WaterSMART: Water and Energy Efficiency Grants for FY2017
Funding Opportunity Announcement No. BOR-DO-17-F012
Funding Group I

City of Big Bear Lake

Department of Water & Power

Advanced Metering Infrastructure Program Phase III

Applicant Information: **City of Big Bear Lake**
Department of Water & Power
41972 Garstin Drive/ P.O. Box 1929
Big Bear Lake, CA 92315

Project Manager: **Reginald A. Lamson**
General Manager
RLamson@bbldwp.com
Phone: (909) 866-5050 x 201
Fax: (909) 866-3184

Service, Quality, Community

Table of Contents

List of Tables

List of Figures

TECHNICAL PROPOSAL

Section 1. Executive Summary

Date	January 18, 2017
Applicant	City of Big Bear Lake, Department of Water and Power
City, County, State	Big Bear Lake, San Bernardino, California
Project Name	Advanced Metering Infrastructure (AMI) Program Phase III
Project Length	2 years
Estimated Completion Date	March 1, 2019

The executive summary should include:

The date, applicant name, city, county, and state (complete above)

A one paragraph project summary that specifies the work proposed, including how project funds will be used to accomplish specific project activities and briefly identifies how the proposed project contributes to accomplishing the goals of this FOA (see Section C.3.1. Eligible Projects)

State the length of time and estimated completion date for the proposed project

Whether or not the project is located on a Federal facility (complete below)

The City of Big Bear Lake, Department of Water and Power (the DWP, BBLDWP, DWP, or the Department) is applying for funding by the United States Bureau of Reclamation's (USBR) WaterSMART: Water and Energy Efficiency Grants for FY 2017 Funding Opportunity Announcement No. BOR-DO-17-F012. The DWP is applying for $300,000 in federal funding assistance for Federal Funding Group I to continue implementation of an Advanced Metering Infrastructure (AMI) Program, which includes the replacement of 15,548 conventional meters for residential and commercial users. Funds will be used to purchase and install 3,500 AMI meters, radios and necessary components. The purpose of the AMI Program (the Program) is to increase water conservation and water use efficiency by providing real-time water consumption data to the DWP and its customers. The Program will increase water use efficiency and reduce water loss caused by leaks. Customer leaks caused by frozen pipes will be identified and stopped in a matter of hours, compared to leaks flowing for weeks or months with the existing manual read meters. This significantly reduces water waste and customer property damage. Almost 70% of the DWP's customers are part-time residents so unidentified leaks are commonplace with conventional meters and these leaks may run for weeks while the customer is away. Reduced water use through conservation produces a linear reduction in energy use associated with water production, conveyance, and treatment requirements.

The Project is not located on a Federal Facility.

Section 2. Background Data

Provide a map of the area showing the geographic location (include the state, county, and direction from nearest town) of the proposed project.

As applicable, describe the source of water supply, the water rights involved, current water uses (e.g., agricultural, municipal, domestic, or industrial), the number of water users served, and the current and projected water demand. Also, identify potential shortfalls in water supply. If water is primarily used for irrigation, describe major crops and total acres served.

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

2.1 Location

The DWP's water service area is located within Bear Valley, as depicted in Figure 1. This area is located in the San Bernardino Mountains in San Bernardino County, California. The DWP's service area is located primarily along the south shore of Big Bear Lake. Fawnskin lies to the north of the lake, and the Sugarloaf-Erwin Lake and Lake William systems are located east of Big Bear Lake. In total, the DWP's service areas encompass approximately 13 square miles.

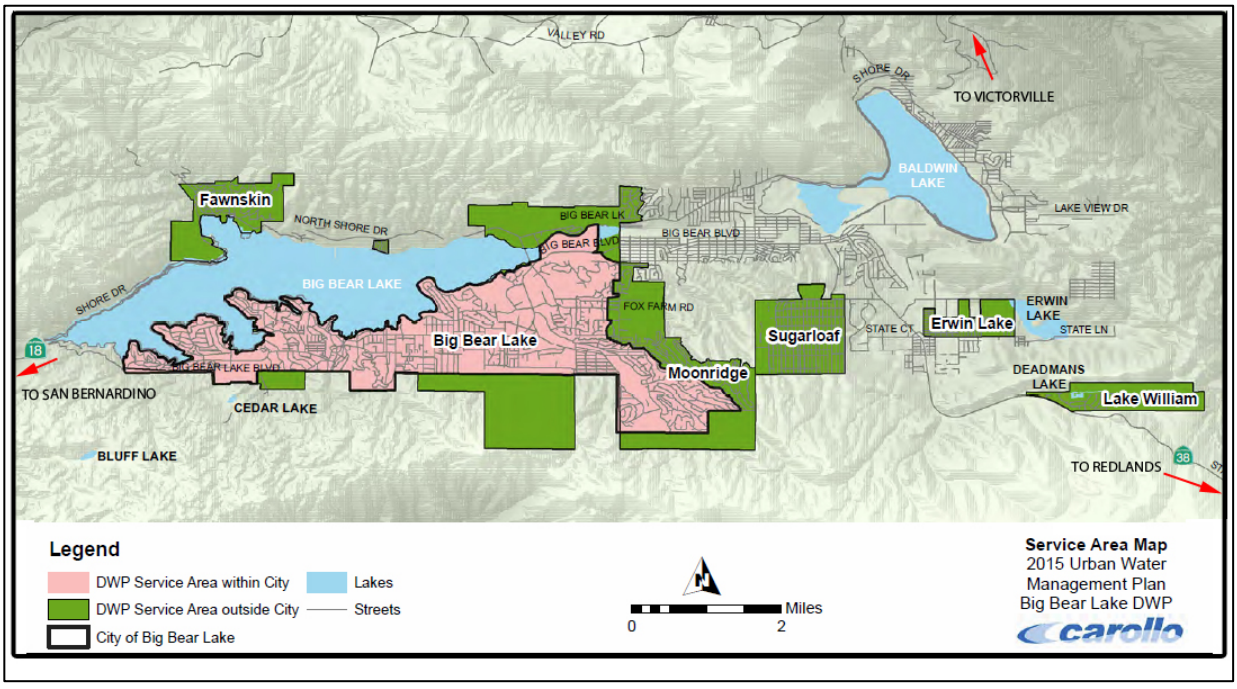

Figure 1 Water Service Area

2.2 Source of Water Supply

The DWP produces potable water from a combination of horizontal wells (gravity) and vertical wells (pumped) in the Bear Valley Groundwater Basin (DWR designation 8-9). The Bear Valley Groundwater Basin is un-adjudicated, however the DWP works closely with the other public water provider, the Big Bear City Community Services District (BBCCSD), to ensure the basin is not over drafted. The perennial yield of the entire Bear Valley Groundwater Basin is estimated at 5,500 acre-feet per year (afy) while the safe yield within the DWP's service area is 3,100 afy. The DWP's current demands are below the perennial yield of its service area and the DWP has adequate pumping facilities to meet those demands. Table No. 1, below, demonstrates that the average annual demand is within the safe yield for the DWP service area. The DWP does not use surface or imported water to meet its water demand as importing water into the Bear Valley would be extremely costly and is not a viable option.

Table No. 1 Current and Projected Supply/Demand

Supply Source	Annual Pumping (afy)					
	2015	2020	2025	2030	2035	2040
Groundwater/ Total	2,095	2,169	2,246	2,326	2,408	2,494

Note: The calculations used for the demands are based on a 0.7% growth in demand each year, beginning in 2015. Supplies are assumed to equal Demand, up to 3,100 AFY (DWP's share of the operating safe yield of the Bear Valley Groundwater Basin). These quantities meet all state water conservation requirements.

2.3 Water Delivery System

The DWP distributes its potable water supply through a distribution system consisting of five water systems with 15 separate pressure zones, 180 miles of pipeline, 33 vertical wells, 22 slant wells, 16 reservoirs, 12 booster stations, 41 pressure reducing valves, 26 chlorination stations, and 22 sample stations. Table No.2 is a summary of DWP's current and projected number of connections by customer class. Based on the data collected in the 2015 Urban Water Management Plan (UWMP), the average annual population in the DWP service area in 2015 was estimated at 25,601 (including full time and temporary populations). The 2015 UWMP assumed a growth rate of 0.7 percent for subsequent years.

Table No. 2 Summary of the Current and Projected Water Use by Customer Class

Customer Class	2020	2025	2030
	Population 26,510	Population 27,451	Population 28,425
	Demand (afy)	Demand (afy)	Demand (afy)
Residential	1,443	1,495	1,548
Commercial	474	491	509
System Losses	220	227	235
Unbilled Consumption	32	33	34
Total	**2,169**	**2,246**	**2,326**

2.4 Current Water Uses

As of 2016, the DWP maintains 15,612 water meters, of which 14,683 are residential and 937 are commercial. Multi-family residential accounts are classified as commercial accounts. Thus, about 94% percent of the accounts are residential (Figure 2).

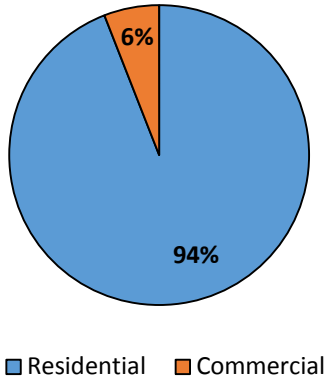

Figure 2 Percentage of Accounts by Customer Class

2.5 Working Relationship with the Bureau of Reclamation

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

In July 2016, the DWP entered into two assistance agreements with the USBR. Assistance Agreement #R16AP0113 was executed on July 31, 2016 to provide up to $300,000 in grant funding for the AMI Program Phase II. Phase II of the AMI program was for the purchase and installation of 5,000 AMI meters and necessary components. Phase II is still in progress and is ahead of schedule with an expected completion date of March 1, 2017.

Assistance Agreement #R16AP0116 was the second agreement entered into with the USBR and it was executed on July 31, 2016 to provide up to $300,000 in grant funding for the replacement of approximately 4,000 feet of riveted steel pipeline in Big Bear Boulevard. The 4,000 feet of water distribution main pipeline has been installed and the contractor is currently working diligently to make the final service and lateral connections. The project commencement was delayed one month due to other contractors working on projects in the same right of way. Winter weather conditions caused additional construction delays. The USBR granted the DWP an extension until June 30, 2017 to complete this project.

Section 3. Project Description

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

The DWP has approximately 15,612 meters within its service area. Some of the meters are over 70 years old. The typical warranty on a meter is 10 years on moving parts and 20 years on the meter body.

In 2014, the DWP completed random accuracy testing of the meters and found that only 5 meters out of 60 tested passed the 98% accuracy standard (Exhibit No. 1 and No 2). Two of the 60 meters tested were not registering flow due to inoperable internal parts. Also during the meter testing program, the DWP's staff estimated that there were potentially 540 such inoperable meters within the system. Because approximately 70% of the DWP's customers are part-time residents, it is not unusual for meters to have no usage for months or even years, making it difficult to distinguish these inoperable meters.

Based upon the water meter testing data from July 2014, the DWP's Board of Commissioners (the Board) approved an AMI program to replace all of the meters in the system with new meters and remote radio read technology. The DWP conducted extensive research and testing on eleven different types of meters from five different manufacturers and five different radio read systems. Upon completion of the research and testing, the DWP selected the Sensus Accustream and Omni meters and Sensus 520M MXU radio system.

Phase l of the AMI Program was self funded and included installation of two collectors to obtain meter reads from the meters, installation of new smart meter software system, replacement of approximately 1,525 existing AMI radios, and installation of approximately 1,760 new meters and radios.

Phase II of the AMI Program, which includes the installation of 5,000 additional AMI meters is currently underway. As of November 30, 2016, 4,723 meters were replaced with AMI meters in Phase II of the program, which is nearly complete.

Phase III of the AMI Program will begin upon completion of Phase ll and will include the installation of 3,500 additional meters over a two-year period, with expected completion by March 1, 2019.

In total, as of December 15, 2016, approximately 8,170 meters have been replaced or upgraded with this technology at a total cost of approximately $1.8 million dollars. Figure 3 shows the locations within the DWP service area (areas with red dots) where the AMI system has been implemented. Approximately 7,400 existing conventional meters require replacement to complete the project.

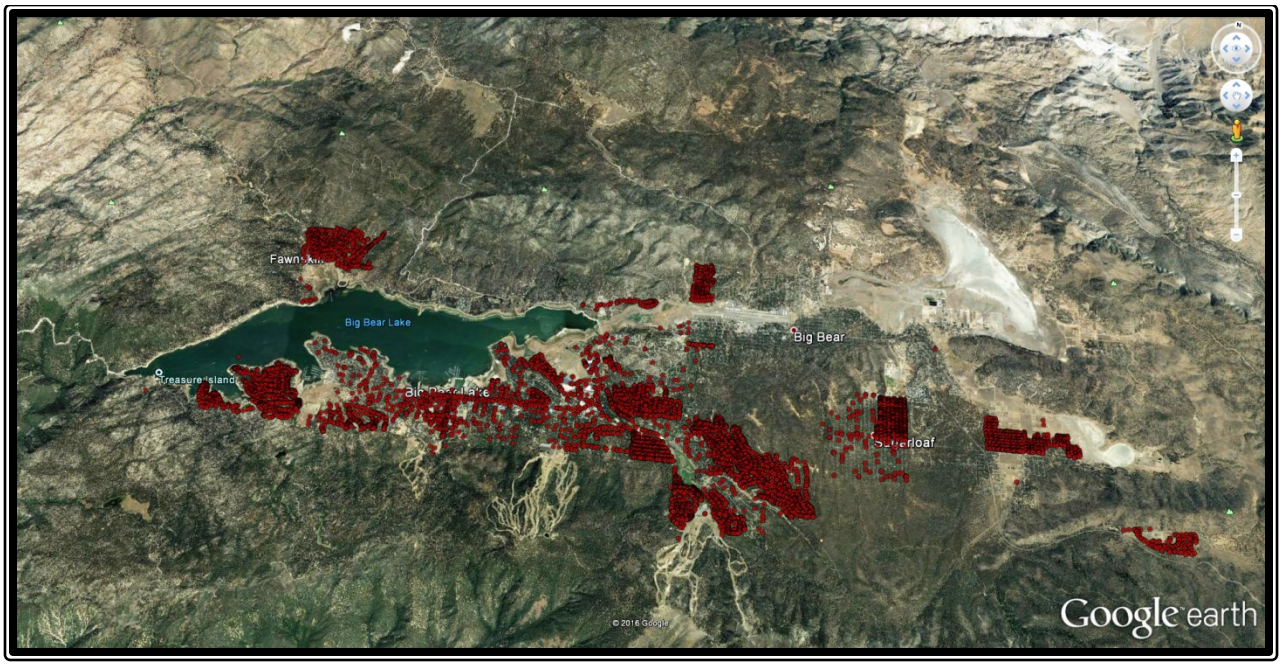

Figure 3 AMI Implementation

The DWP has completed the research and product selection for the AMI system and self-funded Phase I of the implementation plan. The DWP received $300,000 in financial assistance from the Bureau of Reclamation WaterSMART 2016 program for the installation of Phase II of the implementation plan totaling an additional 5,000 meters. Upon entering into a financial assistance agreement with the Bureau of Reclamation under BOR-DO-17-F012, the DWP will be able to proceed with the purchase and installation of 3,500 additional AMI meters as identified in the AMI Program approved in July 2014 (Capital Improvement Plan, Exhibit 3).

The following is a summary of the ongoing implementation plan:

1. After remote locations and troublesome areas are converted, the remainder of the meters will be systematically replaced until the entire water system is equipped with AMI meters (Phase II, III, and Final Phase).

2. The DWP's staff will modify or replace the existing meter box so each installation is a minimum of three feet deep. Staff will then install an insulation pad above the new meter. The radio will be installed below the meter box lid. The DWP will then program the radio and modify the radio location if radio reception is an issue (All Phases).

3. As routes are converted to the radio read system, meter technicians will be able to perform other important maintenance tasks (valve turning, hydrant maintenance, air valve maintenance, backflow program, leak detection and repair) that have previously been deferred. The DWP's staff plan on completing this Program within five years.

The winters have been mild due to prolonged drought, which allowed the DWP to install more radio read meters than originally estimated. As of December 15, 2016, approximately 8,170 AMI meters are installed. Assuming normal weather conditions for the remainder of this

project, the DWP estimates that it can install 1,750 radio read meters per year or more. At that rate, the AMI Program could be fully implemented by December of 2019, approximately a year ahead of the original schedule.

3.1 The Proposed Project

Upon execution of the contract with the USBR, the DWP will continue to purchase meters at a rate of at least 1,750/year and the DWP's staff will continue installation over a two year period (3,500 meters total). The Program will comply with standards established by the American Water Works Association (AWWA) for drinking water systems, and the meters will be lead free.

Selected Technology:

In considering meter system options, the following items were reviewed to identify the most appropriate technology:

- Accuracy in metering water consumption;
- Ability to perform radio and/or drive-by readings;
- Ability to store historical data in order to analyze user consumption patterns or identify system deficiencies (unaccounted for water);
- Reliability of the meter in a freeze-thaw environment;
- Compatibility with the existing system;
- Cost of initial investment, as well as ongoing operations and maintenance costs; and
- Training requirements.

Selected Equipment:

Meter:

Sensus AccuSTREAM composite meters tested within +/-2% accuracy requirement at low, medium, and high flow rates. During the freeze test, the bottom plate failed, as designed, and was easily and economically replaced. The meter was retested and still met industry standards.

Radio:

Sensus 520M MXU SmartPoint radio transmits meter consumption information to the base station once per hour. This information is sent to the DWP via the internet and is used to answer customer inquiries, bill the account, and disseminate leak alarms. The radio transmitter is mounted inside the meter box with a ¼" black ABS plastic bracket. Mounting inside the box reduces the risk of damage to the transmitter by vehicles and snow plows.

Freeze prevention:

Each meter box will be equipped with a Meter Box Frost Lid – Sport Mat to reduce the exposure of the meter to freezing temperatures. Meters will be set at least three feet below grade which is the frost line standard for the Bear Valley.

3.2 AMI Benefits

The purpose of this AMI system is to prevent water loss and better track water system

demands in real time to measure effects of conservation measures. By tracking real time data of water system demands, the DWP is able to educate customers regarding water use and also identify leaks and other areas where additional conservation may be possible. DWP recently provided hourly usage information to our Hydraulic Modeling consultants and they are using this information to update our hydraulic model.

The DWP is currently using the AMI system to improve the following areas of conservation:

- *Leak Alerts* – One very important benefit of improved data collection is the ability to identify customer leaks. AMI systems can detect two types of leaks. First, AMI software can be programmed to recognize large sustained increases in flow departing from normal use patterns. This is indicative of catastrophic pipeline breaks. When this type of break is detected, home or business owners can be notified in case they are away at work or out of town, allowing the customer and the DWP's staff to respond to the break as quickly as possible. In Big Bear this is particularly important as many homeowners are not full time residents and the freezing conditions make homes more susceptible to ruptures from frozen pipes, potentially causing catastrophic property damage and significant water loss. A second type of leak that can be identified by the AMI system is recognizing when a small amount of flow is consistently being detected at the meter. This is indicative of a small leak somewhere in the home or business or between the meter and the building or home. In this case, the DWP can contact the resident to identify the issue and encourage the customer to investigate. In both cases, AMI can save water for the DWP and money for its customers. Unusual AMI customer usage patterns are monitored daily and over 800 customer leaks were detected and resolved in 2016. The EPA estimates the average household's leaks can account for more than 10,000 gallons of water wasted every year. This represents a significant area of potential conservation. In addition, once a customer reports that a leak has been repaired, the AMI interface allows staff to confirm that fact. Knowing the amount of water that is being used also helps customers and their chosen contractors get an idea of where a leak may be originating.

- *Time of Day Audits* – In 2004, the City adopted an ordinance restricting outdoor irrigation to April through October and prohibited outdoor irrigation between 9:00 a.m. and 6:00 p.m. for all water users. Evapotranspiration is a calculated estimate of the water that evaporates from soil and plant surfaces and the water plants lose through their leaves. Evapotranspiration rates in this arid mountain region can be as high as 7.06 inches of water loss per month. The AMI system has the ability to provide alerts to the DWP when water uses indicate possible irrigation occurring during prohibited time frames. Violations are generally addressed with friendly visits and written reminders to customers. However, the ordinance does allow the DWP to assess fines to chronic violators.

- *Peak Use Data* – With the DWP's new AMI system, it is possible to educate customers regarding peak usage. For example, the DWP is able to alert customers to key periods of

high demand that may be indicative of water waste. By identifying peak demand periods, customers can be made aware of times of day or times of year when water is potentially being wasted.

- *Water Audits* - In addition to time of day and leak alerts, it is also possible to identify the largest users of water on a regular basis, as wells as, peak instantaneous demand basis. The new AMI system will also be able to identify the highest users by peak day and peak hour. This may help identify users that have less efficient fixtures or sprinkler systems. For those users with excessive water use, the DWP will provide information and resources to help in their efforts to save water.

- *Expanded Public Education* - The DWP has an extensive public education program that includes indoor water conservation surveys, outdoor water conservation surveys, a retrofit on change of service program, hospitality industry outreach, regular radio and newspaper advertising, educational outreach to schools and more. By referencing AMI data, the conservation department can show customers their peak usage times as well as historical or seasonal comparisons. With live data the DWP can modify marketing to notify the community if they are not meeting conservation targets and update them on their progress.

- *Drought and Water Emergency Measures* - In addition to its efforts to achieve long-term water use reductions through conservation, the DWP also has a plan for reducing water consumption in times of drought or other water emergencies (such as a line break). The Water Shortage Contingency Plan includes the restriction of water use by large users, stricter enforcement of existing DWP conservation practices, voluntary reduction of water use, with mandatory reductions of water through enforcement as a last resort. The AMI system will be capable of quickly identifying large water users in case of a water emergency and give conservation staff the ability to enforce restrictions if necessary.

- *California Senate Bill No. 555 Compliance* - California Senate Bill No. 555 requires each urban retail water supplier, on or before October 1, 2017, and on or before October 1 of each year thereafter, to submit a completed and validated annual water loss audit report. The completion of the AMI Program would greatly assist the DWP in completing the annual audit.

- *Usage Alerts* – Approximately 70% of the DWP's customers are part-time residents. Sometimes, these vacant homes get broken into and home invaders live there until they are discovered. The AMI system can be utilized to notify the customer of usage during periods when they are out of town. This feature will improve the security/safety of the home, reduce property damage/loss, and reduce unauthorized water use.

Section 4. Evaluation Criteria

The evaluation criteria portion of your application should thoroughly address each of the following criteria and subcriteria in the order presented to assist in the complete and accurate evaluation of your proposal. If a particular criterion does not apply to your project, please indicate which criteria are inapplicable as part of your application. (Note: it is suggested that applicants copy and paste the below criteria and subcriteria into their applications to ensure that all necessary information is adequately addressed). **Applications will be evaluated against the evaluation criteria (listed below), which comprise 100 points of the total evaluation weight**. Please note that projects may be prioritized to ensure balance among the program Task Areas and to ensure that the projects address the goals of the WaterSMART program.

*Please note, if the work described in your application is a phase of a larger project, please **only** discuss the benefits that will result directly from the work discussed in your application and that is reflected in the budget and exclude discussion of benefits expected from the overall project.*

Evaluation Criterion A: Quantifiable Water Savings

Describe the amount of water saved. For projects that conserve water, please state the estimated amount of water expected to be conserved (in acre-feet per year) as a direct result of this project. Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations. Please be sure to consider the questions associated with your project type (listed below) when determining the estimated water savings, along with the necessary support needed for a full review of your proposal (please note, the following is not an exclusive list of eligible project types. If your proposed project does not align with any of the projects listed below, please be sure to provide support for the estimated project benefits, including all supporting calculations and assumptions made). *In addition, please note that the use of visual observations alone to calculate water savings, without additional documentation/ data, are not sufficient to receive credit under this section.*

By installing 3,500 additional AMI meters the DWP will save an estimated 113 AF of water per year, which is 5.2% of the 2,169 AF produced in 2016. This estimate is based on data from the 8,170 AMI meters already installed and reduced proportionately for 3,500 meters. Complete calculations are in Table No. 3 and descriptions in Municipal Metering item a) below.

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

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

The primary quantifiable reduction in water waste associated with the installation of 3,500 meters is related to customer leaks and inefficient or leaky outdoor irrigation. Customer leaks and wasteful irrigation all result in water either evaporating or percolating into the ground. Water from household leaks may go into the sewage system or percolate into the ground.

Approximately 70% of the DWP's customers are part-time residents. During the winter months, many of these customers fail to properly winterize their water systems prior to leaving the

house vacant for extended periods of time. The water in the customer's pipes freezes and the pipes crack. When the pipes thaw-out, severe leaks occur. During the summer months, significant leaks are primarily associated with irrigation systems. Customers fail to winterize their irrigation systems properly and during the winter the shallow irrigation pipes freeze and crack. When the irrigation system is put back into service, the pipes leak and many of these leaks go undetected because they do not come to the surface.

The DWP has a bimonthly meter reading policy and when there is significant snow covering the meter box, the water usage is estimated. If a leak occurs shortly after the conventional meter is read, the leak could go undetected for nearly two months, or even longer during winter months. Implementing the AMI Program has allowed DWP Conservation and Meter staff to check customer's water usage between billing periods despite heavy snow or ice. The AMI software produces a daily list of customers with potential leaks based on unusual or continuous customer usage. The customers are contacted and the leak is repaired within days, instead of months. The meter department is able to quantify the amount of water that would have been lost by recording the number of leaks that occur each month. A calculation of water loss due to customer leaks is described in Table No. 3.

Figure 4
Home damage due to frozen and bursting pipes

In January, February, and December of 2016, DWP staff identified 173 leaks and notified each customer within hours of the leak occurring. The AMI system helped prevent property damage and significant water waste that the DWP frequently sees in winter conditions, as shown in Figure 4.

The AMI Program is also giving staff more thorough and accurate data when communicating to customers about their water use. This is especially useful after the customer receives a high water use notice and/or has an outdoor landscape survey. Since the AMI meter can detect irrigation outside of approved irrigation times, staff can contact customers and inform them of the violation, using it as an opportunity to offer turf buybacks and outdoor surveys which result in more efficient irrigation. Research on outdoor evaluations has shown that they produce water savings, but it is difficult to quantify locally.

The AMI Program also allows the DWP to compare real-time water usage data with real-time water production data, for a specific area of the DWP's service area. This allows the DWP to identify areas of our system that may have main leaks.

Please include a specific quantifiable water savings estimate; do not include a range of potential water savings.

The estimated water saved with 3,500 AMI meters is 113 AF per year. This estimate is based on data from the 8,170 AMI meters already installed and reduced proportionately for 3,500 meters.

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

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

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

DWP has been recording daily leak information for over a year, now that a significant percentage of AMI meters have been installed. DWP records the number of leaks that occur each day and month and the total number of AMI meters that are operational each month. We then looked up the flow, or volume per hour, of a representative sample of daily leaks. With this information we are able to calculate the percentage of AMI customers who have a leak each month, the average volume of the leak for the AMI customers each month, and the estimated volume of the water lost each month, if the leak had gone undetected.

We then normalized the data for 3,500 AMI customers and assumed that, on average, a leak would go undetected for 35 days for a customer with a conventional meter. Because DWP reads its conventional meters bimonthly, and, during the winter months meters can be estimated for one or more billing periods, we feel 35 days is a reasonable assumption. We then calculated the volume of water that would have been lost using 3,500 conventional meters with leaks running for 35 days.

The volume in cubic feet (CF) has been converted into acre feet as directed.

Table No. 3 Estimated Water Savings with 3,500 AMI Meters

	(A)	(B)	(C) = (A)/(B)	(D)	(E) = (D)*840 hrs	(F)= (C) *3,500	(G)= (F)*(E)/43,560
Month	Number (No.) of Leaks	No. AMI Meters in Service	% of Customers w/Leak	Leak Volume per Hour (CF/HR/Leak)	Leak Volume[(1)]	Estimated Number of Leaks for 3,500 Meters	**Leak Volume per 3,500 Meters in AF**
Jan	48	5,093	0.94%	26	21,840	33	**16.54**
Feb	60	5,334	1.12%	26	21,840	39	**19.74**
Mar	39	5,843	0.67%	8	6,720	23	**3.60**
Apr	52	6,193	0.84%	8	6,720	29	**4.53**
May	78	6,424	1.21%	8	6,720	42	**6.56**
Jun	116	6,787	1.71%	13	10,920	60	**15.00**
Jul	90	7,047	1.28%	13	10,920	45	**11.21**
Aug	95	7,562	1.26%	13	10,920	44	**11.02**
Sep	43	7,798	0.55%	8	6,720	19	**2.98**
Oct	58	8,122	0.71%	8	6,720	25	**3.86**
Nov	66	8,395	0.79%	8	6,720	28	**4.24**
Dec	65	8,490	0.77%	26	21,840	27	**13.44**
Estimated water (acre feet) saved per year per 3,500 AMI meters installed							**113**

[(1)] Average Leak is assumed to run for 35 days or 840 hours

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

The DWP historically provides leak adjustments to customers who have unusually high usage due to a leak and provide proof that the leak has been repaired. The problem with this method of determining water loss due to customer leaks is that it requires the customer to request a leak adjustment due to an unusually high bill. If the leak is small to medium, many customers do not qualify for, nor do they request a leak adjustment and in the past many leaks went undetected. For example, during fiscal years 2013/2014 and 2014/2015, the DWP provided leak adjustments to 358 customers for 43,758 CCF's or 100 acre feet of water for a two year period. The production for fiscal years 2013/2014 and 2014/2015 totaled 4,413 AF, from this the DWP estimates that reported customer leaks accounted for 2.3% of the DWP's production those years. This method was one indicator of how much water was lost with conventional meters, however, it did not account for the water waste associated with the small to medium leaks that go unreported. Utilizing AMI technology, staff can now create leak reports that will indicate leaks as low as 1 CF (7.48 gallons) per hour, even if they run for just a day.

As shown in Table No. 3 above, over 800 leaks were identified by the AMI system in 2016. In 2016, about half of DWP's conventional meters had been replaced, so by proportion, when 15,600 AMI meters are operational, the AMI system may identify approximately 1,600 leaks per year, which is significantly more than the 358 leaks reported by conventional meter customers over the two year period mentioned above.

c) For installing individual water user meters, refer to studies in the region or in the

applicant's service area that are relevant to water use patterns and the potential for reducing such use. In the absence of such studies, please explain in detail how expected water use reductions have been estimated and the basis for the estimations.

The Residential End Uses of Water, Version 2 reports that, "the average daily per capita leak is 7.9 gallons per capita day" and "thirty-two percent of homes had higher leakage rates, as high as 600 gallons per household per day" (Water Research Foundation, 2016). By utilizing AMI the DWP can identify those leaks immediately and require customers to make repairs.

A research paper titled, "Exploring the Energy Benefits of Advanced Water Metering" from the Ernest Orlando Lawrence Berkeley National Laboratory cited a recent case study by the California Department of Water Resources stating, "The City of Sacramento, California, began implementing a water AMI system in 2009. After installing 17,600 smart water meters, they monitored their performance from 2010-2011. Through analysis of the volumetric consumption data collected, 1,076 leaks were identified, 75% of which were verified in the field. The City estimated that fixing these leaks saved an estimated 236 million gallons of water over the two-year period, or approximately 12.6 gallons per capita per day (California Water Plan, Update 2013. Vol 3. 2013)."

While we have not identified any applicable regional studies, the DWP already has over 8,170 AMI meters installed and has been able to rely on this data to analyze the potential for reducing water loss and water waste, especially from leaks. The DWP has been able to track and record daily use patterns and leak information for over a year. From this, the DWP calculated the flow volume per hour of a representative sample of daily leaks and the total number of AMI meters that are operational each month. We were able to calculate the percentage of AMI customers that have a leak for each month, the average flow of the leak for the AMI customers each month, and the estimated quantity of the water lost each month.

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

The DWP has meters on all of its sources of supply. Although only about half of its customer's meters have been replaced with AMI meters, several of the smaller systems have been converted completely to AMI meters. The DWP's Fawnskin system (approximately 700 AMI meters) has been completely converted, which allows the DWP to compare production quantity to customer usage and approximate unaccounted for water for the Fawnskin water system. DWP noticed unusually high unaccounted for water in the Fawnskin water system and began to look for main line leaks in this relatively small area. DWP located a leak on an abandoned main that was not properly abandoned. The main was taken out of service in 2012, so it was leaking for nearly four years. Most of the leak was percolating into the ground, so determining where exactly the abandoned main was leaking and the flow rate was not economically feasible. The abandoned main was therefore properly separated from the distribution system and the leak stopped flowing. Although this leak was not easily quantifiable, it is another good example of

how the AMI meters reduce water loss.

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

The meters are ¾" and 1" Sensus AccuSTREAM composite meters or Sensus Omni meters for meters larger than 1" in diameter.

The radios are Sensus 520M MXU SmartPoint. The radios are mounted in the meter box and the frost lid is installed above the meter. The frost lid is an essential part of the meter replacement program because it prevents the meter from freezing, which reduces water loss related to broken meters.

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

DWP will use the same method as described in Municipal Metering item a) above, except we will use data from the 3,500 meters installed during Phase lll in lieu of prorated Phase l and ll data. DWP will record the number of leaks that occur each day and month and the flow per hour of a representative sample of daily leaks, for the newly installed AMI meters for one year after all 3,500 meters are installed. This information will be used to calculate the average volume of the leak for the new AMI customers each month and the volume of the water that would have been lost each month if the leak was not detected utilizing the AMI system.

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

Maximum consideration under this criterion will be given to projects that will commit conserved water to instream flows for the benefit of federally listed threatened or endangered species, designated critical habitat, or other fish and wildlife benefits. Consideration will also be given to projects expected to result in water sustainability benefits in other ways, such as making water available to alleviate water supply shortages or to address other specific water management concerns in the region.

Note: Maximum consideration under this criterion is also available to projects that result in habitat improvements that benefit federally listed threatened or endangered species, designated critical habitat, or other fish and wildlife (i.e., Task C activities).

For Task C activities with benefits unrelated to water savings (e.g., habitat improvements, or installation of fish bypasses or fish screens), describe the activities and associated benefits in detail. Please address the following: Will the project benefit federally-recognized candidate species? Will the project directly accelerate the recovery of, threatened or endangered species or address designated critical habitat? Is the project expected to have other fish and wildlife benefits?

While the AMI Program will not directly commit conserved water to instream flows, the water conserved will benefit an endangered species. Years ago the U.S. Forest Service determined that the DWP's pumping, along with BBCCSD's pumping within the Erwin Subunit Basin on the

east side of the Bear Valley has affected the Unarmored Threespine Stickleback Fish ("UTS" or "Stickleback") habitat. The UTS is a federally protected endangered species.

In 2009 the U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office published a Five Year Review: Summary and Evaluation on the UTS. According to that review, "Groundwater removal for domestic and agricultural use is a major threat to the UTS in … Shay Creek," and "according to the U.S. Forest Service (2001), catastrophic mortality of the UTS in Shay Creek and Baldwin Lake occurred in 1985 and 1986 due to insufficient amounts of water due to groundwater withdrawal. The UTS survived in the deeper pools of Shay and Wiebe Ponds. Excessive groundwater removal can, in some cases, result in the complete drying of a stream reach or pond, especially during drought conditions."

For years, the DWP has co-funded the pumping of water into the Stickleback pond to maintain its habitat. The reduced pumping from the implementation of the AMI Program will help maintain UTS habitat by reducing DWP's overall demand annually. DWP already pumps less than the perennial yield of the Bear Valley Basin, so further reduction in pumping will increase the sustainability of the basin.

Some projects may address water supply sustainability in ways other than committing water for instream flows. If the questions listed above are not applicable to your project, please address the following to explain how the water savings from the project are expected to result in a public benefit:

- Is there a specific water supply sustainability concern in the region? What factors are contributing to the concern? Please include a description of the impacted geographic area and stakeholders, the partners that are collaborating to resolve the concern, and any other applicable information.

From 2000 to 2002 the DWP experienced three extremely dry years, with average precipitation of only 20.84 inches per year (in comparison to a 130 year average of 35.83 annual inches). In 2002 the DWP declared a Water Shortage Emergency. While conservation regulations existed before this time, that year was a "watershed" moment in DWP conservation. The Water Shortage Emergency lasted over a decade, resulting in a building moratorium for one DWP water system and vastly expanded rules and regulations related to conservation.

Twice annually the DWP holds a Technical Review Team (TRT) committee meeting to review and evaluate the status, condition, and availability of the DWP's groundwater supplies. The Committee makes recommendations and advises the Board concerning conservation and other significant resource management constraints, including any possible declarations of a Water Shortage Emergency.

At the November 17, 2016 TRT Committee meeting the DWP discussed the fact that precipitation at the dam from July 1, 2015 through June 30, 2016 was 30.80 inches, nearly 86% of the 132-year annual precipitation average. The annual rainfall, measured at the Big Bear Dam, has been below average for the last five years. Therefore, despite improved precipitation, the Bear Valley is still beginning its sixth year of severe drought and relies strictly on naturally

charged groundwater for its source of supply.

Past and present investments have added critical flexibility in how the DWP can exercise different sub-basins within the Bear Valley. New sources and additional storage, improved pump efficiency, better water transfer systems and improved monitoring capabilities have improved the DWP's drought resiliency. While some aquifer sub-units' levels are in decline, other aquifer sub-units' have increased. Recent calculations show that even with some wells offline and continued drought projections, the water supply is sufficient for more than three years. Nevertheless, DWP staff continue to closely monitor the basin and water agencies across the Bear Valley are working together to create and promote comprehensive and consistent conservation policies based on prior experience.

- How will the proposed project help to address that concern? Will water conserved through the project result in reduced diversions or be made available to help alleviate water supply shortages due to drought, climate variation, or over-allocation?

Part of the DWP's water supply is derived from slant wells (horizontal wells) and the slant well production has declined or stopped completely during this drought. The water conserved from the AMI Program will help offset the decreased production of the DWP's slant wells.

In addition, the area wastewater provider, the Big Bear Area Regional Wastewater Agency, treats the influent (from sewers) to the required standards and then transfers the treated effluent out of the Bear Valley to the Lucerne Valley, where it is used for agriculture. Water conserved through the AMI Program helps maintain the integrity of the aquifers through early identification of customer leaks (some of which flow into the sewer system), therefore reducing this sizable and permanent source of water loss in the Bear Valley.

- Will the project make additional water available to Indian tribes, and/or rural or economically disadvantaged communities)? If so, please explain.

According to the Santa Ana Basin Study Summary Report, a large portion of the DWP service area is a disadvantaged community. These customers will possibly financially benefit from early leak detection and notification that may reduce customer property damage and other costs associated with water leaks.

- Will water conserved through the project help to address water supply sustainability in a way not listed above?

The Big Bear Lake is managed by the Big Bear Municipal Water District (MWD). While Big Bear Lake is not a source of supply for the DWP, the lake level is indicative of drought conditions. Lake levels have been steadily dropping since May of 2011. As of December 12, 2016 the lake level was down 16' 11" from full and 50% of normal volume. As the lake level has dropped MWD has considered cloud seeding, struggled with keeping public launches open and made efforts at lake level mixing to keep mercury levels within regulation.

Eventually a portion of water conserved through the Program will find its way into Big Bear

Lake via subsurface or stream flow. MWD has downstream water obligations to entities located in Redlands and San Bernardino. They accomplish meeting these downstream obligations through in lieu water transfers and direct releases from Big Bear Lake. Big Bear Lake is also a vital source of recreational opportunities for this mountain community.

Evaluation Criterion C: Energy-Water Nexus

For projects that include construction or installation of renewable energy components, please respond to Subcriterion No. C.1: Implementing Renewable Energy Projects Related to Water Management and Delivery. If the project does not implement a renewable energy project but will increase energy efficiency, please respond to Subcriterion No. C.2. Increasing Energy Efficiency in Water Management. If the project has separate components that will result in both implementing a renewable energy project and increasing energy efficiency, an applicant may respond to both. However, an applicant may receive no more than 18 points total under both Subcriteria No. C.1 and C.2.

Subcriterion No. C.1: Implementing Renewable Energy Projects Related to Water Management and Delivery

This specific Program does not include a renewable energy component; however, the DWP is submitting a separate WaterSMART Water and Energy Efficiency grant application for the Division Well Field Solar Project.

Subcriterion No. C.2: Increasing Energy Efficiency in Water Management

Up to **4 points** may be awarded for projects that address energy demands by retrofitting equipment to increase energy efficiency and/or through water conservation improvements that result in reduced pumping or diversions.

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

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

As described in Table 3, Water Savings, the DWP estimates it will reduce its Average Annual Water Supply/Demand by 5.2% (113 AF/yr out of 2,169 AF/yr) by installing 3,500 AMI Replacement Meters. The DWP uses about 2,000,000 kilowatt hours of power per year. The reduced pumping resulting from the 5.2% water conserved will result in approximately 104,000 kilowatt hours per year (2,000,000 kilowatt hours x 5.2 %) reduction in DWP power usage. This calculation includes energy for pumping and treating the DWP's water supply.

- Please describe the current pumping requirements and the types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements?

The DWP has forty-five well and booster pumping plants that distribute its water supply throughout the Bear Valley. The proposed Program would reduce pumping costs by 5.2% as described in the previous section.

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

The energy savings estimate originates from the point of diversion.

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

Yes, the calculation includes energy required to treat the water.

- Will the project result in reduced vehicle miles driven, in turn reducing carbon emissions? Please provide supporting details and calculations. Describe any renewable energy components that will result in minimal energy savings/production (e.g., installing small-scale solar as part of a SCADA system).

Before implementation of the AMI Program, DWP had 80 meter routes that were read manually, six times per year. The average mileage driven on each route is estimated at 11.3 miles. The total annual miles driven for DWP's 15,600 customers (80 routes) is equal to 5,400 miles per year (11.3 miles per route X 80 Routes X 6 meter reads per year). The reduction in miles driven associated with the 3,500 Phase lll AMI meters is 1,200 miles per year (5,400 miles X 3,500/15,600). At 75 gallons of gas per year (1,200 miles/ 16 miles per gallon), the E.P.A. Greenhouse Gas Equivalencies Calculator calculates this as an equivalent elimination of 0.667 metric tons of carbon dioxide (Calculation: 8,887 grams of CO2 /gallon of gasoline =8.887 × 10-3 metric tons CO2/gallon of gasoline).

Evaluation Criterion D: Addressing Adaptation Strategies in a WaterSMART Basin Study

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

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

The Santa Ana Watershed Basin Study looks at the Santa Ana River Watershed (SARW), including the service area of Big Bear Lake near the headwaters of the Santa Ana River. The Santa Ana Watershed Project Authority (SAWPA) is a water resources planning agency tasked with protecting the water quality of the watershed. The specific adaptation strategy addressed

by this proposal is to reduce demand, described as “Promote the State’s 20x2020 Water Conservation Plan in the watershed.” By reducing demand we help to address three vulnerabilities: water supply, water quality and the ecosystem.

The Basin Study states that, “In light of climate change, prolonged drought conditions, potential economic growth, and population projections, a strong concern exists to ensure an adequate water supply will be available to meet SARW’s future water demands.” Examples of proposed actions include: Urban Water Use Efficiency (decreasing per capita use), Improved Conveyance Systems (increased efficiency and the reduction of greenhouse gas emissions, Groundwater Management (reduce demand, increase local supplies, and reduce summertime pumping).

- 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 states that “Conservation of existing water supplies is of utmost importance to a growing population in the SARW.” By implementing the AMI system and controlling water loss as well as waste, the grant project will help to achieve the adaptation strategy. By implementing the AMI technology the DWP will be able to actively monitor customer’s use and utilize the customer interface to notify them when there are periods of peak demand. We can then encourage customers to reduce their use and, or shift their patterns toward periods of off-peak demand. In addition, the thorough understanding of customer’s daily usage patterns will allow the DWP to better manage our pumping activities and reservoir levels. An added benefit to monitoring use is the ability to quickly identify potential leaks and either turn the customer’s meter off, or notify them so that they can address the problem.

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

While the DWP does work with SAWPA on the Integrated Regional Water Management Plan it did not play a vital role in the Basin study.

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

By implementing the AMI technology the DWP is prepared to share the results with other SAWPA member agencies and contributors. We have shared the benefits and lessons learned during Phases l and ll of the AMI program and look forward to the opportunity to share our additional experiences and would be honored to be a case study for other agencies within the watershed weighing the costs and benefits to implementing AMI throughout their system.

Evaluation Criterion E: Expediting Future On-Farm Irrigation Improvements

This Program does not include future on-farm irrigation improvements.

Evaluation Criterion F: Implementation and Results

Subcriterion No. F.1: Project Planning

Does the project have a Water Conservation Plan and/or System Optimization Review (SOR) in place. Please self-certify, or provide copies of these plans where appropriate to verify that such a plan is in place.

Provide the following information regarding project planning:

1. (1)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 earliest iteration of a water conservation program in the Big Bear Valley was established in June 1989. Nevertheless, in 2002 demand for water in the DWP service area approached the maximum perennial yield. In July of that year a chapter was added to the Big Bear Lake Municipal Code addressing mandatory conservation rules and regulations, especially as they pertained to landscaping and irrigation. Less than six months later the DWP Board declared a water shortage emergency and began implementing additional and more stringent water conservation regulations. For seven years one of DWP's more isolated service areas, Lake William, was subject to a building moratorium due to the water shortage and resulting deterioration of water quality in its particular sub-basin.

Since 2002 the DWP has been ahead of the curve in adopting and implementing permanent water conservation measures. The DWP Water Conservation Policy addresses limitations on how water may be applied, when, and where. For example, outdoor irrigation is on an alternate day schedule limited to between 6 p.m. and 9 a.m., leaks must be repaired upon detection and no run off is allowed. These are just a few of the rules that apply to water application. In addition, the policy addresses regulations for new or retrofitted landscapes (turf is limited to 1,000 square feet and irrigation timers must be equipped with a rain shut off device); upon a change in service, account holders must ensure that all plumbing fixtures meet current low flow guidelines or the fixtures must be replaced. Implementation of the AMI Program continues to facilitate enforcement of the Conservation Policy. In addition to finding leaks, by monitoring customer usage conservation staff can determine if customers are watering daily, or during restricted hours. Staff analyzes patterns to see if customers are applying irrigation despite recent precipitation, which is a new prohibition in California. Frequent and excessive watering also provokes conservation to investigate if a new landscape or turf has been installed. DWP efforts paid off and water production was reduced by over 25% between 2002 and 2012. Since 2012 demand has held fairly steady (ranging from 2,131 to 2,410 acre feet per year).

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

The DWP's Board of Commissioners adopted a Five-Year Capital Improvement Plan during the

July 22, 2014 Board Meeting (staff report and minutes attached as Exhibit 3). The AMI Program is the largest project within the approved Five-Year Capital Improvement Plan.

The AMI meters provide hourly usage information and leak alerts, and eliminate the need to estimate meter reads during heavy snow events. Once all of the meters are installed, the DWP will be able to customize the conservation efforts, identify problem leak areas, and develop plans for future facilities more efficiently.

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:

- Is there widespread support for the project?

Yes, see attached letters of support.

- What is the significance of the collaboration/support?

After signing a letter in support of the Program last year, Senator Mike Morrell (23rd District) requested that the DWP General Manager speak with other agencies in his district. The DWP AMI Program can serve as a model for these other agencies to follow.

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

Yes, water saved by implementing the AMI Program will result in increased water sustainability in the Bear Valley. Also, the additional water use information provided to the customer helps them understand their usage patterns and modify or reduce their water usage.

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

No, all agencies in the Bear Valley work together to maintain the sustainability of the basin. In 2015/2016, the Big Bear Area Regional Wastewater Agency, Big Bear Municipal Water District, Big Bear City Community Services District and the City of Big Bear Lake, Department of Water and Power each contributed $40,000 to fund the Bear Valley Water Sustainability Plan. This plan evaluated various strategies to use reclaimed throughout the Bear Valley. While ultimately deemed not financially feasible, the project is demonstrative of the Valley's agencies supporting one another in various projects to conserve and manage the water in the basin collaboratively.

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

Collaboration with the Big Bear City Community Services District (BBCCSD) may encourage the agency to implement similar programs in their service area which would further benefit the aquifer. The two base stations that collect and transmit meter data to the DWP can also be

used by BBCCSD. The DWP and BBCCSD staffs have discussed the possibility of sharing the two base stations. BBCCSD already uses touch pad Sensus meters and they would only need to add radios to the touch pad to convert their system into an AMI system.

Subcriterion No. F.3: Performance Measures

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (e.g., water saved or better managed, energy generated or saved). For more information calculating performance measure, see Section *D.2.2.5 Performance Measures*.

Note: All Water and Energy Efficiency Grant applicants are required to propose a "performance measure" (a method of quantifying the actual benefits of their project once it is completed). A provision will be included in all assistance agreements with Water and Energy Efficiency Grant recipients describing the performance measure, and requiring the recipient to quantify the actual project benefits in their final report to Reclamation upon completion of the project. If information regarding project benefits is not available immediately upon completion of the project, the financial assistance agreement may be modified to remain open until such information is available and until a Final Report is submitted. Quantifying project benefits is an important means to determine the relative effectiveness of various water management efforts, as well as the overall effectiveness of Water and Energy Efficiency Grants.

DWP will record the number of leaks that occur each day and month and the flow per hour of a representative sample of daily leaks, for the newly installed AMI meters for one year after all 3,500 meters are installed. This information will be used to calculate the average flow of the leak for the new AMI customers each month and the quantity of the water that would have been lost each month if the leak was not detected utilizing the AMI system. We then assume that, on average, the leak for a customer with a conventional meter would go undetected for 35 days. Because DWP reads its conventional meters bimonthly and during the winter months, meters can be estimated for one or more billing periods, we feel 35 days is a reasonable assumption. We then calculate the amount of water that would have been lost using 3,500 conventional meters versus AMI meters. For an example of the calculation, see Table No. 3.

Another method to determine if using AMI meters results in water savings would be to compute the historical usage of the 3,500 new AMI customers for calendar years 2014 and 2016. In general, DWP's customers reduced their usage in 2015 by 13% because of the drought restrictions. Usage for 2014 is more representative of DWP's average customer usage over the last five years, and 2016 may be the new normal as customers have adapted to the new drought restrictions. Then for calendar year 2019, once the 3,500 AMI meters are installed, we compute the usage of the 3,500 new AMI customers and compare it to their 2014 and 2016 usage. DWP performed extensive existing meter testing to help justify the AMI program (see Exhibit 2). During this testing, it was calculated that on average the existing meters were under registering by 3.3%. The 2014 and 2016 usage information will be increased by 3.3% to provide an accurate comparison of customer usage over the three test years. This would be the best before AMI and after AMI comparison to measure water savings.

To save a year in this verification process, DWP could compute the usage for the 1,700 or 1,800 AMI meters installed in 2017 and assume the second half of the 3,500 will follow similar usage patterns.

Evaluation Criterion G: Additional Non-Federal Funding

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

Non-Federal Funding: $430,778
Total Project Cost $730,778

Phase III of the AMI Program will be funded 58.9% from non-federal sources. The DWP plans to provide 100% of the matching funds under this application from revenues and capital improvement reserves.

Evaluation Criterion H: Connection to Reclamation Project Activities

1. How is the proposed project connected to Reclamation project activities?

The proposed Program is indirectly connected to the State Water Project because of in lieu water transfers. The Big Bear Municipal Water District (MWD, the Agency in charge of the lake) has annual downstream water obligations to the San Bernardino area. In order to maintain lake levels, MWD has a contract with the local State Water Contractor to provide in lieu water transfers, out of Lake Silverwood, so they don't have to discharge from the Big Bear Dam. In this way the annual Bear Valley precipitation stays in the Bear Valley to fill the lake and percolate into the aquifers.

2. Does the applicant receive Reclamation project water?

The DWP's water system does not rely on reclamation project water at this time.

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

The Program is not on Reclamation project lands and does not involve Reclamation facilities.

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

No, however, the State Water Project does benefit the Bear Valley via in lieu water transfers as discussed in Evaluation Criteria H. 1 above.

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

The proposed Program will reduce the amount of water withdrawn from the Bear Valley Basin.

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

This is not applicable for this project.

Section 5. Performance Measures

All WaterSMART Grant applicants are required to propose a method (or "performance measure") of quantifying the actual benefits of their project once it is completed. Actual benefits are defined as water actually conserved or better managed, as a direct result of the project. A provision will be included in all assistance agreements with WaterSMART Grant recipients describing the performance measure and requiring the recipient to quantify the actual project benefits in their final report to Reclamation upon completion of the project.

Quantifying project benefits is an important means to determine the relative effectiveness of various water management efforts, as well as the overall effectiveness of WaterSMART Grants.

The following information is intended to provide applicants with examples of some acceptable performance measures that may be used to estimate pre-project benefits and to verify post-project benefits upon completion. **However, the following is not intended to be an exclusive list of acceptable performance measures. Applicants are encouraged to propose alternatives to the measures listed below if another measure is more effective for the particular project.**

Reclamation understands that, in some cases, baseline information may not be available, and that methods other than those suggested below may need to be employed. If an alternative performance measure is suggested, the applicant must provide information supporting the effectiveness of the proposed measure as applied to the proposed project.

Performance Measure No. A: Projects with Quantifiable Water Savings

Performance Measure No. A.2: Measuring Devices

Good water management requires accurate and timely water measurement at appropriate locations throughout a conveyance system. This includes irrigation delivery systems and municipal distribution systems.

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

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

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

The proposed project will replace existing manual meters with AMI meters.

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

The Program will include individual water user meters only.

- If the project replaces existing meters with new meters, whether new technologies

(automatic meter reading (AMR) or advanced metering infrastructure (AMI) meters) will be employed.

The Program will replace existing manual meters with AMI meters.

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

DWP's supply facilities have main line meters to measure water production. Installing the new AMI meters will facilitate real time production to usage comparisons which will enable DWP to locate areas in the system where unaccounted for water is high and therefore reduce the area to search for mainline leaks.

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

For residential customers, the DWP has a bimonthly, multi-tiered, inclining block rate structure which includes a bimonthly service charge (first 8 CCF's are included) and tiered charges for usage in excess of 8 CCF's. The DWP currently has an adopted rate plan which includes a 2% increase in base fees and volumetric rates on July 1, 2017. Rates will be reviewed at the end of 2017 and the DWP expects that any increases will be consistent with the previous 2% annual increases.

Current Residential Rates

Service Charges (Effective July 1, 2016 - June 30, 2017):

The residential bimonthly service charge for 5/8" meters is $89.40.
The residential bimonthly service charge for 1" meters is $160.06.
Service charge base rate: 0-8 CCFs are included in the minimum bill.

Table No. 4 Volumetric Charges:

Hundred Cubic Feet (CCF)	Charge per CCF
0-8	Included in service charge
9-24	$2.70
25-40	$3.74
41-60	$5.58
61-100	$9.50
101+	$12.78

DWP does not anticipate that the AMI program will result in a change to its rate structure. Bimonthly billing has certain operational costs savings and the DWP's residential customers are accustomed to receiving a water bill only six times per year.

Performance Measure No. B: Projects with Quantifiable Energy Savings

Applicants should address the following subsections as part of the performance measures they submit with their applications.

Performance Measure No. B.2: Increasing Energy Efficiency in Water Management

- Explain the methodology for calculating the quantity of energy savings resulting from the water management improvements or water conservation improvements

As estimated in Table No. 3, by installing 3,500 additional AMI meters the DWP will save an estimated 113 AF per year, which is 5.2% of the 2,169 AF produced in 2016. DWP uses approximately 2,000,000 KWh per year to produce 2,169 AF of water supply. If the water supply is reduced by 5.2%, then the energy consumed will also be reduced by 5.2% or 104,000 KWh per year.

- Explain anticipated cost savings

During fiscal year 2016, DWP spent approximately $600,000 to pump the annual water supply. Phase lll of the AMI Program is estimated to reduce water supply by 5.2%, which will reduce costs by 5.2% or an estimated cost reduction of $31,200 per year.

Performance Measure No. C: Projects that Benefit Endangered Species and/or Critical Habitat

For projects that benefit federally listed species (threatened or endangered), federally recognized candidate species, or designated critical habitat that are affected by a Reclamation facility, the applicant should consider the following:

- The methodology used for determining the recovery rate of the threatened and/or candidate species

The 2009 U.S. Fish and Wildlife Service Five Year Review on the UTS states, “The recovery criteria and tasks are listed in the recovery plan for the UTS (Service 1985).” However, “The criteria are out of date because they do not reflect the best available information on the biology of the subspecies. Since the development of the recovery plan, much research has been conducted and additional threats have been identified.”

The DWP anticipates that the reduced pumping and water conserved as a result of the AMI Program will help maintain UTS habitat. An increased water supply to the UTS habitat is an obvious contributing benefit for the Stickleback’s recovery. Unfortunately the DWP could not determine the methodology used to determine the recovery rate. DWP reached out to the U.S. Fish and Wildlife Service staff working on a new evaluation of the UTS, but did not receive a reply.

- How their projects will address designated critical habitats, including acres covered, species present, and how the water savings or transfers are expected to benefit the habitat(s)

“Currently, the UTS are restricted to the upper Santa Clara River and its tributaries in Los Angeles County, San Antonio Creek on Vandenberg Air Force Base (VAFB) in Santa Barbara County, and the Shay Creek vicinity in San Bernardino County,” according to the most recent five year species review. The report goes on to state, “No range-wide, long-term monitoring program is currently being conducted for the UTS, and data on population dynamics is limited;” however, “The Shay Creek vicinity population is unique in that it occurs at a high elevation, about 2,042 m (6,700 ft) above sea level, while all other UTS populations inhabit streams below 914 m (3,000 ft).”

While, “The encroachment of emergent wetland vegetation has been gradually reducing open-water habitat in Shay Pond and may be limiting the UTS population,” report findings also suggest that, “UTS re-occupy aquatic habitats that are connected to Shay Creek during periods when water is present.” The DWP expects that water conserved from the AMI Program will benefit the Erwin Subunit Basin including Shay Creek, which is home to this critical habitat for the Unarmored Threespine Stickleback Fish.

- Unavoidable negative impacts to endangered, threatened, or candidate species and/or the critical habitat(s)

None

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

So that Reclamation can assess the probable environmental and cultural resources impacts and costs associated with each application, all applicants must respond to the following list of questions focusing on the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), and National Historic Preservation Act (NHPA) requirements. ***Note: Applicants proposing a Funding Group II project must address the environmental and cultural resources compliance questions for their entire project, not just the first 1-year phase.***

Please answer the following questions to the best of your knowledge. If any question is not applicable to the project, please explain why. The application should include the answers to:

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

  There are no anticipated impacts to the surrounding environment. The new radio read meters will be installed into existing meter boxes, which will minimize or eliminate earth-disturbing type work.

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

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

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

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

- When was the water delivery system constructed?

  The majority of the DWP’s water system was constructed during the 40’s, 50’s, and 60’s. The City of Big Bear Lake acquired the water system from Southern California Water Company in 1989 and has made over $65,000,000 in improvements since that time.

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

alterations or modifications to those features completed previously.

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

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

  No, there are no buildings, structures, or features in the Program area listed or eligible for listing on the National Register of Historic Places.

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

  No, there are no known archaeological sites in the proposed Program area. The new radio read meters will be installed into existing meter boxes.

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

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

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

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

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

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

LETTERS OF SUPPORT

Please include letters from interested stakeholders supporting the proposed project. To ensure your proposal is accurately reviewed, please attach all letters of support/ partnership letters as an appendix. *(Note: this will not count against the application page limit.)* **Letters of support received after the application deadline for this FOA will not be considered in the evaluation of the proposal.**

Please see Exhibit 5

REQUIRED PERMITS OR APPROVALS

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

There are no required permits anticipated for this project. All of the Program work will be conducted at current meter locations. All project-related approvals will be handled by the DWP and will be executed in a timely and efficient manner. Final Program approval from the DWP Board of Commissioners was received on July 22, 2014.

NEPA - National Environmental Policy Act: The DWP does not anticipate any impacts on the environment and will fit within a Categorical Exclusion to NEPA. Any environmental impacts will be minimized during construction using best management practices.

NHPA - National Historic Preservation Act: There will be no impacts on historic sites as a result of this project.

ESA - Endangered Species Act: There is no critical habitat or endangered or threatened species that will be negatively affected by this project.

State Permits: No State permits will be required for the project.

Local Permits: There are no other local permits that will be required for the project.

OFFICIAL RESOLUTION

Include an official resolution adopted by the applicant's board of directors or governing body, or, for state government entities, a signed statement from an official authorized to commit the applicant to the financial and legal obligations associated with receipt of a financial assistance award under this FOA, verifying:

• The identity of the official with legal authority to enter into an agreement

• The board of directors, governing body, or appropriate official who has reviewed and supports the application submitted

• The capability of the applicant to provide the amount of funding and/or in- kind contributions

specified in the funding plan

• That the applicant will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement

An official resolution meeting the requirements set forth above is mandatory. If the applicant is unable to submit the official resolution by the application deadline because of the timing of board meetings or other justifiable reasons, the official resolution may be submitted up to 30 days after the application deadline.

The DWP Board of Commissioners is scheduled to consider the Resolution during the January 24, 2017 Regular Board meeting. Once approved, the Resolution will be included with BBLDWP's applications.

PROJECT BUDGET

Section 1. Funding Plan and Letters of Commitment

The funding plan must include all project costs, as follows:

- 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 DWP will fund any costs for materials, above and beyond the amount funded by the federal government, with a combination of the following: Revenue from water rates, and/or capital improvement reserves. The DWP's 2014 5-year capital improvement plan authorizes spending of over $550,000 per year for the AMI Program. This funding includes items covered in this application, as well as other related items, such as larger sized meters and replacement meter boxes where necessary. Additionally, the Board has set aside $170,000 in funds from reserves to accelerate this Program whenever possible.

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

The DWP began installing new AMI meters in October 2014 and self-funded the installation of the first 3,285 units. The DWP received funding under the WaterSMART Program to install 5,000 meters starting July 1, 2015 with projected Phase II completion by February 28, 2017. If eligible, the DWP would like to seek federal funding for qualified costs incurred from March 1, 2017 (or the completion of Phase II, whichever occurs first) for 3,500 AMI meter installations.

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

Not applicable. The DWP intends to move forward with this Program irrespective of potential funding

- 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.*

Not applicable.

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

The DWP will be submitting an application to the USBR for WaterSMART Group ll funding for up to $1,000,000 for this project, but with a larger scope and duration. The DWP will meet its matching requirement using revenue from rates and use of capital improvement reserves. No other federal funds will be used as matching for this program.

The DWP intends to move forward with this Program irrespective of potential funding. The DWP has capital improvement reserves to rely upon in the event no state funding is awarded.

Please include the following chart to summarize all funding sources. Denote in-kind contributions with an asterisk (*).

Table No. 5 Funding Sources for 3,500 AMI Meters

FUNDING SOURCES	AMOUNT
Non-Federal Entities	
1. DWP Revenues and Reserves	$430,778
Non-Federal Subtotal:	$430,778
Other Federal Entities	
1.	N/A
Other Federal subtotal	-0-
Requested Reclamation funding:	$300,000

Section 2. Budget Proposal

The budget proposal should include detailed information on the categories listed below and must clearly identify all project costs. Unit costs shall be provided for all budget items including the cost of work to be provided by contractors. The budget proposal should also include any in-kind contributions of goods and services provided to complete the Project. It is strongly advised that applicants use the budget proposal format shown below or a similar format that provides this information. If selected for award, successful applicants must submit detailed supporting documentation for all budgeted costs.

Table No. 6 Budget Proposal for 3,500 AMI Meters

Budget Item Description	Computation			Total Cost
	$/Unit	Quantity	Quantity Type	
Labor and Fringe Benefits				$0
Travel				$0
Equipment				$0
Supplies and Materials				
Double SmartPoint Radio	$129.60	251	each	$32,529.60
Single SmartPoint Radio	$113.40	2,998	each	339,973.20
1” AccuStream Meter	$123.12	150	each	18,468.00
5/8” AccuStream Meters	$75.60	3,350	each	253,260.00
1/4:” Black ABS Plastic Bracket	$2.68	3,249	each	8,707.32
Carson Meter Box Frost-Lid – Sport Mat	$22.24	3,500	each	77,840.00
Contractual/Construction				$0
Other				$0
Total Direct Costs				$730,778.12
Indirect Costs				$0
Total Estimated Project Costs:				$730,778.12

Section 3. Budget Narrative

Salaries and Wages

The DWP is installing materials and managing the Program with internal resources. Existing staff have been assigned to complete the installations; DWP is not requesting reimbursement for labor and therefore these costs are not incorporated into the proposed budget.

Fringe Benefits

The DWP is installing materials and managing the Program with internal resources. Existing staff have been assigned to complete the installations; DWP is not requesting reimbursement for Fringe Benefits and therefore these costs are not incorporated into the proposed budget.

Travel

DWP is not requesting reimbursement for travel costs for this project.

Equipment

DWP is not requesting reimbursement for equipment usage for this project.

Materials and Supplies

Itemize supplies by major category, unit price, quantity, and purpose, such as whether the items are needed for office use, research, or construction. Identify how these costs were estimated (i.e., quotes, past experience, engineering estimates, or other methodology).

The application includes material costs for 5/8" and 1" meters, radio transmitters, installation brackets and freeze protection mats. The quantities of Double versus Single SmartPoint Radios are estimated based upon current trends. The ability to utilize a double radio (a single radio that reports activity from two separate, compatible meters) is dictated by the location of the existing meter boxes and therefore cannot be more accurately estimated at this stage. Similarly, the ratio of 5/8" meters to 1" meters will be dictated by the needs of each location and therefore these quantities may vary slightly from the proposed budget, which is based upon current installation trends.

Contractual

There is no contractual work associated with this project.

Environmental and Regulatory Compliance Costs

Applicants must include a line item in their budget to cover environmental compliance costs.

The amount of the line item should be based on the actual expected environmental compliance costs for the project, including Reclamation's cost to review environmental compliance documentation. However, the minimum amount budgeted for environmental compliance should be equal to at least one to two percent of the total project costs. If the amount budgeted is less than one to two percent of the total project costs, you must include a compelling explanation of why less than one to two percent was budgeted.

After consulting with Reclamation staff on funding required for USBR to conduct any environmental compliance activities, including Reclamation's cost to review environmental compliance documentation, DWP has budgeted $1,000 for USBR environmental review costs.

Other Expenses

No other expenses are anticipated for this project.

Indirect Costs

No indirect cost reimbursement is being requested for this project.

Total Costs

The total costs projected for Phase III of the AMI Program is $730,778.12. Of this total $430,778.12 (58.9%) will be funded from non-federal sources and if awarded, up to $300,000 (41.1%) will be funded from proceeds awarded under BOR-DO-17-F012.

UNIQUE ENTITY IDENTIFIER AND SYSTEM FOR AWARD MANAGEMENT

The DWP is registered with SAM, ASAP and Grants.gov. The BBLDWP unique entity identifier has been provided in the SF-424. SAM registration will be maintained throughout the grant period.

Exhibit 1. Meter Testing Set by Installation Date

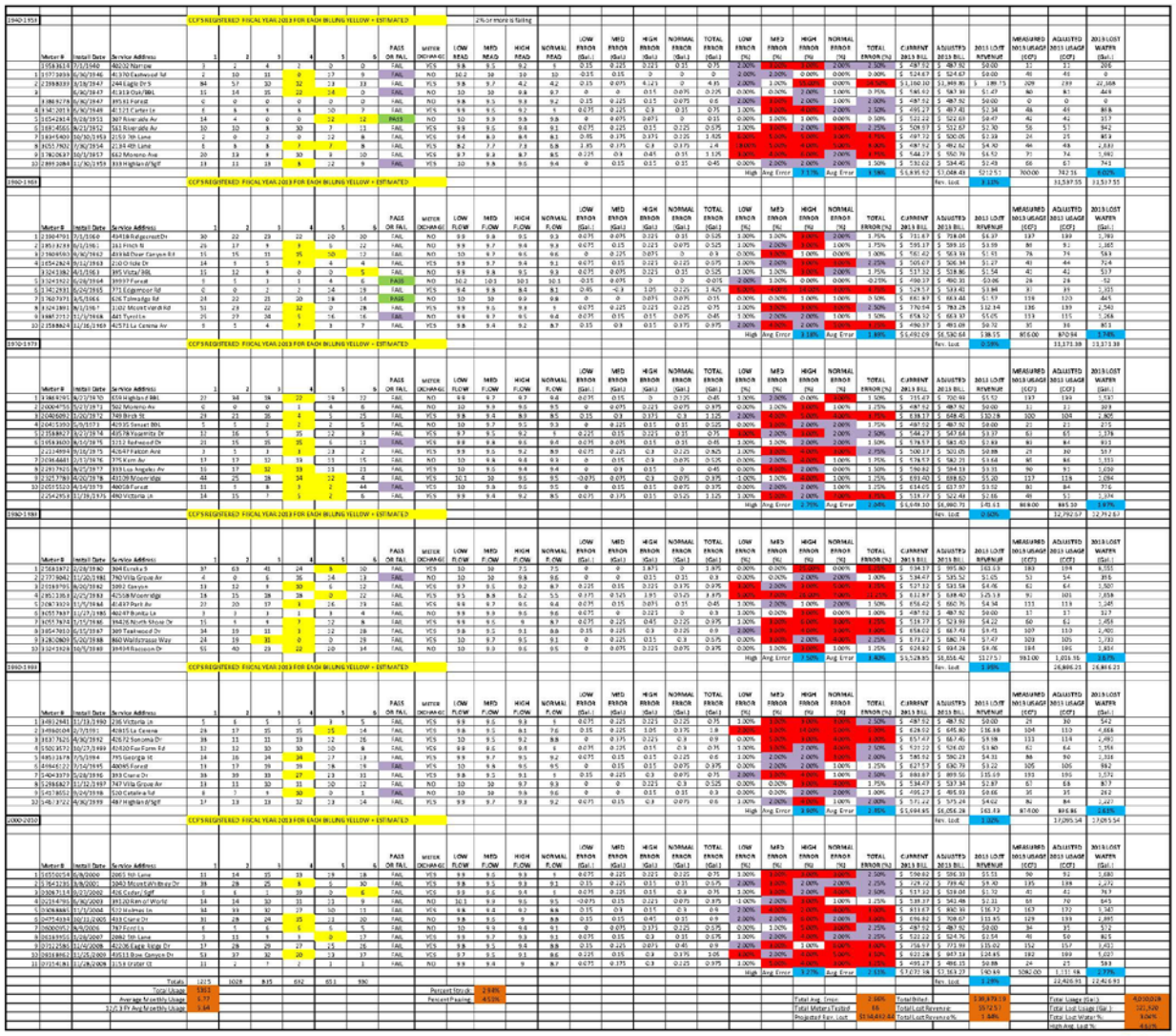

Exhibit 2. Meter Testing Set: Statistically Random (Left)

										CCF'S REGISTERED FISCAL YEAR 2013 FOR EACH BILLING RED = ESTIMATED										
	Account #	Meter #	Install Date	Meter Size	Service Address	1	2	3	4	5	6	7	8	9	10	11	12	PASS OR FAIL	METER EXCHANGE	WORK ORDER #
1	102014000	56837457	10/24/1997	5/8" 4 spin	402 HIGHLAND/SGLF	-	-	-	-	11	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	YES	22697
2	041048000	27124526	11/10/1983	5/8" 3 spin	462 MORENO AV	1	2	1	2	1	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	YES	22700
3	001094000	36128339	5/7/1996	5/8" 4 spin	182 HIGHLAND/SGLF	-	2	1	-	-	-	N/A	N/A	N/A	N/A	N/A	N/A	PASS	NO	22705
4	102911000	03128182	9/18/2000	5/8" 4 spin	435 MORENO AV	-	-	-	-	-	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	YES	22725
5	001179000	29189818	7/15/2002	5/8" 4 spin	318 HIGHLAND/SGLF	-	1	2	1	5	182	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	YES	22732
6	100056000	25278206	12/4/2001	5/8" 3 spin	2176 5TH LANE	6	9	16	-	16	64	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22677
7	042703000	04082976	5/31/2001	5/8" 4 spin	2179 6TH LANE	3	2	3	1	3	4	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22708
9	100604000	06432133	5/30/2007	5/8" 4 spin	600 COVE DR	6	24	1	46	23	9	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22707
10	100930000	06720287	12/1/2005	5/8" 4 spin	368 PULASKI RD	4	11	2	13	18	3	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22720
11	004356000	08169013	3/13/2000	5/8" 4 spin	269 KERN AVE	20	17	16	11	8	18	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	YES	22685
12	021391000	57205545	8/14/2000	5/8" 4 spin	674 MAPLE LN	2	1	-	-	1	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22712
13	003896000	01037573	8/21/1998	5/8" 4 spin	170 SAN BERNARDINO AV	-	-	2	2	2	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	YES	22734
14	043792000	09002068	8/2/2002	5/8" 4 spin	177 KNOLL DR	60	77	44	29	22	18	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	YES	22682
15	009401000	00479172	10/24/2000	5/8" 4 spin	890 EUREKA DR	-	-	-	-	-	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	YES	22680
16	007980000	54031924	10/29/1980	5/8" 4 spin	40055 SIERRA TRAIL	-	-	1	-	-	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22695
17	102034000	46678266	9/7/1989	5/8" 4 spin	619 GEORGIA ST	-	-	1	14	7	4	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22719
18	043095000	03035405	12/14/1988	5/8" 4 spin	1056 EAGLE MTN DR	14	12	13	12	14	13	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22689
19	017648000	54031923	8/29/1983	5/8" 4 spin	1030 DIVISION DR	21	15	14	10	2	8	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22706
20	009695000	50597681	5/6/1996	5/8" 4 spin	43255 SAND CANYON	-	-	-	2	6	1	N/A	N/A	N/A	N/A	N/A	N/A	PASS	NO	22676
21	010152000	33241431	3/21/2000	5/8" 4 spin	43667 RIDGECREST DR	-	-	-	-	-	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22683
22	009554000	56550347	3/4/2004	5/8" 4 spin	43223 SUNSET/BBL	2	1	1	-	2	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22693
23	103600000	09708423	9/15/2009	5/8" ECR 4	43136 SHEEPHORN RD	26	24	6	12	-	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22713
24	034235000	55920645	1/24/1997	5/8" 4 spin	43627 RIDGECREST DR	8	6	4	-	3	1	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22715
25	013406000	02061658	9/19/2008	5/8" 4 spin	359 STARLIGHT	35	22	19	1	-	14	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22704
26	035279000	02061654	6/30/2004	5/8" 4 spin	481 STARLIGHT CIR	19	18	8	20	16	12	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22726
27	015125000	34980005	10/20/1983	5/8" 4 spin	1501 TUOLUMNE RD	-	2	-	-	-	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22686
28	032326001	49915941	7/12/2001	5/8" 4 spin	1035 BUTTE AV	2	3	1	11	5	2	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22702
30	101168000	49579689	7/6/2001	5/8" 4 spin	991 ALPINE WAY	10	8	11	6	5	10	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22716
31	019497001	07036072	12/19/1975	5/8" 4 spin	782 HOLMES LN	-	-	-	-	-	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22678
32	038967000	52986773	7/17/2002	5/8" 4 spin	722 MORENO AV	-	-	-	-	-	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22694
33	020012000	47829080	6/10/2002	5/8" 4 spin	604 VICTORIA LN	2	-	2	-	-	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22696
34	034835002	02078573	9/29/1980	5/8" 4 spin	680 HIGHLAND/SGLF	2	4	2	2	2	4	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22728
35	022168000	08090984	6/12/1996	5/8" 4 spin	515 WAYNOKA LN	4	2	-	1	1	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22699
36	022746000	46297481	8/9/1991	5/8" 4 spin	40226 GUINAN LN	16	19	8	3	1	15	N/A	N/A	N/A	N/A	N/A	N/A	PASS	NO	22703
37	022500000	33410966	7/7/2000	5/8" 4 spin	611 TALMADGE RD	-	-	-	1	-	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22721
38	021005000	36133336	5/30/2008	5/8" 4 spin	451 EDGEMOOR RD	3	1	-	-	2	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22735
39	023886000	56783291	5/17/1995	5/8" 4 spin	40185 MILLCREEK RD	-	-	-	-	-	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22684
40	039192000	11514833	8/11/1998	5/8" 4 spin	523 TIMBER LN	-	2	2	1	-	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22723
41	033378000	01037519	8/22/2006	5/8" 4 spin	380 CONKLIN RD	1	-	-	1	10	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22688
42	100156000	04030652	8/14/1997	5/8" 4 spin	42084 SNOWMASS LN	13	10	10	8	25	13	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22698
43	033820000	49991875	8/15/1994	5/8" 4 spin	41398 EASTWOOD RD	7	7	2	18	69	1	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22709
44	026160000	52542651	8/2/1995	5/8" 4 spin	209 EAGLE DR S	-	2	4	-	5	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22730
45	012234000	48818926	8/8/2013	5/8" 4 spin	42580 CONSTELLATION DR	9	1	-	-	-	1	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22681
46	102159000	51713473	12/17/1992	5/8" 4 spin	42923 FALLS RD	28	7	-	1	1	-	N/A	N/A	N/A	N/A	N/A	N/A	PASS	NO	22687
47	012898000	55920696	9/25/2001	5/8" 4 spin	127 MARINA POINT DR	45	23	6	7	5	28	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22690
48	043020000	17129716	9/22/1988	5/8" 3 spin	1298 BALSAM DR	3	5	10	3	17	9	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22711
49	103144000	55920690	9/6/1991	5/8" 4 spin	41821 GARSTIN DR	-	-	1	-	12	1	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22733
50	039371000	33869256	12/22/2011	5/8" 4 spin	42775 PEREGRINE AV	20	20	5	14	17	42	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22691
51	027728000	06546447	7/31/1992	5/8" ECR 4	42735 MOONRIDGE	20	1	4	13	6	4	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22731
52	103420000	08046202	9/1/2005	5/8" 4 spin	42677 CEDAR/BBL	1	1	5	2	4	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22736
54	034457000	55920708	8/8/2003	5/8" 4 spin	1137 RIDGE RD	54	36	19	7	14	35	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22717
55	033166000	28991102	3/23/2000	5/8" 4 spin	1176 CRAGS LN	4	-	2	-	8	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22718
56	029493000	52826209	9/21/1983	5/8" 4 spin	39305 MOHAWK DR	1	-	-	-	-	-	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22729
57	103090000	01066115	7/2/1998	5/8" 4 spin	42823 SONOMA DR	9	14	3	3	1	11	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22722
58	031311000	36133323	1/17/1994	5/8" 4 spin	43082 GRIZZLY RD	2	2	1	3	3	2	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22724
59	025573000	28991078	3/24/2000	5/8" 4 spin	336 KNIGHT AV	18	16	18	12	13	8	10	14	13	16	15	21	FAIL	YES	22701
60	011350000	02014110	4/21/1991	1 1/2" ECR 5	129 OLYMPIC DR #29	34	32	35	29	34	16	50	20	42	25	21	38	PASS	NO	22714
					Totals	535	462	306	322	420	553	60	34	55	41	36	59			
					Total Usage	2883						Percent Struck:		3.33%						
					Average Monthly Usage	4.21						Percent Passing:		8.33%						
					12/13 FY Avg Usage	5.64														
Stuck meter detected in this testing process																				
Stuck meter replaced recently and no usage registered																				
8	005745000	28511264	4/1/2009	5/8" 4 spin	2050 5TH LANE	0	0	0	3	1	3	N/A	N/A	N/A	N/A	N/A	N/A	Stuck Meter	YES	22727
29	042767000	01080792	9/15/2009	5/8" 4 spin	617 VILLA GROVE	1	0	0	0	0	0	N/A	N/A	N/A	N/A	N/A	N/A	Stuck Meter	YES	22710
53	039796000	04115779	8/7/1991	5/8" 4 spin	39737 FLICKER RD	0	0	0	0	0	0	N/A	N/A	N/A	N/A	N/A	N/A	FAIL	NO	22692
					Totals	1	0	0	3	1	3									
					Total Usage	8														

Exhibit 2. Meter Testing Set: Statistically Random (Right)

										2% or more is failing									
LOW READ	MED READ	HIGH READ	NORMAL READ	LOW ERROR (Gal.)	MED ERROR (Gal.)	HIGH ERROR (Gal.)	NORMAL ERROR (Gal.)	TOTAL ERROR (Gal.)	LOW ERROR (%)	MED ERROR (%)	HIGH ERROR (%)	NORMAL ERROR (%)	AVERAGE ERROR (%)	CURRENT 2013 BILL	ADJUSTED 2013 BILL	2013 LOST REVENUE	MEASURED 2013 USAGE (CCF)	ADJUSTED 2013 USAGE (CCF)	2013 LOST WATER (Gal.)
9.7	9.4	9.0	8.6	0.225	0.225	0.3	0.3	1.05	3.00%	3.00%	4.00%	4.00%	3.50%	$ 495.27	$ 496.21	$ 0.94	11	11	288
9.7	9.4	8.8	8.4	0.225	0.225	0.45	0.3	1.2	3.00%	3.00%	5.00%	4.00%	4.00%	$ 487.92	$ 487.92	$ -	7	7	209
10.0	10.1	10.0	9.9	0	-0.075	0.075	0.075	0.075	0.00%	-1.00%	1.00%	1.00%	0.25%	$ 487.92	$ 487.92	$ -	3	3	6
10.0	9.8	9.4	8.8	0	0.15	0.3	0.45	0.9	0.00%	2.00%	4.00%	5.00%	3.00%	$ 487.92	$ 487.92	$ -	-	-	-
9.4	9.1	8.7	8.7	0.45	0.225	0.3	0	0.975	6.00%	3.00%	4.00%	0.00%	3.25%	$ 1,969.34	$ 2,038.01	$ 68.67	191	197	4,643
10.0	9.9	9.7	9.5	0	0.075	0.15	0.15	0.375	0.00%	1.00%	2.00%	2.00%	1.25%	$ 758.01	$ 765.95	$ 7.94	111	112	1,038
10.1	9.8	9.6	9.3	-0.075	0.225	0.15	0.225	0.525	-1.00%	3.00%	2.00%	3.00%	1.75%	$ 487.92	$ 487.92	$ -	16	16	209
9.9	9.4	9.0	8.6	0.075	0.375	0.3	0.3	1.05	1.00%	5.00%	4.00%	4.00%	3.50%	$ 690.34	$ 704.10	$ 13.76	109	113	2,854
9.4	9.0	8.6	8.2	0.45	0.3	0.3	0.3	1.35	6.00%	4.00%	4.00%	4.00%	4.50%	$ 532.02	$ 536.65	$ 4.63	51	53	1,717
9.9	9.6	9.1	8.9	0.075	0.225	0.375	0.15	0.825	1.00%	3.00%	5.00%	2.00%	2.75%	$ 590.82	$ 596.88	$ 6.06	90	92	1,851
9.9	9.6	9.3	9.3	0.075	0.225	0.225	0	0.525	1.00%	3.00%	3.00%	0.00%	1.75%	$ 487.92	$ 487.92	$ -	4	4	52
9.7	9.2	8.8	8.2	0.225	0.375	0.3	0.45	1.35	3.00%	5.00%	4.00%	6.00%	4.50%	$ 487.92	$ 487.92	$ -	6	6	202
9.6	9.4	9.0	8.5	0.3	0.15	0.3	0.375	1.125	4.00%	2.00%	4.00%	5.00%	3.75%	$ 1,248.92	$ 1,307.61	$ 58.69	250	259	7,013
9.8	9.5	9.1	8.7	0.15	0.225	0.3	0.3	0.975	2.00%	3.00%	4.00%	4.00%	3.25%	$ 487.92	$ 487.92	$ -	-	-	-
9.9	9.6	9.4	9.3	0.075	0.225	0.15	0.075	0.525	1.00%	3.00%	2.00%	1.00%	1.75%	$ 487.92	$ 487.92	$ -	1	1	13
9.9	9.6	9.4	9.3	0.075	0.225	0.15	0.075	0.525	1.00%	3.00%	2.00%	1.00%	1.75%	$ 502.62	$ 503.22	$ 0.60	26	26	340
9.8	9.6	9.2	8.9	0.15	0.15	0.3	0.225	0.825	2.00%	2.00%	4.00%	5.00%	2.75%	$ 561.42	$ 566.68	$ 5.26	78	80	1,604
9.9	9.6	9.4	8.9	0.075	0.225	0.15	0.375	0.825	1.00%	3.00%	2.00%	5.00%	2.75%	$ 556.52	$ 561.10	$ 4.58	70	72	1,440
10.2	10.2	10.1	10.0	-0.15	0	0.075	0.075	0	-2.00%	0.00%	1.00%	1.00%	0.00%	$ 487.92	$ 487.92	$ -	9	9	-
9.5	9.0	7.9	7.5	0.375	0.375	0.825	0.3	1.875	5.00%	5.00%	11.00%	4.00%	6.25%	$ 487.92	$ 487.92	$ -	-	-	-
9.9	9.3	9.0	8.6	0.075	0.45	0.225	0.3	1.05	1.00%	6.00%	5.00%	4.00%	3.50%	$ 487.92	$ 487.92	$ -	6	6	157
10.0	9.9	9.0	8.8	0	0.075	0.675	0.15	0.9	0.00%	1.00%	9.00%	2.00%	3.00%	$ 582.92	$ 588.90	$ 5.98	68	70	1,526
9.7	9.4	8.9	8.5	0.225	0.225	0.375	0.3	1.125	3.00%	3.00%	5.00%	4.00%	3.75%	$ 487.92	$ 488.66	$ 0.74	22	23	617
9.8	9.5	8.9	8.5	0.15	0.225	0.45	0.3	1.125	2.00%	3.00%	5.00%	4.00%	3.75%	$ 640.47	$ 649.99	$ 9.52	91	94	2,553
9.9	9.4	9.1	9.0	0.075	0.375	0.225	0.075	0.75	1.00%	5.00%	3.00%	1.00%	2.50%	$ 598.17	$ 603.87	$ 5.70	93	95	1,739
10.0	9.7	9.3	9.0	0	0.225	0.3	0.225	0.75	0.00%	3.00%	4.00%	3.00%	2.50%	$ 487.92	$ 487.92	$ -	2	2	37
9.9	9.7	9.1	9.0	0.075	0.15	0.45	0.075	0.75	1.00%	2.00%	6.00%	1.00%	2.50%	$ 495.27	$ 495.94	$ 0.67	24	25	449
9.9	9.6	9.3	9.1	0.075	0.225	0.225	0.15	0.675	1.00%	3.00%	3.00%	2.00%	2.25%	$ 505.07	$ 507.22	$ 2.15	50	51	842
9.4	9.0	8.6	8.3	0.45	0.3	0.3	0.225	1.275	6.00%	4.00%	4.00%	3.00%	4.25%	$ 487.92	$ 487.92	$ -	-	-	-
9.8	9.6	9.3	8.9	0.15	0.15	0.225	0.3	0.825	2.00%	2.00%	3.00%	4.00%	2.75%	$ 487.92	$ 487.92	$ -	-	-	-
9.8	9.6	9.6	9.6	0.15	0.15	0	0	0.3	2.00%	2.00%	0.00%	0.00%	1.00%	$ 487.92	$ 487.92	$ -	4	4	30
10.0	9.9	9.5	9.3	0	0.075	0.3	0.15	0.525	0.00%	1.00%	3.00%	2.00%	1.75%	$ 487.92	$ 487.92	$ -	16	16	209
10.1	10.0	9.8	9.6	-0.075	0.075	0.15	0.15	0.3	-1.00%	1.00%	2.00%	2.00%	1.00%	$ 487.92	$ 487.92	$ -	8	8	60
10.1	10.0	9.9	10.0	-0.075	0.075	0.075	-0.075	0	-1.00%	1.00%	1.00%	-1.00%	0.00%	$ 551.62	$ 551.62	$ -	62	62	-
9.8	9.4	9.0	8.5	0.15	0.3	0.3	0.375	1.125	2.00%	4.00%	4.00%	5.00%	3.75%	$ 487.92	$ 487.92	$ -	1	1	28
9.8	9.4	9.2	8.6	0.15	0.3	0.15	0.45	1.05	2.00%	4.00%	2.00%	5.00%	3.50%	$ 487.92	$ 487.92	$ -	6	6	157
9.8	9.6	9.3	9.0	0.15	0.15	0.225	0.225	0.75	2.00%	2.00%	3.00%	3.00%	2.50%	$ 487.92	$ 487.92	$ -	-	-	-
9.9	9.8	9.4	9.4	0.075	0.075	0.3	0	0.45	1.00%	1.00%	4.00%	0.00%	1.50%	$ 487.92	$ 487.92	$ -	5	5	56
9.7	9.5	9.2	8.8	0.225	0.15	0.225	0.3	0.9	3.00%	2.00%	3.00%	4.00%	3.00%	$ 492.82	$ 493.56	$ 0.73	12	12	269
10.0	9.6	9.2	8.8	0	0.3	0.3	0.3	0.9	0.00%	4.00%	4.00%	4.00%	3.00%	$ 564.82	$ 571.34	$ 6.52	79	81	1,773
9.8	9.5	9.0	8.7	0.15	0.225	0.375	0.225	0.975	2.00%	3.00%	5.00%	3.00%	3.25%	$ 782.66	$ 802.84	$ 20.18	104	107	2,528
9.7	9.4	9.1	8.9	0.225	0.225	0.225	0.15	0.825	3.00%	3.00%	3.00%	2.00%	2.75%	$ 487.92	$ 487.92	$ -	11	11	226
10.0	9.9	9.7	9.5	0	0.075	0.15	0.15	0.375	0.00%	1.00%	2.00%	2.00%	1.25%	$ 490.37	$ 490.65	$ 0.28	11	11	103
10.0	9.9	10.0	10.0	0	0.075	-0.075	0	0	0.00%	1.00%	-1.00%	0.00%	0.00%	$ 540.72	$ 540.72	$ -	37	37	-
9.7	9.2	8.8	8.4	0.225	0.375	0.3	0.3	1.2	3.00%	5.00%	4.00%	4.00%	4.00%	$ 696.42	$ 711.61	$ 15.19	114	119	3,411
9.8	9.6	9.3	9.1	0.15	0.15	0.225	0.15	0.675	2.00%	2.00%	3.00%	2.00%	2.25%	$ 517.32	$ 519.30	$ 1.98	47	48	791
9.9	9.6	9.3	9.0	0.075	0.225	0.225	0.225	0.75	1.00%	3.00%	3.00%	3.00%	2.50%	$ 497.72	$ 498.46	$ 0.74	14	14	262
9.5	8.9	8.5	8.4	0.375	0.45	0.3	0.075	1.2	5.00%	6.00%	4.00%	1.00%	4.00%	$ 687.21	$ 702.69	$ 15.48	118	123	3,531
10.0	9.6	9.2	8.8	0	0.3	0.3	0.3	0.9	0.00%	4.00%	4.00%	4.00%	3.00%	$ 529.57	$ 532.00	$ 2.43	48	49	1,077
9.9	9.6	9.6	9.1	0.075	0.225	0	0.375	0.675	1.00%	3.00%	0.00%	5.00%	2.25%	$ 487.92	$ 487.92	$ -	13	13	219
9.9	9.6	9.3	8.9	0.075	0.225	0.225	0.3	0.825	1.00%	3.00%	3.00%	4.00%	2.75%	$ 850.75	$ 867.14	$ 16.39	165	170	3,394
9.6	9.1	8.8	8.4	0.3	0.375	0.225	0.3	1.2	4.00%	5.00%	3.00%	4.00%	4.00%	$ 487.92	$ 488.70	$ 0.78	14	15	419
9.8	9.6	9.5	9.4	0.15	0.15	0.075	0.075	0.45	2.00%	2.00%	1.00%	1.00%	1.50%	$ 487.92	$ 487.92	$ -	1	1	11
9.8	9.6	9.2	8.8	0.15	0.15	0.3	0.3	0.9	2.00%	2.00%	4.00%	4.00%	3.00%	$ 512.42	$ 514.92	$ 2.50	41	42	920
9.6	9.2	8.8	8.4	0.3	0.3	0.3	0.3	1.2	4.00%	4.00%	4.00%	4.00%	4.00%	$ 487.92	$ 487.92	$ -	13	14	389
9.3	8.5	4.4	3.7	0.525	0.6	3.075	0.525	4.725	7.00%	8.00%	41.00%	7.00%	15.25%	$ 1,019.70	$ 1,115.89	$ 96.19	174	201	20,499
10.0	10.0	10.0	10.0	0	0	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%	$ 2,334.72	$ 2,334.72	$ -	376	376	-
										High	Avg. Error	4.02%	Avg. Error	2.88%	$ 34,969.86	$ 35,345.14	$ 375.28	2883.00	2,978.94	3.33%
																Rev. Lost %	1.07%		71,761.25	71,761.25
											Total Avg. Error:		2.88%						
											Total Meters Tested		57	Total Billed:			$ 34,969.86		Total Usage (Gal.):	2,156,484
											Projected Rev. Lost		$102,069.07	Total Lost Revenue:			$375.28		Total Lost Usage (Gal.):	71,761
												Std Dev:	2.16%	Total Lost Revenue %:			1.07%		Total Lost Water %:	3.33%
										50 of 57 (87.7%) are within one Std Dev										
0.0	-10.0	0.0	-10.0	7.5	7.5	7.5	7.5	30	100.00%	100.00%	100.00%	100.00%	100.00%	$ 487.92	$ 487.92	$ -	7	-	(5,236)
0.0	-10.0	0.0	-10.0	7.5	7.5	7.5	7.5	30	100.00%	100.00%	100.00%	100.00%	100.00%	$ 487.92	$ 487.92	$ -	1	2	748
9.9	9.8	9.6	9.4	0.075	0.075	0.15	0.15	0.45	1.00%	1.00%	2.00%	2.00%	1.50%	$ 487.92	$ 487.92	$ -	-	-	-

Exhibit 3. Capital Improvement Plan

AGENDA REPORT

Service, Quality, Community

DATE: July 22, 2014

TO: Board of Commissioners

FROM: Reginald A. Lamson, General Manager

PREPARED BY: Danielle McGee, Administrative Manager
Steve Wilson, Water Superintendent

RE: **Proposed Five-Year Capital Improvement Plan (FY 14/15-FY18/19) and Meter Replacement Implementation Program**

Background:

During the June Board meeting, staff was directed to provide additional information for the proposed 5-Year Capital Improvement Plan. Staff was also directed to revise the Meter Replacement Implementation Program staff report. Staff has combined the Proposed Five-Year Capital Improvement Plan and the Meter Replacement Implementation reports.

Since 1989, the main focus of DWP's Capital Improvements has been on supply facilities and pipeline replacement. DWP has replaced several well pumping units and constructed new wells to improve the quantity and quality of our pumping facilities. By the fall of 2014, the pumping facilities within the Big Bear Lake / Moonridge System, Sugarloaf / Erwin Lake System, Fawnskin System and Lake William System will meet the Department of Public Health's requirement that the pumping capacity of a water system shall be capable of meeting the Maximum Day Demand; when the highest producing pumping unit is not in service. This fall, the Klamath Booster Pumping Plant and the Angels Camp Reservoir will be operational, which will increase our operational flexibility and efficiency.

During the third year of the proposed Capital Improvement Plan, the Sawmill Well Pumping Plant will be constructed. This plant will be designed to pump 350 GPM to the new Angels Camp Reservoir. This additional capacity can serve the Sugarloaf / Erwin Lake System or be efficiently transferred to the Big Bear Lake / Moonridge System via the new Klamath Booster. During the second year of the proposed Capital Improvement Plan, DWP staff will rehabilitate The Bear Mountain Slant Wells and put these gravity supply facilities back into service. The proposed Capital Improvement Plan provides funding for annual replacement of existing pumping units and the construction of a new well pumping plant every four years. Staff will continue to recommend projects that enhance gravity supply facilities and improve operational efficiency.

The storage capacities in three of the four water systems meet the operational, fire and emergency storage requirements. Only the storage capacity in the Lake William System is below the current standard (0.16 MG vs. 0.23 MG). The proposed Capital Improvement Plan provides

funding for Reservoir Rehabilitation Projects. The recently constructed and proposed supply facilities adequately address DWP's supply needs over the next five years. Staff has reviewed the condition of our storage reservoirs and estimates that reservoir recoating and repiping can be deferred for three or four years.

DWP replaced 5.5 mile of pipelines during the summer of 2012. DWP staff replaced a half mile of pipeline in the Erwin Lake area over the last year and a half. DWP has also constructed 1.7 miles of new pipelines associated with the Arrastre Creek Well and Angels Camp Reservoir Projects. DWP has installed 7.7 miles of new pipeline since the summer of 2012.

DWP has 11 miles of undersized (4-inch diameter or smaller) steel pipelines and a half mile of 12-inch steel main within Big Bear Blvd. that was installed in 1947/1948. The 12-inch Big Bear Blvd. water main is the last section of this important water main that requires replacement. The proposed Capital Improvement Plan will schedule replacing this section of pipe during the fourth year of the plan. Within the proposed Capital Improvement Plan, DWP staff will replace a 1,000 LF of undersized steel pipeline and will focus on areas prone to freezing and on steel water mains located within back lot easement; relocating those mains to street rights-of way.

Ten years ago, DWP averaged 40 – 50 main leaks per year. Now, DWP averages about twenty main line leaks per year. Because DWP has recently installed 7.7 miles of new water mains and because water main leaks have dropped to twenty per year, staff is proposing to minimize pipeline replacement until FY 2021/22. Starting in FY 2021/22 and beyond, DWP will have nearly four million per year to dedicate towards capital improvement projects and we can replace the remaining steel and undersized water mains at an accelerated rate. If a large section of water main fails before FY 2021/22, DWP has a Capital Improvement Project Reserve to take care of emergency replacements.

DWP has 15,526 meters within its Big Bear Service Area. Some of the meters are over 70 years old. The typical warranty on a meter is 10 years on moving parts and 20 years on the meter body. DWP has completed random accuracy testing of the meters and found that 5 meters out of 60 tested passed the 98% accuracy standard. Two of the 60 meters tested were stuck. Revenue lost based on the inaccuracy of the 60 meters tested (not including the two stuck meters) is $137,000 per year, which is projected over the 15,503 active meters. Also during the meter testing program, staff calculated that there are potentially 540 meters stuck within our system. The potential revenue lost due to the stuck meters is estimated at $24,000 per year (see attached Meter Testing Program Staff Report). Because of the age and inaccuracy of DWP's meters, it would be prudent to implement a meter replacement program.

DWP has installed 1,525 Hersey radio read meters with Itron 200W radios between 2006 and 2010. These meters have generally performed well but there have been some issues related to the operation of these radios and meters. The primary concern with DWP's radio read meters is the batteries are not lasting ten years and the meters had questionable accuracy. Customer service from the vendor for the Hersey/Itron system has been inconsistent. Itron has developed a new 100W radio that has additional features and its batteries are supposed to last 20 years.

The current meter and radio that DWP is using are obsolete. DWP has conducted extensive testing on eleven different meters (five different manufacturers) and are considering either the Hersey 420 composite meter or the Sensus AccuStream composite meter. DWP has researched five different radio read systems and are considering either the Itron 100W system or the Sensus 520M MXU system. DWP staff estimates that they could complete a meter change out program

in six years. A manual read meter system would cost about $1.2 million and a radio read meter system would cost about $3.3 million.

Replacing the existing Meter System has the following advantages:

1) Additional usage revenue because the existing meters are under measuring.
2) All stuck meters would be replaced.
3) A reduction in DWP's unaccounted for water.
4) A favorable Internal Rate of Return on DWP's investment of 8.6% with a payback period of about 10 years.

Replacing the existing Meter System has the following disadvantages:

1) Cost of new meters.

The radio read system has the following advantages:

1) Two meter technicians could be reassigned to other water system maintenance duties.
2) Final/initial meter reads can be done from the office (1,280 reads/yr.).
3) Eliminates check reads related to human error and usual usage (850 reads/yr.).
4) Eliminates estimating water usage during winter months, which saves time in the billing and customer service departments.
5) Provides hourly water usage information, which reduces customer service time related to explaining a disputed bill.
6) Notifies the office of a possible leak, which reduces customer service and customer field service time associated with a flooded house. It reduces the amount of property damage to the home. It will also reduce the leak adjustments.
7) Eliminates check reads associated with leaks (460 reads/yr.).
8) Injuries that occur while reading meters will be eliminated.
9) Eliminates vehicle expense related to reading the meters.
10) DWP's conservation department will have real-time usage data to assist them in monitoring high water users.
11) Customers can check their current usage via our web page.
12) The radio read system can send the customer an email to notify them of unusual usage. The customer will setup this feature via our web page.
13) A favorable Internal Rate of Return on DWP's investment of 6.9% with a payback period of about 11 years.

Note: Savings related to items 4, 5, 6, 8, and 9, are difficult to quantify and were not calculated.

The radio read system has the following disadvantages:

1) The equipment is more expensive than manual read meters.
2) The batteries in the radio and in the meter register have a 20 year life. The radios and at least the meter registers will need to be replaced every 20 years.
3) Annual costs for equipment and software maintenance agreements.

Staff recommends implementing a Radio Read Meter Replacement Program. Staff also recommends installing the Sensus Radio Read System. Staff bases this recommendation on

competitive pricing for the equipment, reduced annual fees, favorable reference regarding the equipment and customer service, Sensus meter passed both freeze tests, Hersey meter stuck after the second freeze test, and the simplicity of the Sensus Radio Read system.

Implementation of the Radio Read Program will be as follows:

1) Install the Sensus AMI network (2 collectors), which will read all of DWP's meter locations. Collectors to be installed by Sensus contractor.
2) DWP staff will replace the 1,525 Itron 200W radios with Sensus 520M MXU radios.
3) DWP will select areas that are remote from DWP's office (Fawnskin, 700 connections). DWP will select routes that have a history of repeated estimated usage. During the winter months, DWP will select routes that have minimal snow coverage so that the change out program can continue through the winter.
4) DWP staff will modify or replace the existing meter box so that it is a minimum of three feet deep, install a 4-inch diameter by 1 foot deep pipe below the meter and install an insulation pad above the new meter. The radio will be installed below the meter box lid. DWP will then program the radio and modify the radio location if radio reception is an issue.
5) As routes are converted to the radio-read system, meter technicians will be able to perform other important maintenance tasks (valve turning, hydrant maintenance, air valve maintenance, backflow program) that have previously been deferred. DWP staff plan on completing this project in six years.

Converting to a radio read system can facilitate outsourcing billing and cash receipts. Staff determined that during the proposed 6-year implementation period, staffing in Customer Accounts could not be reduced because the work involved to set up the new meters and remove old meters from the customer information system would more than offset any time savings from outsourcing.

When the implementation is completed, staff projects that hours required to develop the data files for export of meter reads, evaluate the accuracy of the billings, research exceptions reported by the outside agency, and import data back to the DWP's customer information system would require 15 hours per week. It would be difficult to attract and retain an employee with the required skill set for this position if it were reduced to a part-time position.

The costs associated with outsourcing billing are expected to be $40,500-$43,000 per year based upon a current quote from a compatible outsourcing company and adjusted for 2% annual inflation. If we were to hire a part time person, then the net annual savings would be approximately $36,000.

Outsourcing cash receipts could save approximately 5 hours per week in customer service and the maintenance fee for the remittance processing system. The cost to outsource this process based upon a current vendor quote exceeds the DWP's cost to perform these functions by approximately $3,600 per year.

Companies like Apple Valley Ranchos are able to effectively utilize outsourcing because there is support from the corporate headquarters that is not reflected in headcount at their local offices and there are economies of scale from outsourcing billings for multiple water companies. The parent company – Park Water – outsources billing for an estimated 48,000 customers compared to the DWP's processing bills for only 15,526.

Over the next five fiscal years, the capital improvement funds are estimated as follows:

FY14/15	FY15/16	FY16/17	FY17/18	FY18/19
$848,000	$1,086,000	$1,185,000	$1,272,000	$1,373,000

Considering the above information, staff is recommending the following five-year Capital Improvement Plan:

FY14/15

1) Replace 1,525 Itron 200W radios with Sensus 520M MXU radios; and Replace 1,065 existing meters with radio read meters.
2) Install complete Sensus AMI network.
3) Establish a Pumping Plant Replacement Reserve. At the end of FY 13/14, funding for Reservoir Rehabilitation of $120,000 was unutilized and returned to reserves. Staff would like to use this surplus to establish a Reservoir Rehabilitation Reserve. The FY 14/15 Budget provides an additional $170,000 for the Reservoir Rehabilitation Reserve. Staff is requesting the Board authorize funding an additional $35,582 for the Reservoir Rehabilitation Fund. Staff is requesting the Board authorize a budget adjustment to transfer this $325,582 into the proposed Pumping Plant Replacement Reserve.
4) Replace Division Well No. 5 Pumping Unit and Electrical Equipment.
5) Revise Atlas Maps and Hydraulic Model.
6) Upgrade Pontell Booster Station and Install Hydro-pneumatic Tank.

With only $848,000 in revenues expected for capital projects in FY 14/15, there will be a shortfall of $150,000. This shortfall can be funded if the Board authorizes the following:

1) Authorize using $150,000 of reserves to fund the Pontell Booster Pump Project. These funds were appropriated in FY 13/14 but not utilized.

FY15/16

1) Replace 2,590 existing meters with radio read meters.
2) In-house replacement of 1,000 LF of Steel Pipelines.
3) Fund Pumping Plant Replacement Reserve to $500,000.
4) Design the Sawmill Pumping Plant using current year's revenue of $70,000.
5) Rehabilitate Bear Mountain Slant Wells (in-house).
6) Pumping Unit Replacement.
7) Establish a Pipeline Replacement Reserve and fund to $47,322.

FY16/17

1) Replace 2,590 existing meters with radio read meters.
2) In-house replacement of 1,000 LF of Steel Pipelines.
3) Construct Sawmill Pumping Plant using the Pumping Plant Replacement Reserve.
4) Pumping Unit Replacement.
5) Fund the Pipeline Replacement Reserve to $288,062.
6) Fund the Reservoir Rehabilitation Reserve to 120,000.

7) Design the repiping and rehabilitation of the Yosemite Reservoir using current year's revenue of $80,000.
8) Design Pipeline Replacement – Big Bear Blvd. using current year's revenue of $50,000.

FY17/18

1) Replace 2,590 existing meters with radio read meters.
2) In-house replacement of 1,000 LF of Steel Pipelines.
3) Fund Pumping Plant Replacement Reserve to $100,000.
4) Pumping Unit Replacement.
5) Construct Big Bear Blvd. Pipeline using current year revenues of $311,938 and the balance of the Pipeline Replacement Reserves of $288,062.
6) Rehabilitate Yosemite Reservoir using current year revenues of $165,802 and $54,198 of the Reservoir Replacement Reserve.

FY18/19

1) Replace 2,590 existing meters with radio read meters.
2) In-house replacement of 1,000 LF of Steel Pipelines.
3) Increase Pumping Plant Replacement Reserve to $300,000.
4) Design a replacement well using current year's revenue of $70,000.
5) Design a reservoir rehabilitation project using current year's revenue of $80,000.
6) Pumping Unit Replacement.
7) Fund the Pipeline Replacement Reserve to $194,542.
8) Increase Reservoir Rehabilitation Reserve to $200,000.

Please see the attached spreadsheet for a summary of the costs for the above projects.

Financial Impact

A) Meter Replacement Program

FY14/15: $544,418
FY15/16: $554,260
FY16/17: $554,260
FY17/18: $554,260
FY18/19: $554,260

Manual Read option: $1.2 million over a six year period
Radio Read option: $3.3 million over a six year period
Replacing the meters will provide $161,000 additional water usage revenue
Radio read meters will reduce the meter reading expense by $163,000 per year
Radio read meters will reduce the check read expense by $33,000 per year
Radio read meters will reduce the final/initial reading expense by $27,000 per year
Internal Rate of Return for the Manual Read option is 8.6% with a 10 year payback period.
Internal Rate of Return for the Radio Read option is 6.9% with an 11 year payback period.
The Annual fees for the radio read equipment and software will be about $29,000 per year, after DWP has more than 5,000 radios installed.

7) Design the repiping and rehabilitation of the Yosemite Reservoir using current year's revenue of $80,000.
8) Design Pipeline Replacement – Big Bear Blvd. using current year's revenue of $50,000.

FY17/18

1) Replace 2,590 existing meters with radio read meters.
2) In-house replacement of 1,000 LF of Steel Pipelines.
3) Fund Pumping Plant Replacement Reserve to $100,000.
4) Pumping Unit Replacement.
5) Construct Big Bear Blvd. Pipeline using current year revenues of $311,938 and the balance of the Pipeline Replacement Reserves of $288,062.
6) Rehabilitate Yosemite Reservoir using current year revenues of $165,802 and $54,198 of the Reservoir Replacement Reserve.

FY18/19

1) Replace 2,590 existing meters with radio read meters.
2) In-house replacement of 1,000 LF of Steel Pipelines.
3) Increase Pumping Plant Replacement Reserve to $300,000.
4) Design a replacement well using current year's revenue of $70,000.
5) Design a reservoir rehabilitation project using current year's revenue of $80,000.
6) Pumping Unit Replacement.
7) Fund the Pipeline Replacement Reserve to $194,542.
8) Increase Reservoir Rehabilitation Reserve to $200,000.

Please see the attached spreadsheet for a summary of the costs for the above projects.

Financial Impact

A) Meter Replacement Program

FY14/15: $544,418
FY15/16: $554,260
FY16/17: $554,260
FY17/18: $554,260
FY18/19: $554,260

Manual Read option: $1.2 million over a six year period
Radio Read option: $3.3 million over a six year period
Replacing the meters will provide $161,000 additional water usage revenue
Radio read meters will reduce the meter reading expense by $163,000 per year
Radio read meters will reduce the check read expense by $33,000 per year
Radio read meters will reduce the final/initial reading expense by $27,000 per year
Internal Rate of Return for the Manual Read option is ~~8.6~~ 7.42% with a ~~10~~ 11 year payback period.
Internal Rate of Return for the Radio Read option is ~~6.9~~ 3.46% with an ~~11~~ 13 year payback period.
The Annual fees for the radio read equipment and software will be about $29,000 per year, after DWP has more than 5,000 radios installed.

B) Five-Year Capital Improvement Plan

FY14/15: $998,000
FY15/16: $1,086,000
FY16/17: $1,185,000
FY17/18: $1,272,000
FY18/19: $1,373,000

Recommendation

Approve the proposed five-year Capital Improvement Plan, the Sensus Radio Read Meter Replacement Program and the associated budget adjustments.

PROPOSED 5-YEAR CAPITAL IMPROVEMENT PLAN
EFFECTIVE 7/1/14

Description	Units	Cost/unit		Undesignated Reserves	Pumping Plant Reserve	Reservoir Reserve	Pipeline Replacement Reserve
Unused Funding - Reservoir Rehab FY 13/14			$ 120,000		$ 120,000		
Unused Funding - Pontell Booster Station FY 13/14			150,000	150,000			
Available Reserves from FY 13/14			**$ 270,000**	**$ 150,000**	**$ 120,000**	**$ -**	**$ -**
	FY 14/15						
Expected Revenues			$ 848,000				
Unused Funding - Pontell Booster Station FY 13/14			150,000				
FY 14/15 Proposed Funding			**$ 998,000**				
Replace 200W's with 520M MXU's Radios	1,525	$ 159.19	$ 242,768				
Replace Meters with Radio Read Meters	1,065	$ 210.00	$ 223,650				
Install Radio Read Network			78,000				
Fund Pumping Plant Replacement Reserve			205,582		205,582		
Replace Division Well # 5 Pumping Unit and Electrical Equipment			59,000				
Revise Atlas Maps and Hydraulic Model			39,000				
Upgrade Pontell Booster Station			150,000	(150,000)			
FY 14/15 Total Uses			**$ 998,000**	**$ -**	**$ 325,582**	**$ -**	**$ -**
	FY 15/16						
Expected Revenues			$ 1,086,000				
Replace Meters with Radio Read Meters	2,590	$ 214.00	$ 554,260				
Replace steel pipeline (in-house labor)	1,000	$ 100.00	100,000				
Fund Pumping Plant Replacement Reserve			174,418		174,418		
Design Sawmill Pumping Plant			70,000				
Rehabilitate Bear Mountain Slant Wells (in-house)			100,000				
Pumping unit replacement			40,000				
Fund Pipeline Replacement Reserve			47,322				47,322
FY 15/16 Total Uses			**$ 1,086,000**		**$ 500,000**	**$ -**	**$ 47,322**

PROPOSED 5-YEAR CAPITAL IMPROVEMENT PLAN
EFFECTIVE 7/1/14

Description	Units	Cost/unit		Undesignated Reserves	Pumping Plant Reserve	Reservoir Reserve	Pipeline Replacement Reserve
FY 16/17							
Expected Revenues			$ 1,185,000				
Pumping Plant Reserve			500,000		$ (500,000)		
FY 16/17 Proposed Funding			**$ 1,685,000**				
Replace Meters with Radio Read Meters	2,590	$ 214.00	$ 554,260				
Replace steel pipeline (in-house labor)	1,000	$ 100.00	100,000				
Pumping unit replacement			40,000				
Design Reservoir Project			80,000				
Design pipeline replacement - Big Bear Blvd.			50,000				
Construct Sawmill Well			500,000				
Fund Pipeline Replacement Reserve			240,740				240,740
Fund Reservoir Reserve			120,000			120,000	
FY 16/17 Total Uses			**$ 1,685,000**	**$ -**	**$ -**	**$ 120,000**	**$ 288,062**
FY 17/18							
Expected Revenues			$ 1,272,000				
Pipeline Replacement Reserve			$ 288,062				$ (288,062)
Reservoir Reserve			54,198			$ (54,198)	
FY 17/18 Proposed Funding			**$ 1,614,260**				
Replace Meters with Radio Read Meters	2,590	$ 214.00	$ 554,260				
Replace steel pipeline (in-house labor)	1,000	$ 100.00	100,000				
Fund Pumping Plant Replacement Reserve			100,000		100,000		
Pumping unit replacement			40,000				
Construct Big Bear Blvd pipeline			600,000				
Rehabilitate Yosemite Reservoir			220,000				
FY 17/18 Total Uses			**$ 1,614,260**		**$ 100,000**	**$ 65,802**	**$ -**

PROPOSED 5-YEAR CAPITAL IMPROVEMENT PLAN
EFFECTIVE 7/1/14

Description	Units	Cost/unit		Undesignated Reserves	Pumping Plant Reserve	Reservoir Reserve	Pipeline Replacement Reserve
FY 18/19							
Expected Revenues			$ 1,373,000				
Replace Meters with Radio Read Meters	2,590	$ 214.00	$ 554,260				
Replace steel pipeline (in-house labor)	1,000	$ 100.00	100,000				
Fund Pumping Plant Replacement Reserve			200,000		200,000		
Design Replacement Well			70,000				
Design Reservoir Project			80,000				
Pumping unit replacement			40,000				
Fund Pipeline Replacement Reserve			194,542				194,542
Fund Reservoir Reserve			134,198			134,198	
FY 18/19 Total Uses			**$ 1,373,000**	**$ -**	**$ 300,000**	**$ 200,000**	**$ 194,542**

Sensus Radio Read System

Description	Quantity	Unit Cost	Cost
5/8' X 3/4" AccuStream w/ SmartPoint	12,859	$ 175.00	$ 2,250,325.00
1" AccuStream w/ SmartPoint	214	$ 219.00	46,866.00
1 1/2" OMNI R2	38	$ 364.26	13,841.88
2" OMNI R2	79	$ 511.09	40,376.11
3" OMNI T2	1	$ 1,107.61	1,107.61
4" OMNI T2	5	$ 2,138.76	10,693.80
6" OMNI T2	3	$ 3,851.02	11,553.06
8" OMNI T2	1	$ 6,547.32	6,547.32
10" OMNI T2	1	$ 8,525.36	8,525.36
5/8' X 3/4" AccuStream w/ Double SmartPoint	400	$ 190.00	76,000.00
5/8' X 3/4" AccuStream w/ SmartPoint Cable Only	400	$ 72.23	28,892.00
SmartPoint with adaptor cable	1,425	$ 130.63	186,147.75
Double SmartPoint with adaptor cable	50	$ 145.63	7,281.50
SmartPoint Cable Only with adaptor cable	50	$ 34.06	1,703.00
Meter & Radio Sub-Total Cost	15,526		$ 2,689,860.39
8% Sales Tax			215,188.83
Meter & Radio Total Cost			$ 2,905,049.22
Note: DWP staff to install meters & radios			
DWP's Material Cost to Modify Meter Boxes	15,526	$ 21.00	$ 326,046.00
Sensus Base Station with installation	2	$ 34,000.00	$ 68,000.00
Hand Held with Command Link	1	N.C.	$ -
4-days of Sensus software training	1	$ 10,000.00	$ 10,000.00
Total Meter/Radio Costs			**$ 3,309,095.22**
Annual Fees:			
Year 1 & 2 Hosting Fee (Integration & set up included)			$ 14,000.00
Year 3 going forward			$ 22,500.00
Handhelds & Dock Maintenance Fees (Itron)			$ 1,572.48
Base Station Maintenance Fee (Year 2 going forward)			$ 5,000.00
Annual Fee Summary:			
Year 1			$ 15,572.48
Year 2			$ 20,572.48
Year 3+			$ 29,072.48

Itron/Hersey Radio Read System

Description	Quantity	Unit Cost	Cost
5/8' X 3/4" Hersey 420 Composite	13,659	$ 177.50	$ 2,424,472.50
1" Hersey PD meter	214	$ 293.75	62,862.50
1 1/2" Hersey PD meter	38	$ 474.50	18,031.00
2" Hersey PD meter	79	$ 523.50	41,356.50
3" MVR meter	1	$ 1,277.75	1,277.75
4" MVR meter	5	$ 1,703.75	8,518.75
6" MVR meter	3	$ 3,337.75	10,013.25
8" FM3 w/ Bypass meter	1	$ 5,382.50	5,382.50
10" FM3 w/ Bypass meter	1	$ 7,215.50	7,215.50
Replace 200W with 100W	325	$ 75.00	24,375.00
Meter & Radio Sub-Total Cost	14,326		2,603,505.25
8% Sales Tax			208,280.42
Meter & Radio Total Cost			$ 2,811,785.67
Notes: Itron to change out 1,200 existing 200W			
DWP staff to install meters & radios			
DWP's Material Cost to Modify Meter Boxes	15,526	$ 21.00	$ 326,046.00
Collector and Repeater installation	14	$ 2,500.00	$ 35,000.00
Itron Antenna Kit	150	$ 25.00	3,750.00
Itron Repeaters	8	$ 3,200.00	25,600.00
Itron Collectors	2	$ 4,450.00	8,900.00
8% Sales Tax			5,860.00
Set-up and Server Fee	1	$ 3,644.00	3,644.00
Hardware Total			$ 82,754.00
MC Lite Mobile Collector	1	N.C.	$ -
Total Meter/Radio Costs			**$ 3,220,585.67**
Annual Fees:			
Hosting Fee			$ 18,600.00
Handhelds & Dock Maintenance Fees (Itron)			$ 1,572.48
Hardware Maintenance Fees			$ 2,211.00
MVRS Software Support			$ 2,637.12
Fixed Network Maintenance Fee			$ 2,100.00
Total Annual Fees			**$ 27,120.60**

Hersey Manual System

Description	Quantity	Unit Cost	Cost
5/8' X 3/4" Hersey 420 Composite	13,625	$ 51.25	$ 698,281.25
1" Hersey PD meter	214	$ 160.00	$34,240.00
1 1/2" Hersey PD meter	38	$ 347.50	13,205.00
2" Hersey PD meter	79	$ 396.50	31,323.50
3" MVR meter	1	$ 1,117.25	1,117.25
4" MVR meter	5	$ 1,544.50	7,722.50
6" MVR meter	3	$ 3,179.25	9,537.75
8" FM3 w/ Bypass meter	1	$ 9,720.00	9,720.00
10" FM3 w/ Bypass meter	1	$ 15,200.00	15,200.00
Meter Sub-Total Cost	13,967		820,347.25
8% Sales Tax			65,627.78
Meter Total Cost			$ 885,975.03
Note: DWP staff to install meters			
DWP's Material Cost to Modify Meter Boxes	15,526	$ 21.00	$ 326,046.00
Total Meter Costs			$ 1,212,021.03

Sensus Manual System

Description	Quantity	Unit Cost	Cost
5/8' X 3/4" AccuStream	13,625	$ 48.32	$ 658,360.00
1" AccuStream	214	$ 107.86	23,082.04
1 1/2" OMNI R2	38	$ 364.26	13,841.88
2" OMNI R2	79	$ 511.09	40,376.11
3" OMNI T2	1	$ 1,107.61	1,107.61
4" OMNI T2	5	$ 2,138.76	10,693.80
6" OMNI T2	3	$ 3,851.02	11,553.06
8" OMNI T2	1	$ 6,547.32	6,547.32
10" OMNI T2	1	$ 8,525.36	8,525.36
Meter Sub-Total Cost	13,967		774,087.18
8% Sales Tax			61,926.97
Meter Total Cost			$ 836,014.15
Note: DWP staff to install meters			
DWP's Material Cost to Modify Meter Boxes	15,526	$ 21.00	$ 326,046.00
Total Meter Costs			$ 1,162,060.15

Exhibit 3. continued (Minutes)

MINUTES OF A REGULAR BOARD MEETING
CITY OF BIG BEAR LAKE
DEPARTMENT OF WATER AND POWER
BOARD OF COMMISSIONERS
JULY 22, 2014

OPEN SESSION
A Regular Meeting of the Board of Commissioners of the City of Big Bear Lake, Department of Water and Power was called to order at 9:00 a.m. by Chair Foulkes at 41972 Garstin Drive, Big Bear Lake, California.

BOARD MEMBERS PRESENT:
Steve Foulkes, Chair
Bill Giamarino, Vice Chair
Bob Tarras, Treasurer
Don Smith, Commissioner
Craig Hjorth, Commissioner

BOARD MEMBERS EXCUSED:
None

PLEDGE OF ALLEGIANCE
Bill Giamarino, Vice Chair

PUBLIC FORUM
No public comment was received during the Public Forum.

1. **CONSENT CALENDAR**

1.1 Approve Minutes of a Regular Board Meeting Dated June 24, 2014

1.4 Resolution No. DWP 2014-09, Adopting Modifications to Water Service Administrative Fees

1.5 Ratification of Well Pumping Unit Change Order for Division #6

1.6 Budget Adjustment – Emergency Repairs at Pontell Booster Station

1.7 Adopt a CEQA Categorical Exemption for Selling the Rimforest Surplus Lots

Motion made by Treasurer Tarras, seconded by Commissioner Smith, and carried 5-0 to approve Consent Calendar items 1.1, 1.4, 1.5, 1.6 and 1.7 as presented.

AYES: Foulkes, Giamarino, Tarras, Smith, Hjorth

ITEMS REMOVED FROM THE CONSENT CALENDAR

1.2 Authorize Purchase of Pickup Truck
Board discussed the size of the pickup truck with Management.

Motion made by Commissioner Smith, seconded by Treasurer Tarras, and carried 5-0 to approve Consent Calendar item 1.2 as presented.

AYES: Foulkes, Giamarino, Tarras, Smith, Hjorth

1.3 Resolution No. DWP 2014-08, Amending Policy #2011-01, Benefits and Working Conditions for Unrepresented Employees
Board discussed the proposed policy amendments with Management. Board directed staff to modify the health insurance section to specify employee premium pick-up scenario, and bring back for the Board's consideration. Board directed staff to review certification payment benefit at the end of 2016. Board requested staff check with legal counsel regarding discussed changes to retirement benefits.

2. DISCUSSION/ACTION ITEMS

2.1 Check Register 06/01/14 – 06/30/14

Board reviewed and discussed the check register for June 2014 with Management.

Motion made by Vice-Chair Giamarino, seconded by Treasurer Tarras, and carried 5-0 to authenticate the Check Register for June 2014 as presented.

AYES: Foulkes, Giamarino, Tarras, Smith, Hjorth

2.2 Revision to Leak Adjustment Credits

Board discussed the modification of leak adjustment factors with Administrative Manager McGee.

Motion made by Commissioner Smith, seconded by Commissioner Hjorth, and carried 5-0 to modify the leak adjustment factors to $0.72/CCF for the marginal cost of water, and $115 per incident for the service fee.

AYES: Foulkes, Giamarino, Tarras, Smith, Hjorth

2.3 DWP Office Building Solar Project

Board discussed the proposed solar project with General Manager Lamson.

Motion made by Treasurer Tarras, seconded by Vice-Chair Giamarino, and carried 5-0 to authorize staff to proceed with the proposed office-building solar project for a not to exceed amount of $350,000.

AYES: Foulkes, Giamarino, Tarras, Smith, Hjorth

2.4 Authorize Purchase of Backhoe

Board discussed the proposed backhoe purchase with Management.

Motion made by Vice-Chair Giamarino, seconded by Commissioner Smith, and carried 5-0 to authorize the purchase of a Backhoe from RDO Equipment Co. in the amount of $88,489, after trade-in of 1990 Case Backhoe.

AYES: Foulkes, Giamarino, Tarras, Smith, Hjorth

2.5 Tentative Five-Year Capital Improvement Plan (FY 14/15 – FY 18/19) and Meter Replacement Implementation Program

Board discussed the proposed five-year Capital Improvement Plan (CIP) with Management. General Manager Lamson provided the Board with a summary of the proposed CIP, including a detailed explanation of the proposed Meter Replacement Program.

Motion made by Vice-Chair Giamarino, seconded by Commissioner Smith, and carried 5-0 to approve the proposed five-year Capital Improvement Plan, including the Meter Replacement Program; and associated budget adjustment as presented.

AYES: Foulkes, Giamarino, Tarras, Smith, Hjorth

2.6 Resolution No. DWP 2014-10, Requesting that the City Council Consider Annexation of Parcels Outside the City Limits
Board discussed the resolution with Management.

Motion made by Commissioner Smith, seconded by Vice-Chair Giamarino, and carried 5-0 to approve Resolution No. DWP 2014-10, Requesting that the City Council Consider an Application to Annex Parcels Outside the City Limits Owned by the City of Big Bear Lake, DWP.

AYES: Foulkes, Giamarino, Tarras, Smith, Hjorth

2.7 New Pension Accounting Requirements
Board discussed the new pension accounting requirements with Administrative Manager McGee.

Motion made by Vice-Chair Giamarino, seconded by Commissioner Hjorth, and carried 5-0 to adopt the initial measurement date for compliance with GASB 68 as June 30, 2014.

AYES: Foulkes, Giamarino, Tarras, Smith, Hjorth

2.8 Award Installation of Telemetry Equipment at Arrastre Creek Well and Klamath Booster Station
Board discussed the installation of telemetry equipment with General Manager Lamson.

Motion made by Treasurer Tarras, seconded by Commissioner Smith, and carried 5-0 to award the proposed telemetry contract to Byrd Industrial Electronics in the amount of $33,821.87; and budget internally for a 10 percent contingency for a total amount of $37,200; and approve associated budget adjustment as presented.

AYES: Foulkes, Giamarino, Tarras, Smith, Hjorth

2.9 Award Emergency Repair at Lassen #4 Well
Board discussed the emergency repairs at Lassen #4 Well with Management.

Motion made by Vice-Chair Giamarino, seconded by Commissioner Smith, and carried 5-0 to approve the proposed emergency repairs at Lassen #4 Well; and award the contract to Romans Construction Co. in the amount of $14,800; and budget internally for a 10 percent contingency for a total amount of $16,280; and approve associated budget adjustment as presented.

AYES: Foulkes, Giamarino, Tarras, Smith, Hjorth

2.10 Management Reports
Board discussed Management Reports. Board directed staff to issue a public release regarding the State's Water Conservation Regulation that goes into effect August 1, 2014. Board directed staff to develop and propose a new water conservation incentive plan for the Board's consideration. Board requested staff discontinue reporting Rimforest production levels.

2.11 Board Member Reports
Commissioner Smith discussed a terrorist awareness training class he attended and recommends for DWP staff. Chair Foulkes informed the Board that he is running for the Bear Valley Unified School District Board. If elected, Chair Foulkes intends to resign from the DWP Board after the December 2014 meeting.

At 11.35 a.m. Chair Foulkes moved to recess without objection.

At 11:41 a.m. Chair Foulkes reconvened the meeting.

3. CLOSED SESSION
At 11:41 a.m. the Board went into closed session.

3.1 Closed Session Pursuant to Section 54956.95
Liability Claim
Claimant: Dominique Kreger
Agency Claimed Against: City of Big Bear Lake, Department of Water and Power

3.2 Closed Session Pursuant to Section 54956.95
Liability Claim
Claimant: David Delbridge
Agency Claimed Against: City of Big Bear Lake, Department of Water and Power

OPEN SESSION
At 12:09 p.m. the Board came out of closed session. No reportable action was taken.

ADJOURNMENT
No additional business came before the Board. At 12:09 p.m. Chair Foulkes adjourned the meeting.

Diego Chavez, Secretary
DWP Board of Commissioners

Approved at meeting dated:

Exhibit 4. Water Meter Specifications

Aqua Metric

Aqua Metric Sales Co. 4050 Flat Rock Dr. Riverside CA 92505, (951)- 637-1400 (951) 637-1500 f

Sensus Limited Warranty

G-500 R19

I. **General Product Coverage**
Sensus USA Inc. ("Sensus") warrants its products and parts to be free from defects in material and workmanship for one (1) year from the date of Sensus shipment and as set forth below. All products are sold to customer ("Customer") pursuant to Sensus' Terms of Sale, available at: https://sensus.com/TC/TermsConditions.pdf.

II. **SR II® and accuSTREAM™ 5/8", 3/4" & 1" Meters...**
are warranted to perform to AWWA New Meter Accuracy Standards for five (5) years from the date of Sensus shipment or until the registration shown below, whichever occurs first. Sensus further warrants that the SR II meter will perform to at least AWWA Repaired Meter Accuracy Standards for fifteen (15) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	New Meter Accuracy	Repair Meter Accuracy
5/8" SR II Meter and accuSTREAM Meter	500,000 gallons	1,500,000 gallons
3/4" SR II Meter and accuSTREAM Meter	750,000 gallons	2,250,000 gallons
1" SR II Meter and accuSTREAM Meter	1,000,000 gallons	3,000,000 gallons

III. **SR® 5/8", 3/4" & 1" Meters...**
are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment. Sensus further warrants that the 5/8", 3/4" and 1" SR meter will perform to at least AWWA Repaired Meter Accuracy Standards for fifteen (15) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	Repair Meter Accuracy
5/8" SR Meter	1,500,000 gallons
3/4" SR Meter	2,250,000 gallons
1" SR Meter	3,000,000 gallons

IV. **SR 1-1/2" & 2" Meters...**
are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment. Sensus further warrants that the 1-1/2" and 2" SR meter will perform to at least AWWA Repaired Meter Accuracy Standards for ten (10) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	Repair Meter Accuracy
1-1/2" SR Meter	5,000,000 gallons
2" SR Meter	8,000,000 gallons

V. **PMM® 5/8", 3/4", 1" Meters...**
are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment. Sensus further warrants that the 5/8", 3/4", and 1" PMM meter will perform to at least AWWA Repaired Meter Accuracy Standards for fifteen (15) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	Repair Meter Accuracy
5/8" PMM	1,500,000 gallons
3/4" PMM	2,000,000 gallons
1" PMM	3,000,000 gallons

VI. **PMM 1-1/2", 2" Meters...**
are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment. Sensus further warrants that the 1-1/2", and 2" PMM meter will perform to at least AWWA Repaired Meter Accuracy Standards for ten (10) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	Repair Meter Accuracy
1-1/2" PMM	5,000,000 gallons
2" PMM	8,000,000 gallons

VII. **IPERL™ Water Management Systems...**
that register water flow are warranted to perform to the accuracy levels set forth in the IPERL Water Management System Data Sheet (IPL-110), available at www.sensus.com/iperl or by request from 1-800-METER-IT, for twenty (20) years from the date of Sensus shipment. The IPERL System warranty does not include the external housing.

VIII. **Maincase...**
of the SR, SR II and PMM in both standard and low lead alloy meters are warranted to be free from defects in material and workmanship for twenty-five (25) years from the date of Sensus shipment. Composite and E-coated maincases will be free from defects in material and workmanship for fifteen (15) years from the date of Sensus shipment.

IX. **Sensus "W" Series Turbo Meters, OMNI™ Meters and Propeller Meters...**
are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment.

X. **Sensus accuMAG™ Meters...**
are warranted to be free from defects in material and workmanship, under normal use and service, for 18 months from the date of Sensus shipment or 12 months from startup, whichever occurs first.

XI. **Sensus Registers...**
are warranted to be free from defects in material and workmanship from the date of Sensus shipment for the periods stated below or until the applicable registration for AWWA Repaired Meter Accuracy Standards, as set forth above, are surpassed, whichever occurs first:

5/8" thru 2" SR, SR II, PMM, accuSTREAM Standard Registers	25 years
5/8" thru 2" SR, SR II, PMM, accuSTREAM Encoder Registers	10 years
Electronic Communication Index (ECI)	10 years
All HSPU, IMP Contactor, R.E.R. Elec. ROFI	1 year
Standard and Encoder Registers for: "W" Turbo and Propeller Meters	1 year
OMNI Register with Battery	10 years

XII. **Sensus Electric Meters...**
are warranted to be free from defects in material and workmanship for one (1) year from the date of Sensus shipment. Spare parts and components are warranted to be free from defects in material and workmanship for one (1) year from the date of Sensus shipment.

Repaired or refurbished equipment repaired by Sensus is warranted to be free from defects in material and workmanship for ninety (90) days from the date of Sensus shipment or for the time remaining on the original warranty period, whichever is longer.

XIII. **Batteries, iPERL System Components, AMR and FlexNet™ System AMI Interface Devices...**
are warranted to be free from defects in material and workmanship from the date of Sensus shipment for the period stated below:

Electronic TouchPads	10 years
RadioRead® MXU (Model 505C, 510R or 520R) and Batteries	20 years*
Act-Pak® Instrumentation	1 year
TouchRead® Coupler and AMR Equipment	1 year
FlexNet Water or Gas SmartPoint™ Modules and Batteries	20 years*
Hand Held Device	1 year
Vehicle Gateway Base Station	1 year
FlexNet Base Station (including the Metro and M400 base stations)	1 year
Echo Transceiver	1 year
Remote Transceiver	1 year
ICorA and FlexNet Electricity SmartPoint Module	1 year
IPERL System Battery and IPERL System Components	20 years*
Residential Electronic Register	20 years*

(continued)

sensus

Service, Quality, Community

Sensus Limited Warranty

*Sensus will repair or replace non-performing:

- RadioRead® MXU (Model 505C, 510R and 520R) and Batteries,
- FlexNet Water or Gas SmartPoint Modules (configured to the factory setting of six transmissions per day under normal system operation of up to one demand read to each SmartPoint Module per month and up to two firmware downloads during the life of the product) and batteries,
- Residential Electronic Register with hourly reads
- iPERL System Batteries, and/or the iPERL System flowtube, the flow sensing and data processing assemblies, and the register ("iPERL System Components") with hourly reads at no cost for the first ten (10) years from the date of Sensus shipment, and for the remaining ten (10) years, at a prorated percentage, applied towards the published list prices in effect for the year product is accepted by Sensus under warranty conditions according to the following schedule:

Years	Replacement Price	Years	Replacement Price
1-10	0%	16	55%
11	30%	17	60%
12	35%	18	65%
13	40%	19	70%
14	45%	20	75%
15	50%	>20	100%

Note: Software supplied and licensed by Sensus is warranted according to the terms of the applicable software license agreement. Sensus warrants that network and monitoring services shall be performed in a professional and workmanlike manner.

XIV. Return...

Sensus' obligation, and Customer's exclusive remedy, under this Sensus Limited Warranty is, at Sensus' option, to either (i) repair or replace the product, provided the Customer (a) returns the product to the location designated by Sensus within the warranty period; and (b) prepays the freight costs both to and from such location; or (ii) deliver replacement components to the Customer, provided the Customer installs, at its cost, such components in or on the product (as instructed by Sensus), provided, that if Sensus requests, the Customer (a) returns the product to the location designated by Sensus within the warranty period; and (b) prepays the freight costs both to and from such location. In all cases, if Customer does not return the product within the time period designated by Sensus, Sensus will invoice, and Customer will pay within thirty days of the invoice date, for the cost of the replacement product and/or components.

The return of products for warranty claims must follow Sensus' Returned Materials Authorization (RMA) procedures. Water meter returns must include documentation of the Customer's test results. Test results must be obtained according to AWWA standards and must specify the meter serial number. The test results will not be valid if the meter is found to contain foreign materials. If Customer chooses not to test a Sensus water meter prior to returning it to Sensus, Sensus will repair or replace the meter, at Sensus' option, after the meter has been tested by Sensus. The Customer will be charged Sensus' then current testing fee. Sensus SmartPoints modules and MXU's returned must be affixed with a completed return evaluation label. For all returns, Sensus reserves the right to request meter reading records by serial number to validate warranty claims.

For products that have become discontinued or obsolete ("Obsolete Product"), Sensus may, at its discretion, replace such Obsolete Product with a different product model ("New Product"), provided that the New Product has substantially similar features as the Obsolete Product. The New Product shall be warranted as set forth in this Sensus Limited Warranty.

THIS SECTION XIV SETS FORTH CUSTOMER'S SOLE REMEDY FOR THE FAILURE OF THE PRODUCTS, SERVICES OR LICENSED SOFT¬WARE TO CONFORM TO THEIR RESPECTIVE WARRANTIES.

XV. Warranty Exceptions and No Implied Warranties...

This Sensus Limited Warranty does not include costs for removal or installation of products, or costs for replacement labor or materials, which are the responsibility of the Customer. The warranties in this Sensus Limited Warranty do not apply to goods that have been: installed improperly or in non-recommended installations; installed to a socket that is not functional, or is not in safe operating condition, or is damaged, or is in need of repair; tampered with; modified or repaired with parts or assemblies not certified in writing by Sensus, including without limitation, communication parts and assemblies; improperly modified or repaired (including as a result of modifications required by Sensus); converted; altered; damaged; read by equipment not approved by Sensus; for water meters, used with substances other than water, used with non-potable water, or used with water that contains dirt, debris, deposits, or other impurities; subjected to misuse, improper storage, improper care, improper maintenance, or improper periodic testing (collectively, "Exceptions."). If Sensus identifies any Exceptions during examination, troubleshooting or performing any type of support on behalf of Customer, then Customer shall pay for and/or reimburse Sensus for all expenses incurred by Sensus in examining, troubleshooting, performing support activities, repairing or replacing any Equipment that satisfies any of the Exceptions defined above. The above warranties do not apply in the event of Force Majeure, as defined in the Terms of Sale.

THE WARRANTIES SET FORTH IN THIS SENSUS LIMITED WARRANTY ARE THE ONLY WARRANTIES GIVEN WITH RESPECT TO THE GOODS, SOFTWARE LICENSES AND SERVICES SOLD OR OTHERWISE PROVIDED BY SENSUS. SENSUS EXPRESSLY DISCLAIMS ANY AND ALL OTHER REPRESENTATIONS AND WARRANTIES, INCLUDING WITHOUT LIMITATION, WARRANTIES AS TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, NON-INFRINGEMENT AND TITLE.

SENSUS ASSUMES NO LIABILITY FOR COSTS OR EXPENSES ASSOCIATED WITH LOST REVENUE OR WITH THE REMOVAL OR INSTALLATION OF EQUIPMENT. THE FOREGOING REMEDIES ARE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES FOR THE FAILURE OF EQUIPMENT, LICENSED SOFTWARE OR SERVICES TO CONFORM TO THEIR RESPECTIVE WARRANTIES.

XVI. Limitation of Liability...

SENSUS' AGGREGATE LIABILITY IN ANY AND ALL CAUSES OF ACTION ARISING UNDER, OUT OF OR IN RELATION TO THIS AGREEMENT, ITS NEGOTIATION, PERFORMANCE, BREACH OR TERMINATION (COLLECTIVELY "CAUSES OF ACTION") SHALL NOT EXCEED THE TOTAL AMOUNT PAID BY CUSTOMER TO SENSUS UNDER THIS AGREEMENT. THIS IS SO WHETHER THE CAUSES OF ACTION ARE IN TORT, INCLUDING, WITHOUT LIMITATION, NEGLIGENCE OR STRICT LIABILITY, IN CONTRACT, UNDER STATUTE OR OTHERWISE.

AS A SEPARATE AND INDEPENDENT LIMITATION ON LIABILITY, SENSUS' LIABILITY SHALL BE LIMITED TO DIRECT DAMAGES. SENSUS SHALL NOT BE LIABLE FOR: (I) ANY INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES; NOR (II) ANY REVENUE OR PROFITS LOST BY CUSTOMER OR ITS AFFILIATES FROM ANY END USER(S), IRRESPECTIVE OF WHETHER SUCH LOST REVENUE OR PROFITS IS CATEGORIZED AS DIRECT DAMAGES OR OTHERWISE; NOR (III) ANY IN/OUT COSTS; NOR (IV) MANUAL METER READ COSTS AND EXPENSES; NOR (V) DAMAGES ARISING FROM MAINCASE OR BOTTOM PLATE BREAKAGE CAUSED BY FREEZING TEMPERATURES, WATER HAMMER CONDITIONS, OR EXCESSIVE WATER PRESSURE. "IN/OUT COSTS" MEANS ANY COSTS AND EXPENSES INCURRED BY CUSTOMER IN TRANSPORTING GOODS BETWEEN ITS WAREHOUSE AND ITS END USER'S PREMISES AND ANY COSTS AND EXPENSES INCURRED BY CUSTOMER IN INSTALLING, UNINSTALLING AND REMOVING GOODS. "END USER" MEANS ANY END USER OF ELECTRICITY/WATER/GAS THAT PAYS CUSTOMER FOR THE CONSUMPTION OF ELECTRICITY/WATER/GAS, AS APPLICABLE.

The limitations on liability set forth in this Agreement are fundamental inducements to Sensus entering into this Agreement. They apply unconditionally and in all respects. They are to be interpreted broadly so as to give Sensus the maximum protection permitted under law.

To the maximum extent permitted by law, no Cause of Action may be instituted by Customer against Sensus more than TWELVE (12) MONTHS after the Cause of Action first arose. In the calculation of any damages in any Cause of Action, no damages incurred more than TWELVE (12) MONTHS prior to the filing of the Cause of Action shall be recoverable.

8601 Six Forks Road, Suite 700
Raleigh, NC 27615
1-800-638-3748

SENSUS

Exhibit 5. Letters of Recommendation

PAUL COOK
8TH DISTRICT, CALIFORNIA

1222 LONGWORTH HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-5861

Congress of the United States
House of Representatives
Washington, DC 20515–0508

January 4, 2017

Bureau of Reclamation
Financial Assistance Services
Attn: Ms. Rupal Shah
P. O. Box 25007
Denver, Colorado 80225

RE: WaterSmart 2017: Advanced Metering Infrastructure Project

Ms. Shah,

It is my pleasure to submit this letter in support of the City of Big Bear Lake, Department of Water and Power (BBLDWP) Advanced Metering Infrastructure (AMI) Project. Sustained support of the AMI project will allow the BBLDWP to continue its conversion of old, outdated, and sometimes inaccurate, meters to "smart" meters. This project provides real-time radio reads of water consumption to the BBLDWP staff, allowing them to reduce water waste through active monitoring and leak detection along with enforcement of water regulations and enhanced customer engagement. The reduced need for manual meter reading will result in less driving, fewer emissions, and increased accuracy.

The BBLDWP serves a mountain community of approximately 15,600 connections and is somewhat unique in its need for AMI. Extreme weather conditions create significant water loss issues, as heavy winter snowfall sometimes requires that meter reads be estimated. This practice can result in leaks going undetected for long periods of time. In addition, many homeowners have an expectation of landscaping that may not be suitable for arid and high elevation properties and requires irrigation that is inconsistent with BBLDWP water conservation regulations. Lastly, the BBLDWP has no imported water so conservation is a constant. AMI will help the BBLDWP address all of these issues.

It is important to note that this project is in alignment with the Santa Ana Watershed Project Authority One Water One Watershed (OWOW) sustainability initiative identified in the Bureau of Reclamation's Basin Study.

Thank you for the opportunity to express my support for the efforts of BBLDWP as they seek external funding to provide a robust dataset for water management that will result in water and energy conservation.

Sincerely,

Col. Paul Cook (Ret.)
Congressman, 8th District of California

PRINTED ON RECYCLED PAPER

CAPITOL OFFICE
STATE CAPITOL
ROOM 3056
SACRAMENTO, CA 95814
TEL (916) 651-4023
FAX (916) 651-4923

DISTRICT OFFICE
10350 COMMERCE CENTER DRIVE
SUITE A-220
RANCHO CUCAMONGA, CA 91730
TEL (909) 919-7731
FAX (909) 919-7739

California State Senate

MIKE MORRELL
SENATOR, TWENTY-THIRD DISTRICT

COMMITTEES
PUBLIC EMPLOYMENT AND RETIREMENT
VICE CHAIR
BANKING & FINANCE
ENERGY

Bureau of Reclamation
Financial Assistance Services
Attn: Ms. Rupal Shah
P. O. Box 25007
Denver, Colorado 80225

RE: WaterSmart 2017: City of Big Bear Lake, Department of Water and Power - Advanced Metering Infrastructure Project

Ms. Shah,

It is my pleasure to write this letter in support of the City of Big Bear Lake, Department of Water and Power (BBLDWP) Advanced Metering Infrastructure (AMI) Project. Sustained support of the AMI project will allow the BBLDWP to continue to convert meters from old, outdated, and sometimes inaccurate, meters to "smart" meters. This project provides real time radio reads of water consumption to the BBLDWP staff, allowing them to reduce water waste through active monitoring and leak detection along with enforcement of water regulations and enhanced customer engagement. The reduced need for manual meter reading means less driving, less emissions, increased accuracy, increased customer engagement, more information and more conservation.

The BBLDWP serves a mountain community of about 15,600 connections and is somewhat unique in its need for AMI. First, extreme weather creates two water loss issues; heavy winter snows mean meter reads must sometimes be estimated, which means leaks can go undetected for months and freezing temperatures result in leaky pipes, wasted water and customer property damage. Second, nearly 70% of BBLDWP customers are second homeowners which can make leak detection and timely repair exceedingly difficult. In addition, some affluent homeowners have an expectation of landscaping that may not be suitable for arid and high elevation properties and requires irrigation that is inconsistent with BBLDWP water conservation regulations. Lastly, the BBLDWP has no imported water so conservation is a constant. AMI will help the BBLDWP address all of these issues.

Last but not least this project is in alignment with the Santa Ana Watershed Project Authority's One Water One Watershed (OWOW) sustainability initiative identified in the Bureau of Reclamation's Basin Study. In conclusion, I fully support the efforts of the BBLDWP as they seek external funding to support a program designed to provide a robust dataset for water management that will result in water and energy conservation.

Sincerely,

Senator Mike Morrell
California's 23rd District
State Capitol, Room 3056
Sacramento, CA 95814
916)651-4023

PRINTED ON RECYCLED PAPER

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0033
(916) 319-2033
FAX (916) 319-2133

DISTRICT OFFICE
15900 SMOKE TREE STREET, SUITE 125
HESPERIA, CA 92345
(760) 244-5277
FAX (760) 244-5447

Assembly
California Legislature

JAY OBERNOLTE
ASSEMBLYMAN, THIRTY-THIRD DISTRICT

COMMITTEES
VICE CHAIR: ARTS, ENTERTAINMENT, SPORTS, TOURISM, AND INTERNET MEDIA
VICE CHAIR: BUDGET
APPROPRIATIONS
UTILITIES AND COMMERCE
RULES (ALTERNATE)

SUBCOMMITTEES
BUDGET SUBCOMMITTEE NO. 6 ON BUDGET PROCESS, AND PROGRAM EVALUATION

JOINT COMMITTEES
JOINT COMMITTEE ON ARTS
JOINT LEGISLATIVE BUDGET

Bureau of Reclamation
Financial Assistance Services
Attn: Ms. Rupal Shah
P. O. Box 25007
Denver, Colorado 80225

RE: WaterSmart 2017: City of Big Bear Lake, Department of Water and Power - Advanced Metering Infrastructure Project

Ms. Shah,

It is my pleasure to write this letter in support of the City of Big Bear Lake, Department of Water and Power (BBLDWP) Advanced Metering Infrastructure (AMI) Project. Sustained support of the AMI project will allow the BBLDWP to continue to convert meters from old, outdated, and sometimes inaccurate, meters to "smart" meters. This project provides real time radio reads of water consumption to the BBLDWP staff, allowing them to reduce water waste through active monitoring and leak detection along with enforcement of water regulations and enhanced customer engagement. The reduced need for manual meter reading means less driving, less emissions, increased accuracy, increased customer engagement, more information and more conservation.

The BBLDWP serves a mountain community of about 15,600 connections and is somewhat unique in its need for AMI. First, extreme weather creates two water loss issues; heavy winter snows mean meter reads must sometimes be estimated, which means leaks can go undetected for months and freezing temperatures result in leaky pipes, wasted water and customer property damage. Second, nearly 70% of BBLDWP customers are second homeowners which can make leak detection and timely repair exceedingly difficult. In addition, some affluent homeowners have an expectation of landscaping that may not be suitable for arid and high elevation properties and requires irrigation that is inconsistent with BBLDWP water conservation regulations. Lastly, the BBLDWP has no imported water so conservation is a constant. AMI will help the BBLDWP address all of these issues.

Last but not least this project is in alignment with the Santa Ana Watershed Project Authority's One Water One Watershed (OWOW) sustainability initiative identified in the Bureau of Reclamation's Basin Study. In conclusion, I fully support the efforts of the BBLDWP as they seek external funding to support a program designed to provide a robust dataset for water management that will result in water and energy conservation.

Sincerely,

Assemblyman Jay Obernolte
33rd Assembly District
State Capitol Office: Room 4116
Sacramento, CA 94249
(916) 319-2033

Printed on Recycled Paper

Santa Ana Watershed Project Authority

OVER 45 YEARS OF INNOVATION, VISION, AND WATERSHED LEADERSHIP

One Water One Watershed
AWRA INTEGRATED WATER RESOURCES MANAGEMENT AWARD
HARVARD KENNEDY SCHOOL'S TOP 25 INNOVATIONS IN AMERICAN GOVERNMENT

January 10, 2017

Bureau of Reclamation
Financial Assistance Services
Attn: Ms. Rupal Shah
P. O. Box 25007
Denver, Colorado 80225

RE: WaterSmart 2017: City of Big Bear Lake, Department of Water and Power - Advanced Metering Infrastructure Project

Ms. Shah,

It is my pleasure to write this letter in support of the City of Big Bear Lake, Department of Water and Power (BBLDWP) Advanced Metering Infrastructure (AMI) Project. Sustained support of the AMI project will allow the BBLDWP to continue to convert meters from old, outdated, and sometimes inaccurate, meters to "smart" meters. This project provides real time radio reads of water consumption to the BBLDWP staff, allowing them to reduce water waste through active monitoring and leak detection along with enforcement of water regulations and enhanced customer engagement.

The BBLDWP serves a mountain community of about 15,600 connections and is somewhat unique in its need for AMI. First, extreme weather creates two water loss issues; heavy winter snows mean meter reads must sometimes be estimated, which means leaks can go undetected for months and freezing temperatures result in leaky pipes, wasted water and customer property damage. Second, nearly 70% of BBLDWP customers are second homeowners which can make leak detection and timely repair exceedingly difficult. In addition, some affluent homeowners have an expectation of landscaping that may not be suitable for arid and high elevation properties and requires irrigation that is inconsistent with BBLDWP water conservation regulations. Lastly, the BBLDWP has no imported water so conservation is a constant. AMI will help the BBLDWP address all of these issues.

Last but not least this project is in alignment with the Santa Ana Watershed Project Authority's One Water One Watershed (OWOW) sustainability initiative identified in the Bureau of Reclamation's Basin Study. In conclusion, I fully support the efforts of the BBLDWP as they seek external funding to support a program designed to provide a robust dataset for water management that will result in water and energy conservation.

Sincerely,

Celeste Cantú
General Manager

11615 Sterling Avenue, Riverside, CA 92503 • 951.354.4220
www.sawpa.org • www.sawpa.org/OWOW

BIG BEAR CITY
Community Services District

Bureau of Reclamation
Financial Assistance Services
Attn: Ms. Rupal Shah
P. O. Box 25007
Denver, Colorado 80225

RE: WaterSmart 2017: City of Big Bear Lake, Department of Water and Power - Advanced Metering Infrastructure Project

Ms. Shah,

It is my pleasure to write this letter in support of the City of Big Bear Lake, Department of Water and Power (BBLDWP) Advanced Metering Infrastructure (AMI) Project. Sustained support of the AMI project will allow the BBLDWP to continue to convert meters from old, outdated, and sometimes inaccurate, meters to "smart" meters. This project provides real time radio reads of water consumption to the BBLDWP staff, allowing them to reduce water waste through active monitoring and leak detection along with enforcement of water regulations and enhanced customer engagement. The reduced need for manual meter reading means less driving, less emissions, increased accuracy, increased customer engagement, more information and more conservation.

The BBLDWP serves a mountain community of about 15,600 connections and is somewhat unique in its need for AMI. First, extreme weather creates two water loss issues; heavy winter snows mean meter reads must sometimes be estimated, which means leaks can go undetected for months and freezing temperatures result in leaky pipes, wasted water and customer property damage. Second, nearly 70% of BBLDWP customers are second homeowners which can make leak detection and timely repair exceedingly difficult. In addition, some affluent homeowners have an expectation of landscaping that may not be suitable for arid and high elevation properties and requires irrigation that is inconsistent with BBLDWP water conservation regulations. Lastly, the BBLDWP has no imported water so conservation is a constant. AMI will help the BBLDWP address all of these issues.

Last but not least this project is in alignment with the Santa Ana Watershed Project Authority's One Water One Watershed (OWOW) sustainability initiative identified in the Bureau of Reclamation's Basin Study. In conclusion, I fully support the efforts of the BBLDWP as they seek external funding to support a program designed to provide a robust dataset for water management that will result in water and energy conservation.

Sincerely,

Scott Heule
General Manager

Office 909.585.2565 | After Hours Emergency 909.585.2567 | Fax 909.585.0025 | 139 E. Big Bear Blvd. | PO Box 558 | Big Bear City, CA 92314 | bbccsd.org