiative is costly and every grant dollar counts. I strongly encourage you to consider Azusa's application and we hope to hear good news soon from your Agency.

Sincerely,

Ria Benbow
Chairwoman of the Board
Azusa Chamber of Commerce

REQUIRED PERMITS OR APPROVALS

ALW does not expect to require any permits for the proposed AMI projects. The AMI meters and network will be installed on existing facilities. ALW expects the City to approve the final contract with Sensus USA (the selected prime contractor) in Spring 2017.

RESOLUTION NO. 2017-C6

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AZUSA, CALIFORNIA, APPROVING THE APPLICATION FOR GRANT FUNDS FOR THE BUREAU OF RECLAMATION'S WATERSMART GRANTS: WATER AND ENERGY EFFICIENCY GRANS FOR FISCAL YEAR 2017 FOR AZUSA LIGHT & WATER'S ADVANCED METERING INFRASTRUCTURE (AMI) PROJECT.

WHEREAS, the City of Azusa has prepared an application to apply for federal funding from the United States Department of the Interior, Bureau of Reclamation (Reclamation) to assist in the funding of the Water and Energy AMI Efficiency Project; and

WHEREAS, the funding opportunity provided by Reclamation through their Grant Program entitled "WaterSmart Grants: Water and Energy Efficiency Grants for FY 2017" Funding Opportunity Announcement No. is BOR-DO-17-F012; and

WHEREAS, the proposed Advanced Metering Infrastructure (AMI) Project will benefit utility customers in Azusa Light & Water's service territory by providing the ability to read electric and water meters through a wireless network, provide consumption data and service enhancements to customers, and provide new diagnostic and remote control capabilities to the water and electric utility managers, resulting in improved operations management and long-term water and energy savings; and

WHEREAS, the City of Azusa intends to enter into an agreement with Reclamation to carry out the AMI Project if the WaterSmart Grant is awarded to the City of Azusa.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Azusa does hereby finds, determines and declares as follows:

SECTION 1. Approves the filing of an application for the AMI Project;

SECTION 2. Certifies that City understands they will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement;

SECTION 3. Certifies that Applicant is capable of providing the amount of funding specified in the application; and,

SECTION 4. Appoints the City Manager, or designee, as agent to conduct all negotiations, execute and submit all documents including, but not limited to applications, agreements, payment requests and so on, which may be necessary for the completion of the aforementioned project.

PASSED, APPROVED and **ADOPTED** this 3rd day of January, 2017.

Joseph Romero Rocha
Mayor

ATTEST:

Jeffrey Lawrence Cornejo, Jr.
City Clerk

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) ss.
CITY OF AZUSA)

I HEREBY CERTIFY that the foregoing Resolution No. 2017-C6 was duly adopted by the City Council of the City of Azusa at a regular meeting thereof, held on the 3rd day of January, 2017, by the following vote of Council:

AYES:	COUNCILMEMBERS: GONZALES, CARRILLO, MACIAS, ALVAREZ, ROCHA
NOES:	COUNCILMEMBERS: NONE
ABSTAIN:	COUNCILMEMBERS: NONE
ABSENT:	COUNCILMEMBERS: NONE

Jeffrey Lawrence Cornejo, Jr.,
City Clerk

APPROVED AS TO FORM:

Marco Martinez
City Attorney Best Best & Krieger, LLP

PROJECT BUDGET

FUNDING PLAN AND LETTERS OF COMMITMENT

1. How you will make your contribution to the cost-share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant (e.g., reserve account, tax revenue, and/or assessments)?

The entire project cost is $11,469,082. Of this amount, 32% of this cost is directly attributed to costs that are associated with the electric portion of the project and none of these costs are being counted as cost share nor are these costs included in the BOR request. Of the entire project cost, 68% is water-related, or $7.800 million. We respectfully request funding from the BOR in the amount of $1 million towards the $7.800 million water-related project. ALW's cost share towards the water portion of the project is $6.800 million in cash from ALW's utility reserve funds. Therefore, the local cost share based off the water-related portion only of the project is 87% and the BOR funding is 13%.

Total Project = $11.469 million

Electric Portion of the Project = $3.668 million

Water Portion of the Project	= $7.800 million (100%)
ALW's Cost Share	= $6.800 million (87%)
BOR Request	= $1 million (13%)

Funding from BOR will support the critical first three years of the project during which most project costs will be incurred. ALW is currently undergoing negotiations with Sensus USA (the prime contractor); project costs stated herein are substantially correct, however, may be adjusted in the final contract with Sensus USA.

2. Describe any costs incurred before the anticipated Project start date that you seek to include as project costs.

There are no costs incurred before the project start date that are included as project costs. Pre-project procurement activities are already underway, but these costs (ALW staff time) are not included in the project costs (and are outside of the scope of the grant application) in order to simplify grant reporting. ALW has provisionally selected a prime contractor, Sensus USA. Contract negotiations with Sensus USA are ongoing and we expect the negotiations to be concluded in Spring 2017. Some costs may be incurred for Year 1 activities depending on date of final contract approval, but no cost reimbursements are requested from grant funds for Year 1 activities.

3. Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.

The proposed project does not include funding partners. All cost share will be provided by ALW.

4. Describe any funding requested or received from other Federal partners. Note: other sources of Federal funding may not be counted towards the required cost share unless otherwise allowed by statute.

The proposed project does not include Federal partners. See Table 12.

Table 12: Summary of Non-Federal and Federal Funding Sources

FUNDING SOURCES	AMOUNT
Non Federal Entities	
Azusa Light & Water (Water portion of the project only)	$6,800,116
Other Federal Entities	
None	0
Requested Reclamation Funding	$1,000,000

5. Describe any pending funding requests that have not yet been approved, and explain how the project will be affected if such funding is denied.

There are no pending funding requests.

BUDGET PROPOSAL

Table 13: Total Project Budget

Budget Item Description	Computation			Total Cost	Amt. Attributed to Electric (100% or 35% of total cost if split with water)	Amt. Attributed to Water (100% or 65% of total cost if split with electric)	Local Cost Share for BOR Grant Purposes	BOR Grant Request
	$/Unit	Unit	Quantity					
Salaries and Wages								
Personnel costs (including project mangement, training, and Phase I installation) are not included in the scope of the grant application.				$ -				
Fringe Benefits								
Not applicable				$ -				
Supplies/ Materials								
Not Applicable				$ -				
Equipment (per unit cost greater than $5,000)								
Not Applicable				$ -				
Contractual /Construction								
1. Sensus Water Meters, Transceivers, Lids	$218	Each	23,062	$5,024,477	$0	$5,024,477	$4,024,477	$1,000,000
2. Sensus Electric Meters	$161	Each	16,163	$2,594,228	$2,594,228	$0	$0	$0
3. Water Meter Installation (Utility Partners of America)	$1,709,743	Lump Sum	1	$1,709,743		$1,709,743	$1,709,743	$0
4. Electric Meter Installation (Utility Partners of America)	$560,026	Lump Sum	1	$560,026	$560,026	$0	$0	$0
5. Install and Configure FlexNet AMI Network, including FlexNet Basestations (n=3), and Regional Network Interface	$332,800	Lump Sum	1	$332,800	$116,480	$216,320	$216,320	$0
6. Install and Configure Harris MeterSense Meter Data Management System	$504,540	Lump Sum	1	$504,540	$176,589	$327,951	$327,951	$0
7. Install and Configure Customer Portal and Systems (Harris CustomerConnect, Smartworks Compass, and Consumer Portal)	$130,900	Lump Sum	1	$130,900	$45,815	$85,085	$85,085	$0
8. System integration between FlexNet AMI network, Harris MDMS, and Customer Portal Systems	$86,488	Lump Sum	1	$86,488	$30,270	$56,218	$56,218	$0
9. System Service and Hosting Fees	$340,880	Lump Sum	1	$340,880	$119,308	$221,572	$221,572	$0
10. Training	$75,000	Lump Sum	1	$75,000	$26,250	$48,750	$48,750	$0
11. Grant Management: Consulting Contract to Assist with Grant Management (should grant be awarded)	$100	Hours	300	$30,000		$30,000	$30,000	$0
Environmental								
Equal to approx. 1% of total project costs	$80,000	Lump Sum	1	$80,000		$80,000	$80,000	$0
Other								
Not Applicable				$0				
Indirect								
Not Applicable				$0				
Total Project Costs				**$11,469,082**	**$3,668,966**	**$7,800,116**	**$6,800,116**	**$1,000,000**
Percentage Contribution by Funding Source				**100%**	**32%**	**68%**	**87%**	**13%**

Table 14: Project Budget (By Year and Phase)

Year 1 (Phase I) Costs		65%			35%	
Replace/retrofit test meters (less than 1%)	METER	COST ALLOCATION	LOCAL	BOR Grant	COST ALLOCATION	
ITEMS/SERVICES	QUANTITY	WATER UTILITY	COST SHARE	Request	ELECTRIC UTILITY	TOTAL
FlexNet Network Set up		$216,320	$216,320		$116,480	$332,800
Water Meters, Transceivers, Lids	77	$19,022	$19,022			$19,022
Electric Meter Cost	57				$10,895	$10,895
Meter Data Mgmt Sys (MDMS) Lic		$126,107	$126,107		$67,904	$194,010
Harris Services		$201,845	$201,845		$108,686	$310,530
Customer Info Sys Integration		$85,085	$85,085		$45,815	$130,900
Year 1 - Reg Network Interface Services		$16,054	$16,054		$8,644	$24,698
Year 1 - FlexNet as a Service		$11,700	$11,700		$6,300	$18,000
Year 1 - MDMS Portal Hosting		$17,550	$17,550		$9,450	$27,000
Environmental Compliance		$80,000	$80,000			$80,000
Grant Management		$10,000	$10,000			$10,000
YEAR 1 SUBTOTAL		**$783,682**	**$783,682**	**$0**	**$374,173**	**$1,157,855**

Year 2 (Phase 2) Costs		65%			35%	
(Replace/retrofit 66% of all meters)	METER	COST ALLOCATION	LOCAL	BOR Grant	COST ALLOCATION	
ITEMS/SERVICES	QUANTITY	WATER UTILITY	COST SHARE	Request	ELECTRIC UTILITY	TOTAL
Year 2 - Reg Network Interface Services		$20,082	$20,082		$10,813	$30,895
Year 2 - FlexNet as a Service		$19,541	$19,541		$10,522	$30,063
Year 2 - MDMS Portal Hosting		$43,144	$43,144		$23,231	$66,375
Water Meters, Transceivers, Lids	15,324	$3,336,970	$2,836,970	$500,000		$3,336,970
Electric Meter Cost	10,774		$0		$1,722,273	$1,722,273
Meter Installer Mobilization		$366,208	$366,208		$197,189	$563,396
Water Meter Installation		$895,690	$895,690			$895,690
Electric Meter Installation			$0		$241,891	$241,891
MDMS Maintenance Fees		$31,526	$31,526		$16,976	$48,502
Systems & Software Maint. Fees		$1,950	$1,950		$1,050	$3,000
			$0			
Grant Management		$10,000	$10,000			$10,000
YEAR 2 SUBTOTAL		**$4,725,111**	**$4,225,111**	**$500,000**	**$2,223,946**	**$6,949,057**

Year 3 (Phase 2) Costs						
(Replace/retrofit 33% of all meters)		65%			35%	
	METER	COST ALLOCATION	LOCAL	BOR Grant	COST ALLOCATION	TOTAL
ITEMS/SERVICES	QUANTITY	WATER UTILITY	COST SHARE	Request	ELECTRIC UTILITY	
Year 2 - Reg Network Interface Services		$20,082	$20,082		$10,813	$30,895
Year 2 - FlexNet as a Service		$19,541	$19,541		$10,522	$30,063
Year 2 - MDMS Portal Hosting		$43,144	$43,144		$23,231	$66,375
Water Meters, Transceivers, Lids	7,661	$1,668,485	$1,168,485	$500,000		$1,668,485
Electric Meter Cost	5,387		$0		$861,059	$861,059
Water Meter Installation		$447,845	$447,845			$447,845
Electric Meter Installation			$0		$120,946	$120,946
MDMS Maintenance Fees		$31,526	$31,526		$16,976	$48,502
Systems & Software Maint. Fees		$1,950	$1,950		$1,050	$3,000
			$0			
Training for ALW Staff		$48,750	$48,750		$26,250	$75,000
Grant Management		$10,000	$10,000			$10,000
YEAR 3 SUBTOTAL		**$2,291,323**	**$1,791,323**	**$500,000**	**$1,070,847**	**$3,362,170**
TOTAL		**$7,800,116**	**$6,800,116**	**$1,000,000**	**$3,668,966**	**$11,469,082**

BUDGET NARRATIVE

1. Salaries and Wages
Total BOR Request: $0

Personnel costs (salaries and wages) for the project are not included in the project budget to facilitate ease of ALW's reporting to BOR. Personnel costs will be provided by ALW outside of the grant scope, and include the following:

Project Management
The project will be managed by Cary Kalscheuer, MPA, ALW's Assistant Director for Customer Care and Solutions, who was responsible for the development of this application. Mr. Kalscheuer will be responsible for day-to-day operations of the project and will serve as the primary liaison with BOR. He will manage the project budget and schedule, and will be responsible for oversight of the selected contractor (Sensus USA). Mr. Kalscheuer will conduct the project kick-off meeting, conduct regularly scheduled meetings with the contractor, and develop and disseminate required performance reports to BOR.

Mr. Kalscheuer is an experienced project manager whose experience includes coordinating and managing municipal utility projects for the last 17 years at ALW. Significantly, he developed revenue bond financing documents to raise $54 million to fund the Joseph F. Hsu Water Treatment Plant; initiated and managed multiple refinancing of long term debt to save Utility ratepayers millions of dollars; and conducted numerous analytic studies which resulted in water and electric rate adjustments necessary to meet revenue requirements, debt coverage targets, and reserve policy requirements. Mr. Kalscheuer also manages drought enforcement staff and oversees issuance of warnings and citations for drought violations. Previously, he served as a Senior Management Analyst for 10 years at the City of Covina.

Water Meter Installation
Year 1 of the project (Phase I) will primarily be devoted to project mobilization and installation and setup of the AMI network and software installation and configuration. ALW anticipates having sufficient time in Year 1 to install a small number of AMI water meters (n=77), and these will be installed by ALW staff (after training and orientation by the contractor). The remaining meters (more than 20,000) will be installed in Years 2 and 3 (Phase II) by the contractor. Having ALW staff install meters in Year 1 will allow them to gain "first-hand" experience with installation and operation of the new meters.

Training
The selected contractor will provide training on the new AMI system to ALW staff including customer service representatives, billing staff, and water and energy supervisors and managers. Topics will include (but are not limited to): meter reading through the wireless network, new billing procedures and access to billing data via the new system, new diagnostic and remote control capabilities, including report writing, and operation of new customer user

interface/web portal. Training time provided by contractors will be part of their contract obligations to ALW, however, are not activities for which granting is requested.

2. Fringe Benefits
Not applicable.

3. Travel
Not applicable.

4. Equipment
Not applicable.

5. Materials and Supplies
Not applicable.

6. Contractual
Total BOR Request: $1,000,000

In order to simplify and reduce costs related to grant administration, the grant request will only include costs for water meters, transceivers, and water meter lids (in the Contractual/Construction category). Procurement for the proposed project has begun, and a prime contractor (Sensus USA) has been provisionally selected. ALW expects that the City will finalize the contract with Sensus USA in Spring 2017. Sensus USA and its subcontractors will perform all aspects of the project under the direction of ALW, including purchasing, installation, integration, system testing, training of ALW staff, and coordination with subcontractors.

Sensus AMI Water Meters – iPERL and OMNI R2, Transceivers and Meter Box Lids
$1,000,000 (represents 20% of costs for this line item; remaining costs will be covered by ALW).

The project will install two types of smart meters, both of which are compatible with Sensus USA's AMI system. Meters that are less than 5 years old or larger than 2" (~20% of total) will be retrofit with new registers compatible with AMI network. All meters will include a transceiver or transmitter to communicate with the AMI network. New meter lids will be installed with each meter replacement/retrofit.

6.1 Sensus SmartPoints - 520M Pit Version - Single Port FlexNet Transceiver.

- The SmartPoint® 520M pit set module is a radio transceiver designed for use in submersible, pit set environments. With true two-way communication ability, it serves as a walk-by endpoint, drive-by endpoint, fixed-base endpoint or any combination of those. This versatility gives you highly flexible data collection options and simplifies both current operations and network evolution.
- Industry-leading broadcast power

- Patented TouchCoupler interfaces with encoded meters via existing two-wire installations
- Dual port design accommodates connection to multiple registers and ancillary devices (such as acoustic monitoring) to a single SmartPoint
- Hourly readings monitor continuous flow, alert to leak conditions
- 35 days of historical data stored in memory
- Over-the-air programming and updates
- Operates in walk-by, drive-by, and fixed based modes
- Easy migration to fixed base

6.2 Lids

- Old Castle concrete meter lids or Armorcast Lids
    - Sizes vary, but 95% of inventory will be sizes 9" X 14" and 10" X 15"
    - Lids include hole for Sensus transceiver antenna

6.3 Sensus's iPERL Meter. Sensus has installed over 2 million iPERL meters worldwide. The iPERL description and capacity include:

- Operating range of 0.11 gpm (0.025 m^3/hr) to 55 gpm (12.5 m^3/hr)—registers flow as low as 0.03 gpm (0.007 m^3/hr);
- Sizes include: 5/8" (DN 15mm), 3/4" (DN 20mm) and 1" (DN 25mm);
- The iPERL meters can be installed horizontally, vertically or diagonally;
- 15-20-year service life;
- The iPERL does not use mechanical measuring elements (i.e., no moving parts). The iPERL meter body is made of composite alloy and contains no metal material. Inside the meter body is an electronic register and a measuring device that is comprised of a composite alloy flow tube. Embedded in the flow tube are coated silver electrodes. iPERL utilizes these to measure the fluid velocity through the flow tube – enabling less power consumption and predictable meter performance.
- Equipped with smart water alarms including leak detection, reverse flow, empty pipe, magnetic tamper and low battery. These alarms will be integrated with Sensus's FlexNet communication network, which will allow remotely gathering and transmitting data which is the cornerstone of the project's water savings benefit.

6.4 Sensus OMNI R2 Smart Water Meters. The OMNI R2 improves accuracy and range for larger applications. The OMNI R2 description and capacity include:

- 1-1/2" and 2" Sizes, with operating range from 2 to 200 gpm;
- Operates up to a maximum working pressure of 200 psig;
- Direct magnetic drive between the motion of the measuring element blade position and the electronic register. Floating Ball Technology extends service live, enhances low flow sensitivity, and provides extended flow capacity and accuracy;

- Meet or exceeds all requirements of AWWA Standard C701 for Class II turbine meter assemblies, AWWA C700 Residential Standard using Sensus Turbo technology, and NSF/ANSI Standard 61, Annex F and G;
- Electronic register with no mechanical gearing;
- Configurable LCD display;
- Low battery alarm;
- Sensus V-shaped, UL listed, FM approved strainer;
- Vertical and horizontal installations;
- Flanged design;
- Compatible with Sensus AMI and AMR systems; and
- 10-year battery warranty.

ALW will install a small number of AMI water meters (n=77) in Year 1 to assist with system testing. These test meters will be installed by ALW staff (after training and orientation by the contractor). Installation of the remaining meters in Years 2 and 3 will be completed by Utility Partners of America (a Sensus subcontractor).

ALW will be responsible for the costs of all the remaining project activities in the Contractual category, and these include:

- Installation of Sensus Water Meters, Transceivers, and Lids;
- Sensus FlexNet Network, Base Stations, and Regional Network Interface;
- GE Aclara and Elster AMI Electric Meters and Installation;
- MeterSense Meter Data Management (MDM) System;
- Customer Portal (SmartWorks Compass and SmartWorks CustomerConnect);
- System Integration;
- System Service and Hosting Fees; and
- Training for ALW Staff.

7. Environmental and Regulatory Compliance Costs
Total BOR Request: $0

Costs for environmental and regulatory compliance will be part of ALW's cost share. The project will be evaluated for CEQA and NEPA compliance during Year 1 of the project, and it is expected that the project will be designated a Categorical Exemption for CEQA and a Categorical Exclusion for NEPA because the project will result in minor construction activities and will utilize existing facilities. Therefore, the total project budget includes costs of approximately 1% ($80,000) of the total water-related project cost to cover ALW's staff time to prepare, submit, and coordinate environmental documents, and Reclamation's cost to review the documents.

8. Other Expenses
Not applicable.

9. Indirect Costs
Not applicable.

10. Total Costs
The cost of the entire AMI project is $11,469,082. This includes both the water and electric portions of the project. As noted previously, ALW is currently undergoing negotiations with Sensus USA (the prime contractor); project costs stated herein are estimates and may be adjusted in the final contract with Sensus USA. Of the total project cost, 68% is water-related, or $7.8 million. This application requests funding from the BOR in the amount of $1 million towards the $7.8 million water-related project.

Table 15: Cost Share Amounts and Total Costs

FUNDING SOURCE	PERCENT OF TOTAL PROJECT COST	TOTAL COST BY SOURCE
Recipient		$11,469,082
Electric-Related		$3,668,966
Water-Related	100%	$7,800,116
Local Cost Share	87%	$6,800,116
Reclamation	13%	$1,000,000
Other	0%	$ 0
Totals	**100%**	**$ 11,469,082**