SA-1 Hydropower and Water Conservation Project

WaterSMART: Water and Energy Efficiency Grants for FY2020
BOR-DO-20-F001- Funding Group 1

October 3, 2019

Prepared For:
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Table of Contents

Table of Tables

Table of Figures

SECTION 1: TECHNICAL PROPOSAL

A. Executive Summary

Date: October 3, 2019
City: Santa Ana
County: Orange County
State: California

Applicant Name: City of Santa Ana
Project Length of Time: 12 months
Estimated Completion Date: December 2020
Located on a Federal Facility: No

The City of Santa Ana Public Works Agency purchases 18,000,000 kWh of electrical power each year to operate well pumps and booster pumps to deliver potable water to 44,565 customer meters. The SA-1 Hydropower and Water Conservation Project proposes to enhance the renewable energy system at one of the City's import connections, which will offset some of the electric load, reduce the associated greenhouse gas (GHG) emissions and lower the City's electric bill. This objective will be achieved through the installation of hydropower: recovering hydraulic head from water that is delivered directly to the city from the Metropolitan Water District (MWD) at a pressure that is higher than what the city uses. The proposed project will generate an estimated additional 425,280 kWh annually at this location resulting in an annual savings of approximately $38,441. The financial savings will be utilized to implement Smart Irrigation Measures that will expand water conservation efforts at nine City facilities. These measures will include the replacement of existing irrigation controllers and standard nozzles with Smart irrigation controllers and high efficiency nozzles, together saving approximately 9.6 acre-feet of water annually. **The City of Santa Ana is ready for implementation of this project upon notice of award.** If awarded, the implementation will result in significant energy savings and water conservation for the City. The Project will further the City's water supply reliability and conservation goals by accomplishing the following:

- Estimated energy savings of at least 425,280 kilowatt-hours (kWh) per year (and as much as 877,140 kWh annually)
- Estimate savings of at least $38,441 annually to be used to implement smart irrigation measures to support water conservation efforts at City facilities
- Conserve 9.6 AFY annually making the City less reliant on import supplies
- Reduce time, labor, cost, energy, and Greenhouse Gas emissions
- Progress toward achieving the City of 2015 Santa Ana Climate Action Plan that identifies the goal to reduce carbon dioxide (CO_2e) 30% by the year 2020 and 40% by 2035, relative to the 2008 baseline.

B. Background Data

The City of Santa Ana is the second most populous city in Orange County, California, and with a population of 324,528 at the 2010 census, Santa Ana is the 57th most populous city in the United States. According to the 2000 U.S. Census, of U.S. cities with more than 300,000 people, Santa Ana is the 4th-most densely populated behind only New York City, San Francisco, and Chicago, and slightly denser than Boston. City of Santa Ana has a service area of 27 square miles and supplies more than 12.5 billion gallons of water with 44,565 meter connections to its residents. The City of Santa Ana has an average median household income below state and federal levels with 19.5 percent of the population in poverty.

The City relies on approximately 71 percent local groundwater from the Orange County Groundwater Basin (OC Basin). The Orange County Water District (OCWD) is responsible for managing the OC Basin, including water quality and groundwater replenishment, and the City manages its 21 groundwater wells and distribution system. The OC Basin is not adjudicated and as such, pumping from the OC Basin is managed through a process that uses financial incentives to encourage groundwater producers to pump a sustainable amount of water.

Approximately one percent of the City's supply is provided through OCWD's Green Acres (recycled water) project. The remaining 28 percent of the City's water supply is supplemented by the MWD, which receives water from the Colorado River via the Colorado River Aqueduct (CRA) and the Lake Oroville watershed in Northern California through the State Water project (SWP). The water obtained from these sources is treated at a regional plant called the Robert B. Diemer Filtration Plant located north of Yorba Linda. Typically, the Diemer Filtration Plant receives a blend of Colorado River water from Lake Mathews through the Metropolitan Lower Feeder and SWP water through the Yorba Linda Feeder.

The city is divided into two zones for potable water supply: the smaller "north zone" (northeast of Interstate 5 Fwy) which is kept at a pressure of approximately 100 psig; and the larger "main zone", where the pressure has been observed to be about 70 psig as water leaves the booster pumps, and lower as it flows through the distribution system. The City manages and maintains seven imported water connections that receive water through MWD's Orange County and East Orange County Feeder pipelines. The seven metered connections (SA-1 through SA-7) have a total capacity of 60,580 gallons-per-minute and transfer water into the City's distribution system, after reducing the pressure. The connection points use pressure reducing valves (PRVs) to drop the pressure from approximately 160 to 190 psig in the MWD pipes to the city pressure of approximately 70 psig or 100 psig at one connection in the upper zone.

The City maintains 480 miles of transmission and distribution mains, 10 reservoirs with a storage capacity of 49.3 million gallons, seven pumping stations and 26 booster pumps, four

pressure regulating stations with pressure reducing and safety valves (PRV/PSV) that allow flows between the water system's two pressure zones (High Zone to the Low Zone), 21 groundwater wells, and seven import water connections. The City's Public Works Agency - Water Resources Division oversees and maintains the daily operations of the water system.

Because of the drought conditions, on April 14, 2015, MWD took action to reduce water deliveries to its member agencies, including the City of Santa Ana's share, which was reduced by 15 percent. Following this action, on June 2, 2015, the City Council of Santa Ana declared a Phase 2 Water Supply Shortage. By this resolution, the City Council declared that a water shortage existed and ordered that water customers must reduce their monthly total potable water consumption by 12 percent, using 2013 as the base year. Overall, City of Santa Ana water use decreased by 16.97 percent between June 2015 and February 2016 — the nine months of the initial statewide conservation mandate — achieving a 12 percent reduction.

While the current water conditions have improved, the long-term impacts from the historic drought, as well as continued drought conditions of 2018, have served as a warning for the City to explore new energy efficiency methods to save every drop of its precious water resources, particularly since water demands in the City are projected to increase in the coming decades.

As shown below in Table 1, the City's total water demand in 2015 was 36,656 acre-feet and is expected to increase to 39,716 acre-feet by 2040.

Table 1: Actual and Projected Water Demands in Acre Feet

Use Type	Actual	Projected Water Use				
	2015	2020	2025	2030	2035	2040
Single-Family	14,084	14,093	15,138	15,242	15,238	15,260
Multi-Family	10,399	10,406	11,177	11,254	11,251	11,267
Commercial, Institutional, Industrial (CII)	12,025	12,033	12,925	13,014	13,010	13,029
Landscape (Large)	147	147	158	159	159	159
Total	36,656	36,678	39,397	39,669	39,658	39,716

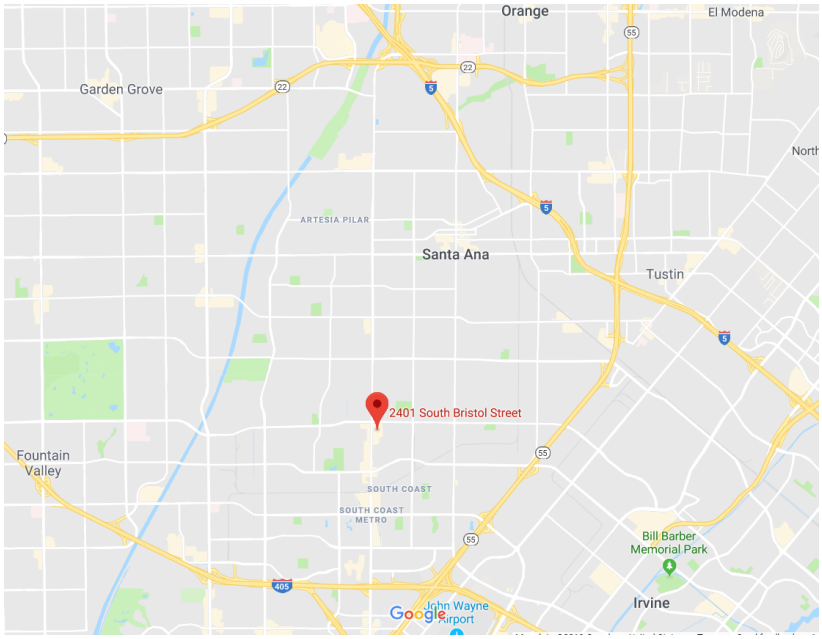
The City of Santa Ana received a grant from the Drought Response Program of the Bureau of Reclamation in 2018 for its Well 32 Rehabilitation Improvements

C. Project Location

The SA-1 Hydropower and Water Conservation Project is located in City of Santa Ana in Orange County, California, approximately 30 miles southeast of Los Angeles. The City of Santa Ana is bounded on the north by the Cities of Garden Grove and Orange, on the east by the Cities of Tustin and Irvine, on the south by the City of Costa Mesa, and on the west by the Cities of Westminster and Fountain Valley. The approximate project latitude is 33°44'N and longitude is 117°52'W.

The SA-1 is located in the Garthe Pumping station at 2401 Bristol Ave. See Figure 1 (below) for a map of the City including the location of SA-1.

Figure 1 - Location Map of SA-1



D. Technical Project Description

In February 2019, the Water Resources Division of the City of Santa Ana Public Works Agency approved a "Water Systems Alternative Energy Feasibility Study" prepared by Newcomb Anderson McCormick (NAM), a Willan Company. This study included an evaluation of the potential to generate electricity by recovering excess head from the water delivered to the City directly from the Metropolitan Water District (MWD).

SA-1 is one of seven (7) MWD connections that provide approximately 25-30% of the City's water; of which SA-1 provides 31% of this total. According to the 2017 Water Master Plan, the normal operating capacity for SA-1 is 5.15 MGD (8.0 cfs). Table 2 shows the monthly flow through SA-1 as well as the normal monthly operating capacity.

Table 2: SA-1 Monthly Flow and Operating Capacity (2017)

Month	Flow through SA 1 (Cubic Feet)	Normal Operating Capacity	Calculated Hours/Month at Normal Operating Capacity
Jan-17	400	0%	0
Feb-17	4,511,700	23%	157
Mar-17	5,350,500	25%	186
Apr-17	19,539,100	94%	678
May-17	20,903,300	98%	726
Jun-l7	14,247,700	69%	495
Jul-17	21,471,100	100%	745
Aug-17	21,467,200	100%	745
Sep-17	20,771,300	100%	721
Oct-17	21, 131,000	99%	734
Nov-17	20,539,500	99%	713
Dec-17	21,451,800	100%	745
Total	191,384,600		6645

The flow data (Column 2) in this table is based upon the city's Monthly Production Reports for the 2017 calendar year, which is taken to be representative of flows in typical years.

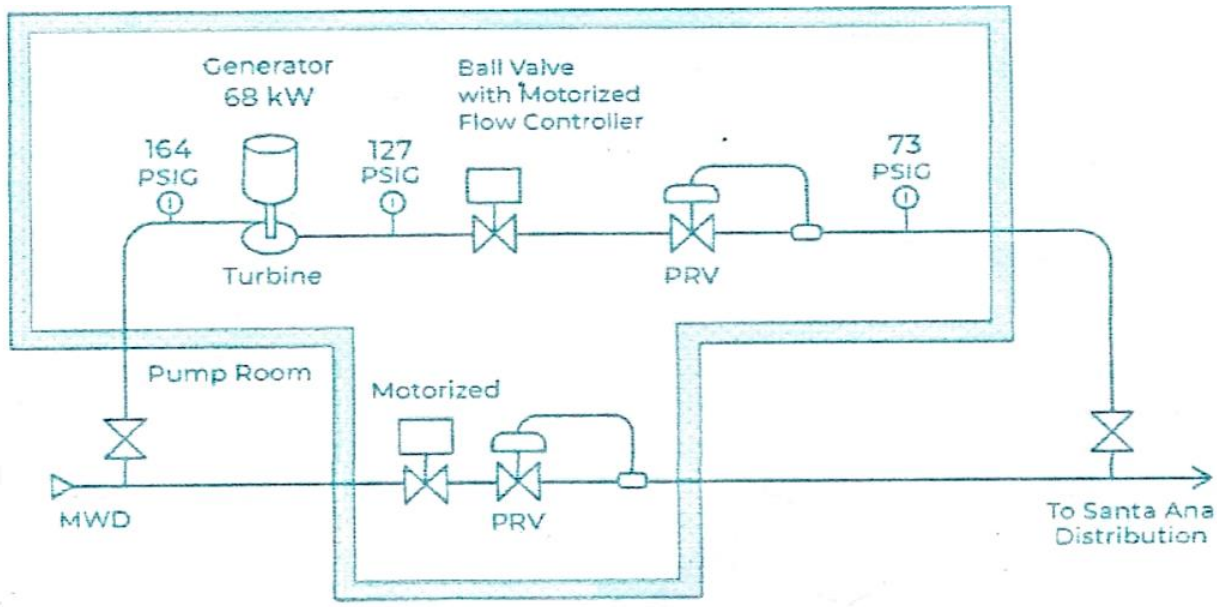
MWD connections are typically operated either fully open or fully closed. When the flow is less than this capacity, it is assumed that during some hours of that particular month the flow is zero. In other words, if the Normal Operating Capacity (Column 3) is shown to be 25%, this implies the unit operates only 25% of the available time that particular month. Based upon this monthly normal operating capacity indicated in Column 3, the total hours per month were then calculated and listed in Column 4.

Station SA-1 is the only MWD import connection point in the City of Santa Ana where electricity is currently generated. The imported water is fed through a Byron Jackson 2-stage hydro turbine, which drives a 200-hp Siemens Allis generator to offset electricity purchases for the wells and booster pumps at this site. After the discharge of the turbine, there is a manual

control valve and a pressure reducing valve (PRV) to drop the pressure as needed to match the City's pressure.

Figure 2 (below) illustrates the existing configuration:

Figure 2: SA-1 Existing Configuration (July 2018)



The NAM study indicated that during a July 2018 site visit, MWD pressure was observed at 164 psig, and City system pressure as 73 psig. The pressure after the turbine and before the PRV was observed to be 127 psig per the local meter. In other words, the pressure dropped 37 psi (85 feet) through the turbine. Flow was 8.2 cfs at that time. The theoretical power calculated from flow and pressure drop (assuming a turbine mechanical efficiency of 70%), fields 39 kW as follows:

$$\frac{8.2\ ft^3}{sec} \times 85\ ft \times \frac{hp\ sec}{550\ ft\ lbs} \times \frac{62.4\ lbs}{ft^3} \times 70\%\ mech.eff. \times 95\%\ elect.eff \times \frac{0.746\ kW}{hp} = 39\ kW$$

The electric meter on the turbine read 68kW of electrical power. This discrepancy between the theoretical (39kW) and the actual (68kW) reveals the inefficiencies in the current operations including the condition of the (32-year-old) turbine, which was re-built 14 years ago, and is now is approaching the end of its useful life. For purposes of this report, to be most conservative, it was assumed that the electric meter reading was actuate, and 68kW was used as a baseline for evaluation.

The NAM study suggests replacing the existing hydro-generator with a new unit, designed around the parameters the original unit was designed for; e.g. a flowrate of 8 cfs, which is what the unit is typically controlled to. One potential turbine that could be used is a Canyon Hydro In-Line Turbine ILT12-33-9.0 which is relatively inexpensive and matches the geometry of the existing configuration. The Canyon Hydro turbine indicates a mechanical efficiency of 83.5% at the design point of 8 cfs and 245-feet. The theoretical power would then be calculated as follows:

$$\frac{8.0\ ft^3}{sec} \times 245\ ft \times \frac{hp\ sec}{550\ ft\ lbs} \times \frac{62.4\ lbs}{ft^3} \times 83.5\%\ mech.eff. \times 95\%\ elect.eff \times \frac{0.746\ kW}{hp} = 132\ kW$$

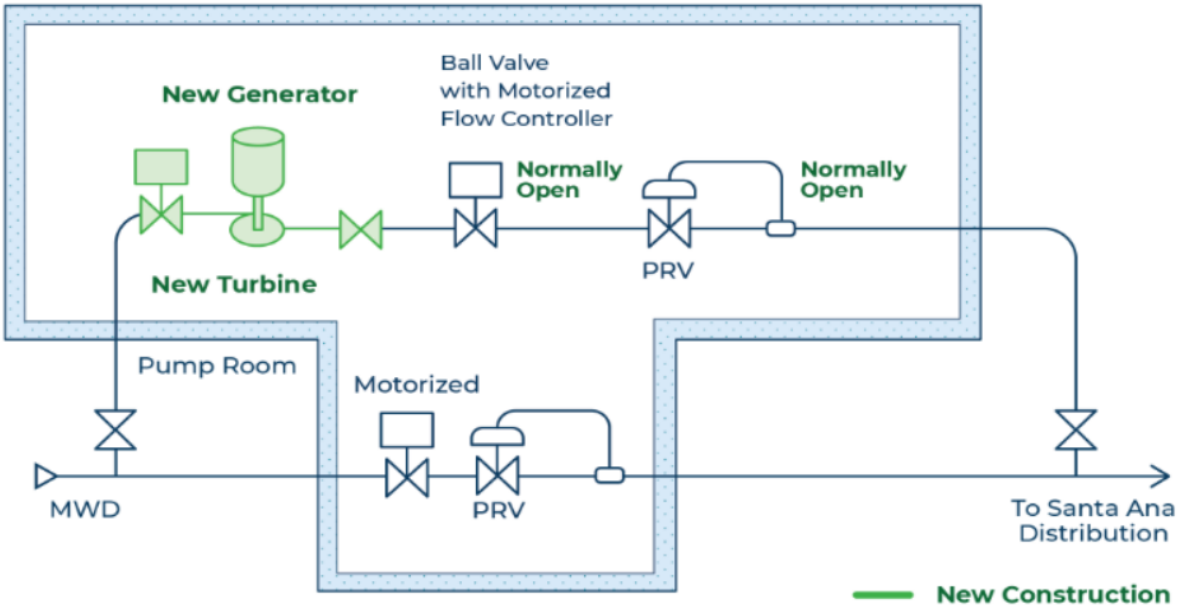
As a result, the installation of a new hydro-turbine and generator will (conservatively) increase the current output from 68kW to 132 kW, or a net increase of 64kW. The increase would actually be as high as 132kW if the current unit fails (i.e. output zero). This net increase will occur during the 6,645 hours per year that this connection is in use.

The estimate energy savings is then easily calculated by multiplying the expected output (kW) by the hours per year that the unit is in use (6645 hours). **The estimated energy savings would then be 425,280 kWh of renewable energy each year, and as much as 877,140 kWh annually.** Based on the current appropriate rate schedule (i.e. $0.09 per kWh on rate TOU-PA-3-B-S per the NAM study) this annual savings is estimated to be $38,441 (which could be as much as $79,185 if the current unit fails).

The proposed project would consist of the demolition of the existing unit (i.e. removal of the generator, turbine shaft, impeller and upper housing), installing a new similar unit and connecting the electrical and control systems. Interconnection with SCE is also required. A new foundation would be constructed from the salvaged existing concrete bell. The existing manual valve and PRV would no longer be necessary; a new automated valve would be installed upstream of the turbine, proving a remote shut off for flow through the turbine.

The following figure illustrates the proposed configuration:

Figure 3: SA-1 Proposed Configuration



The City of Santa Ana also proposes to modernize the City's existing infrastructure and improve its water conservation efforts at nine of City's facilities by installing smart irrigation controllers and high-efficiency nozzles. Description for this part of the work is covered in below sections.

E. Evaluation Criteria

E.1.1. Evaluation Criterion A—Quantifiable Water Savings

Up to 30 points may be awarded for this criterion. This criterion prioritizes projects that will conserve water and improve water use efficiency by modernizing existing infrastructure. Points will be allocated based on the quantifiable water savings expected as a result of the project. Points will be allocated to give greater consideration to projects that are expected to result in more significant water savings.
All applicants should be sure to address the following:

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

With the savings realized through the implementation of the hydropower component of this project, the City proposes to modernize the City's existing infrastructure and improve its water conservation efforts by installing Smart irrigation controllers and high-efficiency nozzles at the below City facilities. Total water consumption at above sites is 19.2 AFY. These facilities are listed below:

Table 3 - City facilities receiving Smart Irrigation Measures

Site #	Site Name	Address	Square Feet (approx.)
1	**Cambridge Station**	2736 N Cambridge St., Santa Ana, CA 90701	31,300
2	**East Station**	1730 S Santa Fe, Santa Ana, CA 92705	56,300
3	**J. Garthe Station**	2401 N Bristol St, Santa Ana, CA 92706	100,800
4	**South Station**	1727 W Alton Ave, Santa Ana CA 92705	79,800
5	**West Station**	209 2/4 S Mountain View, Santa Ana, CA 92703	36,100
6	**Walnut**	723 W Walnut St, Santa Ana, CA 92701	6,600
7	**Well 33**	917 W Walnut St, Santa Ana, CA 92703	5,200
8	**Well 35**	1718 N Sydney Pl, Santa Ana, CA 92706	7,150
9	**SARTC**	1000 E Santa Ana Blvd, Santa Ana, CA 92701	90,000

Smart Irrigation Controllers

In April 2008, The US Bureau of Reclamation published "Final Technical Memorandum 86-68210-SCAO-01" entitled, '*Summary of Smart Controller Water Savings Studies'.* This memorandum provided data (based on real world studies) showing that for the numerous agencies and applications that were studied throughout the country, the installation of smart irrigation controllers resulted in a significant reduction of water usage. For example; in 2007, the City of Bend, Oregon installed Smart irrigation controllers at 29 city-owned and study partner-owned commercial sites. Average water savings was reported to be 41%, with some sites demonstrating up to 86% savings.

More recently; in April 2014, the Environmental Energy Technologies Division of Lawrence Berkeley National Laboratory published a report (supported by the U.S. Environmental Protection Agency) entitled '*Estimates of Savings Achievable from Irrigation Controller*". This report provided information examined in 47 other references, and revealed that the installation of Smart irrigation controllers resulted in a significant annual reduction of water usage . It noted that on aggregate, Weather Based Irrigation Controllers (WBIC) resulted in water savings of approximately 15% (21% in commercial application), a higher savings of 38% for Soils Moisture Sensors (SMS) and 21% for Rain Sensors (RS).

Energy Efficient Nozzles

The sprinkler body is the exterior shell that connects to the irrigation system piping and houses the spray nozzle that applies water on the landscape. Landscape irrigation sprinklers are often installed at sites where the system pressure is higher than what is recommended for the sprinkler nozzle. This can lead to excessive flow rates, misting, fogging, and uneven coverage; all which amount to inefficiency and water waste.

The Environmental Protection Agency (EPA) recommends the installation of "WaterSense" labeled spray sprinklers with integral pressure regulation that can reduce water waste by providing a constant flow at the sprinkler nozzle. When the sprinkler maintains a pressure near its optimal operating pressure, the connected nozzle is better able to generate the right amount of water spray and coverage for more uniform distribution of water across the landscape. According to the EPA, "experts estimate that as much as 50 percent of outdoor water use is wasted due to overwatering caused by inefficiencies in irrigation methods and systems". See link below for referenced information:
https://www.epa.gov/watersense/spray-sprinkler-bodies

For purposes of this application, based upon the documented results of these studies, we are assuming a very conservative estimated water savings of 50% anticipated with the installation of Smart controllers and energy efficient nozzles.

To calculate the amount of water expected to be conserved (in acre-feet per year) as a direct result of the installation of the Smart controllers and energy efficient nozzles, we can easily multiply the total (historic) annual usage for the sites listed in Table 3 above by the 50% reduction to determine the amount of water conserved annually, as follows:

19.2 AFY x 50% = 9.6 AFY water conserved through Smart Irrigation Measures.

Together the Installation of the smart irrigation measures component of this project is expected to conserve 9.6 AFY.

After project implementation, actual water savings will be verified by conducting an audit that will compare historical data of water usage at the nine affected sites prior to implementation, and again for two years after implementation of the proposed smart irrigation measures. That differential will represent the actual water savings for the proposed project.

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

Santa Ana relies upon imported water from MWD for approximately 28% of its water supply. In response to MWDs concerns regarding the potential impacts recent droughts and climate change may have on the quantity of imported water available, the City is eager to do its part to increase the reliability of this supply. Implementation of the proposed smart irritation measures will improve conservation and management efforts by making the conserved water available for multiple beneficial uses and users, even helping to resolving water related conflicts in the region reducing the City's need for imported water from MWD, and making more water available for other customers and/or environmental benefits (e.g. maintaining levels in the Colorado River, etc.)

Describe the support/documentation of estimated water savings: Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations. Note: projects that do not provide sufficient supporting detail/calculations may not receive credit under this section. 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. 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. Further, the water savings must be the result of reducing or eliminating a current, ongoing loss, not the result of an expected future loss.

The calculation above (E.1.1.) illustrates exactly how the estimated water savings was calculated. After project implementation, actual water savings will be verified by conducting an audit that will compare historical data of water usage at the nine affected sites prior to

implementation, and again for two years after implementation of the proposed smart irrigation measures. That differential will represent the actual water savings for the proposed project.

Please address the following questions according to the type of infrastructure improvement you are proposing for funding. See Appendix A: Benefit Quantification and Performance Measure Guidance for additional guidance on quantifying water savings.

(1) Canal Lining/Piping:

The City of Santa Ana will not be installing Canal Lining/Piping as part of the proposed project.

(2) Municipal Metering:

The City of Santa Ana will not be installing meters as part of the proposed project.

(3) Irrigation Flow Measurement

The City of Santa Ana will not be installing Irrigation Flow Measurement as a part of this project.

(4) Turf Removal

The City of Santa Ana will not be installing turf removal as part of the proposed project.

(5) Smart Irrigation Controller and High Efficiency Nozzles: Applicants proposing smart irrigation controller or high efficiency nozzle projects should address the following:

a. How have the average annual water saving estimates been determined? Please provide all relevant calculations, assumptions and supporting data.

The calculation above (E.1.1.) illustrates exactly how the estimated water savings was calculated.

b. Was historical water consumption data evaluated to estimate the percent reduction in water demand per unit area of irrigated landscape? If so, did the evaluation include a weather adjustment component?

City of Santa Ana utilized the actual water usage of the proposed city facilities receiving Smart Irrigation Measures in the last twelve months that are adjusted based on the season and therefore accurately depicts the water consumption at these sites.

c. What types (manufacturer and model) of devices will be installed and what quality of each.

The city estimates replacing 10 controllers and 110 water efficient nozzles. All devices shall be WaterSense labeled and certified, and in compliance with all EPA criteria. The manufacturer for the Smart Irrigation Measures will be Hunter Smart Controller and Rain Sensors and Hunter MP Rotor Water Saving Nozzles.

d. Will the devices be installed through a rebate or direct-install program?

The devices be installed through a direct-install program.

e. Will site audits be performed before and after installation?

Yes; before installation and for two years after installation.

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

Site audits will be performed before and after installation. To verify the actual amount of water savings, historical water usage data prior to implementation of the smart irrigation measures will be compared with water usage data for two years after implementation of the smart irrigation measures at each of the nine city locations. That differential will represent the actual water savings for the proposed project.

E.1.2. Evaluation Criterion B — Water Supply Reliability

Up to 18 points may be awarded under this criterion. This criterion prioritizes projects that address water reliability concerns, including making water available for multiple beneficial uses and resolving water related conflicts in the region. Note that an agreement will not be awarded for an improvement to conserve irrigation water unless the applicant agrees to the terms of Section 9504(a)(3)(B) of Public Law 111-11 (see p. 52 of the FOA for additional information).

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

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

     Southern California has experienced several significant droughts in the last 15 years, which has resulted in drastic decrease of water supplies. The City currently relies on imported water from the MWD for approximately 28% of its water supply. Prior to 2018 winter, the snowpack and groundwater levels decreased due to severe dry conditions, reducing the amount of local groundwater supply and imported water available for the City.

Because of the persistent drought conditions in recent years, MWD took action to reduce water deliveries to its member agencies, including the City of Santa Ana; effective July 1, 2015, enforcing heavy surcharges if the specified allocations were exceeded. The City of Santa Ana's water deliveries were reduced by 15%. Following this action, on June 2, 2015, the City Council of Santa Ana declared a Phase 2 Water Supply Shortage that implemented additional regulations and restrictions on the delivery of water. By this resolution, the City Council declared that a water shortage existed throughout the area served by the City of Santa Ana Water Resources Division and ordered that water customers must reduce their monthly total potable water consumption by 12%, using 2013 as the base year. Overall, the City of Santa Ana's water use decreased by 16.97% between June 2015 and February 2016, the nine months of the initial statewide conservation mandate. Although this is a step forward, the City expects that the proposed project will further increase its water conservation efforts and water reliability, as climate change and environmental impacts continue to influence water sources.

As shown in the City's 2015 UWMP, the City's population is projected to increase from 335,299 in 2015 to 343,766 by 2040. The City's total water demand is expected to increase from 36,656 acre-feet in 2015 to 39,716 acre-feet or over 8% by 2040.

The City of Santa Ana is one of MWD's 26 member-agencies (including 14 cities, 11 municipal water districts, and one county water authority). Implementation of the proposed project will help ensure the City serves as a responsible member by reducing its dependence on the finite supply from MWD, thereby supporting water supply reliability during times of drought. Project implementation will also help prepare for projected increases in water demands, making water available for multiple beneficial uses and help to resolve or prevent water related conflicts in the region.

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

The City relies on MWD for approximately 28% of its water supply and coordinates its long-term and water-shortage planning with these agencies. The City can better contribute to supporting water reliability in the region by developing robust water conservation efforts and effectively maintaining its water production assets. The proposed project will enhance water conservation management efforts to support the reliability of the City's water supply and increase water supply reliability

Water savings realized by implementation of the Irrigation Measures component of the proposed project will supplement the groundwater in the OC Basin benefitting the region and all member agencies. It will also reduce the City's need for purchase of expensive imported water from MWD, making more available for the other member agencies.

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

No additional mechanisms will be necessary to allocate the conserved water for its intended use. The conserved water will be used to supplement the groundwater supply from the OC Basin and reduce the need to purchase imported water.

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

The total estimated amount of conserved water is 9.6 acre-feet annually, and 192 AF over the (conservatively) 20 year expected life of the hydropower project will be used to supplement the City's finite water supply from the OC Basin, as well as offset the need to purchase costly imported water.

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

- *Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?*

The implementation of the proposed smart irrigation measures will benefit municipal, industrial, and environmental, recreation sectors, making more imported water available to these sectors in times of drought. The project will benefit the overall environment by enhancing water reliability, conserving valuable water, reducing greenhouse gas emissions, and improving water conservation management.

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

The project involves alternative energy and irrigation improvements throughout the City of Santa Ana and will not directly benefit any particular specific species. However, this project will enhance water reliability, conserve water, reduce greenhouse gas emissions, and improve water conservation management which will benefit the surrounding environment and wildlife overall.

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

  As noted earlier, City of Santa Ana responded to MWD that called on its 26-member agency for water conservation. The City of Santa Ana (City) relies on approximately 71% local groundwater from the OC Basin, and 28% purchased water from MWD and therefore, any amount of water savings by implementation of the proposed project, will benefit the member agencies in the region and their water users.

- *Will the project benefit Indian tribes?*

  No, this project will not directly affect Indian tribes.

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

  The City of Santa Ana has an average median household income below state and federal levels. According to the U.S Census Bureau (2013-2017), the median household income is $57,151 in 2017 dollars, with 19.5 percent of the population in poverty. The median household income in California (2013-2017) was 67,169. This proposed project will benefit all residents of Santa Ana, including those low-income households.

- *Describe how the project will help to achieve these multiple benefits. In your response, please address where the conserved water will go and where it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.*

  The conserved water will be used to supplement the groundwater supply from the OC Basin and reduce the need to purchase imported water for the City of Santa Ana. Reduced draw from the OC Basin will benefit MWD and its 26-member agencies and their customers.

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

The City of Santa Ana is committed to keeping its community informed and intends to prepare an education insert in the customers water bill to inform and educate them of the smart irrigation measures the City has undertaken, while encouraging them to do the same. Implementation of the proposed project will promote partnership between its customer and the agency that will be beneficial in meeting current and future water conservation goals.

The City of Santa Ana has started communication with Southern California Edison (SCE) who are very supportive of this project and have been collaborating with the City on this project. City of Santa Ana has been one of the leaders in conservation in the region and will communicate the results of this project to other member agencies so that it can be duplicated by others.

- *Is there widespread support for the project?*

Water conservation through Irrigation Measures provides a benefit to the entire service area in the form of reduced water rates and a more resilient water supply; it will generate widespread support among City customers and water agency management. As discussed previously, imported water is the least reliable supply for City of Santa Ana and also 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 the City to have a more reliable supply in the face of water-related crises such as earthquakes, flooding and drought. As mentioned above, this project is fully supported by SCE as stated in their letter of support that can be viewed in Appendix 3.

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

Since adoption of the water conservation mandates, City of Santa Ana has observed a positive response expressed by the behavior modification of its customers. With greater levels of customer education, the City expects individual customers to be motived to implement their own conservation measures, particularly if an incentive can be made available. Customer response on the recent water conservation goals is indicative of their desire to continue supporting water conservation efforts.

SCE's support will allow the City to have a streamlined process during the project implementation completing the project within time and budget.

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

When the public is educated about the implementation of the proposed project, and the benefits to each resident, they will be more inclined to implement their own conservation measures for an even more robust response to water conservation. The City leading by example will motivate the public and the potential to offer incentives will further the goal. Additionally, other member agencies will likely be encouraged to implement similar projects in their jurisdictions.

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

This project will not directly prevent a water-related crisis. However, in times of drought, the water conservation benefits from this project will help alleviate the City's reliance on valuable groundwater and imported water supplies, as well as prepare the City for future needs. In addition, implementation of the proposed project will be very beneficial in achieving the water conservation goals of the city and the financial goals

of the water customers. This will allow the City to have optimum water usage from the OC Basin resulting in reduced competition for the water supply.

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

  There are no third-party partners proposed for this project.

4. *Will the project address water supply reliability in other ways not described above?*
   No.

E.1.3. Evaluation Criterion C—Implementing Hydropower

*Up to **18 points** may be awarded for this criterion. This criterion prioritizes projects that will install new hydropower capacity in order to utilize our natural resources to ensure energy is available to meet our security and economic needs.*

If the proposed project includes construction or installation of a hydropower system, please address the following:

***Describe the amount of energy capacity.** For projects that implement hydropower systems, state the estimated amount of capacity (in kilowatts) of the system. Please provide sufficient detail supporting the stated estimate, including all calculations in support of the estimate.*

According to the NAM study, during a July 2018 site visit, MWD pressure was observed at 164 psig, and City system pressure as 73 psig. The pressure after the turbine and before the PRV was observed to be 127 psig per the local meter. In other words, the pressure dropped 37 psi (85 feet) through the turbine. Flow was 8.2 cfs at that time. (This is field observation was consistent with historical records.) The actual reading on the electric meter on the turbine was 68kW of electrical power. Although a theoretical power calculation would yield a lower number; to be the most conservative, for purposes of this evaluation it was assumed that the electric meter reading was actuate, and 68kW was used as a baseline for evaluation.

The NAM study suggests replacing the existing hydro-generator with a new unit, designed around the parameters the original unit was designed for; e.g. a flowrate of 8 cfs, which is what the unit is typically controlled to. The replacement turbine is expected to feature a mechanical efficiency of 83.5% at 8 cfs. The theoretical power would then be calculated as follows:

$$\frac{8.0\ ft^3}{sec} \times 245\ ft \times \frac{hp\ sec}{550\ ft\ lbs} \times \frac{62.4\ lbs}{ft^3} \times 83.5\%\ mech.eff. \times 95\%\ elect.eff \times \frac{0.746\ kW}{hp} = 132\ kW$$

Consequently, the installation of a new hydro turbine and generator will (conservatively) increase the output from 68kW to 132 kW, or a **net increase of 64kW**. The increase would actually be **as high as 132kW** if the current until fails (i.e. output zero).

Describe the amount of energy generated. *For projects that implement hydropower systems, state the estimated amount of energy that the system will generate (in kilowatt hours per year). Please provide sufficient detail supporting the stated estimate, including all calculations in support of the estimate.*

As explained in the paragraph above, the installation of a new hydro turbine and generator will (conservatively) increase the output from 68kW to 132 kW, or a **net increase of 64kW**. The increase would actually be **as high as 132kW** if the current until fails (i.e. output zero). Pursuant to the historic date provided in the NAM study, and shown in Table 1 of this application, SA-1 is in operation approximately 6645 hours per year.

This net increase (i.e. between **64kW** and 132 kW) will occur during the 6,645 hours per year that this connection is in use.

The estimated energy generated would then be calculated as follows:

64 kW x 6645 hours = 425,280 kWh of renewable energy each year
and up to
132 kW x 6645hours = 877,140 kWh annually.

Describe any other benefits of the hydropower project. *Please describe and provide sufficient detail on any additional benefits expected to result from the hydropower project, including:*

- *Any expected reduction in the use of energy currently supplied through a Reclamation project.*
- *Anticipated benefits to other sectors/entities.*
- *Expected water needs, if any, of the system.*

The hydropower project will further the City of Santa Ana's water supply reliability and conservation goals as follows:

- Expected reduction in the current use of energy of at least 425,280 kilowatt-hours (kWh) per year (and as much as 877,140 kWh annually)
- Estimate savings of at least $38,441 annually to be used to implement Irrigation Measures to support water conservation efforts at City facilities
- Conserve 9.6 AFY annually making the City less reliant on import supplies
- Reduce time, labor, cost, energy, and Greenhouse Gas emissions
- Progress toward achieving the City of 2015 Santa Ana Climate Action Plan that identifies the goal to reduce $C0_2e$ 30% by the year 2020 and 40% by 2035, relative to the 2008 baseline.

The proposed hydropower project will not generate additional water needs; rather, it will take advantage of the existing MWD imported water connection already being supplied to the City system by recovering lost hydraulic head.

Energy savings gained from implementation of this project will reduce the grid load, increase energy storage, and lower production costs for the SCE customers in Southern California.

E.1.4. Evaluation Criterion D — Complementing On-Farm Irrigation Improvements

This criterion is not applicable to this project.

E.1.5. Evaluation Criterion E — Department of Interior Priorities

Up to 10 points may be awarded based on the extent that the proposal demonstrates that the project supports the Department of the Interior priorities. Please address those priorities that are applicable to your project. It is not necessary to address priorities that are not applicable to your project. A project will not necessarily receive more points simply because multiple priorities are addressed. Points will be allocated based on the degree to which the project supports one or more of the priorities listed, and whether the connection to the priority(ies) is well supported in the proposal.

1. *Creating a conservation stewardship legacy second only to Teddy Roosevelt*
    a. Utilize science to identify best practices to manage land and water resources and adapt to changes in the environment;

        The City of Santa Ana plans to use new, more efficient technology such as Smart irrigation controllers to more efficiently manage its limited water resources and adapt to changes in the environment. These smart irrigation controllers actually "sense" changes in the environment (soil/air) and adapt to these changes by adjusting the irrigation water flow accordingly.

    b. Examine land use planning processes and land use designations that govern public use and access;
    c. Revise and streamline the environmental and regulatory review process while maintaining environmental standards.
    d. Review DOI water storage, transportation, and distribution systems to identify opportunities to resolve conflicts and expand capacity;
    e. Foster relationships with conservation organizations advocating for balanced stewardship and use of public lands;
    f. Identify and implement initiatives to expand access to DOI lands for hunting and fishing;
    g. Shift the balance towards providing greater public access to public lands over restrictions to access.

2. *Utilizing our natural resources*
    a. Ensure American Energy is available to meet our security and economic needs;

        The proposed project will better use our limited natural resources by upgrading the hydropower system at a water import connection point and recovering lost hydraulic head is estimated to conserve between 425,280 kWh and 877,140 kWh annually. Replacing the irrigation components (controllers and nozzles) is expected

to conserve 9.6 AF of water on an annual basis. As a result, additional energy savings will be achieved by the reduced purchases of imported water required, leading to a reduction of greenhouse gas for production and delivery that will result in a cleaner environment and reduced energy spent dealing with its impacts.

b. Ensure access to mineral resources, especially the critical and rare earth minerals needed for scientific, technological, or military applications;
c. Refocus timber programs to embrace the entire 'healthy forests' lifecycle;
d. Manage competition for grazing resources.

3. *Restoring trust with local communities*
   a. Be a better neighbor with those closest to our resources by improving dialogue and relationships with persons and entities bordering our lands;
   b. Expand the lines of communication with Governors, state natural resource offices, Fish and Wildlife offices, water authorities, county commissioners, Tribes, and local communities.
4. *Striking a regulatory balance*
   a. Reduce the administrative and regulatory burden imposed on U.S. industry and the public;
   b. Ensure that Endangered Species Act decisions are based on strong science and thorough analysis.
5. *Modernizing our infrastructure*
   a. Support the White House Public/Private Partnership Initiative to modernize U.S. infrastructure;

The City's existing aging water infrastructure includes a 32-year old hydro-generator that has well exceeded its expected life; as well as older, inefficient irrigation controller and nozzles. The proposed project directly supports the White House initiative to modernize US infrastructure by replacing the hydro-generator and irrigation components with state-of-the-art technology. These modernization efforts promise to save the city between 425.280 kWh and 877,140 kWh and approximately 9.6 AF of water on an annual basis.

b. Remove impediments to infrastructure development and facilitate private sector efforts to construct infrastructure projects serving American needs;
c. Prioritize DOI infrastructure needs to highlight: 1) Construction of infrastructure; 2) Cyclical maintenance; 3) Deferred maintenance.

E.1.6. Evaluation Criterion F — Implementation and Results

E.1.6.1. Subcriterion F.1 — Project Planning

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

The City of Santa Ana is dedicated to supporting water reliability and water conservation. In May 2015, the City passed a Water Conservation Ordinance No. NS-2877 (See Appendix D of the 2015 UWMP). The purpose of the Water Conservation Ordinance is to encourage reduced water consumption within the City through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within the City. It provides procedures, rules, and regulations for mandatory water conservation that gain results while minimizing the effect of a water shortage on the City's water customers.

In addition, as previously mentioned, the City of Santa Ana has deeply committed to saving the City's precious water resources and developed numerous planning documents addressing water shortages and conservation alternatives including:

- City of Santa Ana Permanent Water Conservation requirements (Municipal Code section 39-106) — https://library.municode.com/ca/santa_ana/codes/code_of_ordinances?nodeId=PTIITHCO_CH39WASE_ARTVIWASHCOPL_DIV4REGOWACOPH_S39-106PEWACOREROAGWAWA
- City of Santa Ana Strategic Plan – Community Facilities and Infrastructure: https://www.dropbox.com/home/work/ess/Projects/SA%20SRF/City%20of%20Santa%20Ana/From%20Santa%20Ana?preview=Strategy+Plan+-+CommunityFacilitiesandInfrastructure.pdf
- City of Santa Ana Climate Action Plan - https://www.santa-ana.org/sites/default/files/Documents/climate_action_plan.pdf
- City of Santa Ana Drought Action Plan - https://www.dropbox.com/home/work/ess/Projects/SA%20SRF/City%20of%20Santa%20Ana/From%20Santa%20Ana?preview=Drought+Action+Plan.pdf
- City of Santa Ana Water Master Plan (2017) - https://www.santa-ana.org/sites/default/files/Documents/2017WaterMasterPlan.pdf
- Urban Water Management Plan (2015) – https://www.santa-ana.org/sites/default/files/Documents/urban_water_management_plan.pdf
- Water Systems Alternative Energy Feasibility Study: https://www.dropbox.com/s/zel1wyw637nfazm/Renewable%20Generation%20Study%204%20Feb%202019%20Final%20%281%29.pdf?dl=0

These planning documents recognize water conservation as the most cost-effective way to remedy current and future water resource management issues and in doing so, they provide support for the proposed project. This was proven by the City's impressive reduction of water usage during the recent California drought.

Describe how the project conforms to and meets the goals of any applicable planning efforts and identify any aspect

Through water conservation, the proposed project is expected to provide an additional 9.6 AFY to the City's groundwater supplies, resulting in the City's equivalent reduction in demand for imported water and allowing the city to utilize a resource already available within the city, which conforms with and is consistent with goals of the following planning efforts:

- City of Santa Ana Strategic Plan
- City of Santa Ana Climate Action Plan
- City's Drought Action Plan
- City's Water Conservation Ordinance No. NS-2877.
- City of Santa Ana 2017 Water Master Plan

Additionally, in August 1999; Metropolitan Water District adopted a "Water Surplus and Drought Management Plan", and in 1996 adopted an evolving long-term water strategy known as the "Integrated Water Resources Plan", or IRP. The IRP was updated in 2004, 2010, and 2015. Like the 2010 IRP Update, the 2015 IRP Update "looks to local solutions to close any potential gap between supply and demand," representing a refinement — not an overhaul — of Southern California's water management strategy. The proposed project does exactly that, by promising to provide an additional 9.6 AFY to the City's groundwater, thereby helping to close the gap.

The City's Strategic Plan clearly identifies investing resources and technology to extend the service life of existing infrastructure to protect the City's investment and support a high quality of life standard as the strategy to reach its goals. Implementation of the project will achieve these goals by replacing the older, inefficient irrigation controller and nozzles for more efficient materials.

E.1.6.2. Subcriterion F.2 — Performance Measures

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (e.g., water saved or better managed, energy generated or saved). For more information calculating performance measure, see Appendix A: Benefit Quantification and Performance Measure Guidance.

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.

Note: program funding may be used to install necessary equipment to monitor progress. However, program funding may not be used to measure performance after project construction is complete (these costs are considered normal operation and maintenance costs and are the responsibility of the applicant).

The City of Santa Ana proposes to use the following performance measures to quantify the benefits upon completion of the proposed project:

Performance Measure No. 1: Water Saved (Conserved)
The measure of performance will be the actual amount of water saved through the installation of Smart irrigation controller and energy efficient nozzles, quantified as follows:
After project implementation, actual water savings will be verified by conducting an audit that will compare historical data of water usage at the nine affected city sites prior to implementation, and again for two years after implementation (of the irrigation measures). That differential will represent the actual water savings (i.e. "performance") of the irrigation component of the proposed project.

Performance Measure No. 2: Energy Generated
The measure of performance will be the actual amount of energy generated (kWh) resulting from the construction of the hydropower component of the project. After construction, and for two years following, the City will conduct an audit that will compare historical meter readings (kW) prior to construction and again after construction. That differential will represent the actual energy generated (i.e. the "performance") of the hydropower component of the proposed project.

E.1.6.3. Subcriterion F.3 – Readiness to Proceed

Applicants that describe a detailed plan (e.g., estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates) will receive the most points under this criterion.
Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.

Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones and dates.

As indicated below, the City of Santa Ana has completed the feasibility studies and preliminary design and is scheduled to have the detailed design package ready before the agreement for this funding is executed. The Project Schedule summarizes the stages and duration of the proposed work, including major tasks, milestones, and estimated dates.

Note: To minimize impact to system operations, the hydro-generator construction will be scheduled during the months that the SA-1 import connection is not in operation (historically

January-March). The irrigation component is being designed by City staff and is on the same design schedule as the hydropower component. Construction of the irrigation improvements will be scheduled for the spring.

Table 4: Estimated Project Schedule

Estimated Project Schedule		
Task / Milestone	**Start Date**	**Completion Date**
Preliminary Design	Completed	
Environmental Review	Completed	
Design Period		February 2020
30% Design Submittal	Completed	
60% Design Submittal		December 2019
Building Department Review	December 2019	January 2020
SCE Review	December 2019	January 2020
MWD & SWRCB General Permit	December 2019	February 2020
100% PS&E Submittal		February 2020
PS&E Approval		March 2020
Construction: Irrigation by City's Landscape Contractor	**March 2020**	**April 2020**
Public Bid Process for SA-1:	**Immediately upon execution of BOR Agreement, (est. Aug. 2020)**	**September 2020**
Award Constr. Contract: Hydropower	September 2020	October 2020
Construction: Hydropower	**October 2020**	**December 2020**
Project Complete		**December 2020**

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

All work is to be performed in accordance with the City of Santa Ana Public Works Department, California Department of Water Resources and State Water Resources Control Board Division of Drinking Water (DDW), and in compliance with the requirements of Southern California Edison. Permits included can be seen in Table 5.

Table 5: Anticipated Permits and Processes for Approval

Anticipated Permit	Process for Approval or Issuance
City of Santa Ana Public Works Review	Plans and Specifications to be reviewed by City engineering staff and approved by the Director of Public Works/City Engineer
City of Santa Ana Building Department to issue appropriate building permits	PW staff to submit applicable Plans and Specifications to City Building Department for review/approval and issuance of appropriate building permits (may include mechanical, structural, electrical)
Metropolitan Water District (MWD) plan approval/permit	City staff to submit Plans and Specifications to be reviewed/approved by MWD engineering staff
Southern California Edison (SCE) permit for Interconnection	Interconnection with SCE is required. City to apply for SCE to review/approve plans. Coordination with SCE has started already.
State Water Resources Control Board (SWRCB) permit	City staff to apply for a general permit to discharge test water associated with the hydropower construction activity.

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

In February 2019, the Water Resources Division of the City of Santa Ana Public Works Agency approved a "Water Systems Alternative Energy Feasibility Study" prepared by Newcomb Anderson McCormick (NAM), a Willan Company. This study included an evaluation of the potential to generate electricity by recovering excess head from the water delivered to the City directly from the Metropolitan Water District (MWD). One of the recommendations from this study was the proposed project: to replace the hydro-generator at the SA-1 import connection. A preliminary design was included in this study. A CEQA – Notice of Exemption was filed September 2019.
City has already identified the Smart Irrigation devices conforming to city wide usage. Replacement of these devices will be completed by the City's landscape contractor.

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

No new policies are required to implement the project; the following administrative actions are required:

1. City staff to acquire formal approval of plans and specifications.
2. City of Santa Ana Building Dept. to issue appropriate building permits.
3. Southern California Edison (SCE) to approve plans and issue permit.
4. State Water Resources Control Board to issue general permit.
5. City staff to implement Public Bid process to determine the lowest responsible bidder, in compliance with State of California Public Contracts Code.
6. Santa Ana City Council to award construction contract (to the lowest responsible bidder).
7. City of Santa Ana Public Works Dept. to issue Public Encroachment Permit(s) to the contractor.
8. Construction Management will comprise of City staff and support from design engineering firm.
9. Grant Compliance: The City of Santa Ana has professional grant consultants on contract that will utilize to assure all the Bureau of Reclamation requirements are met in a timely manner.

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

The internal evaluation of the project has determined that the project falls under Categorical Exemption for CEQA as identified by the State Resources Agency. The filed Notice of Exemption was filed is attached in Appendix 2. The compliance cost has not been discussed with Reclamation; however, $10,000 allocation has been stipulated in the budget.

E.1.7. Evaluation Criterion G — Nexus to Reclamation Project Activities

Up to 4 points may be awarded if the proposed project is in a basin with connections to Reclamation project activities. No points will be awarded for proposals without connection to a Reclamation project or Reclamation activity.

- *Is the proposed project connected to Reclamation project activities? If so, how? Please consider the following:*

  The City is not connected to Reclamation project activities.

- *Does the applicant receive Reclamation project water?*
  Not applicable.
- *Is the project on Reclamation project lands or involving Reclamation facilities?*
  Not applicable.
- *Is the project in the same basin as a Reclamation project or activity?*
  Not applicable.
- *Will the proposed work contribute water to a basin where a Reclamation project is located?*
  Not applicable.

- *Will the project benefit any tribe(s)?*

  No, this project will not have an impact on any tribes.

E.1.8. Evaluation Criterion H — 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:

There are no other federal funding sources for this project and the remaining cost of the project will be provided by the City of Santa Ana Capital Improvement Program funds. The City's portion is intended to be substantially more than 50% of the project cost.

Table 6: Percentage of Non-Federal Funding

Percentage of Non Federal Funding		
Non Federal Funding Amount	Total Project Cost	Non Federal Funding Percentage
$1,003,413	$1,303,413	**76.98%**

SECTION 2: PROJECT BUDGET

Standard Form 424 Budget Information C

This document is included in the separate submittal with other completed Standard 424 forms relevant to this application.

A. Funding Plan and Letters of Commitment

The City of Santa Ana does not have any third-party funding sources or expected Federal funding sources outside of this application for assistance. Currently, the City does not have any pending funding requests for this project outside of this application and will provide the funding from the Water Utility Capital Project Funds that will be allocated as part of the Capital Improvement Program for the proposed project.

B. Budget Proposal

Table 7: Total Project Costs by Source

SOURCE	AMOUNT
Costs to be reimbursed with the requested Federal funding	**$300,000.**
Costs to be paid by the applicant	**$1,003,413**
Value of third party contributions	**$0**
Total Project Cost	**$1,303,413**

Table 8: Summary of Funding Sources

Funding Sources	Amount
City of Santa Ana - Cash Contributions	$980,100
City of Santa Ana value of in-house resources*	$23,313
Other Federal Entities	$0
Bureau of Reclamation	$300,000
Total:	**$1,303,413**

Table 9: Budget Proposal

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	$/Hour	Quantity		
Salaries and Wages				**$15,417**
Water Resources Director	$84.09	48	Hour	$4,036
Project Manager	$69.47	100	Hour	$6,947
Water Services Supervisor	$44.34	100	Hour	$4,434
Fringe Benefits				**$7,896**
Water Resources Director	$48.55	48	Hour	$2,330
Project Manager: Senior Civil Engineer	$31.89	100	Hour	$3,189
Water Service Supervisor	$23.77	100	Hour	$2,377
Equipment				**$14,900**
Controllers	$800	9	Each	$7,200
Nozzles	$70	110	Each	$7,700
Supplies and Materials				
Not Applicable				
Contractual/Construction				**$1,159,900**
Equipment and Installation of the SA-1	1	$1,150,000	Each	$1,150,000
Irrigation Nozzles & Controller	9	$1,100	Sites	$9,900
Third-Party Contributions				
None				$0
Other				**$95,300**
Prepare design and bid documents	1	$95,300	Each	$95,300
Total Direct Costs				**$1,293,413**
Indirect Costs				**$10,000**
BOR Environmental Review				$10,000
Total Estimated Project Costs				**$1,303,413**

C. Budget Narrative

Salaries and Wages:
The Program Manager for this project will be Nabil Saba, PE, and the direct City Project Manager will be Rudy Rosas, PE, throughout design and construction. They will be assisted with support from the Water Services Supervisor. Key personnel are listed in Table 9. At this time, the salaries for these employees are not anticipated to be escalated within the contract implementation period.

The salary rates for all City positions are available via the link below:
https://www.ci.santa-ana.ca.us/sites/default/files/hr/documents/Salary%20Schedule%20FY%202018_2019%20March%20Update.pdf

Fringe Benefits:
Fringe Benefits are included in Table 9 for key staff involved in the proposed project.

Travel:
Travel is not included in this proposal

Equipment:
The cost estimate from the Feasibility Report conducted by NAM was used to determine the costs of equipment for this project.

Materials and Supplies:
Materials and supplies for this project were included as part of the equipment cost and part of the contractor's work and has been estimated as part of the installation cost.

Contractual/Construction:
The contractual process will require City of Santa Ana staff to implement the Public Bid process to determine the lowest responsible bidder, in compliance with State of California Public Contracts Code to hire a contractor for the construction of the hydropower project.

The Santa Ana City Council will then award the construction contract (to the lowest responsible bidder). Construction Management be provided by City staff with support from a design engineering firm that is already on contract with the City. Installation of the controller and the nozzles will be provided by the City's current landscape maintenance contractor.

Third-Party In-Kind Contributions:
There are no third-party contributions towards this project.

Environmental and Regulatory Compliance Costs:
The project is categorically exempt from the provisions of CEQA. However, $10,000 has been allocated for environmental and cultural report studies if that would be necessary under Federal regulations.

Other Expenses:
No other expenses are associated with this project.

Indirect Costs:
These costs are included in Table 9, the Budget Proposal summary.

Total Costs:
The total cost of the project is included in Table 9, the Budget Proposal summary.

SECTION 3: ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

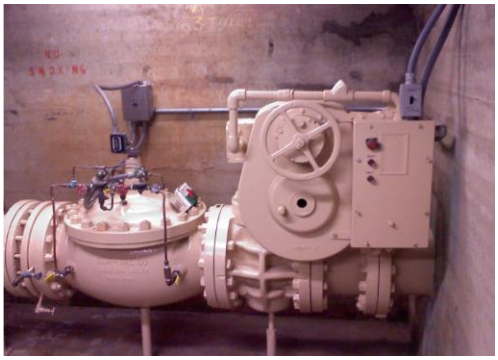
To allow Reclamation to assess the probable environmental and cultural resources impacts and costs associated with each application, all applicants should consider the following list of questions focusing on the NEPA, ESA, and NHPA requirements. Please answer the following questions to the best of your knowledge. If any question is not applicable to the project, please explain why. The application should include the answers to:

The internal evaluation of the project has determined that the project falls under Categorical Exemption for CEQA as identified by the State Resources Agency. (CEQA Guidelines 14 CCR Section 15300-15331). The filed Notice of Exemption was filed is attached in Appendix 2.

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.

The scope of work on this project requires replacement of equipment only and therefore, there will not be any impact on the surrounding environment. Any impact from the construction phase of the project will be limited in nature and temporary. To minimize any impacts, the construction period will be limited to city ordinance requirements for noise and traffic.

Below are photos of existing SA-1 equipment:



- *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?*

  The project area includes no known species listed or proposed to be listed as a Federal threatened or endangered species nor designated critical habitat.

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

  There are no known wetland or surfaced waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States".

- *When was the water delivery system constructed?*

  For many years, the City of Santa Ana was a ranching community with some farming. To serve this growing agricultural and domestic community, a municipal water system was formed in 1886.

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

  The Smart Irrigation Measures recommended in this project will be on selected city facilities and will not impact features of the overall irrigation system such as head gates, canals, or flumes.

- *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; the proposed project area has no buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places.

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

  No; the proposed project area includes no known archeological sites.

- *Will the proposed project 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 proposed project will NOT have a disproportionately high and adverse effect on low income or minority populations. In fact, the proposed project will have a **POSITIVE** effect on the local (and within the OC Basin) population, including low income and minority populations. Historically, Santa Ana has had one of the lowest per capita incomes in all of Orange County. The local population (of which more than 78 percent identified as Hispanic or Latino in 2010) will benefit from the energy efficiency and

water savings that the proposed project implementation will bring. In addition, the drought-stricken basin-wide population will benefit from the increased energy and water efficiency.

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

  No; the proposed project will NOT contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area.

SECTION 4: REQUIRED PERMITS OR APPROVALS

No permits or approvals other than the contract approvals that have been noted in the schedule section are anticipated to be required in order to implement the project.

SECTION 5: LETTERS OF SUPPORT

Per Reclamation's application guidelines in Section D.2.2.7. Letters of Support, all statements of support from interested stakeholders are included in Appendix 3.

SECTION 6: OFFICIAL RESOLUTION

The final text of the resolution that is scheduled for approval by the City of Santa Ana Council on October 15, 2019 is included below. Once the resolution is passed, the final, executed copy will be sent to Reclamation as per instructions.

jmf 9/18/19

RESOLUTION NO. 2019-XXX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SANTA ANA AUTHORIZING AN APPLICATION FOR GRANT FUNDING BY THE BUREAU OF RECLAMATION'S WATERSMART WATER AND ENERGY EFFICIENCY GRANT PROGRAM FOR THE HYDROPOWER GENERATION PROJECT

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SANTA ANA AS FOLLOWS:

Section 1. The City Council of the City of Santa Ana hereby finds, determines and declares as follows:

A. The City of Santa Ana water system has seven connection points with the Metropolitan Water District, SA-1 through SA7.

B. The volume of water flow through three of the connection points allows for generation of electricity via hydro turbines.

C. In February 2019, the City completed the Water Systems Alternative Energy Feasibility Study, which determined that SA-1, SA-3 and SA-6 have adequate water flow to generate electricity. The cost of fully deploying the Hydropower Generation Project for the City is approximately $2,600,000.

D. The study estimates the annual monetary value for the power generated through the improvements at the three sites to be approximately $175,000.

E. The United States Department of the Interior offers financial assistance in the form of grant funding through its Bureau of Reclamation's WaterSMART (Sustain and Manage America's Resources for Tomorrow) Water and Energy Efficiency Grant (WEEG) Program for this type of project. The program provides up to a maximum of $300,000 in grant funding for projects such as the Hydropower Generation Project.

F. The City desires to fund part of the cost of the Hydropower Generation Project with grant funding from the WaterSMART WEEG Program.

Section 2. The City Council of the City of Santa Ana hereby authorizes and directs the Executive Director of Public Works, or his or her designee, to sign and submit, for and on behalf of the City of Santa Ana, a grant application from the Bureau of Reclamation's WaterSMART WEEG Program for the Hydropower Generation Project up to the amount of $300,000.

Section 3. The Executive Director of Public Works, or his or her designee, is designated to provide the assurances, certifications, and commitments required for the grant application, including executing a financial assistance or similar agreement with the Bureau of Reclamation within established deadlines and any amendments or changes thereto.

Section 4. The Executive Director of Public Works, or his or her designee, is designated to represent the City of Santa Ana in carrying out the City's responsibilities under the grant agreement, including certifying disbursement requests on behalf of the City and compliance with applicable state and federal laws.

Section 5. If a grant award is made by the Bureau of Reclamation, the City of Santa Ana commits to providing up to $2,300,000 in matching funds for the Hydropower Generation Project plus any remaining balance.

Section 6. This Resolution shall take effect immediately upon its adoption by the City Council, and the Clerk of the Council shall attest to and certify the vote adopting this Resolution.

ADOPTED this ____ day of _____, 2019.

_____
Miguel A. Pulido
Mayor

APPROVED AS TO FORM:
Sonia R. Carvalho, City Attorney

By: _____
John M. Funk
Assistant City Attorney

AYES: Councilmembers _____

NOES: Councilmembers _____

ABSTAIN: Councilmembers _____

NOT PRESENT: Councilmembers _____

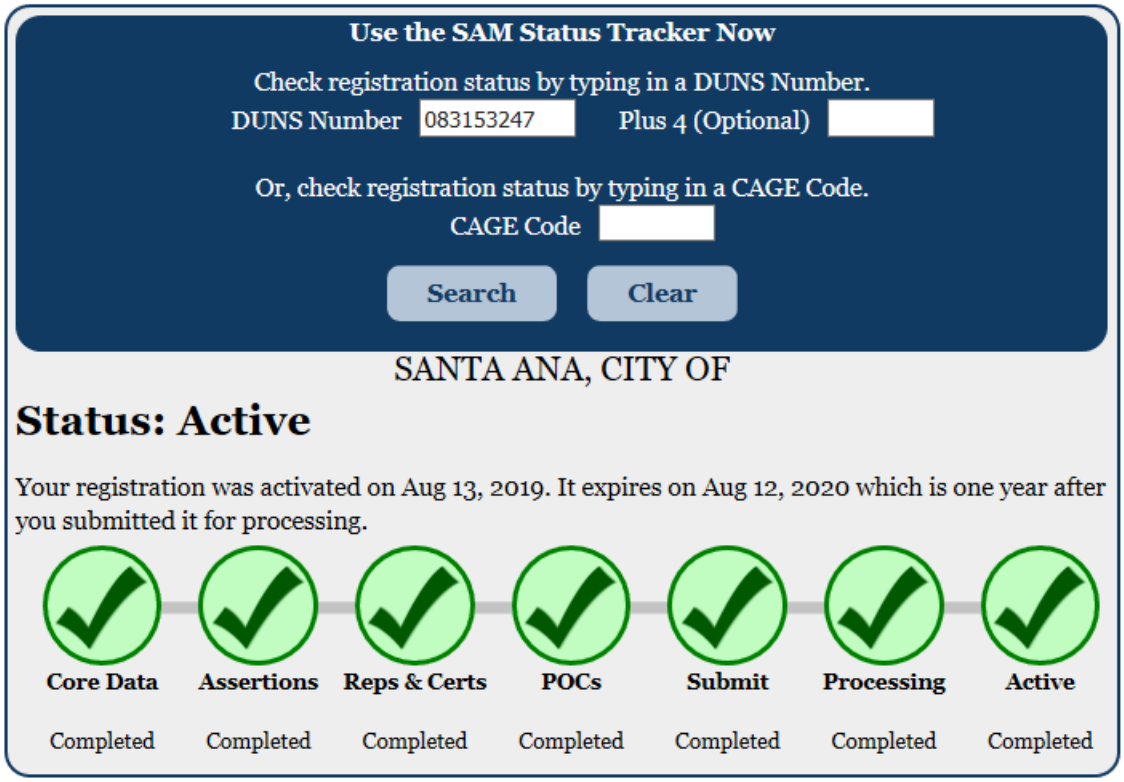
APPENDICES:

Appendix 1: Proof of SAM Registration

Appendix 2: CEQA Notice of Exemption

Appendix 3: Letters of Support

Appendix 1: Proof of SAM Registration



Use the SAM Status Tracker Now

Check registration status by typing in a DUNS Number.

DUNS Number 083153247 Plus 4 (Optional)

Or, check registration status by typing in a CAGE Code.

CAGE Code

Search Clear

SANTA ANA, CITY OF

Status: Active

Your registration was activated on Aug 13, 2019. It expires on Aug 12, 2020 which is one year after you submitted it for processing.

Core Data	Assertions	Reps & Certs	POCs	Submit	Processing	Active
Completed	Completed	Completed	Completed	Completed	Completed	Completed

Appendix 2: CEQA Notice of Exemption

Recorded In Official Records, Orange County
Hugh Nguyen, Clerk-Recorder
NO FE
201985000961 12:15 pm 09/23/19
388 OR02 Z01
0.00 50.00 0.00 0.00 0.00 0.00 0.00

MAYOR
Miguel A. Pulido
MAYOR PRO TEM
Juan Villegas
COUNCIL MEMBERS
Cecilia Iglesias
David Penaloza
Vicente Sarmiento
Jose Solorio

CITY MANAGER
Kristine Ridge
CITY ATTORNEY
Sonia R. Carvalho
CLERK OF THE COUNCIL
Daisy Gomez

CITY OF SANTA ANA

PLANNING & BUILDING AGENCY
20 Civic Center Plaza (M-20)
P.O. BOX 1988 • Santa Ana, California 92702
(714) 667-2700 • Fax (714) 973-1461
www.santa-ana.org

NOTICE OF EXEMPTION

From the Requirements of the California Environmental Quality Act (CEQA)

Fee Exemption per California Government Code Section 6103

To: COUNTY CLERK
County of Orange
P.O. Box 238
Santa Ana, CA 92702

From: City of Santa Ana
Planning & Building Agency
20 Civic Center Plaza M-20
Santa Ana, CA 92702

Project Title: Replacement of Existing Hydro-Generator
Date of Approval: 09/23/2019
Project Number(s): PWA-2019-1431-CITY
Project Location: 1 CityWide (Partial)
City: Santa Ana **County:** Orange **ER Number:** ER-2019-87
Project Description: The project proposes to replace the existing 32-year old hydro-generator at the City's MWD import connection, SA-1. The new unit will be designed around the parameters of the existing (original) unit, and operate at the existing flow rate (8CFS). This project will result in substantial energy efficiency.

Applicant Name: Rodolfo Rosas, City of Santa Ana
Applicant Address: 20 Civic Center Plaza
SANTA ANA, CA 92702

POSTED
SEP 23 2019
ORANGE COUNTY CLERK-RECORDER DEPARTMENT
BY: HT DEPUTY

FILED
SEP 23 2019
ORANGE COUNTY CLERK-RECORDER DEPARTMENT
BY: HT DEPUTY

Name of Public Agency Approving Project: City Council
Name of Person or Agency Carrying Out Project: Rosas, Rodolfo

Exempt Status:
- ☐ Ministerial (Sec. 15268)
- ☐ Declared Emergency (Sec. 15269 (a))
- ☐ Emergency Project (Sec. 15269 (b through e))
- ☐ General Rule (Sec. 15061(b)(3)/(5))
- ☐ Statutory Exemption:
- ☑ Categorical Exemption: 15301(b)

Reason(s) Why Project is Exempt From CEQA:
15301(b) consists of repair/maintenance of existing public facilities.

City Contact: Rudy Rosas **Telephone:** (714) 647-3379
Signature: Edward A. Torres **Title:** Associate Engineer **Date:** 9/23/19

SANTA ANA CITY COUNCIL

Miguel A. Pulido, Mayor, mpulido@santa-ana.org
Juan Villegas, Mayor Pro Tem, Ward 5, jvillegas@santa-ana.org
Vincente Sarmiento, Ward 1, vsarmiento@santa-ana.org
Jose Solorio, Ward 3, jsolorio@santa-ana.org
Vacant, Ward 4
David Penaloza, Ward 2, dpenaloza@santa-ana.org
Cecilia Iglesias, Ward 6, ciglesias@santa-ana.org

State of California - Department of Fish and Wildlife

2019 ENVIRONMENTAL FILING FEE CASH RECEIPT

DFW 753.5a (Rev. 01/01/18) Previously DFG 753.5a

Print | StartOver | Finalize&Email

RECEIPT NUMBER: 30-2019 0936

STATE CLEARINGHOUSE NUMBER *(If applicable)*: N/A

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY.

LEAD AGENCY	LEAD AGENCY EMAIL	DATE
CITY OF SANTA ANA		09/23/2019

COUNTY/STATE AGENCY OF FILING	DOCUMENT NUMBER
Orange	201985000961

PROJECT TITLE: REPLACEMENT OF EXISTING HYDRO-GENERATOR

PROJECT APPLICANT NAME	PROJECT APPLICANT EMAIL	PHONE NUMBER
RODOLFO ROSAS, CITY OF SANTA ANA		(714) 647-3379

PROJECT APPLICANT ADDRESS	CITY	STATE	ZIP CODE
20 CIVIC CENTER PLAZA M-20	SANTA ANA	CA	92702

PROJECT APPLICANT *(Check appropriate box)*

☑ Local Public Agency ☐ School District ☐ Other Special District ☐ State Agency ☐ Private Entity

CHECK APPLICABLE FEES:

☐ Environmental Impact Report (EIR)	$3,271.00	$	0.00
☐ Mitigated/Negative Declaration (MND)(ND)	$2,354.75	$	0.00
☐ Certified Regulatory Program document (CRP)	$1,112.00	$	0.00
☑ Exempt from fee			
☑ Notice of Exemption (attach)			
☐ CDFW No Effect Determination (attach)			
☐ Fee previously paid (attach previously issued cash receipt copy)			
☐ Water Right Application or Petition Fee (State Water Resources Control Board only)	$850.00	$	0.00
☐ County documentary handling fee		$	0.00
☐ Other		$	

PAYMENT METHOD:

☐ Cash ☐ Credit ☐ Check ☐ Other **TOTAL RECEIVED** $ 0.00

SIGNATURE	AGENCY OF FILING PRINTED NAME AND TITLE
X Nadia Alobaidi	NADIA AL OBAIDI, DEPUTY CLERK

ORIGINAL - PROJECT APPLICANT | COPY - CDFW/ASB | COPY - LEAD AGENCY | COPY - COUNTY CLERK | DFW 753.5a (Rev. 20151215)

Appendix 3: Letters of Support

SOUTHERN CALIFORNIA EDISON®
Energy for What's Ahead™

9/19/2019

Bureau of Reclamation
Financial Assistance Support Section
P.O. Box 25007 MS-84-27814
Denver, CO 80225

SUBJECT: Letter of Intended Support for City of Santa Ana, WaterSMART Grants: Water and Energy Efficiency BOR-DO-20-F001,

Southern California Edison ("SCE") is pleased to offer this letter of intended support for the proposal entitled Hydro-Generator Turbine submitted by the City of Santa Ana in response to WaterSMART Grants: Water and Energy Efficiency, BOR-DO-20-F001.

SCE, a subsidiary of Edison International ("EIX"), is an investor-owned electric utility operating in the State of California, covering over 50,000 square miles and serving 15 million people. SCE has a strong interest in successfully enabling promising technologies and supporting the long-term success of the cities and customers within the SCE service area. As such, SCE agrees with the Project's overall goals to: The City of Santa Ana receives approximately 70 % of its water supply from seven import connections to Metropolitan Water District (MWD) at a pressure that is higher than what the city uses. This project is the first project proposed to install hydro-turbine at one of the connections recover the head loss between the higher water pressure delivered to the City form the Metropolitan Water District (MWD), and the lower pressure used in the City's local distribution system.

This energy will generate alternate power that will result in significant savings to the City over the expected life of the project. Savings resulting from the installation of these hydro-generators will be used by the City to implement water conservation projects in the irrigation systems of City facilities.

SCE's potential participation in this project is expected to be a technical advisor, provide data and awareness to this technology which could further decrease energy use in other facilities, with the scope of the activities to be mutually acceptable to SCE and the City of Santa Ana. Because this is an unfunded collaboration and SCE will not be seeking reimbursement from The City of Santa Ana, SCE expects to be able to provide this type of support without being subject to the terms and conditions that may apply to a sub-recipient or vendor for the project.

Any potential participation or support provided by SCE is conditioned upon the successful negotiation of mutually acceptable contractual arrangements. For the avoidance of doubt, this letter may not be construed by The City of Santa Ana or any third party as creating any legally binding obligation by SCE.

We support the advancement of this project and wish you a successful outcome from the proposal selection process.

SOUTHERN CALIFORNIA EDISON®
Energy for What's Ahead™

Sincerely,

Jeanne Boyce, Director
Government, Institutions and Agriculture
Business Customer Division
Southern California Edison Company

MWDOC

Street Address:
18700 Ward Street
Fountain Valley, California 92708

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

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

Brett R. Barbre
President

Joan C. Finnegan
Vice President

Larry D. Dick
Director

Bob McVicker, P.E. D.WRE
Director

Megan Yoo Schneider, P.E.
Director

Sat Tamaribuchi
Director

Jeffery M. Thomas
Director

Robert J. Hunter
General Manager

MEMBER AGENCIES

City of Brea
City of Buena Park
East Orange County Water District
El Toro Water District
Emerald Bay Service District
City of Fountain Valley
City of Garden Grove
Golden State Water Co.
City of Huntington Beach
Irvine Ranch Water District
Laguna Beach County Water District
City of La Habra
City of La Palma
Mesa Water District
Moulton Niguel Water District
City of Newport Beach
City of Orange
Orange County Water District
City of San Clemente
City of San Juan Capistrano
Santa Margarita Water District
City of Seal Beach
Serrano Water District
South Coast Water District
Trabuco Canyon Water District
City of Tustin
City of Westminster
Yorba Linda Water District

September 17, 2019

Bureau of Reclamation
Financial Assistance Support Section
Attn: Ms. Janeen Koza
P.O. Box 25007, MS 84-27814
Denver, Colorado 80225

Subject: WaterSMART Grant BOR-DO-20-F001: City of Santa Ana: Hydropower and Water Conservation Project

Dear Ms. Koza,

The Municipal Water District of Orange County (MWDOC) supports the City of Santa Ana's proposal for a WaterSMART Grant (Water and Energy Efficiency) to implement its proposed Hydropower and Water Conservation Project. Approximately seventy percent (70%) of the City's water supply is provided directly to the City of Santa Ana from seven import connections at a pressure that is higher than what the city uses. The subject project includes the installation of hydro-turbines at three of these locations, which will recover those head losses between the higher water pressure delivered to the City of Santa Ana from Metropolitan Water District, and the lower pressure used in the City of Santa Ana's system. This energy will generate alternative power that will result in significant savings to the City of Santa Ana over the expected life of the project.

By implementing this Hydropower and Water Conservation Project, financial savings will provide the funding necessary for the City of Santa Ana to implement water conservation measures in the City of Santa Ana's irrigation systems, reinforcing their commitment to support water reliability through conservation.

The City of Santa Ana, along with MWDOC, are both part of Metropolitan Water District's 26 public member agencies that together serve 19 million people. The City of Santa Ana has been committed to conservation and has a successful history in outreach and partnership with its residents to lower per capita water use. We encourage your award of the City of Santa Ana's proposal and the local and regional benefits it offers, which will reduce the City of Santa Ana's dependence on imported water, thereby supporting water supply reliability.

Sincerely,

Robert J. Hunter
General Manager

MUNICIPAL WATER DISTRICT OF ORANGE COUNTY

September 17, 2019

Bureau of Reclamation
Financial Assistance Support Section
P.O. Box 25007 MS-84-27814
Denver, CO 80225

RE: City of Santa Ana - Hydropower and Water Conservation Project
WaterSMART Grant: Water and Energy Efficiency BOR-DO-20-F001

To Whom it May Concern:

It has come to our attention that the City of Santa Ana is applying for a WaterSMART Grant (Water and Energy Efficiency) for the implementation of a hydropower generator at two of its Metropolitan Water District (MWD) import connections and the replacement of an existing hydrogenerator at a third location. Collectively these three connections deliver over 90% of the City's imported water. With the installation of these hydropower generators, the proposed project will recover hydraulic head lost between the higher water pressure delivered to the City from MWD, and the lower pressure in the City's local water system. The City will use the substantial savings resulting from the installation of these hydropower generators to install water conservation elements in the irrigation systems of City facilities, including SMART irrigation controllers, energy efficient nozzles and turf removal.

On behalf of the Orange County Water District (OCWD), please accept this letter in strong support of this application.

The City of Santa Ana's imported water supplies from the Colorado River and northern California are susceptible to drought, regulatory restrictions, environmental issues and competing interest. Water supply resiliency for the City can best be provided by becoming less reliant upon imported water. The City can better contribute to supporting water reliability in the region by developing water conservation efforts such as the irrigation improvements included in this proposed project.

PO Box 8300
Fountain Valley, CA 92728-8300
18700 Ward Street
Fountain Valley, CA 92708
(714) 378-3200
(714) 378-3373 fax
www.ocwd.com

Water savings realized by implementation of the proposed irrigation measures will supplement the groundwater in the Orange County (OC) Basin, benefitting the region and all member agencies. It will also reduce the City's need to purchase expensive imported water from MWD, making more water available for the other member agencies.

We strongly support this application and applaud the City's efforts to conserve one of our most precious natural resources, which might not be possible without this WaterSMART Grant.

If you have any questions, or if we can be of further assistance, please contact John Kennedy at (714) 378-3304.

Respectfully,

Michael R. Markus, P.E., D.WRE, BCEE, F.ASCE
General Manager