WaterSMART
WATER AND ENERGY EFFICIENCY GRANT PROGRAM

Funding Opportunity BOR-DO-17-F012

Automated Metering Infrastructure – Three Year Meter Installation Project

January 18, 2017

Riverside County, California

Eastern Municipal Water District
2270 Trumble Road
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I.A General Information

Date: January 18, 2017

Applicant: Eastern Municipal Water District

City, County, State: Perris, Riverside County, California

I.B Project Summary

The Automated Metering Infrastructure Expansion – Three Year Meter Installation Project (Project) will advance Eastern Municipal Water District's (EMWD/Eastern) implementation of automated metering. The proposed project involves the installation of 45,981 Advanced Metering Infrastructure (AMI) meters within EMWD's service area over the next three years. This Project is a phase of an ongoing project that has already installed approximately 62,120 AMI meters, with plans to install an additional 86,260 AMI in the next five years (from 2017 to 2021), inclusive of this Project's meters.

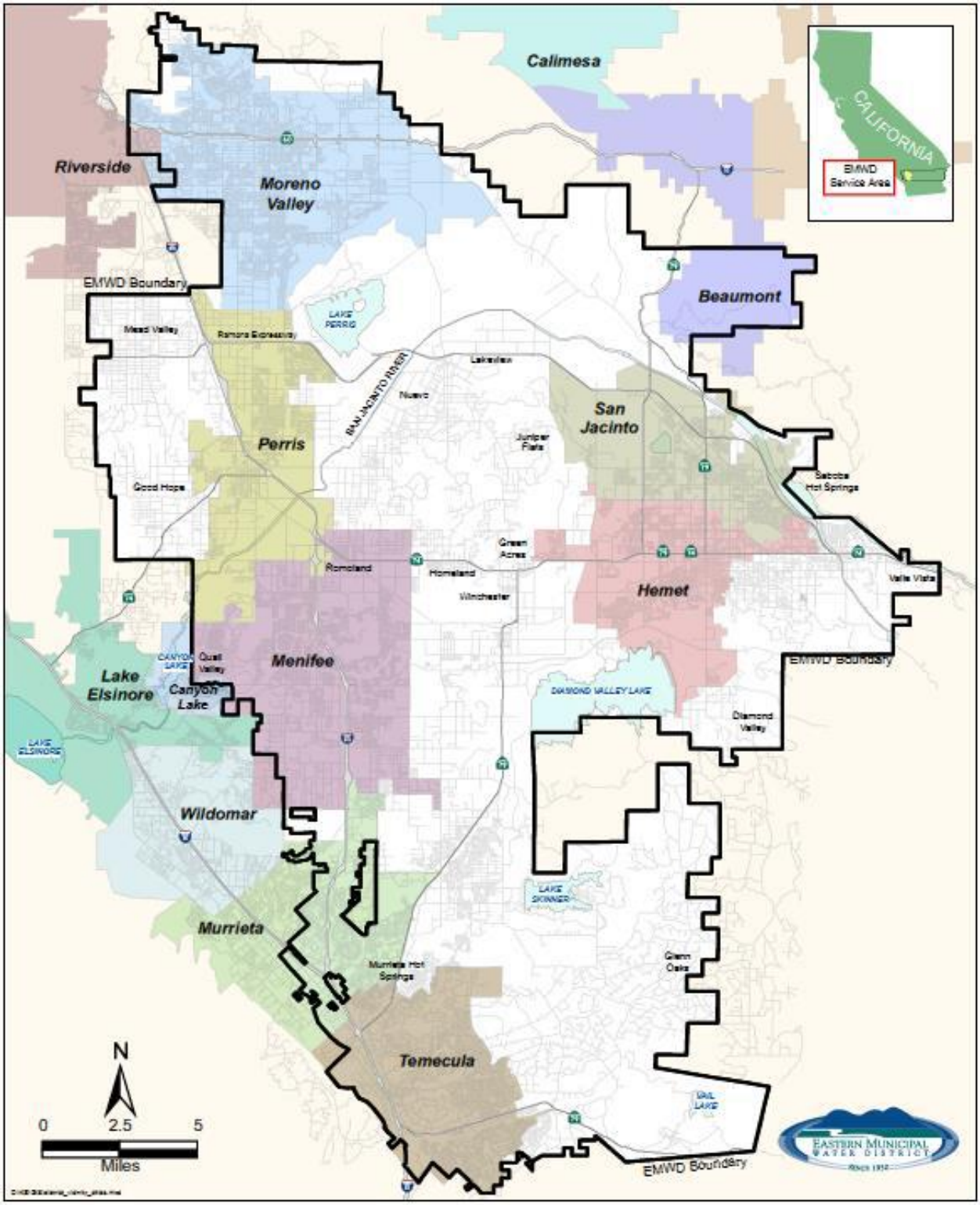
Project funding will be used to purchase and install the 45,981 AMI meters. The resulting full complement of AMI meters, used in conjunction with EMWD's existing AMI Tower Gateway Basestations (TGBs) and Meter Data Management System (MDMS), will allow full implementation of EMWD's information and communications technology system, which provides the tools to utilize AMI data for purposes such as leak detection, customer notification, use analysis, and conservation. The resulting water savings are estimated to be 1,945 acre-feet per year, with an associated energy savings of 47,145,775 kilowatt-hours (kWh) per year, and water savings of 3,649 acre-feet ongoing per year, achieved after five years, with an associated energy savings of 88,445,657 kWh per year. The Project is anticipated to begin in August 2017, and take approximately 36 months to complete. The Project is not located on a Federal facility.

II. BACKGROUND DATA:

II.A Geographic Location

Eastern is a regional public water and wastewater agency that provides service for a population of over 761,221 (32% of Riverside County) through 147,300 service connections. Eastern was formed in 1950 and annexed to Metropolitan Water District of Southern California (MWD, Metropolitan) in 1951, for the purpose of importing water to augment local groundwater supplies. Eastern serves as a wholesale provider of imported water to seven local public water systems, agricultural customers, and other private interests in addition to its retail customers. Eastern's service area encompasses 555 square miles in a semi-arid region in southwest Riverside County along Interstate 215. It is bounded on the west by Western Municipal Water District and Elsinore Valley Municipal Water District, on the north by the San Bernardino County Line, and on the south by the San Diego County Line. A vicinity map is included as Figure 1.

Figure 1. Eastern Municipal Water District Vicinity Map



II.B Source of Water Supply

Eastern is located in a semi-arid region in southwest Riverside County, California. For many years, Eastern has proactively developed local resources to help meet the needs of customers. These efforts include the development of a robust recycled water program and the desalination of local brackish groundwater. Even with these efforts, 54 percent of Eastern's total water supply is imported through the Metropolitan Water District of Southern California.

Eastern has four sources of water supply; imported water purchased from Metropolitan, local potable groundwater, local desalinated groundwater and recycled water. Total water supply for Eastern is made up of 50 percent imported water, 12 percent local potable groundwater, 4 percent desalted groundwater and 34 percent recycled water. Metropolitan delivers water from two sources; the State Water Project (SWP) and the Colorado River Aqueduct (CRA). Table 1, with information taken from the 2015 Urban Water Management Plan (UWMP), lists the past supply quantities by source. A map showing the location of Eastern's supplies is included as Figure 2.

Table 1. Retail Water Supply (AFY) 2010 – 2015

Type	Source	Percent	2010	2011	2012	2013	2014	2015
Imported - Treated	Metropolitan Water District	36%	49,700	47,000	53,200	52,300	52,900	36,800
Imported – Local Treated	Metropolitan Water District	13%	16,600	16,200	18,300	18,100	21,600	18,600
Imported – Raw	Metropolitan Water District	1%	500	700	600	800	800	900
Groundwater	Hemet/San Jacinto and West San Jacinto Basins	12%	15,700	17,500	15,500	18,800	12,000	15,300
Desalination	West San Jacinto Mgmt.	4%	5,800	5,700	5,700	4,800	6,776	7,300
Recycled	EMWD Regional Water Reclamation Facilities	34%	46,500	45,800	46,000	47,600	46,900	44,200
Total		**100%**	**134,800**	**132,900**	**139,300**	**142,400**	**140,976**	**123,100**

It is anticipated that the majority of the retail water demands within Eastern's jurisdiction caused by future development will be met through additional water imports from Metropolitan. Imported sources will be supplemented by an increase in desalination of brackish groundwater, recycled water and water use efficiency.

Figure 2. Eastern Municipal Water District Facilities Location Map

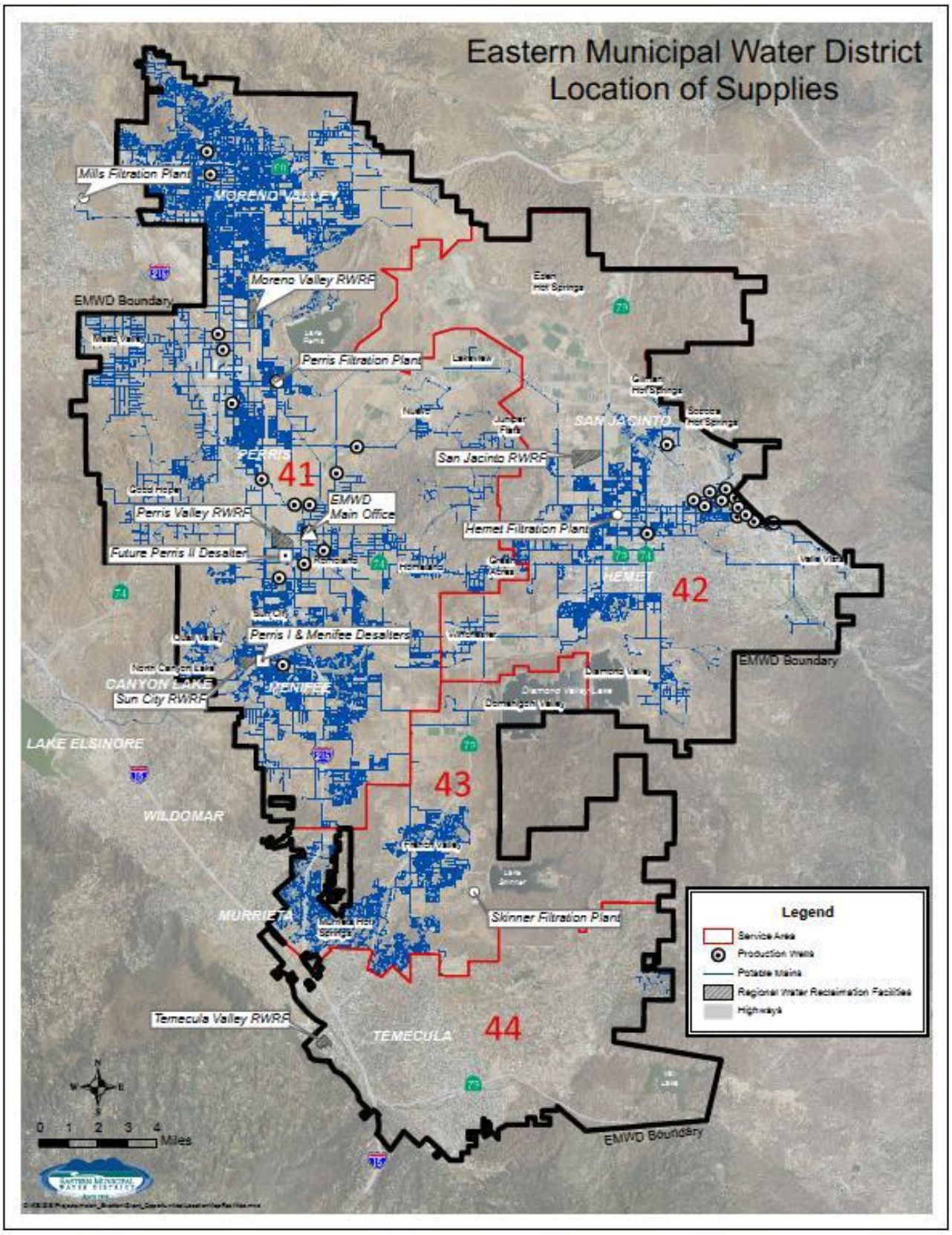


Table 2 lists the projected average of Eastern's existing water supply resources from 2020 – 2040 using information from the 2015 UWMP.

Table 2. Retail Water Supply Sources for 2020 – 2040 under Average Year Hydrology (AF)

	2020	2025	2030	2035	2040
Metropolitan Water District[1]	73,697	81,597	92,997	104,097	114,597
Groundwater	12,303	12,303	12,303	12,303	12,303
Desalters	7,000	10,100	10,100	10,100	10,100
Recycled Water	45,245	48,334	50,017	51,800	53,300
Total Supplies	**138,245**	**152,334**	**165,417**	**178,300**	**190,300**

(1) Imported water totals from Metropolitan Water District do not include 7,500 AF in annual deliveries for recharge purposes under the Soboba Settlement Agreement. This water is delivered to EMWD as the member agency of MWD but the groundwater supplies that result from this recharged water are divided between the Soboba Tribe and the participants of the Hemet/San Jacinto Groundwater Management Plan.

Eastern has identified several projects that would supplement imported supplies; retrofit of potable water landscape customers, indirect potable recharge and additional water use efficiency. These projects will offset the demand of existing water and free up resources for new development. Table 3 provides a summary of additional potential local supplies.

Table 3. Potential Additional Water Supplies 2020 – 2040 Under Average Year Conditions (AF)[1]

	2020	2025	2030	2035	2040
Full Utilization of Recycled Water (Potential IPR)[2]	18,500	18,500	18,500	18,500	18,500
Perris II Desalter	3,000 – 6,000	3,000 – 6,000	3,000 – 6,000	3,000 – 6,000	3,000 – 6,000
Moreno Valley Groundwater Development	2,000	2,000	2,000	2,000	2,000
North Perris Groundwater Development	1,000	1,000	1,000	1,000	1,000
Total Additional Supplies (Potential/Planned)	24,500 – 27,500	24,500 – 27,500	24,500 – 27,500	24,500 – 27,500	24,500 – 27,500

(1) Table indicates expected increase in water supplies to EMWD under average year hydrologic conditions. EMWD also plans for additional water supplies to be available during multiple dry year hydrology
(2) While the implementation of IPR is a potential future supply project, the volume is not included in EMWD's supply projections listed above in Table 2.

EMWD's service area is divided into three sub-areas (SA) for retail distribution of potable water, summarized in Table 4. The divisions are based on location, local water sources, existing water deliveries, and proximity to sources of imported water. Water can be transferred from one sub-area to another on a limited basis, but in general, the sub-areas are designed to operate independently using locally-accessible sources. In recent years, Eastern has had to move water into SA 42, from SA 41 and 43, to meet seasonal and maximum day demands (MDD).

Table 4. Sub Areas for Retail Water Distribution

Sub-Area	Sources	Communities
41	• 80.0 MGD connection to Mills WTP - Imported • 24 MGD Perris WFP – Imported – Local Treated • 6 MGD Menifee Desalter – Desalination • 5 MGD from 5 wells – Ground Water	Moreno Valley, Perris, Good Hope, Homeland, Juniper Flats, Lakeview, Mead Valley, Menifee, Nuevo, North Canyon Lake, Quail Valley, Romoland, Sun City
42	• 28 MGD from 14 wells – Ground Water • 12 MGD Hemet WFP – Imported – Local Treated	Hemet, San Jacinto, Winchester; Green Acres, Eden Hot Springs, Soboba Hot Springs, Gilman Hot Springs, Valle Vista, Diamond Valley
43	• 87 MGD connection to Skinner WTP - Imported	Temecula, Murrieta, Murrieta Hot Springs, French Valley, Domenigoni Valley

II.B.1. Local Resources

In an effort to reduce dependency on imported water from Metropolitan, Eastern has developed several programs designed to take advantage of local resources. High-quality groundwater is a source of water for local customers in the Hemet/San Jacinto area. In the West San Jacinto Basin, groundwater is blended with imported water for use in the western portion of Eastern's service area.

Eastern has constructed two desalination facilities (desalter) in the west San Jacinto groundwater basin area; a third desalter has been designed, and is scheduled to come online between 2020 and 2025. Desalters recover poor quality groundwater with high levels of total dissolved solids (TDS), and produce water that enters Eastern's potable distribution system. In addition to groundwater extraction, Eastern is one of the leading suppliers of recycled water in Southern California.

II.B.2. Groundwater Recharge

Through pilot programs and using temporary facilities, Eastern has recharged groundwater in the Hemet/San Jacinto area with imported surplus water from Metropolitan since 1990. In April of 2004, Eastern, Lake Hemet Municipal Water District (LHMWD), and the Cities of Hemet and San Jacinto executed a Memorandum of Understanding (MOU) for an Interim Water Supply Plan. The purpose of the plan was to address the deteriorating situation in the Hemet/San Jacinto area by providing recharge of imported water from the State Water Project into the aquifer at two sites – the Conjunctive Use Ponds in the Intake portion of the San Jacinto Upper Pressure Management Zone, and the Grant Avenue Ponds in the Canyon Management Zone.

From 2004 through 2007, the amount of water recharged into the aquifer from the SWP was 20,819 AF. Due to dry conditions, environmental restriction, and the level of demands in its service area, Metropolitan curtailed Replenishment Service in May 2007. Since then, permits to recharge water at the two sites have expired. To replace the temporary recharge facilities, long term facilities are built as part of the Integrated Recharge Recovery Program (IRRP). The IRRP is an integral piece of the water management plan and the Soboba settlement. The IRRP initially consists of 35 acres of basins or ponds for recharging State Project Water; three extraction wells; three monitoring wells; modification to two existing pump stations; and pipelines within, and adjacent to, the San Jacinto River. In 2012 over 8,000 AF was recharged at the IRRP ponds.

Eastern is also contributing to the replenishment of the basin by providing recycled water in lieu of groundwater production. The Recycled In-Lieu Program supplies recycled water for agricultural irrigation in-lieu of pumping native groundwater. The project can deliver up to 8,540 acre-feet per year to local agricultural water producers. The project costs are jointly funded by Eastern, Lake Hemet Municipal Water District, and the Cities of Hemet and San Jacinto. Agreements that set limits on groundwater production, and provide for payment of a portion of the operation and maintenance costs have been in place since 2008.

II.B.3. Recycled Water

Recycled water is used extensively in Eastern's service area, for both municipal and agricultural purposes. The supply of recycled water will continue to grow with Eastern's population growth. Eastern's four (4) regional water reclamation facilities have either recently been expanded or have an expansion planned in the near future.

Municipal customer use recycled water for landscape irrigation and industrial process water. The majority of Eastern's agricultural customers use recycled water for irrigating crops. In some cases, recycled water is used by agricultural customers in lieu of groundwater production, increasing the amount of groundwater available for municipal use without increased recharge.

Currently, the use of recycled water is limited by the amount available to serve during peak demands, with livestream discharge occurring in off peak periods. Eastern has developed plans to eliminate discharge and use all of the recycled water available within the District. Plans include offsetting demand of existing potable customers, by retrofitting potable water landscape customers and indirect potable recharge.

II.C Water Rights

On October 16, 1950 Eastern was organized under the Municipal Water District Act of 1911 (the Law), for the primary purpose of importing Colorado River water to its service area to augment local water supplies. Prior to the District's creation, the local water supply was primarily groundwater wells.

II.C.1. Imported Water from Metropolitan

In 1951 Eastern was annexed to Metropolitan by the District's voters. Eastern is a member of Metropolitan, which is a cooperative organization of 26 cities and water agencies that are responsible for providing imported water to arid southern California. Eastern is currently entitled to have one District representative on the Metropolitan Board. The statutory relationship between Metropolitan and its member agencies establishes the scope of Eastern's entitlements from Metropolitan.

II.C.2. Groundwater Management

Since 2001, the Cities of Hemet and San Jacinto, Lake Hemet Municipal Water District (LHMWD), EMWD, and representatives of the private groundwater producers, with the California Department of Water Resources (DWR) acting as an impartial mediator, have been working on a groundwater management plan for the Hemet/San Jacinto Water Management Plan area. Over the past several years, the group has discussed and resolved several controversial issues, including San

Jacinto Tunnel seepage water, export of groundwater from the basins, and how to maximize the use of recycled water.

As a result of their efforts, a final Hemet/San Jacinto Water Management Plan (HSJWMP) was completed in 2007 and a Stipulated Judgment was final in 2013. The Stipulated Judgment for the Hemet/San Jacinto Water Management Plan is in effect, and has established a Watermaster responsible for managing the basins.

The Hemet/San Jacinto Water Management Plan:

- Limits the amount of water being extracted from the basin to a sustainable yield
- Implements continued recharge of the basin using imported water through the Integrated Recharge and Recovery Project (IRRP)
- Insures settlement claims by the Soboba Band of Luiseño Indians are facilitated and accommodated
- Expands existing water production and water services system to meet future urban growth through the use of imported water recharged into the basin
- Protects and/or enhances water quality in the management plan area
- Supports cost-effective water supplies and treatment by the public agencies
- Eliminates groundwater overdraft and enhances basin yield
- Continues the monitoring program to promote and provide for best management and engineering principles to protect water resources

Long term groundwater management includes plans for artificial recharge using Metropolitan replenishment water via permanent facilities through the IRRP. An agreement with the Soboba Band of Luiseño Indians requires that, on average, an annual delivery of 7,500 acre-feet of water from MWD for the next 30 years. Water will be delivered to Eastern, LHMWD, and the Cities of Hemet and San Jacinto. This is part of an effort to recharge groundwater in the Hemet/San Jacinto area, fulfilling the Soboba Tribe's water rights and addressing chronic groundwater overdrafts.

In the West San Jacinto area, a cooperative groundwater management plan is already in place to insure the reliability and quality of the water supply. In June 1995, Eastern adopted the West San Jacinto Groundwater Basin Management Plan (WSJGBMP) in accordance with the statutes in the State Water Code Sections 10750 through 10755, resulting from the passage of Assembly Bill 3030 (AB3030). The plan was adopted after extensive public outreach and meetings with interested individuals and agencies.

Implementation of the WSJGBMP began directly after its adoption. Initial efforts to implement the WSJGBMP included: establishing an advisory committee; prioritizing the groundwater management zones; evaluating groundwater resources including establishing groundwater quality, level and extraction monitoring programs; and conducting hydro-geophysical investigations. EMWD's rights under the HSJWMP are a base groundwater production right of 10,869 acre feet per year (AFY). As water levels decline, EMWD has been required to reduce production by up to 10 percent annually over six years. EMWD's adjusted production right is 9,400 AF in 2015. Any pumping above that amount is subject to replenishment fees.

The WSJGBMP Annual report, documenting the implementation of the plan and activities in the groundwater management zones, has been published annually since 1996.

II.D Water Uses, Current and Projected Water Demand

Located in Southwest Riverside County, Eastern's service area experienced one of the fastest growth rates in the nation in the early 2000's. Although having recently experienced a dramatic slowdown in the development market, Eastern is less than 50 percent built out and expects demand to grow as the economy recovers.

Eastern's service area is made up of mostly single family residential homes with a small amount of commercial and industrial development. Only a small portion of Eastern's agricultural customers are served with potable water. The majority of agricultural demand and a portion of landscape and industrial demand are met with recycled water. Table 5 provides the percent of Eastern's current potable water supply used by retail customer type.

Table 5. Current Potable Water Uses for Eastern's Retail Customers[1]

Water Use	Single Family Residential	Multi-Family Residential	Commercial	Industrial	Institu-tional	Landscape	Agriculture	Other[2]	Losses
% of Potable Water Supplies	59.2%	7.5%	6.0%	0.3%	2.7%	10.0%	2.5%	6.4%	5.4%

1. Does not include raw water demand
2. Other uses include temporary construction meters, unbilled but authorized consumption, etc.

Table 6 lists current and future potable water demand for Eastern.

Table 6. Current and Future Potable and Raw Water Demand (AFY) – 2010-2035

	Actual	Projected				
	2015	2020	2025	2030	2035	2040
Retail Potable Water Sales	78,937	100,500	111,500	122,900	134,000	144,500
Wholesale Demands (Sales and Groundwater recharge)	21,768	50,500	54,100	57,700	61,200	64,800
Other Water Uses / Losses	4,183	7,100	7,900	8,800	9,700	10,500
Total	**104,888**	**158,100**	**173,500**	**189,400**	**204,900**	**219,800**

II.E Potential Shortfalls in Water Supply

Eastern's water supply is a blend of imported and local resources. Both of these resources face limitations, especially as development increases. Improving reliability and efficient use of water is a key to supporting economic development. Reducing demand for landscape irrigation will stretch existing supplies and improve long term reliability.

Eastern is proactive in developing and protecting its local resources, groundwater, desalinated water and recycled water. Even with large investments in local facilities and supply, Eastern is still heavily reliant on imported water from Metropolitan.

Metropolitan uses the Water Surplus and Drought Management Plan as a guideline to store surplus water when available to supplement dry year supplies. During unprecedented shortage events, the MWD Water Supply Plan (WSAP) is implemented, requiring a reduction in demand by member agencies. The allocation plan takes into account member agency population growth and investments in local resources. Member agencies are allocated a portion of their anticipated demand with the assurance that a member agency will not see a retail shortage greater than the regional shortage.

Water supply is not limited under the allocation plan but water use above a member agency's allocation is charged at a much higher rate. Several years of dry conditions and regulatory limitations on State Water Project operations required MWD to implement the allocation plan at a 10 percent regional shortage level from July of 2009 through April of 2011. This action follows the principles in the Water Surplus and Drought Management Plan as described in the 2010 UWMP. During the allocation from MWD, EMWD implemented demand reduction strategies as outlined in its Water Shortage Contingency Plan and reduced imported demand below the allocation level.

To decrease reliance on imported water Eastern has developed groundwater management plans; implemented a groundwater desalination program and expanded its recycled water system. Although these efforts have reduced dependence on Metropolitan imports there is the potential for shortfalls in local water resources, specifically groundwater.

Eastern is actively working with other agencies and groups to insure that groundwater will be a reliable resource far into the future. Part of managing groundwater responsibly is limiting the amount of water that Eastern extracts. Native production in Hemet and San Jacinto will be reduced as a groundwater management plan is implemented and extraction of recharge water begins. If surplus water from Metropolitan is not available to recharge the basin it could threaten the ability to meet water demand in that area.

The West San Jacinto basins production must also remain static to prevent continued overdraft. Although the desalters will be an additional supply of water, the amount of water produced is not sufficient to accommodate all the proposed growth within Eastern.

Eastern has a growing population as seen in Table 7. In the past decade Eastern experienced one of the highest growth rates in the country. Although currently experiencing a dramatic slowdown in the development market, Eastern is less than 50 percent built out and expects new demand to occur as the economy recovers. According to the Riverside County Center for Demographic Research 2010 projection, 58,000 new homes in Eastern's retail service area are proposed by 2020. To prepare for new economic opportunities and the water demand that will accompany them,

Eastern is proposing to develop aggressive water use efficiency standards and practices for new development to implement.

Table 7. Current and Future Population Growth

	2015	2020	2025	2030	2035	2040
Population	761,221	856,500	967,100	1,075,200	1,178,600	1,274,600

II.F Water Delivery System

Eastern has 2441 miles of pipeline delivering water to approximately 147,300 retail connections and eight wholesale customers. A map of Eastern's water delivery system is included as Figure 2. Eastern's system ties together its local potable water sources to feed the entire District. Groundwater is the major supply of water in the eastern area portion of Eastern. This area includes the Cities of Hemet and San Jacinto as well as surrounding unincorporated areas. The desalination plants serve the middle portion of the District. The microfiltration plant in Perris currently serves the City of Perris and surrounding areas. The Hemet Microfiltration Plant supplements supply to the Hemet/San Jacinto area. Metropolitan's Mills Filtration Plant serves Moreno Valley South, while Skinner in the southeast serves the Murrieta/Temecula area. The limits of services for each source of supply often vary due to demand level and operation procedures and constraints.

II.G Energy Sources and Uses

Eastern has over 250 separate electrical, and over 40 separate natural gas service accounts. Electrical energy is provided by Southern California Edison Co. for all services, except one (the Mills Pumping Plant) which is supplied through the City of Riverside's Public Utility. All Natural Gas purchased by Eastern is delivered to the District by Southern California Gas Company. The Natural Gas commodity, for nine of Eastern's largest accounts, is purchased from Shell Energy.

Currently, Eastern self-generates a percentage of its power at several locations. Its microturbine generating facility at the headquarters in Perris operates on natural gas; it is rated at 480 kW and generates approximately half of the facility's peak demand. Eastern's digester gas powered Fuel Cell at the Moreno Valley RWRF is rated at 900 kW and equates to approximately 45 percent of that facility's demand. Eastern's digester gas powered Fuel Cell at the Perris RWRF is rated at 600 kW and equates to approximately 30 percent of that facility's demand. Solar panels at Eastern's Headquarters Complex generate 500 kW, and solar panels at Eastern's four Regional Wastewater Reclamation Facilities (Moreno Valley, San Jacinto Valley, Temecula Valley, and Perris Valley) plus the Perris/Menifee Desalting Facility generate 1 Megawatt each.

All of Eastern's energy sources are used in the operation of its water, wastewater, and recycled water systems.

II.H Past and Present Working Relationships with Reclamation

EMWD has worked with the Bureau of Reclamation on several different projects which include the following programs:

- California Friendly Median/Large Landscape Irrigation Rebate Program, a three (3) year project from July 2006 to June 2009, funded in part by the USBR Field Services Water Conservation Program. This program funded more than 27,000 rotating nozzles for commercial customers.
- California Friendly Home Projects, multiple projects which started in 2005 and were completed in 2008, funded in part by the USBR Field Services Water Conservation Program and administered through MWD. This program provided water efficient landscape incentives for 555 new homes in EMWD's service area.
- The Perris Groundwater Basin – Zero Liquid Discharge System, an ongoing project started in 2005, funded by USBR. This project applies new technology to reduce volume of brine discharge.
- Public School Retrofit Program; a three (3) year project from 2008 to 2011, funded in part by the USBR CALFED Water Use Efficiency Grant. This program enabled 48 public schools within Eastern's service area to retrofit inefficient devices with water efficient devices both indoor and outdoor.
- High Efficiency Clothes Washer Direct Install Program in partnership with Southern California Gas; started in 2010 and is an on-going program to provide the installation of HEWs, as a component of the SoCal Gas Low Income Energy Efficiency program, to low-income single family homes that are customers of both Eastern and SoCal Gas.
- Perris Water Filtration Plant Reject Recovery Facility Project; started in 2010 and is an on-going project to fund the design of this facility.
- Water Efficient Guidelines for New Development; started in 2011 and is an on-going program to develop a guidebook for new construction that will encourage water use efficiency beyond what is currently required by legislation, code and ordinance.
- Water Use Efficiency Master Plan (WUEMP); started in 2014 and was completed in 2015. The WUEMP helped to identify and update the targets for saving water through active conservation and provided a portfolio of projects and actions that can meet or exceed the Water Conservation Act of 2009, Senate Bill 7x-7 (SB7x-7), which set a requirement for water agencies to reduce their per capita water use by the year 2020.
- Outdoor School Water Management Program; started on October 2015 and targeted for completion on December 2017. The objective of this program is to assist schools in reducing the amount of water they are currently using by eliminating non- functional turf and installing devices such as smart controllers and nozzles.

III. TECHNICAL PROJECT DESCRIPTION:

III.A Detailed Project Description

Eastern is utilizing information and communications technology in their operations. The District's goal is to increase water conservation by its customers through implementation of the Meter Installation Project. The proposed Project involves the installation of 45,981 AMI meters within EMWD's service area over the next three years. These meters will provide water and energy saving by allowing customers to identify and fix leaks, as well as track water consumption more frequently than on a monthly basis, thus reducing demand.

Installation of AMI meters to replace old meters will be performed by Eastern personnel. These installations will include new meter covers and lids.

Project funding will be used to purchase and install the new AMI meters. The resulting full complement of AMI infrastructure, including these new meters, will provide vital AMI data for purposes such as leak detection, customer notification, use analysis, and conservation.

The Project purpose is to increase water conservation through leak detection, education, and improved communications between EMWD and its customers. Documented usage data and cost information combined with a consumer's ethical motivation to conserve water plus economic incentives to meet targeted consumption rates will modify behavior. The District began implementing outbound leak detection notices utilizing its MDMS and AMI capabilities in January/February 2016. This covers the existing 62,000 AMI accounts, but will expand by 45,981 accounts in the next three years. The cost of installing the 45,981 new AMI meters is a part of this funding request. Funds for installing the remaining AMI meters will come from other sources, and are not a part of this funding request. Full meter conversion for the District (148,000 accounts) is anticipated in 5 years.

At an average savings of 0.0423 acre-feet per year per meter (see page 18), the water savings realized by installing the 45,981 AMI meters will be 1,945 acre-feet per year. Installation of the additional 86,260 meters over the next 5 years are expected to result in 3,649 acre-feet per year of water savings. This savings represents a direct reduction in demand on the California Bay-Delta and Colorado River and power savings approaching 47,145,775 kilowatt hours per year based on 1,945 acre-feet per year of water saved, and 88,445,657 kilowatt hours per year based on 3,649 acre-feet per year of water saved, through reduced pumping, driving costs, and conservation measures.

III.B Estimated Project Schedule

The estimated Project schedule is provided in Table 8.

Table 8: Project Schedule

Phase	Phase Start	Phase Finish
Application Preparation	January 1, 2017	January 18, 2017
Application Review	January 20, 2017	June 2017
Project Implementation	August 1, 2017	July 31, 2020

III.C Project Tasks

Task 1: Install AMI Meters

Eastern personnel will purchase and install 45,981 new AMI meters as a part of this funding request. This task is expected to take about three years.

Task 2: Provide Public Notification and Education

Eastern will notify users of the new AMI system by mailings and by posting information on their web site.

IV. EVALUATION CRITERIA

IV.A.1 Evaluation Criterion A: Quantifiable Water Savings

Eastern's water supply averaged 135,579 acre-feet from all sources (imported water, local groundwater, desalted groundwater, and recycled water) from 2010 to 2015. All imported and local groundwater is used for potable water. Water conserved by this project will reduce imported water from the SWP and Colorado River Aqueduct.

Installation of AMI meters reduces water loss due to leakage and encourages conservation. To estimate the amount of water lost annually to leaks, a documented average leakage rate for typical homes was used. DWR's "California Single-Family Water Use Efficiency Study" (2011) documents an average leakage rate of 30.7 gallons per household per day for a California study group from 2005. This equates to 11,200 gallons per year, or 0.0343 acre-feet per year per household. Leakage sources are typically valves (faucets, water bibs, etc.), broken or cracked pipes, hot water heaters, and irrigation systems. Leakage either soaks into the ground (broken or cracked pipes, water bibs) or goes into drains and the wastewater system. In addition, Eastern has determined with the proposed Project in place, over-budget individual accounts (those which consume higher amounts of water than their budget as set by Eastern's tiered rates) can save 10 percent annually by receiving an early warning that they are approaching their budgeted amount. By dividing the savings from those accounts by the total number of accounts, the savings was calculated by Eastern to be an additional 0.008 acre-foot per meter per year. This brings the total savings to 0.0423 acre-feet per year per AMI meter. Conserved water will reduce Eastern's amount of imported water.

With the installation of 45,981 new AMI meters in three years and 86,260 new AMI meters in five years, an annual average savings of about 1,945 acre-feet per year, and 3,649 acre-feet ongoing per year, achieved after five years respectively, when all meters have been converted to AMI meters, will be realized as:

- 45,981 meters x 0.0423 acre-feet/meter = 1,945 acre-feet/year.
- 86,260 meters x 0.0423 acre-feet/meter = 3,649 acre-feet/year.

All AMI meters installed will be SENSUS – PMM (Multi-jet) and MasterMeter – ELINX (Multi-jet).

Actual water savings will be verified by comparing historical data for water usage prior to implementation of the AMI meters system.

IV.A.2 Evaluation Criterion B: Water Sustainability Benefits Expected to Result from the Project

The Project is expected to improve water sustainability by reducing water consumption through increased customer awareness, which is expected to help to alleviate water supply shortages and increase water supply reliability. Currently, over half of Eastern's water supply is comprised of imported water from the SWP water and Colorado River Aqueduct water. In recent years, these sources have become increasingly less reliable. The Colorado River has been experiencing drought conditions for over a decade. In addition, the State of California is in a severe drought, which is significantly limiting the availability of supplies from the SWP. These statewide drought conditions have resulted in supplies from the SWP being curtailed to a 2014 Table A supply allocation of merely 5 percent, with 2015 allocations at 20 percent. Therefore, by decreasing consumption which reduces dependence on imported water supplies, this Project will enhance water supply reliability even under unpredictable drought conditions, thereby alleviating water supply shortages.

Additionally, by reducing imported water demand, the Project will reduce diversions from the Colorado River and Bay-Delta and improve the condition of the downstream habitat on Colorado River and the Bay-Delta. In the Bay-Delta, natural flows are altered by operation of the SWP, impacting aquatic species health. The Bay Delta Conservation Plan (BDCP), created to develop a plan for habitat conservation in the Delta, notes that various habitat types exist in the area including tidal and nontidal wetlands, floodplains, and riparian habitat. Reducing imported water use would allow for water to remain in the system to support these habitats. Additionally, species such as the Delta smelt become entrained in the pumps used to bring flows to Southern California. Reducing imported water demand will contribute towards reducing pumping in the Delta. The diversion of water for supply from the Colorado River has impacted downstream habitats, particularly habitats in the Colorado River Delta that are actively being restored, such as riparian and brackish marsh habitats. Reducing dependence on imported water from the Colorado River will contribute flows towards these efforts.

IV.A.3 Evaluation Criterion C: Energy-Water Nexus

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

The proposed Project does not implement a renewable energy project; therefore, Subcriterion No. C.1 does not apply.

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

Energy Savings on Imported Water Pumping

Eastern has proactively developed local water resources, but still relies on Metropolitan for 56 percent of its water supply. Of Eastern's imported water supplies from Metropolitan, approximately 80 percent are from the SWP and 20 percent from the Colorado River Aqueduct, on average. EMWD receives SWP water from the Pearblossom Pumping Plant at 4,549 kWh/AF (per DWR, Bulletin 132-15) and from the Colorado River Aqueduct at 2,000 kWh/AF (per Metropolitan, 2015 Regional Urban Water Management Plan). The water conserved in this program is estimated to reduce average annual energy consumption by 7,856,229 kWh/yr as a result of 1,945 AFY reduction per year, and 14,738,225 kWh/yr as a result of 3,649 AFY reduction ongoing per year, achieved after five years, in overall imported water demand.

Table 9. Energy Efficiency – Imported Water Supply - 1,945 AFY Conserved

Source	% of Total Imported Water	Estimated AFY Saved	Energy Used (kWh / AFY)	Energy Savings (kWh/yr)
SWP	80%	1,556	4,549	7,078,230
CRA	20%	389	2,000	777,999
Total		1,945		7,856,229

Table 10. Energy Efficiency – Imported Water Supply – 3,649 AFY Conserved

Source	% of Total Imported Water	Estimated AFY Saved	Energy Used (kWh / AFY)	Energy Savings (kWh/yr)
SWP	80%	2,919	4,549	13,278,706
CRA	20%	730	2,000	1,459,519
Total		3,649		14,738,225

Energy Savings by Reducing EMWD's Water System Electrical Usage

EMWD's *Energy Management Plan*, 2014 (prepared by Kennedy/Jenks Consultants in August 2014) summarizes their water system requirements. It indicates that EMWD's system conveys 92,930 AFY to their service area, and the total system energy usage (electricity plus natural gas) is 260,063,650 kWh/year. These numbers include Water, Raw Water, and Wastewater amounts. Table 2-3 from the *Energy Management Plan* is included as an attachment.

"Water" includes facilities that treat and convey potable water to the EMWD service area. It includes water treated by EMWD for potable use and purchased potable water; and it includes energy demands for such facilities as wells, water treatment plants, and brine disposal.

"Raw Water" applies to facilities that import raw, untreated water to EMWD water treatment facilities and to groundwater wells for recharge to underlying aquifers. The energy to pump this water back out of the aquifer is included in the "Water" category. The energy demand for the "raw water" category includes EMWD's raw water booster pumping plants.

"Wastewater" applies to facilities that convey and treat wastewater in the EMWD service area. This category includes regional water reclamation facilities, sewage lift stations, and booster pump plants.

To calculate the energy intensity of the system, the energy demands of the water, raw water, and wastewater categories were combined and divided by the total flow in the system. To avoid double counting, the total flow only includes the "Water" flow and not the "Wastewater" flow. The energy per unit of water associated with this Project is therefore:

Energy of the Water + Raw Water + Wastewater ÷ Total Flow

260,063,650 kWh/year ÷ 92,930 AFY = 2,798.49 kWh/AFY

The annual energy savings for EMWD's water system energy usage as a result of this project would therefore be:

45,981 meters in 2 years = 1,945 AF x 2,798.49 kWh/AF = 5,443,063 kWh/year

86,260 meters in 5 years = 3,649 AF x 2,798.49 kWh/AF = 10,211,690 kWh/year

Energy Savings from Reduced Vehicle Miles Driven

This project would create an additional energy savings through reducing fossil fuel consumption. By replacing the manually- read meters with AMI meters, EMWD staff will no longer need to drive to the additional 45,981 meters in three years, or 86,260 meters in five years, every month to record water usage data. To produce a kWh/year estimate for energy savings, EMWD's Fleet Manager prepared a report on the miles travelled and gasoline required to read 83,000 existing manual meters in EMWD's service area.

Over a year, approximately 93,175 miles were travelled and 11,785 gallons of fuel were consumed to read the meters, once per month, for a total of 996,000 meter trips per year. This amounts to an average for EMWD's service area of approximately 0.0935 miles driven per meter read (93,175 miles ÷ 83,000 meters ÷ 12 months = 0.0935) and 0.012 gallons of fuel used per meter read (11,785 gallons ÷ 83,000 meters ÷ 12 months = 0.012). These estimates produce a fuel efficiency value lower than the U.S. EPA average of 21.5 miles/gallon, but this difference can be explained by the continuous stop-and-go driving that is typical for meter readers in the EMWD service area.

Using the average miles traveled and gallons of fuel used per meter read, EMWD estimated the numbers of miles and gallons of fuel per year that would be consumed to read the additional 45,981 meters in three years, or 86,260 meters in five years. Assuming this number of meters to be replaced, meter reading vehicles will travel approximately 51,590 (based on 45,981 meters) or 96,8784 (based on 86,260 meters) fewer miles per year, expending approximately 6,621 and 12,421 fewer gallons of fuel per year, respectively.

(0.0935 miles/meter read) x (45,981 meters/month) x (12 months) = 51,590 miles/yr

(0.0935 miles/meter read) x (86,260 meters/month) x (12 months) = 96,784 miles/yr

(0.012 gals/meter read) x (45,981 meters/month) x (12 months) = 6,621 gal/yr

(0.012 gals/meter read) x (86,260 meters/month) x (12 months) = 12,421 gal/yr

U.S. EPA parameters specify 1.25 therms/gallon of fuel and 29.3 kWh/therm. Using these values, there will be approximately 242,494 kWh/year (based on 45,981 meters) and 454,919kWh/year (based on 86,260 meters) that will be saved as a result of this project.

(6,621 gal/yr) x (1.25 therms/gal) x (29.3 kWh/therm) = 242,494 kWh/yr

(12,421 gal/yr) x (1.25 therms/gal) x (29.3 kWh/therm) = 454,919 kWh/yr

Energy Savings from Reduced Hot Water Leakage

Some water loss is due to leakage from hot water lines and faucets. DWR has developed a tool entitled *Estimates of Water Savings, Energy Savings, and GHG Emissions Reduction*, which can be found at http://www.water.ca.gov/waterenergygrant/docs/Attachment2_Worksheet.xlsx. This tool calculates energy savings from electric and natural gas hot water heating systems. EMWD has determined that 40 percent of customer losses are indoor. Of this amount, 60 percent of the loss is hot water. Eastern assumes that within its service area, 20 percent of hot water losses are from electric water heaters, and 80 percent are from gas water heaters. Using the DWR tool, the combined energy savings for both types of hot water heating systems was calculated to be 33,603,989 kWh/year based on 1,945 AFY of water savings (45,981 meters), and 63,040,823 kWh/year based on 3,649 AFY of water savings (86,260 meters).

Total Energy Savings

As shown in Table 10, the total energy savings as a result of this Project would therefore be 47,145,775 kWh per year as a result of 1,945 AFY reduction in potable water use, and 88,445,657 kWh per year as a result of 3,649 AFY reduction in potable water use ongoing, achieved after five years.

Table 11. Total Energy Savings		
Source of Energy Savings	Energy Savings - 1,945 AFY (kWh)	Energy Savings – 3,649 AFY (kWh)
Imported Water Pumping	7,856,229	14,738,225
EMWD System Usage	5,443,063	10,211,690
Reduced Vehicle Miles	242,494	454,919
Hot Water	33,603,989	63,040,823
Totals	47,145,775	88,445,657

IV.A.4 Evaluation Criterion D: Addressing Adaptation Strategies in a WaterSMART Basin Study

Eastern Municipal Water District is a member agency of the Santa Ana Watershed Project Authority (SAWPA), which is a joint powers authority composed of five member agencies. SAWPA was selected by the Bureau of Reclamation in 2010 to collaborate with them in preparation of the Santa Ana River Watershed Basin Study (Basin Study). The Study focuses on SAWPA's integrated regional water resources management planning process, refines the region's water projections, and identifies potential adaptation strategies in light of potential effects of climate change. The Basin Study updates SAWPA's Integrated Water Resources Management Plan called the "One Water One Watershed" (OWOW) Plan.

The Study also addresses increased energy demands and future water quality and supply needs in relation to climate change, drought, and increased demands. The Study promotes and encourages collaboration among SAWPA's member agencies.

The Basin Study identifies water demand strategies using education and outreach actions that encourage implementation of tier based-allocated water conservation rates. It also aims to implement a systems approach to lead to behavioral change in the watershed to engage water use efficiency, and encourages the use of new or expanded off-the-shelf web-based/GIS based interactive tools. The Project proposed by Eastern addresses and encourages these aims by using their tiered rate system to modify customers' behaviors, fix leaks, and allowing customers to view their usage on-line in real time and adjust their usage accordingly.

The Basin Study conducts a detailed and system-wide evaluation of climate change and energy impacts to water infrastructure operations and construction activities to determine greenhouse gas emissions. The proposed Project provides direct water conservation of 1,945 acre-feet per year, resulting in an annual energy savings of over 47,145,775 kWh, and 3,649 acre-feet ongoing per year, achieved after five years, resulting in an annual energy savings of over 88,445,657 kWh.

IV.A.5 Evaluation Criterion E: Expediting Future On-Farm Irrigation Improvements

The proposed Project does not provide on-farm irrigation improvement benefits.

IV.A.6 Evaluation Criterion F: Implementation and Results

Subcriterion No. F.1: Project Planning

Eastern maintains numerous planning documents addressing water shortages and conservation alternatives including:

- An Annual Water Loss Audit Report (State required, SOR included)
- Urban Water Management Plan (State approved water conservation plan)
- Water Surplus and Drought Management Plan (Metropolitan)
- Water Shortage Contingency Plan

Some documents, including the Urban Water Management Plan, can be found online at http://www.emwd.org/meet-emwd/news-information/emwd-publications/reports- plans-and-studies/urban-water-management-plan, and the Water Shortage Contingency Plan at http://www.emwd.org/use-water-wisely/water-shortage-contingency-plan.

The previously mentioned planning documents all cite conservation as the simplest, most cost-effective way to remedy or at least postpone a myriad of resource management issues.

(1) For over 60 years Eastern has worked to deliver precious water in the semi-arid southwest. The lack of local supplies and the difficulties associated with imported supplies has motivated Eastern to construct and operate one of the most efficient water delivery systems in California. The installation of smart meters furthers this effort.

(2) The proposed Project conserves water through education, real time feedback to residential water users, and financial incentives.

Subcriterion No. F.2: Support and Collaboration

The proposed Project has widespread support among Eastern's customers and wholesale agencies. Reducing leaks and increasing customer awareness of water usage provides a benefit to the entire service area in the form of reduced water rates and a more resilient water supply. As discussed previously, imported water is considered to be the least reliable supply in Eastern's water supply portfolio and also one of the most expensive; therefore, the water savings achieved through this Project are expected to reduce reliance on imported supplies. Reductions in imported supplies will allow Eastern to have a more reliable supply in the face of water-related crises such as earthquakes, flooding and drought.

Eastern's Customer Service personnel have direct and near real time access to AMI usage information from the customer's meter. Representatives are trained to utilize this data in assisting customers in identifying leaks and usage patterns to improve water conservation. The customer response has been exceptionally positive and expressive of behavior modification. For example, customers have typically worked to improve leaks soon after receiving notice of a potential leak from Eastern. These behavioral changes provide evidence of customers' support for the Project.

Subcriterion No. F.3: Performance Measures

Specific performance measures are included herein as Section V. Existing documents representing years of data collection and analysis will be used to describe pre-Project conditions—a baseline from which to quantify and gauge Project benefits. Advanced methods made available through Project implementation will assist in evaluating the accuracy of old methods as well as calculating system improvements.

IV.A.7 Evaluation Criterion G: Additional Non-Federal Funding

Formula: $\frac{\text{Non-Federal Funding}}{\text{Total Project Cost}}$

Table 12. Percentage of Non-Federal Funding

Non-Federal Funding Amount	Total Project Cost	Non-Federal Funding Percent
$12,072,023	$13,072,023	92.35%

IV.A.8 Evaluation Criterion H: Connection to Reclamation

Project Activities

(1) Reclamation's WaterSMART Program focuses in part on the uses of technology to balance future water supply and demand needs throughout California and the western United States. The proposed Project demonstrates the opportunities for significant water and energy conservation through remote sensing, state-of-the- art software, and systems integration. Water conserved is directly related to the CALFED Bay-Delta Program which is a major ongoing Reclamation activity. Eastern has and continues to have a close working relationship with the Lower Colorado Regional and Southern California offices. A list of Reclamation projects is presented in the background section on page 13

(2) Eastern receives water both from the SWP and the Colorado River Aqueduct.

(3) The Project focuses on municipal water delivery and distribution, and does not directly involve Reclamation project lands or facilities.

(4) There are numerous Reclamation projects and activities in the Santa Ana River Basin including the ongoing Basin Study, a collaborative effort by Reclamation and the Santa Ana Watershed Authority (of which Eastern is a member agency).

(5) The Project will contribute 1,556 AFY per year, and 2,919 AFY per year ongoing after five years, to the SWP, and 389 AFY over three years and 730 AFY over five years to the Colorado River Aqueduct.

(6) The Project will not help Reclamation meet trust responsibilities to Tribes.

V. PERFORMANCE MEASURES

V.A.1 Performance Measure No. A: Projects with Quantifiable Water Savings

Performance Measure No. A.1: Quantifiable Water Savings

Eastern is required to conduct a water audit and produce an annual report. These reports will serve as the baseline for quantifying water savings. Detailed records of system improvements will be documented in a Project file. These records will be analyzed routinely with a summary analysis entered as a component of future water audit reports. A *Final Project Implementation Report* will be submitted to Reclamation to verify post-Project benefits. The post-Project benefit objective for Performance Measure No. A.1. is 1,945 acre-feet of potable water saved annually, and 3,649 acre-feet of potable water saved annually ongoing, achieved after five years, through implementation of the Project, consisting of the installation of 45,981 AMI meters, in conjunction with the continuing installation of other AMI meters over the next five years.

Performance Measure No. A.2: Improved Water Management

The *Final Project Implementation Report* will contain a section entitled *Improved Water Management*. A portion of the Project journal will be dedicated to documenting general management improvements. This information will similarly be included in the annual audit report. The post-Project benefit objective for Performance Measure No. A.2. is potable water savings of 1,945 acre-feet per year, and 3,649 acre-feet per year ongoing, achieved after five years.

V.A.2 Performance Measure No. B: Projects with Quantifiable Energy Savings

Performance Measure No. B.1: Implementing Renewable Energy Improvements Related to Water Management and Delivery:

No performance measure required.

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

The *Final Project Implementation Report* will contain a section entitled *Increased Energy Efficiency in Water Management*. Water savings identified in the final report will be multiplied by the current energy demand identified in Tables 9 and 10. System optimization studies for power consumption will be discussed. The post-Project benefit objective for Performance Measure No. B.2. is 47,145,775 kWh per year as a result of 1,945 AFY reduction in potable water use, and 88,445,657 kWh per year as a result of 3,649 AFY reduction in potable water use over the next five years.

V.A.3 Performance Measure No. C: Projects that Benefit Endangered Species and/or Critical Habitat

The Final Project Implementation Report will contain a section entitled Benefits to *Endangered Species*. Water savings identified in the final report will be identified as benefitting endangered species. Additional pertinent information will also be documented. The post-Project benefit objective for Performance Measure No. C. is potable water savings of 1,945 acre-feet per year and 3,649 AFY over five years.

V.A.4 Performance Measure No. D: Projects that Establish a Water Market

This Project is not establishing a water market; therefore, no performance measures are required.

VI. ENVIRONMENTAL COMPLIANCE

Table 13. Environmental and Regulatory Compliance Questions

1.	Will your project impact the surrounding environment?	No
2.	Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area?	No
3.	Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as “waters of the United States?”	No
4.	When was the water delivery system constructed?	1951
5.	Will the project result in any modification of or effects to, individual features of an irrigation system (e.g. headgates, canals, or flumes)?	No
6.	Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?	No
7.	Are there any known archeological sites in the proposed project area?	No
8.	Will the project have a disproportionately high and adverse effect on low income or minority populations?	No
9.	Will the project limit access to and ceremonial use of Indian sacred sites or result in other impacts on trial lands?	No
10.	Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?	No

VII. REQUIRED PERMITS OR APPROVALS

No additional permits or approvals are required to implement the Project.

VIII. OFFICIAL RESOLUTION

A Certified Resolution was approved on February 17, 2016, and is provided as an attachment.

IX. PROJECT BUDGET

The total Project cost is estimated at $13,072,023 over three years. The WaterSMART Grant Funding Group I request is for $300,000. Eastern has authorized financing for the remaining $12,072,023.

IX.A Funding Plan and Letters of Commitment

Eastern will finance all Project costs not funded by Reclamation. The funding plan anticipates that WaterSMART Grant funds will be used to purchase water meters. The majority of Eastern's commitment to funding is through in-kind services, and purchase of the remaining materials and supplies.

The Eastern Board of Directors is committed to the Project as proposed. Non-Reclamation funding will be provided solely by Eastern and therefore letters of commitment from third parties are not required.

IX.A.1 Project Costs

(1) The local contribution will be made through in-kind services and cash. Eastern staff will: administer and manage all procurement contracts, perform site preparation activities, and electrical work; and administer and manage all Project requirements. A total of $1,576,773 is budgeted for Eastern staff through June 30, 2019. Cash contributions totaling $11,495,250 will be financed through the District's water operations budget. This budget is $106,343,900 for the 2016/2017 fiscal year, and represents 28 percent of Eastern's entire budget. The District's ability to support cash contributions is related to cash and investments of over $200 million. Eastern's Comprehensive Annual Financial Report for the Fiscal Year Ended June *30, 2016* can be viewed online at: http://www.emwd.org/home/showdocument?id=15133

(2) No costs incurred before the anticipated Project start date are included in the Project budget.

(3) There are no funding partners associated with the proposed Project.

(4) There are no funding requests from other Federal partners. All local funds will come from rate payers. No other Federal or State funds will be used.

(5) Eastern has numerous funding requests working at various levels. Those requests are independent of the proposed Project and will not affect or influence the District's commitment to this Project should it receive funding.

Table 14. Summary of non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non-Federal Entities	
1. Eastern Municipal Water District	$10,495,250
2. Eastern Municipal Water District (In-kind contribution)	$1,576,773*
Non-Federal Subtotal:	**$12,072,023**
Other Federal Entities	
1. None	$0
Other Federal Subtotal:	**$0**
Requested Reclamation Funding:	$1,000,000
Total Project Funding:	$13,072,023

* Denotes in-kind contribution

IX.B Budget Proposal

Table 15. Funding Sources

Funding Sources	Percent of Total Project Cost	Total Cost by Source
Recipient Funding	92.35%	$12,072,023
Reclamation Funding	7.65%	$1,000,000
Other Federal Funding	0	$0
Totals	100%	$13,072,023

Table 16. Budget Proposal

Budget and Item Description	Computation			Total Cost
	$/Unit	Quantity	Unit	
Salaries and Wages				**$734,067**
Meter Installer, EMWD - Permanent	$28.50	6240	hr	$177,840
Meter Installers, Temporary	$21.43	24960	hr	$534,893
Project Leader, EMWD - Permanent	$34.19	624	hr	$21,334
Fringe Benefits				**$502,183**
Meter Installer, EMWD - Permanent	$15.78	6240	hr	$98,467
Meter Installers, Temporary	$15.78	24960	hr	$393,869
Project Leader, EMWD - Permanent	$15.78	624	hr	$9,847
Travel				**$0**
None	$0			$0
Equipment				**$11,495,250**
AMI Meter	$250	45,981	ea	$11,495,250
Supplies and Materials				**$0**
None	$0			$0
Contractual/Construction				**$0**
None	$0			$0
Environmental and Regulatory Compliance				**$0**
Notice of Exemption	$0			$0
Other Costs				**$0**
None	$0			$0
Total Direct Costs				**$12,731,500**
INDIRECT COSTS - 46.53%				**$340,523**
Jesse Necochea, Meter Installer, EMWD - Permanent	$13.10	6240	hr	$81,744
Jose Cueva, Meter Installer, Temporary	$9.97	24960	hr	$248,851
Frank Carrillo, Project Leader, EMWD - Permanent	$15.91	624	hr	$9,928
Total Indirect Costs				**$340,523**
Total Project Costs				**$13,072,023**

IX.C Budget Narrative

IX.C.1 Salaries and Wages

Key personnel are listed in Tables 17, 18 and 19, and they are full-time salaried employees. Salaries in year 2 are escalated by 2.5 percent. Salary rates are typically increased on July 1. The hourly rates shown in Table 16 reflect average rates over three years.

Table 17. Key Personnel – August 1, 2017 – July 31, 2018

Job Description	Name	Status	Salary (annual)	Hourly Rate	Hours Budgeted	Percent of Time
Meter Installer	Jesse Necochea	EMWD - Permanent	$57,824	$27.80	2080	100
Meter Installer	Derek Valencia (subject to change)	Temporary Employee	$43,949	$21.17	2080	100
Meter Installer	Jose Cueva (subject to change)	Temporary Employee	$43,949	$21.17	2080	100
Meter Installer	Jose Castro (subject to change)	Temporary Employee	$43,949	$21.17	2080	100
Meter Installer	Alberto Huerta (subject to change)	Temporary Employee	$43,949	$21.17	2080	100
Project Leader	Frank Carillo	EMWD - Permanent	$70,241	$33.77	208	10

Table 18. Key Personnel – August 1, 2018 – July 31, 2019

Job Description	Name	Status	Salary (annual)	Hourly Rate	Hours Budgeted	Percent of Time
Meter Installer	Jesse Necochea	EMWD - Permanent	$59,270	$28.50	2080	100
Meter Installer	Derek Valencia (subject to change)	Temporary Employee	$45,048	$21.70	2080	100
Meter Installer	Jose Cueva (subject to change)	Temporary Employee	$45,048	$21.70	2080	100
Meter Installer	Jose Castro (subject to change)	Temporary Employee	$45,048	$21.70	2080	100
Meter Installer	Alberto Huerta (subject to change)	Temporary Employee	$45,048	$21.70	2080	100
Project Leader	Frank Carillo	EMWD - Permanent	$71,997	$34.61	208	10

Table 19. Key Personnel – August 1, 2019 – July 31, 2020

Job Description	Name	Status	Salary (annual)	Hourly Rate	Hours Budgeted	Percent of Time
Meter Installer	Jesse Necochea	EMWD - Permanent	$60,751	$29.21	2080	100
Meter Installer	Derek Valencia (subject to change)	Temporary Employee	$46,174	$22.24	2080	100
Meter Installer	Jose Cueva (subject to change)	Temporary Employee	$46,174	$22.24	2080	100
Meter Installer	Jose Castro (subject to change)	Temporary Employee	$46,174	$22.24	2080	100
Meter Installer	Alberto Huerta (subject to change)	Temporary Employee	$46,174	$22.24	2080	100
Project Leader	Frank Carillo	EMWD - Permanent	$73,797	$35.48	208	10

IX.C.2 Fringe Benefits

Fringe Benefits are included in Table 18, "Budget Proposal."

IX.C.3 Travel

Travel is not included in the budget proposal.

IX.C.4 Equipment

AMI meters are included in this item. The cost estimate for materials and supplies is based on quotes provided to Eastern from the various vendors, and on Eastern's experience implementing similar projects and providing project administration.

IX.C.5 Materials and Supplies

Materials and supplies are not included in the budget proposal.

IX.C.6 Contractual/Construction

Contractual services of the vendors are included in the equipment costs.

IX.C.7 Environmental and Regulatory Compliance Costs

The Project is categorically exempt from the provisions of CEQA. A Notice of Exemption will be filed with the County of Riverside. These costs are considered minimal and are therefore not included in the budget.

IX.C.8 Other Expenses

There are no other expenses.

IX.C.9 Indirect Costs

A fixed carryforward indirect rate of 46.53 percent was noticed by Reclamation letter dated March 16, 2012 to Eastern Municipal Water District (copy attached). These costs are included in Table 16, "Budget Proposal."

IX.C.10 Total Costs

Table 20. Total Project Costs

Funding Sources	Percent of Total Project Cost	Total Cost by Source
Federal	7.65%	$1,000,000
Non-Federal	92.35%	$12,072,023
Total Project Cost	100%	$13,072,023

Attachment: Energy Management Plan Table 2-3

Table 2-3: Existing EMWD Facilities Included in the Baseline Forecast

#	Category	Flow (AFY)	Facility Name	Nat Gas. Source	Baseline			
					Electricity Use (kWh/year)	Natural Gas Use – SCG (Therms/year)	Natural Gas Use – Shell (Therms/year)	GHG (MT/year)
1	Water	92,930	Booster Pumping Plants	SCG/Shell	12,700,000	1,090,000	475,000	9,600
2			Storage	--	105,000	--	--	30
3			Wells -- Potable	SCG	9,310,000	141,000	--	3,500
4			Wells -- Brackish	--	4,130,000	--	--	1,200
5			WTP (including Desalters)	SCG	9,840,000	10,300	--	2,900
6			Brine Disposal	--	449,780	--	--	130
7			Water Miscellaneous	--	18,500	--	--	5
8	Recycled Water	48,870	Booster Pumping Plants	SCG	10,900,000	243,000	--	4,500
9			Storage	--	260	--	--	0.1
10			Energy Dissipaters	--	33,400	--	--	10
11			Recycled Water - Miscellaneous	--	1,770	--	--	1
12	Wastewater	53,600	Regional Water Reclamation Facilities	SCG/Shell	39,600,000	2,280,000	1,970,000	23,900
13			Sewage Lift Stations	SCG	5,280,000	34,600	--	1,700
14			Wastewater – Miscellaneous	--	814,000	--	--	230
15	Raw Water		Booster Pumping Plants		1,990,000	--	--	520
16			Storage		--	--	--	0
17			Wells		--	--	--	0
18	Admin	--	HQ	SCG/Shell	6,930,000	450,000	321,000	4,500
19			Customer Service Call Center	SCG	194,000	280	--	60
20			Admin -- Miscellaneous	SCG	--	710	--	4
				Gallons/yr	Diesel	Gasoline	Propane	
21	Fuel	--	--	--	74,300	227,000	670	2,800

(1) Natural gas is purchased both from SCG and Shell, but natural gas volume used is recorded through SCG's meter. The natural gas use shown on this table reflects the usage as provided on SCG invoices.

Attachment: Resolution

ACTION

Board of Directors
February 17, 2016

SUBJECT:

Adopt the Proposed Resolutions of the Board of Directors of Eastern Municipal Water District to Support the District's Applications for the U.S. Bureau of Reclamation's WaterSMART: Water and Energy Efficiency Program for the (1) Automated Metering Infrastructure Expansion Project and (2) Automated Metering Infrastructure Expansion and Meter Installation, and Designate an Authorized Representative

BACKGROUND:

The U.S. Bureau of Reclamation through the WaterSMART: Water and Energy Efficiency Grant Program annually invites states, Indian tribes, water districts, and other organizations to apply for funding assistance. The program targets projects that conserve water, increase water efficiency, increase use of renewable energy, improve energy efficiency, benefit endangered and threatened species, facilitate water markets, reduce climate related impacts on water, or prevent any water related crisis or conflict.

The WaterSMART: Water and Energy Efficiency Grants for Fiscal Year 2016 has an estimated budget of $23.3 million depending on final Fiscal Year 2016 appropriations. Grants up to $1 million per applicant are available. Applicants can submit multiple applications, but no more than $1 million ($500,000 per year) will be awarded to any one applicant. Applicants must provide at least a 50 percent cost share. Projects in Funding Group I (up to $300K) must be completed within two years of award; and Projects in Funding Group II (up to $1 million) must be completed within three years.

WaterSMART requires inclusion of a Board resolution supporting grant proposals within 30 days of the application submittal date. The Board resolution documents the governing body's support of the application. The Board resolution, acknowledges support of the applications, authorizes the General Manager to accept funding, delegate's authority to the General Manager to enter into a contract, recognizes that Eastern Municipal Water District (EMWD) is capable of providing the amount of funds and/or in-kind contributions specified in the funding plan, and commits EMWD to work with the U.S. Bureau of Reclamation to meet established deadlines. The resolution does not obligate EMWD to accept funding. EMWD has the discretion to accept or decline potential funding after award.

EMWD staff has identified two projects that meet the objectives of the WaterSMART Water and Energy Grant Program: the Automated Metering Infrastructure (AMI) Expansion Project (Exhibit A) and the Automated Metering Infrastructure Expansion and Meter Installation, which expand the number of meters installed creating greater water and energy savings.

The Automated Metering Infrastructure Expansion Project involves the installation of nine AMI tower/communication facilities within EMWD's district boundary. The nine additional facilities when combined with EMWD's seven existing locations resulting in 16 Tower Gateway Base-station/communication (TGB) facilities (seven existing plus nine new), combined with EMWD's existing Meter Data Management System (MDMS), will allow full implementation of EMWD's information and communications technology system and provide water and energy saving capabilities throughout EMWD's entire service area. Project funding will be used to purchase

and install the additional nine TGB facilities. Project cost is approximately $705,443. EMWD will submit an application under Funding Group I for $300,000 with a 50 percent cost share.

The second application that meets the objectives of the WaterSMART Water and Energy Grant Program under Funding Group II; the Automated Metering Infrastructure Expansion and Meter Installation Project (Exhibit B), will advance EMWD's implementation of automated metering. The proposed project involves the installation of nine AMI Tower Gateway Base-station/communication facilities and installation of 5,000 AMI meters within EMWD's area. These facilities and meters, when combined with EMWD's seven existing TGB locations, will not only provide water and energy saving capabilities but will provide the necessary infrastructure for 100 percent of the District's current 144,000 potable water accounts over its 542 square mile service area, as well as accommodate future growth.

Project funding will be used to purchase and install the nine TGB facilities and the installation of 5,000 AMI meters. The resulting full complement of 16 TGB facilities (seven existing plus nine new), combined with EMWD's existing information and communication technology system, provides the tools to utilize AMI data for purposes such as leak detection, customer notification, use analysis, and conservation. The resulting water savings are estimated to be 1,903 acre feet per year over three years, with an associated energy savings of 9,535,711 kWh per year, and water savings of 4,230 acre feet per year over six to seven years, with an associated energy savings of 21,198,057 kWh per year. The project cost is approximately $2,129,614. The project is anticipated to begin in August 2016. EMWD will apply to U.S. Bureau of Reclamation for $1M with a 50 percent cost share.

FINANCIAL IMPACT:

This project will be financed from the District's Water Replacement System Betterment Reserve Fund subject to reimbursement from grant funding from the Bureau of Reclamation pending the outcome of the application process.

STRATEGIC PLANNING GOAL/OBJECTIVE:

External Funding Opportunities: Aggressively pursue outside funding to reduce financial burden to the District's customers.

ENVIRONMENTAL IMPACT:

This project is exempt from the California Environmental Quality Act (CEQA) as authorized under the California Code of Regulations, Title 14, Chapter 3, Section 15301, which provides exemption for minor alterations to existing equipment and existing facilities involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination.

RECOMMENDATION:

Adopt Resolutions to Authorize Applications to the Bureau of Reclamation, WaterSMART: Water and Energy Efficiency Grant for Fiscal Year 2016 for the Automated Metering Infrastructure Expansion and for the Automated Metering Infrastructure Expansion and Meter Installation, and Designate an Authorized Representative.

SUBMITTED BY:

Paul D. Jones II P.E., General Manager 2/4/2016

Debby Cherney, Deputy General Manager 1/28/2016

Attachment(s):
Exhibit A - Resolution for Application for AMI
Exhibit B - Resolution for Application for AMI and Meter Installation

History:

02/11/16	Board Planning Committee	RECOMMENDED FOR APPROVAL
02/17/16	Board Meeting	

Staff Contact: Bonnie Wright

STATE OF CALIFORNIA)
)ss.
COUNTY OF RIVERSIDE)

I, TAMI MARTINEZ, Deputy Secretary to the Board of Directors of Eastern Municipal Water District, do hereby certify that the foregoing **Resolution** was duly adopted by the Board of Directors of said District at the Regular Meeting of said Board held on the 17th day of February, 2016, and that it was so adopted by the following vote:

AYES:	Directors, Slawson, Paule, Record, and Sullivan
NOES:	None
ABSTAIN:	None
ABSENT:	Kuebler

Tami Martinez, Deputy Secretary of the
Eastern Municipal Water District
and to the Board of Directors thereof

STATE OF CALIFORNIA)
)ss.
COUNTY OF RIVERSIDE)

I, TAMI MARTINEZ Deputy Secretary to the Board of Directors of Eastern Municipal Water District, do hereby certify that the above and foregoing is a full, true and correct copy of **Resolution No. 2016-026** of said Board, and that the same has not been amended or repealed.

DATE: February 17, 2016

Tami Martinez, Deputy Secretary of the
Eastern Municipal Water District
and to the Board of Directors thereof

(SEAL)

RESOLUTION NO. 2016-026

A RESOLUTION OF THE BOARD OF DIRECTORS OF EASTERN MUNICIPAL WATER DISTRICT TO SUPPORT THE SUBMITTAL OF AN APPLICATION TO THE U.S. BUREAU OF RECLAMATION'S WATERSMART: WATER AND ENERGY EFFICIENCY FOR THE AUTOMATED METERING INFRASTRUCTURE EXPANSION AND DESIGNATE AN AUTHORIZED REPRESENTATIVE

WHEREAS, Eastern Municipal Water District desires to finance a portion of the costs of the Automated Metering Infrastructure Expansion (the "Project"); and

WHEREAS, the District intends to finance the cost of the Project or portions of the Project with monies provided by the U.S. Bureau of Reclamation ("Reclamation")

NOW, THEREFORE, THE BOARD OF DIRECTORS OF EASTERN MUNICIPAL WATER DISTRICT DOES HEREBY RESOLVE, DETERMINE AND ORDER AS FOLLOWS:

1. The General Manager (the "Authorized Representative") or his designee is hereby authorized and directed to sign and file, for and on behalf of the District, a WaterSMART: Water and Energy Efficiency Program Grant Application for financing the cost of the Project from Reclamation;

2. This Authorized Representative, or his designee, is authorized to certify that the District has and will comply with the financial and legal obligations associated with the receipt of a WaterSMART Water and Energy Efficiency Grant financial assistance;

3. That Eastern Municipal Water District has the capacity to provide funding and/or in-kind contributions specified in the funding plan; and

4. That Eastern Municipal Water District will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

5. This Resolution shall be effective upon its adoption.

DATED: February 17, 2016

/s/Randy A. Record
Randy A. Record, President

I hereby certify that the foregoing is a full, true and correct copy of the Resolution adopted by the Board of Directors of the Eastern Municipal Water District at its meeting held on February 17, 2016.

ATTEST:

/s/Sheila Zelaya
Sheila Zelaya, Deputy Board Secretary

(SEAL)

STATE OF CALIFORNIA)
)ss.
COUNTY OF RIVERSIDE)

I, TAMI MARTINEZ, Deputy Secretary to the Board of Directors of Eastern Municipal Water District, do hereby certify that the foregoing **Resolution** was duly adopted by the Board of Directors of said District at the Regular Meeting of said Board held on the 17th day of February, 2016, and that it was so adopted by the following vote:

AYES:	Directors, Slawson, Paule, Record, and Sullivan
NOES:	None
ABSTAIN:	None
ABSENT:	Kuebler

Tami Martinez, Deputy Secretary of the
Eastern Municipal Water District
and to the Board of Directors thereof

STATE OF CALIFORNIA)
)ss.
COUNTY OF RIVERSIDE)

I, TAMI MARTINEZ Deputy Secretary to the Board of Directors of Eastern Municipal Water District, do hereby certify that the above and foregoing is a full, true and correct copy of **Resolution No. 2016-027** of said Board, and that the same has not been amended or repealed.

DATE: February 17, 2016

Tami Martinez, Deputy Secretary of the
Eastern Municipal Water District
and to the Board of Directors thereof

(SEAL)

RESOLUTION NO. 2016-027

A RESOLUTION OF THE BOARD OF DIRECTORS OF EASTERN MUNICIPAL WATER DISTRICT TO SUPPORT THE SUBMITTAL OF AN APPLICATION TO THE U.S. BUREAU OF RECLAMATION'S WATERSMART: WATER AND ENERGY EFFICIENCY FOR THE AUTOMATED METERING INFRASTRUCTURE EXPANSION AND METER INSTALLATION AND DESIGNATE AN AUTHORIZED REPRESENTATIVE

WHEREAS, Eastern Municipal Water District desires to finance a portion of the costs of the Automated Metering Infrastructure Expansion and Meter Installation (the "Project"); and

WHEREAS, the District intends to finance the cost of the Project or portions of the Project with monies provided by the U.S. Bureau of Reclamation ("Reclamation")

NOW, THEREFORE, THE BOARD OF DIRECTORS OF EASTERN MUNICIPAL WATER DISTRICT DOES HEREBY RESOLVE, DETERMINE AND ORDER AS FOLLOWS:

1. The General Manager (the "Authorized Representative") or his designee is hereby authorized and directed to sign and file, for and on behalf of the District, a WaterSMART: Water and Energy Efficiency Program Grant Application for financing the cost of the Project from Reclamation;

2. This Authorized Representative, or his designee, is authorized to certify that the District has and will comply with the financial and legal obligations associated with the receipt of a WaterSMART Water and Energy Efficiency Grant financial assistance;

3. That Eastern Municipal Water District has the capacity to provide funding and/or in-kind contributions specified in the funding plan; and

4. That Eastern Municipal Water District will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

5. This Resolution shall be effective upon its adoption.

DATED: February 17, 2016

/s/Randy A. Record
Randy A. Record, President

I hereby certify that the foregoing is a full, true and correct copy of the Resolution adopted by the Board of Directors of the Eastern Municipal Water District at its meeting held on February 17, 2016.

ATTEST:

/s/Sheila Zelaya
Sheila Zelaya, Deputy Board Secretary

(SEAL)

Attachment: Bureau of Reclamation letter dated March 16, 2011

orig: Jevany
c: C. Rathbone

United States Department of the Interior
NATIONAL BUSINESS CENTER
Indirect Cost Services
2180 Harvard Street, Suite 430
Sacramento, CA 95815

March 16, 2011

Mr. Anthony J. Pack, General Manager
Eastern Municipal Water District
2270 Trumble Road
Perris, California 92572-8300

Dear Mr. Pack:

We reviewed the revised indirect cost rate proposal for the fiscal year (FY) ending June 30, 2010. We are prepared to approve a fixed carryforward rate of 46.53 percent for all programs. This rate is based on total direct costs, less capital expenditures and passthrough funds. The result of our review is summarized in the enclosed Exhibit. If you agree with the contents, **please sign and return the two copies** of the Indirect Cost Negotiation Agreement to us to complete the negotiation process. I will then sign and return one copy to you.

New indirect cost rate proposals are necessary to obtain approved rates for FYs 2011 and 2012. These proposals, which were due in our office before January 1, 2010 and 2011, respectively, may be based on actual costs, budgetary data, or a combination of these data. Your proposal requesting a rate for FY 2012 must include a carryforward computation for FY 2010 based on and or reconcilable to financial statements that meet the requirements of the Single Audit Act of 1984, Public Law 98-502, as amended. For additional information on how to prepare indirect cost proposals, please visit our Web site at http://www.aqd.nbc.gov/ics.

If you have any questions concerning the agreement or this letter, please write or call Ms. Maria Nua, Program Analyst, at (916) 566-7111.

Sincerely,

Deborah A. Moberly
Indirect Cost Coordinator

Enclosures: Exhibit and Negotiation Agreement

Ref: J: States & Local Gov/Local Gov't & Water Districts/Emwdw719/Emwd-Na.10

Phone: (916) 566-7111
Fax: (916) 566-7110

E-mail: ICS@nbc.gov
Internet: http://www.aqd.nbc.gov/ics

Eastern Municipal Water District
FY 2010 Rate Computation

Exhibit

Title/Description	Year Ending Amounts
FY 2010 Indirect Cost Pool	$57,837,782
FY 2010 Direct Cost Base	$124,295,220
FY 2010 Indirect Cost Rate	46.53%