

**Project Name:**  
City of Oceanside  
**Turf Replacement Rebate and Biogas Renewable Energy Capacity Expansion Project**

**Prepared For:**



**U.S. Department of the Interior - Bureau of Reclamation**  
**WaterSMART Grants:**  
**Water and Energy Efficiency Grants Fiscal Year 2023**  
**Funding Opportunity Number: R23AS00008**

**Prepared by:**



**Project Manager:**  
Lindsay Leahy  
Water Utilities Director  
City of Oceanside  
300 N. Coast Hwy  
Oceanside, CA 92054  
Phone: 760-435-5913  
Email: [leahy@oceansideca.org](mailto:leahy@oceansideca.org)

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## 1 Technical Proposal

### 1.1 Executive Summary

**Date:** July 28, 2022

**Applicant Name:** City of Oceanside, California

**City, County, State:** Oceanside CA, San Diego County, California

**Project Name:** Turf Replacement Rebate and Biogas Renewable Energy Capacity Expansion Project

**Category Applicant:** A

**Funding Group:** Group II

**Grant Funding Request:** \$2,000,000

**Non-Federal Matching Funds:** \$4,400,000

**Total Project Costs:** \$6,400,000

**Est. Completion Date:** 5/31/2026

**Est. Duration from contract award date:** Approximately 36 months

**Federal Facility Denotation:** The Project is not located on a Federal facility

**Estimated Annual Water Savings:** 32.1 Acre Feet

**Estimated Annual New Energy Production:** 5.3 million kWh & 213,160 Therms

**Project Partner:** None

### 1.2 Project Summary

The City of Oceanside (City), located in northwest San Diego County, has developed an approach to integrate its solid municipal waste, wastewater, water conservation, and water reuse programs to achieve greater energy sustainability and drought resilience. Eighty-nine percent of Oceanside's water originates from the Colorado River and the State Water Project. The City's Turf Replacement Rebate and Biogas Renewable Energy Capacity Expansion Project (Project) will:

- 1) **Reduce water consumption by 32.1-acre feet per year (AFY)** through the expansion of an existing turf removal rebate program. The enhanced rebate will encourage conservation and ease pressure on the water supply during this critical period of drought to reduce water consumption by 963 AF over the lifetime of the Project.
- 2) **Increase the capacity to produce renewable energy from biogas at the City's wastewater treatment facility by 5.3 million kilowatt hours per year (kWh/year) and 213,160 Therms per year** through the upgrade of the anaerobic digester system, the combined heat and power system, and the expanded use of local food waste as a feed source. The additional local, clean, renewable energy produced through this project will power equipment used to run the City's potable reuse, recycled water, and wastewater treatment processes.

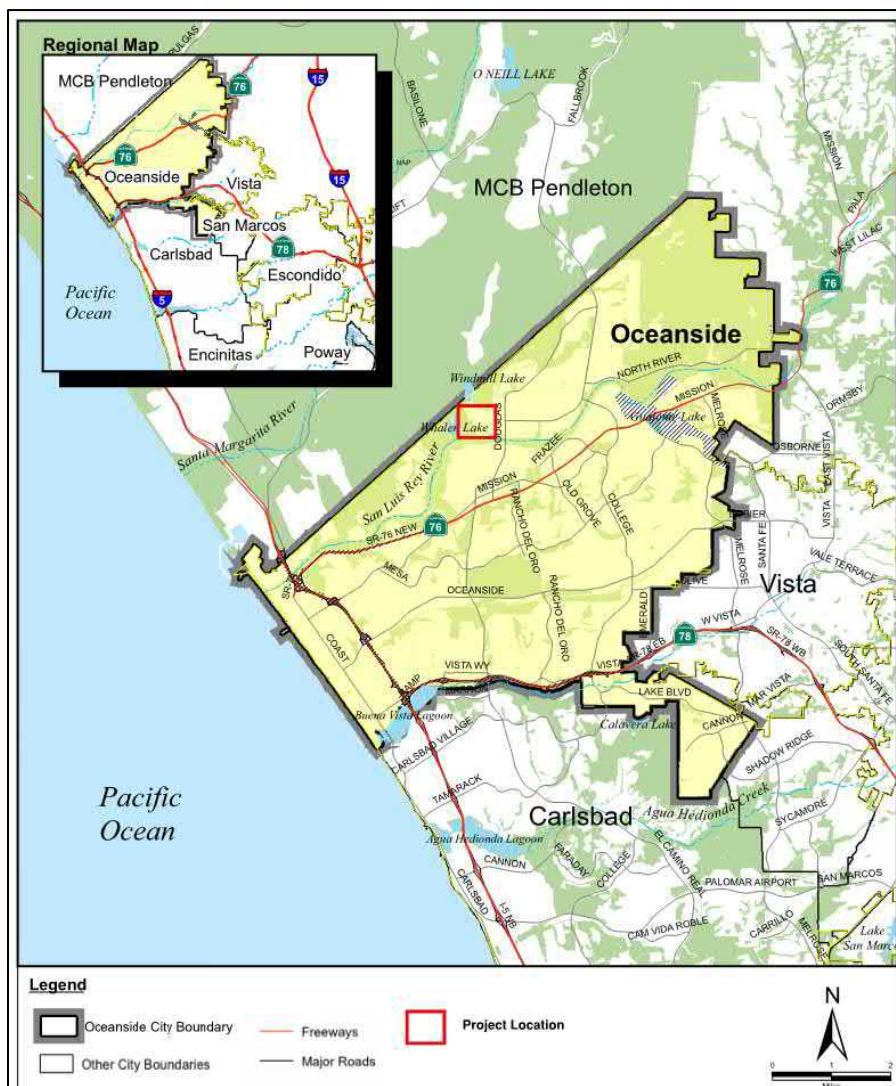
The Project will also achieve the following significant benefits that will lead to a more sustainable future:

- 1) **Divert 9,624 tons of organic waste** from the landfill annually, helping to meet the City's defined zero-waste goals and state mandated diversion goals.
- 2) **Avoid the release of 0.9 metric tons (MT) of carbon dioxide equivalent (MTCO<sub>2</sub>e)** annually. Eliminating 250,000 square feet (sq. ft.) will reduce the use of gas-powered lawn mowers, thus avoiding the release of 26 MTCO<sub>2</sub>e of greenhouse gases (GHGs).
- 3) **Avoid 72,055 kWh and 51.09 MTCO<sub>2</sub>e** annually through the removal of thirsty turfgrass that in turn reduces the use energy embedded in the conveyance of imported water.
- 4) Expand capacity at the City's wastewater facility that will **reduce 7,599 MTCO<sub>2</sub>e annually by offsetting grid-based electricity with electricity produced from locally produced biogas**.
- 5) **Improve water quality** by reducing the amount of polluted dry weather runoff created by irrigation overspray from entering the City's storm drain system which drains untreated to local waterways.
- 6) **Increase capacity to produce 50 tons of compost per day** made available at a local commercial composting facility which will be used to improve soil health and improve water-holding capacity, thus decreasing landscape water demand.

### 1.3 Project Location

The City of Oceanside, California is located 35 miles north of the City of San Diego and encompasses approximately 42 square miles. It is bordered to the north by Marine Corps Base Camp Pendleton, to the south by the cities of Carlsbad and Vista, to the east by unincorporated San Diego County, and to the west by the Pacific Ocean. The enhanced turf rebate will be available to qualified customers throughout the City of Oceanside's Water Utilities Department service area. The renewable energy from biogas capacity expansion component of the Project is located at the City's San Luis Rey Water Reclamation Facility (SLRWRF), located at 3950 N. River Road, Oceanside, CA 92058. The SLRWRF houses the City's wastewater, recycled water, and indirect potable reuse facilities. See Figure 1.3-1 for a Project Location Map. The Project latitude is {33°14'N} and longitude is {117°19'W}.

**Figure 1.3-1 Project Location Map**



#### 1.4 Technical Project Description

The City of Oceanside is responsible for providing reliable treatment of wastewater, recycled water, potable water, and solid municipal waste services to its 174,578 residents. The City’s Water Utilities Department, which oversees these functions and the storm water program, is committed to aggressively pursuing efficiencies in operations at every level. It embraces innovative, science-based methods and technologies to achieve that goal. To that end, the Project goals will be to reduce potable water demand, expand the production of renewable energy to fuel its water reuse treatment processes, and work towards meeting the City’s zero-waste goals by reducing the amount of organic waste heading to the landfill. The proposed Project consists of two components which are further described below.

### ***Enhanced Turf Replacement Rebate***

The Metropolitan Water District of Southern California (MWD) administers the regional SoCal WaterSmart Rebate Program and invites agencies within its service area to add funding to the base turf removal rebate to encourage participation. Currently, MWD offers a base rebate of up to \$2 per sq. ft. to customers that remove thirsty turfgrass and replace it with efficient irrigation and plant material that requires far less water to thrive in Southern California's Mediterranean climate. This Project would enable the City to increase the rebate to both residential and commercial participants by an additional \$1 per sq. ft. The City's customers would thus receive a \$3 per sq. ft. rebate. The Project will incentivize the removal of 250,000 square feet of turf grass. This enhancement is expected to be well-received given the current severe drought conditions and water use restrictions that are in place throughout California.



$$\text{\$1/Sq. Ft. (City of Oceanside) + \$2/Sq. Ft. (MWD) = \$3/Sq. Ft.}$$

MWD's rebate program takes a multi-pronged approach to maximize water conservation and reduces dry weather runoff. Participation rules require that every turf conversion project must include:

- 3 plants per 100 sq. ft. of area transformed
- A stormwater retention feature
- No hardscape within the transformed area, except permeable hardscape
- Replacement or modification of overhead spray sprinklers
- Mulch ground covering

### ***Biogas Renewable Energy Capacity Expansion***

The San Luis Rey Water Reclamation Facility (SLRWRF) treats wastewater that is collected from the City in areas east of Interstate Highway 5, from the adjacent Rainbow Municipal Water District, and from the City of Vista. The SLRWRF, constructed in 1972, has been continuously expanded over the years. The facility treats wastewater to appropriate levels based on its end use. Wastewater that is destined for ocean discharge is treated to a secondary level by conventional biological treatment followed by clarification before being removed via the City's ocean outfall pipe. The SLRWRF diverts a portion of the wastewater stream to produce Title 22 recycled water by sending treated wastewater through additional filtration and disinfection processes. This water supply is used to water golf courses, parks, and street landscaping. The City's robust agriculture sector will be fed recycled water as part of a future recycled water expansion project. Finally, a portion of this Title 22 recycled water is source water that is further treated at the City's new advanced water purification facility (AWPF) to produce potable water

(indirect potable reuse). This new, local water supply started to come on-line in late 2021 to provide a much needed high-quality, drought resilient potable water source for Oceanside.

SLRWRF currently produces approximately 3,600,000 kWh/year of renewable energy in a combined heat and power (CHP) system using biogas that is generated from the anaerobic digestion of biosolids derived from the City's wastewater treatment process. These anaerobically digested biosolids are a combination of primary sludge and thickened waste activated sludge (TWAS). The renewable energy currently produced at the facility (electricity and heat) offsets a portion of the City's energy needs. In addition to using the electricity to offset grid power derived in part from fossil fuels, the City utilizes the heat from the CHP system to partially heat the anaerobic digesters (the remaining heat demand at the plant is currently met using boilers fueled by natural gas).

**A CHP UNIT IS COMPRISED OF AN INTERNAL COMBUSTION ENGINE TO COMBUST THE BIOGAS, AN ALTERNATOR THAT PRODUCES ELECTRICITY, AND A RADIATOR TO CAPTURE AND REUSE THE HEAT FOR USE DURING THE ANAEROBIC DIGESTION PROCESS.**

To enable the addition of more organics for conversion into renewable biogas, the Project will construct facilities to thicken the primary sludge from 2 percent solids to 6 percent solids, which will increase volumetric capacity in the digesters by 35,717 gallons per day. The infrastructure to be constructed by this project includes an 800 kWh CHP system plus equipment and facilities required to thicken primary sludge. The supplemental capacity derived through the Project (meaning the new capacity that is created, above and beyond the designed capacity of the existing treatment facility) will allow for the additional anaerobic digestion of organic sources, such as food waste, fats, oils, and grease (FOG), and high strength brewery waste. The Project will construct facilities at SLRWRF to enable increased production of renewable energy and provide beneficial reuse of tertiary organic sources. Energy produced by the Project will be utilized to operate the City's wastewater, pure water, and recycled water treatment facilities which are co-located at SLRWRF.

The specific infrastructure proposed to be constructed by this project includes a new 800 kWh CHP system and equipment required to thicken primary sludge. The new CHP system will increase the capacity of the existing CHP system by 270 kWh. Electricity and heat will be generated via the combustion of biogas from the anaerobic digesters in the upsized CHP unit which will allow for the full utilization of biogas produced by the Project with no need for flaring. Additional biogas storage capacity will be added as needed to buffer fluctuating gas production levels in the digesters and to optimize gas use (outside project scope).

## 1.5 Evaluation Criteria

### 1.5.1 Evaluation Criterion A – Quantifiable Water Savings

The quantifiable water saving anticipated from the turf removal rebate component of the Project is estimated to be 32.1 AFY or 963 acre-feet over the life of the improvements. Severe drought



conditions continue to impact the City of Oceanside's imported water supply, much like the rest of Southern California and the desert Southwest. Current water supply conditions on the Colorado River are particularly alarming. The megadrought currently being experienced in much of the southwestern U.S. has resulted in extended drier and hotter conditions, constraining imported water supplies. A high reliance on imported water leaves the City vulnerable to the threat of climate change, reoccurring drought, and natural disasters. Diverting water (to the region) from the Colorado River and Bay Delta affects the ecosystems on which fish and wildlife depend. The Project's energy efficiency benefits will address climate change caused by GHG emissions associated with importing water. The arrival of the City's newly developed indirect potable reuse project will provide relief to the demand for imported water, with an ultimate goal of providing 30 percent of the City's water supply. However, anticipated increases in temperature due to climate change will likely contribute to increased water demand that will be mitigated through the proposed turf removal incentive. By increasing water use efficiency and curbing use, the Project reduces energy use and thus avoids the production of GHGs, thereby supporting the intent of E.O. 14008 to strengthen resilience against the impacts of climate change. Details regarding assumptions and supporting documentation for estimated water savings are included in sections to follow.

Water losses do not measurably make their way back into the water system, nor do they contribute to alternative water supplies. Water that is currently being used by landscapes will be conserved through the removal of thirsty turfgrass and the use of plant material that requires much less water. Water will be conserved through the replacement of "full-coverage" overhead sprinkler systems that are required by turfgrass with a modified system that will increase irrigation efficiency and reduce the amount of water applied to the landscape. Typical overwatering/overspray associated with turfgrass irrigation will also be eliminated. The addition of a required rain catchment feature will contain water onsite for use in the landscape, adding to the reduction in water demand.

Estimated water savings from converting turfgrass to sustainable/drought tolerant landscapes are based on the City of San Diego's Cash for Grass Program. San Diego's program was included in the *Alliance for Water Efficiency (AWE) Landscape Transformation Study: 2018 Analytics Report*. AWE's study evaluated nine landscape transformation programs and calculated water savings by analyzing the consumption history of participants in a sample. San Diego's sample set included 382 participants. Seasonal and weather components were incorporated into the analysis. AWE's analysis of the City of San Diego's Cash for Grass showed a savings of 41.8 gallons saved per square foot of turf removed. Comparable water savings for the City's Turf Replacement Rebate is expected due to the City's similar conditions and close proximity to San Diego. AWE's statistical model for San Diego's Cash for Grass is listed below.

**Figure 1.5-1 San Diego City Statistical Model of Landscape Transformation**

LANDSCAPE TRANSFORMATION STUDY: 2018 ANALYTICS REPORT			
<b>San Diego City Statistical Model of Landscape Transformation</b>			
Dependent Variable: Water Consumption in Gallons per Day			
Model Variable	Name	Coeff.	St. Err.
1. First Sine harmonic, 12 month (annual) frequency	sin1	-60.41	(2.676)
2. First Cosine harmonic, 12 month (annual) frequency	cos1	-100.9	(6.225)
3. Second Sine harmonic, 6 month (semi-annual) frequency	sin2	-0.248	(1.916)
4. Second Cosine harmonic, 6 month (semi-annual) frequency	cos2	6.963	(1.430)
5. Deviation from logarithm of 30 or 61 day moving sum of rainfall	dlr_mean	-59.55	(3.206)
6. Monthly lag from rain deviation	dlr_1	-35.63	(2.440)
7. Interaction of contemporaneous rain with annual sine harmonic	dlr_sin1	-19.93	(3.240)
8. Interaction of contemporaneous rain with annual cosine harmonic	dlr_cos1	5.538	(3.259)
9. Average Participation Effect (APE) by customers (385 metered sites in sample)	i_part	-111.6	(7.068)
10. Interaction of APE with annual sine harmonic	i_part_sin1	26.56	(2.294)
11. Interaction of APE with annual cosine harmonic	i_part_cos1	46.01	(5.572)
12. Intercept (approximates mean nonparticipant water use)	_cons	331.1	(2.502)
Number of observations		21,697	
Number of Households		384	
Standard Error of Individual Constant Terms ( $\sigma_u$ )		162.67	
Standard Error of White Noise Error ( $\sigma_e$ )		176.93	
Rho – Intra-cluster correlation		rho	0.458
Adj. R-Squared (Inclusive of customer intercepts)		adj_r2	0.467
		F	62.78
		p	9.94e-79
Time period of Consumption – January 2007 – July 2017			

An additional benchmark to reference water savings is MWD’s 2018 SoCal WaterSmart Water Savings Table which lists a slightly higher factor of 44 gallons saved per square foot of turf removed, along with expected savings enduring for 30 years.

The evaluation of the City of San Diego’s *Cash for Grass* program, analyzed as part of the larger AWE study, forms the basis for a defensible and credible estimate of the net water savings attributable to the landscape transformation program. Water savings assumptions from this study are used to calculate expected water savings from this project and are based on the removal of 250,000 square feet of turfgrass surface area.

**Table 1.5.1-1 Water Savings Calculations for Turf Rebate Component**

<b>WATER SAVINGS ASSUMPTIONS</b>	
<b>Square Footage of turf removed</b>	250,000
<b>Savings factor</b>	41.8
<b>Acre feet conversion</b>	325,851
<b>Years of expected life</b>	30

Average annual water savings calculations for the Project are shown in the table below.

**Table 1.5.1-2 Water Savings Calculations**

<b>WATER SAVINGS CALCULATIONS</b>				
<b>DOCUMENTED WATER SAVINGS</b>	<b>SAVINGS CALCULATION</b>	<b>WATER SAVINGS (AFY)</b>	<b>LIFE OF LANDSCAPE CONVERSION N*</b>	<b>CUMULATIVE SAVINGS (AF)</b>
<b>City of San Diego Cash for Grass</b>	$(250,000 \text{ sq. ft.} \times 41.8 \text{ gals}) \div 325,851 = 32.1 \text{ AFY Savings}$	32.1 AFY	30 years x 32.1 AF	963 AF

\*MWD’s Water Savings Table lists the expected life of the Improvement at 30 years.

While the studies referenced above do not explicitly discuss the assumed average annual turfgrass consumptive rate per unit area, they do quantify net water savings values between turfgrass and waterwise landscapes.

Customers participating in the rebate program will be required to adhere to established quality assurance measures that verify square footage that is converted and ensure program requirements are met. Pre and post site inspections will be conducted on all commercial and public agency sites as part of MWD’s program requirements. A combination of aerial inspections as well as physical inspections administered on a random basis will be used to review project compliance at residential sites. Before being accepted into the program, applicants will provide:

- Measurement of the project area(s)
- Copy of a recent water bill
- Five color photos of the areas of planned turf removal
- Simple landscape plan showing the area to be transformed along with the type and location of the selected stormwater retention feature

Upon completion of the project, photos will be submitted of the converted areas, documenting the removal of turf, installation of climate-appropriate plant material, application of mulch, irrigation modifications, and the stormwater retention feature.

To measure actual performance, the City can determine estimated water savings generated through turf removal by analyzing actual water meter data from a sample set of sites that participated in the rebate program. A baseline value representing average annual water use for a one-to-three-year period prior to implementing the turf conversion project can be established for each site and compared against water consumption for a defined period after projects are completed. For residential sites that have just one meter that measures both indoor and outdoor water use, a methodology can be applied to account for estimated indoor water consumption. Information regarding the size of the conversion project as a percentage of total landscape can also be considered when evaluating overall water use changes. These adjustments will enable a closer estimate of water savings resulting from the conversion project. Similar assumptions regarding the approximated percentage of converted landscape to overall landscape being irrigated on the same irrigation meter can be applied to commercial properties.

### 1.5.2 Evaluation Criterion B — Renewable Energy

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

In 2017, the City commissioned a Biosolids and Food Waste to Energy Master Plan to chart a path forward for the City to accept food waste and other high-strength organic wastes at the SLRWRF. The plan established several goals, including: (1) diverting food waste from landfills in response to California Senate Bill (SB) 1383 and (2) beneficially reusing waste organic streams to produce renewable energy to offset the increased energy demands of the City's water reuse programs. The ability to receive and process pretreated organic waste locally will create new, local renewable energy and help increase the regional capacity for organics processing. The Project proposed in this grant application was born out of those master planning efforts and includes new renewable energy components that will be constructed at the SLRWRF. The specific components proposed for the renewable energy Project is a new 800 kWh CHP unit that will produce clean energy and primary sludge thickening equipment.

The main project benefit to the City includes increasing the SLRWRF's capacity to utilize the solid municipal (organics) waste stream to produce biogas while reducing the usage of **5.3 million kWh/year** and **180,154 Therms** of energy that would otherwise be produced by fossil fuels. The Project will avoid GHG emissions by **7,599 MTCO<sub>2e</sub>** (see Table 1.5.2-6 for calculations). The organic waste will be diverted from landfills and used as source feed to produce biogas through anaerobic digestion and the remaining material from that process is then further reused as an input to produce rich organic compost (these benefits are further discussed below). Heat produced by the CHP will be used to fire boilers for that head the anaerobic digesters, thus offsetting the need to purchase and burn natural gas (total savings of 213,160 Therms/year (see Table 1.5.2-3 Natural Gas Savings Calculations). All of these primary and secondary benefits that are achieved by the Project support E.O. 14008 and strengthen resilience at home against the impacts of climate change by advancing clean energy technologies and infrastructure. The Project

will increase the City’s ability to offset 5.3 million kWh/year of electricity from the grid, enough to power 501 households or 1,343 electric vehicles for one full year.

Household equivalent offset (Source - U.S. Energy Information Administration):

***5,372.972 kWh (electricity capacity) ÷ 10,715 kWh (average annual household electricity demand) = 501 households annually***

Electric vehicle offset calculation (Source - Federal Highway Administration):

***5,372,972 kWh (electricity capacity) ÷ 4,000 kWh (average electric vehicle electricity demand) = 1,343 electric vehicles annually***

***Amount of Energy Capacity***

The City currently produces 3,600,000 kWh/year of renewable energy in a CHP system from biogas generated by anaerobic digestion of biosolids from municipal wastewater. The Project proposes increasing the capacity to produce energy by **5.3 million kWh/year** and will upsize the existing 530 kW CHP system capacity by an additional 270 kW at SLRWRF to do so. In total, the Project will increase the capacity to produce renewable energy from biogas by almost 50%. This increase in renewable energy production capacity will provide roughly 34% (5,280,022 kWh ÷ 15,326,817 kWh) of the anticipated energy demand of the City’s new Pure Water Program (indirect potable reuse). Table 1.5.2-1 illustrates the renewable electricity generation calculations.

**Table 1.5.2-1 Biogas Renewable Energy Capacity Expansion Component  
 Renewable Electricity Calculations**

ITEM	FOOD WASTE	TOTAL	SOURCE/FORMULA/NOTES
Primary sludge Volume (Avg. Gal/Day)	59,835		Historic Data - City
Primary sludge (Avg. % Solids)	2%		Historic Data - City
Thickened Primary Sludge (Avg. % solids)	6%		Target Thickened % Solids
Dry Solids (lbs/day)	12,076		=Volume (gal/day)*8.34 lbs/gal*%Solids
Thickened Primary sludge Volume (Avg. Gal/Day)	24,133		=Dry Solids (lbs/day)/8.34 lbs/gal/%Solids
Reduced PS Volume (Gal/Day)	35,702		=Original PS Volume - Thickened PS Volume
Increased Organics Volume (Gal/Day)	35,702		
% Total Solids (TS) Added	10%		WM average % Solids

ITEM	FOOD WASTE	TOTAL	SOURCE/FORMULA/NOTES
Lbs/day Organics Added	29,775		=Volume (gal/day)*8.34 lbs/gal*%Solids
Dry Tons/Year	5,434	-	=lbs/day organics * 365/2000
Wet Tons/Year	54,340		= Dry Tons/Year ÷ % TS
Density (lb/gal)	8.36		2013 BCUA Pilot Demonstration
Density (Tons/gal)	0.00418		=Density (lb/gal) ÷ 2000lb/Ton
Loading Rate (gpy)	12,999,891		=Wet Tons/Year ÷ Density (Tons/gal)
Loading Rate (gpd)	35,616	35,616	=Loading Rate (gpy) ÷ 365 days/year
Digester Volume (gal)		2,441,000	SLRWRF As-Builts - Assumes Largest Digester is out of Service
Digester Volume (ft <sup>3</sup> )		326,337	= Digester Volume (gal) ÷ 7.48 gal/ft <sup>3</sup>
<b>Minimum SRT Check</b>			
Solids Retention Time or SRT (Days)		68.5	=Digester Volume (gal) ÷ Loading Rate (gpd)
Minimum SRT (Days)		15.0	40 CFR Part 503
<b>Gas Production Calculations</b>			
lbs/day (TS)	29,775		=Dry Tons/Year * 2000 Lbs/Ton ÷ 365 Days/Year
% Volatile Solids (VS)	80%		2019 B&V TM 9
lbs VS/day	23,820	23,820	=lbs/day (TS) * %VS
% Volatile Solids Reduction (VSR)	70%		2019 B&V TM 9
Digester Gas (DG) produced per lb VSR (scf/lb VSR)	15.4		2019 B&V TM 9
lbs VSR/day	16,674		=lbs VS/day * %VSR
DG Production (scfd)	256,780		=DG produced per lb VSR * lbs VSR/day
DG Production (scfh)	10,699		=DG production (scfd) ÷ 24 hours/day

ITEM	FOOD WASTE	TOTAL	SOURCE/FORMULA/NOTES
DG Production (scfm)	178		=DG production (scfh) ÷ 60 minutes/hours
<b>Max Organic Loadings Rate Check</b>			
Max Organic Loadings Rate (OLR) (lb VS/day/ft <sup>3</sup> )		0.16	2019 B&V TM 9
Max Organic Loading (lb VS/day)		52,213.90	=Max OLR (lb VS/day/ft <sup>3</sup> )*Digester Volume (ft <sup>3</sup> )
<b>Energy Calculations</b>			
Energy Value of DG (BTU/scf)	600		2019 B&V TM 9
Energy Value BTU/day	154,068,240	154,068,240	=Energy Value of DG * DG production (scfh)
Electric Efficiency (%)*	0.326	0.326	2011 EPA Opportunities for CHP at WTF
Electric Production (BTU/day)	50,226,246	50,226,246	= Energy Value (BTU/day) * Electric Efficiency (%)
Electric Production (BTU/hr)	2,092,760	2,092,760	= Electric Production (BTU/day) ÷ 24 hours/day
Electric Production (kW)	613	613	= Electric Production (BTU/hr) ÷ 3412 BT/HR/kW
CHP Availability (%)	100%	100%	SLRWRF historic data
Electric Production (kWh/year)	5,372,972	5,372,972	= Electric Production (kW) * 24 hours/day * 365 days per Year * CHP Availability
Baseline Electric Production (kWh/year)			
Additional Electric Production (kWh/year)	5,372,972	5,372,972	
<b>Notes</b>			
* Lean Burn Reciprocating CHP			

### **Amount of Energy Generated**

**Table 1.5.2-1** shows the amount of renewable energy generated and provides detail to support the stated energy capacity estimate. These calculations were in part derived from the Integrated Waste to Energy Biosolids Master Plan Technical Memorandum 9, prepared by Black and Veatch in 2019.

### **Status of a mothballed Hydro Plant**

The Project does not bring a mothballed Hydro Plant capacity back online.

**Other Benefits of the Renewable Energy Project**

The Project is anticipated to increase capacity capable of producing an additional 58.4 Metric million British thermal unit or MMBtu (50,226,246 BTU/day electricity ÷ 0.86) from the new CHP system, as shown in Table 1.5.2-2. This calculation assumes a power to heat ratio (the proportion of electric power to heat in a CHP system) of 0.86, in line with lean-burn engines.

**Table 1.5.2-2 Biogas Renewable Energy Capacity Expansion Project  
 Renewable Heat Calculations**

	<b>TOTAL DIGESTATE</b>	<b>SOURCE/FORMULA/NOTES</b>
<b>Heat Demand Calculations</b>		
Average digester feed Temp (°F)	65	City Historic Data
Temperature in Anaerobic Digesters (DG) (°F)	99	City Historic Data
Temperature Delta (°F)	34	=Temp in AD - Temp Digester Feed
Wet Tons/Year	54,340	See Table 4.2.2.1 -1
lb/Day	297,751	=Wet Tons/Year * 2000 lbs/ton ÷ 365 days/year
Heat Demand (BTU/day)	10,123,532	=Temp Delta * lb/Day
Wall Heat Transfer	13,879,164	See Thermal Losses Calculation Table
Floor Heat Transfer	24,598,670	See Thermal Losses Calculation Table
Roof Heat Transfer	28,839,821	See Thermal Losses Calculation Table
Piping Heat Transfer	1,737,778	See Thermal Losses Calculation Table
<b>Total Heat Demand</b>	<b>79,178,964</b>	See Thermal Losses Calculation Table
<b>Heat Production Calcs</b>		
Power-to-Heat Ratio	86%	2011 EPA Opportunities for CHP at WTF
Electric Production (Btu/day)	50,226,246	See Electricity Calculations
Heat Recovery (Btu/day)	<b>58,402,612</b>	=Electric Production (Btu/day) ÷ Power-to-Heat Ratio

The City currently uses the heat from the existing CHP system to heat its digesters but must supplement with additional heat from natural gas-fired boilers. The City uses approximately 130,000 Therms of natural gas per year as supplemental heating for digesters (estimated as 90% of the total gas usage at SLRWRF). It is anticipated that the Project will increase the heat generation capacity generated from renewable sources to offset 213,160 Therms of natural gas for heating, allowing for enough capacity to realize a 100% decrease in demand for natural gas.



**Table 1.5.2-3 Natural Gas Savings Calculations**

<b>Renewable Energy from Food Waste Diversion Project Natural Gas Savings</b>		
<b>58,402,612</b>	BTU/day	=50.2 MMBtu/0.86
<b>100,000</b>	BTU/Therm	Conversion
<b>584</b>	Therm/Day	=BTU/day ÷ BTU/Therm
<b>213,160</b>	<b>Therm/Yr</b>	=Therm/Day * 365Days/Yr

Table 1.5.2-4 below calculates the existing heat load that the Project will offset.

**Table 1.5.2-4 Digester Piping Thermal Loss Calculations**

<b>Renewable Energy from Food Waste Diversion Project - Thermal Losses Calculation</b>												
<b>Digester Wall - Thermal Loss Calculation</b>												
Diameter (ft)	Height (ft)	Wall Area (SF)	# Digesters	Total Area (SF)	Temp in (°F)	Temp out (°F)	R value/in (hr-ft2-°F/Btu-in)*	Thickness (in)	R Value (hr-SF-°F/Btu)	Energy Demand (BTU/hr-SF)	Energy Demand (BTU/hr)	Energy Demand (BTU/day)
60	28	5,278	2	10,556	99	65	0.08	16	1.28	27	280,387	6,729,291
60	30	5,561	1	5,561	99	65	0.08	16	1.28	27	147,704	3,544,895
60	30	5,655	2	11,310	99	65	0.08	16	1.28	27	300,415	7,209,955
											<b>Total Wall Losses</b>	<b>17,484,141</b>
<b>Digester Roof Thermal Loss Calculation</b>												
Diameter (ft)	Height (ft)	Roof Area (SF)	# Digesters	Total Area (SF)	Temp in (°F)	Temp out (°F)	R value/in (hr-ft2-°F/Btu-in)*	Thickness (in)	R Value (hr-SF-°F/Btu)	Energy Demand (BTU/hr-SF)	Energy Demand (BTU/hr)	Energy Demand (BTU/day)
60	28	11,310	2	22,619	99	65	0.08	16	1.28	27	600,830	14,419,910
60	30	11,310	1	11,310	99	65	0.08	16	1.28	27	300,415	7,209,955
60	30	11,310	2	22,619	99	65	0.08	16	1.28	27	600,830	14,419,910
											<b>Total Roof Losses</b>	<b>36,049,776</b>
<b>Digester Floor Thermal Loss Calculation</b>												
Diameter (ft)	Height (ft)	Floor Area (SF)	# Digesters	Total Area (SF)	Temp in (°F)	Temp out (°F)	R value/in (hr-ft2-°F/Btu-in)*	Thickness (in)	R Value (hr-SF-°F/Btu)	Energy Demand (BTU/hr-SF)	Energy Demand (BTU/hr)	Energy Demand (BTU/day)
60	28	11,310	2	22,619	99	70	0.08	16	1.28	23	512,472	12,299,335
60	30	11,310	1	11,310	99	70	0.08	16	1.28	23	256,236	6,149,668
60	30	11,310	2	22,619	99	70	0.08	16	1.28	23	512,472	12,299,335
											<b>Total Floor Losses</b>	<b>30,748,338</b>
<b>Heat Transfer Piping Thermal Loss Calculation</b>												
Diameter (ft)	Length (ft)	Pipe Wall Area (SF)	# Digesters	Total Area (SF)	Temp in (°F)	Temp out (°F)	R value/in (hr-ft2-°F/Btu-in)*	Thickness (in)	R Value (hr-SF-°F/Btu)	Energy Demand (BTU/hr-SF)	Energy Demand (BTU/hr)	Energy Demand (BTU/day)
1	2,000	4,210	1	4,210	156	70	5.00	1	5.00	17	72,407	1,737,778

\*Source: <https://www.coloradoenergy.org/procorner/stuff/r-values.htm>, Poured Concrete for digester walls and Polyisocyanurate (foil-Faced) for Pipe

The Project is estimated to enable the diversion of 9,624 tons of food waste from landfills, anaerobically digest the food waste to produce biogas and beneficially reuse the remaining waste, known as “composted digestate” as an input ingredient in the production of rich organic

compost. Compost is used to amend soils to improve water holding capacity, thus reducing the need for irrigation. As organics are diverted from the landfill, the following benefits are achieved:

- Reduced GHG emissions between 4,387-6,492 MTCO<sub>2</sub>e (Source: Black and Veatch Study, 2018)
- Reduced emissions due to reduced transportation emissions between 2,120-3,579 MTCO<sub>2</sub>e. Organics are currently trucked to Riverside. (Source: 2018 Organics Feasibility Study).

The City calculated its GHG emissions reductions for diversion and composting of organics using methodologies described in the *2017 Final Draft Method for Estimating Greenhouse Gas Emission Reductions From Diversion of Organic Waste From Landfills to Compost Facilities*, prepared by the California Air Resources Board (CARB), a division of the California Environmental Protection Agency (CalEPA). The Compost Emission Reduction Factor (CERF) of 0.62 MTCO<sub>2</sub>e/ton of feedstock of Food Waste) and 9,624 Tons of Commercial Food Waste Diversion (documented in the 2018 City of Oceanside Organics Feasibility Study) was utilized to calculate a total GHG emissions reduction of 5,967 MTCO<sub>2</sub>e per year (5,967 MTCO<sub>2</sub>e = 0.62 MTCO<sub>2</sub>e/ton of feedstock of Food Waste × 9,624 Tons of Food Waste).

The City referenced several different sources to calculate GHG emissions reductions from the conversion of the energy source from fossil fuels to renewable energy. A carbon intensity of 0.000360 tons per kWh (California Air Pollution Control Officers Association 2016) was used to calculate the reduction in GHGs associated with electricity from fossil fuels. The climate change mitigation from the reduction in GHG is calculated to be 1,939 MTCO<sub>2</sub>e per year (5,280,022 kWh/year × 0.00036 MTCO<sub>2</sub>e/kWh). The City used the GHG Emissions from the Stationary Combustion worksheet from the Greenhouse gas protocol to calculate reduced emissions from the elimination of 130,000 Therms of natural gas (770 MTCO<sub>2</sub>e) and increased emissions from the combustion of biogas in a CHP system (1,077 MTCO<sub>2</sub>e).

Overall, the Project is anticipated to enable GHG emissions reductions by 7,599 MTCO<sub>2</sub>e as is shown in Table 1.5.2-5, Project GHG Emissions Reductions Summary.

**Table 1.5.2-5 Project GHG Emissions Reductions Summary**

<b>Source of GHG Emissions Change</b>	<b>Emissions Reduction in (MTCO<sub>2</sub>e)</b>
Diversion of Organics from Landfills for Composting	5,967
Reduced Electricity from Fossil Fuels	1,938.93
Reduced Heat from Fossil Fuels	770
Increased Electricity from Renewable Energy	(1,077.18)
<b>Total GHG Emissions Reductions</b>	<b>7,599</b>

The primary environmental benefit of the proposed renewable energy expansion effort is the reduction of GHG emissions that will be achieved through the capture of methane gas (biogas) that would otherwise be lost to the atmosphere in the anaerobic digestion process. The Project will also effectively reduce the use of fossil fuels to power the City’s energy intensive indirect

potable reuse (aka Pure Water Oceanside) processes as well as in other water treatment processes at SLRWRF. The table below illustrates the anticipated energy demand for Pure Water Oceanside, the first potable reuse project developed in San Diego County. The program will produce enough water to provide more than 30% of the City’s water supply.

**Table 1.5.2-6  
 Pure Water Oceanside Estimated Energy Demand**

<b>ELECTRICAL INFRASTRUCTURE</b>	<b>HORSE POWER (HP)</b>	<b>VARIABLE FREQUENCY DRIVE or VFD (% POWER)</b>	<b>kW</b>	<b>OPERATIONAL HOURS /YEAR</b>	<b>kWh/year</b>
RO Feed Pump 1	200	90%	135	8,760	1,182,600
RO Feed Pump 2	200	90%	135	8,760	1,182,600
RO Feed Pump 3	200	90%	135	8,760	1,182,600
RO Feed Pump 4 (Future)	200	90%	135	-	-
UF CIP Tank Heater	100		75	438	32,850
RO CIP Heater	133		99.75	438	43,691
UF Feed Pump 1	100	90%	67.5	8,760	591,300
UF Feed Pump 2	100	90%	67.5	8,760	591,300
UF Feed Pump 3	100	90%	67.5	8,760	591,300
UF Feed Pump 4 (Standby)	100	90%	67.5	-	-
UF Feed Pump 5 (Future)	100	90%	67.5	-	-
ABB Blower 1	500	80%	300	8,760	2,628,000
ABB Blower 2	500	80%	300	8,760	2,628,000
ABB Blower 3 (Standby)	500		375	-	-
UF Air Compressor	10		7.5	1,217	9,125
UF Air Compressor (Standby)	10		7.5	-	-
RO Flush Pump P-1	15		11.25	6,570	73,913
RO Flush Pump P-2 (Standby)	15		11.25	-	-
Product Water Pump 1	100		75	6,570	492,750
Product Water Pump 2	100		75	6,570	492,750
Product Water Pump 3	100		75	-	-
Product Water Pump 4 (Standby)	100		75	-	-
Waste EQ PS-1	10		7.5	4,380	32,850
Waste EQ PS-2	10		7.5	4,380	32,850
Waste EQ PS-3	10		7.5	4,380	32,850

ELECTRICAL INFRASTRUCTURE	HORSE POWER (HP)	VARIABLE FREQUENCY DRIVE or VFD (% POWER)	KW	OPERATIONAL HOURS /YEAR	kWh/year
Waste EQ PS-4 (Standby)	10		7.5	-	-
UV Reactor Vessel 1	112.5		84.375	8,760	739,125
UV Reactor Vessel 2	112.5		84.375	8,760	739,125
Decarbonator Blower (Future)	20		15	5,256	78,840
IR Pump 1	60		45	8,760	394,200
IR Pump 2	60		45	8,760	394,200
IR Pump 3	60		45	-	-
IR Pump 4	60		45	8,760	394,200
				<b>Total kWh/year</b>	<b>15,326,817</b>
<b>*Loads under 10 HP not shown</b>					

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

*Energy Efficiencies Derived From Turf Replacement Rebate Component*

The Turf Replacement Rebate is anticipated to result in **quantifiable annual energy savings of 72,055 kWh/year by reducing demand on imported water**. Cumulative energy savings over the life of the conversion will result in 2,161,646 kWh as show in Table 1.5.2-7. The embedded energy in the water distributed by Oceanside includes energy to convey, treat and distribute water. The majority of the supply is imported from northern California via SWP and from CRA.

Net utility energy intensity data was gathered from the 2020 Urban Water Management Plans for MWD, SDCWA, and Oceanside to calculate quantifiable energy savings. A value for kWh/AF was established by combining the net utility energy intensities multiplied by estimated water savings from the Turf Replacement Rebate to determine the avoidance of embedded energy resulting from the conversion of turfgrass to sustainable/drought tolerant landscapes, as shown in the table below.

**Table 1.5.2-7 Embedded Energy Avoidance Resulting from Water Savings**

AGENCY	WATER MANAGEMENT PROCESS (kWh/AF)			NET UTILITY ENERGY INTENSITY
	CONVEYANCE	TREATMENT	DISTRIBUTION	
MWD	1919.9	69.7	-152.6	1837
SDCWA	-32.6	112.1	7.7	87.2
Oceanside	0.30	278.8	41.4	320.5
<b>kWh/AF Saved:</b>				<b>2,245</b>
kWh/AFY for Imported Water Savings from Turf Replacement: <b>Formula: Embedded Energy Avoidance kWh/AF (2,245) × Imported Water Savings AFY (32.1) = kWh/AFY Imported Water Savings (72,055)</b>				<b>72,055</b>
Cumulative kWh/AF for Imported Water Savings from Turf Replacement: <b>Formula: Total kWh/AFY (72,055) × Lifetime Savings (30 years) =Cumulative kWh/AF</b>				<b>2,161,646</b>

**Energy Efficiencies from Biogas Renewable Energy Capacity Expansion Component**

The Project will construct facilities at SLRWRF to enable increased production of renewable energy. This new, locally produced energy source will be directly utilized by the City’s wastewater, recycled water, and Pure Water programs and the quantifiable energy savings expected are 5.3 million kWh/year and 213,160 Therms (see Table 1.5.2-2 Renewable Electricity Calculations and Table 1.5.2-3 Natural Gas Savings Calculations for supporting calculation).

**Benefits to energy efficiency and climate change from Turf Rebate Component**

Replacing turfgrass with sustainable and/or drought-tolerant landscaping not only reduces water use and the associated energy demand required to transport, treat, and convey the water (embedded energy), but also eliminates the energy (gasoline) previously consumed by lawnmowers to mow the lawn. Formulas included in the EPA’s GHG Equivalencies Calculator were used to calculate the amount of carbon dioxide emitted per kilowatt hour associated with embedded energy in imported water and gallons of gasoline used by mowers. Based on the formulas, the reduction in water consumed and elimination of gasoline is expected to translate to the **avoidance of GHG emissions of 46.4 MTCO2e annually and 1,390 MTCO2e over the life of the landscape conversion.**

**Table 1.5.2-8 EPA GHG Equivalencies Calculator GHG Emissions Avoided**

SOURCE	SAVINGS	MTCO <sub>2</sub> e CALCULATOR VALUE/ANNUALY	MTCO <sub>2</sub> e CALCULATOR VALUE/LIFETIME
Embedded energy in water	72,055 kWh per year	51.1	1,533
Gallons of gas per hour mowed per total square foot converted	110 gallons per year	0.9	26
	<b>TOTAL MTCO<sub>2</sub>e:</b>	<b>52</b>	<b>1,559</b>

**Table 1.5.2-9 MTCO<sub>2</sub>e Calculations**

MTCO <sub>2</sub> e CALCULATIONS*	
Embedded Energy in Water	<b>Emission Factor**:</b> 1,562.4 lbs CO <sub>2</sub> /MWh × (4.536 × 10 <sup>-4</sup> metric tons/lb) × 0.001 MWh/kWh = 7.09 × 10 <sup>-4</sup> MTCO <sub>2</sub> e/kWh
	<b>Calculation Annual:</b> 7.09 × 0.0001 MTCO <sub>2</sub> e × 72,055 kWh = 51.1 MTCO <sub>2</sub> e
	<b>Calculation Lifetime:</b> annual MTCO <sub>2</sub> e (51.1 MTCO <sub>2</sub> e) × years (30) = 1,533 MTCO <sub>2</sub> e
Gallons of Gas Consumed***	<b>Emission Factor:</b> 8,897 grams of CO <sub>2</sub> /gallon of gasoline = 8.887 × 10 <sup>-3</sup> metric tons CO <sub>2</sub> /gallon of gasoline
	<b>Calculation Annual:</b> 8.887 × 0.001 MTCO <sub>2</sub> e × 97 gallons = 0.9 MTCO <sub>2</sub> e
	<b>Calculation Lifetime:</b> annual MTCO <sub>2</sub> e (0.9) × years (30) = 26 MTCO <sub>2</sub> e

\* [epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references](http://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references)  
 \*\*AVERT, U.S. national weighted average CO<sub>2</sub> marginal emission rate, year 2019 data  
 \*\*\*Refer to Gallons of Gas Consumed Assumptions listed below

**Table 1.5.2-10 Gallons of Gas Consumed Assumptions**

INPUT/OUTPUT	VALUE	SOURCE/CALCULATION
Total Square Feet	25,000	
Total Acres	5.74	total sq. ft. (25,000) ÷ conversion to acres (43560)
Square Feet Mowed Per Hour	44,431	Output from Mowing Calculator <a href="https://www.mowingmagic.com/2020/06/mowing-calculator-how-long-it-takes-to-mow/">https://www.mowingmagic.com/2020/06/mowing-calculator-how-long-it-takes-to-mow/</a>

INPUT/OUTPUT	VALUE	SOURCE/CALCULATION
<b>Mower Width</b>	21	web search: <i>standard width of a walk behind gas lawn mower</i>
<b>Mower Speed</b>	6	5-8 mpg for residential zero turn lawn mower. <a href="https://www.treelawncareservices.us/how-much-gas-does-a-lawn-mower-use-per-hour">https://www.treelawncareservices.us/how-much-gas-does-a-lawn-mower-use-per-hour</a>
<b>Percent Overlap</b>	10	Prepopulated input from Mowing Calculator <a href="https://www.mowingmagic.com/2020/06/mowing-calculator-how-long-it-takes-to-mow/">https://www.mowingmagic.com/2020/06/mowing-calculator-how-long-it-takes-to-mow/</a> <a href="https://www.mowingmagic.com/2020/06/mowing-calculator-how-long-it-takes-to-mow/">https://www.mowingmagic.com/2020/06/mowing-calculator-how-long-it-takes-to-mow/</a>
<b>Medium-Sized Mower Gas Per Hour</b>	0.59	<a href="http://www.treelawncareservices.us/how-much-gas-does-a-lawn-mower-use-per-hour">www.treelawncareservices.us/how-much-gas-does-a-lawn-mower-use-per-hour</a>
<b>Hours Mowing Per Total Sq. Ft.</b>	4.23	Output from Mowing Calculator <a href="https://www.mowingmagic.com/2020/06/mowing-calculator-how-long-it-takes-to-mow/">https://www.mowingmagic.com/2020/06/mowing-calculator-how-long-it-takes-to-mow/</a> <a href="https://www.mowingmagic.com/2020/06/mowing-calculator-how-long-it-takes-to-mow/">https://www.mowingmagic.com/2020/06/mowing-calculator-how-long-it-takes-to-mow/</a>
<b>Gas Per Hours Mowed Per total square feet</b>	2.5	Hrs. mowed per total sq. ft (4.23) ÷ med-size mower gas per hour (0.59)
<b>Annual Gas Per Hours Mowed Per Total square feet</b>	97	gas per hrs. mowed per total sq. ft (2.5) × [weeks (52) × winter adjustment (0.75)]
<b>Lifetime Gas Per Hours Mowed Per Total square feet</b>	2,920	Annual gas per hrs. mowed per total sq. ft. (97) × years (30)

***Benefits to energy efficiency and climate change from Biogas Expansion Component***

The energy efficiency benefits derived from the biogas expansion project will address climate change by reducing demands on fossil-fuel-derived power sources to support processes at SLRWRF while reducing associated GHG emissions.

***Current Pumping Requirements and Energy Use***

Its regional water wholesaler is the San Diego County Water Authority (SDCWA) and SDCWA’s imported water wholesaler is MWD. MWD provides imported water from two infrastructure systems, the SWP and USBR’s CRA. The energy intensity of water conveyed through the SWP ranges between 2,580 kWh/acre-feet (AF) to 3,236 kWh/AF. The SWP originates in the Northern Sierra Mountain as snowpack. A combination of this snowpack, runoff, and SWP reservoir storage supplies becomes water supply for 29 SWP contractors including MWD. The SWP moves through a system of pump stations, reservoirs, aqueducts, and power plants operated by DWR. DWR utilizes the California Aqueduct and a series of pumps and hydroelectric generators to deliver SWP supplies to southern California. The CRA was constructed and is operated by MWD to convey

water from the Colorado River to its service area. The water is pumped through five pumping plants to reach MWD's service area. The energy intensity of water conveyed through the CRA is 2,000 kWh/AF.

### ***Turf Replacement Rebate Pumping Improvements***

The proposed Turf Replacement Rebate Project will reduce imported water demands by 32.1 AFY. That is 32.1 AFY that will not be pumped from imported water sources hundreds of miles away. Considering the historical imported water split for the SWP and the CRA to the region, the reduction of 32.1 AFY will result in an estimated avoided energy demand of 72,055 kWh annually. Included in this calculation is the energy used by pumps to convey and distribute the water.

The calculations for the proposed Turf Replacement Rebate Project include the energy required to treat the water. A detailed description of the sources of energy, including treatment, is provided above at the beginning of Subcriterion B2. Energy savings estimates associated with reduced water use originate from the point of diversion.

### **1.5.3 Evaluation Criterion C—Sustainability Benefits**

#### ***Enhancing drought resiliency***

San Diego County has been experiencing drought conditions over the last several years. Below-average snowpack levels in the Northern Sierras and Rockies persist and record dryness has inflicted the state at large. On top of poor hydrologic conditions, imported water reservoirs are at record lows including Lake Oroville, Lake Mead and Lake Powell which all supply San Diego County. To combat this issue, the City has taken aggressive measures to diversify its water supply portfolio relying less on imported water and developing local, drought-resilient supplies. The proposed grant Project is a renewable energy project that will offset electricity produced by fossil fuels and heat generated by the combustion of natural gas. This Project provides a local, sustainable energy supply to its Pure Water Oceanside project (funding through a USBR Title XVI grant, Project R21AP104057) which creates a local, drought-proof water supply that decreases the City's demand for imported water (including water imported through the SWP and CRA). Pure Water Oceanside is an exemplary showcase of how water utilities can achieve drought resiliency through diversifying supplies; the Project will enhance this effort by providing Pure Water Oceanside with renewable energy.

Reduced demand on the SWP and CRA supplies will contribute to ecosystem benefits by supporting fish and wildlife corridors within their respective hydrologic systems, some of which are endangered. Ecological resilience to climate change will be provided through reduced GHG emission (see section 4.4.2.1) from reduction in the need for transporting and treating imported supplies. The Project will result in more efficient management of water supplies by freeing up imported water demand for other SWP and CRA users and thus providing greater flexibility to water managers throughout the state and the greater southwest.



### *Address a specific energy sustainability concern(s)*

The Project provides a local, uninterrupted source of renewable energy that reduces the City's reliance on electricity pulled from the grid and produced from fossil fuels, as well as heat through the combustion of natural gas. Increasing the City's local and sustainable energy portfolio is of paramount importance to offset the energy demand increases of the City's water reuse and other water treatment processes. In 2019, the City finished a Phase I upgrade of its water reclamation treatment plant from 0.7 MGD to 3.0 MGD; and Phase I of Pure Water Oceanside was completed at the end of 2021. Pure Water Oceanside is an indirect potable reuse (IPR) groundwater augmentation program that provides local water supply which directly offsets the City's current demand for imported water. These two programs are anticipated to increase the City's electricity demand by over 20,000,000 kWh/yr. Construction of facilities to offset this increase in energy demand due to the City's water reuse programs will significantly enhance the City's ability to utilize local renewable energy resources to support its water reuse programs. By not implementing this Project, the City will have to rely upon energy sources that can be subject to rolling blackouts and public safety power outages, including grid energy. Climate change in recent years has extended the summer season and, consequently, the fire season which plays a key role in when and where outages occur. The Project will help mitigate the energy sustainability concern of service interruption by providing an uninterrupted source of renewable energy.

The Turf Replacement Rebate component addresses water shortages and drought conditions by encouraging improvements that will lead to drought-tolerant, climate-appropriate landscapes and direct water savings. The renewable energy expansion component will address drought and climate change by powering a facility that produces a drought-resilient and sustainable source of drinking water supply.

Water conserved via the Turf Replacement Rebate will offset imported water deliveries and will be made available to other users that receive water from the SWP and CRA. Water that is conserved by this Project can be kept in storage reservoirs in the SWP or CRA distribution systems or used to reestablish water levels in reservoirs (i.e., Lake Oroville, Lake Mead, or Lake Powell) to address shortages and meet future dry-year demands. The intended use is to keep conserved water in the imported water systems for other imported users in times of need.

### *Other project benefits*

The table on the following page lists other project benefits and the associated significance:

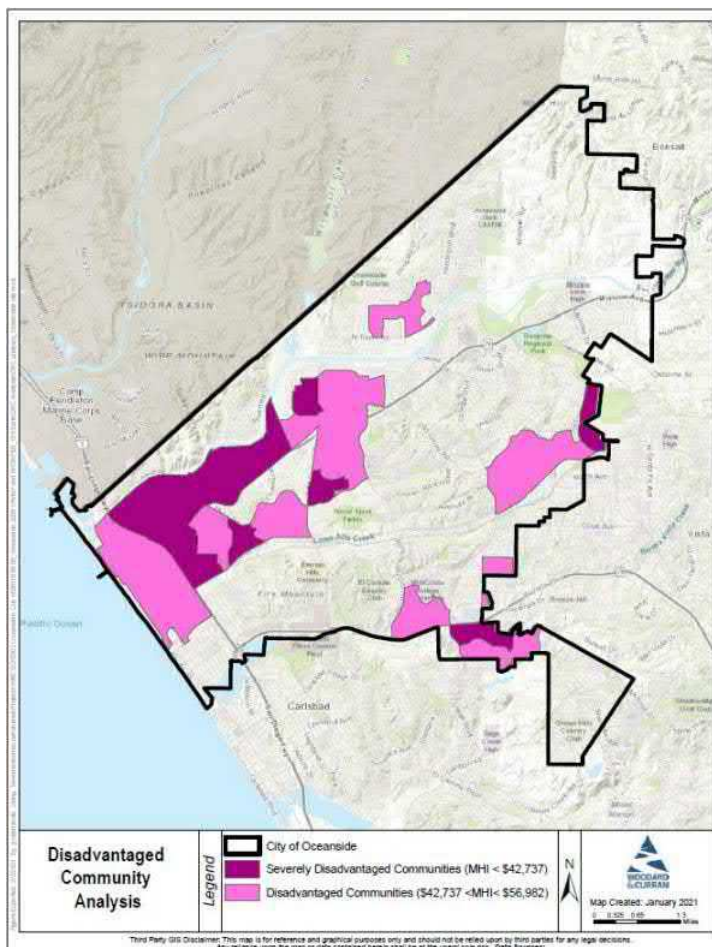
**Table 1.5.3-1 Project Sustainability Benefits and Significance**

CATEGORY	PROJECT BENEFIT	SIGNIFICANCE
<b>COMBATING THE CLIMATE CRISIS</b>	Reduced Imported Water Demand	This project benefit achieves the E.O. 14008 goal of conserving water, protecting biodiversity and addressing climate change.
	Produce and Utilize Renewable Energy Production	This project benefit achieves the E.O. 14008 goal of stimulating clean energy industries conserving our natural resources and leveraging them to help drive our nation toward a clean energy future. The Project will increase the amount of renewable and local energy produced and used by the City and will minimize the impacts of electricity and natural gas price increases.
	Increase Resilience to Climate Change	The project strengthens water supply sustainability to increase resilience to climate change by providing clean power to facilities that will produce drought-resilient, local water supply for the City.
<b>DISADVANTAGED or UNDERSERVED COMMUNITIES</b>	Reduce Greenhouse Gas Emissions	The Project will result in lower greenhouse gas emissions by significantly reducing demand for fossil fuel derived power. Through a reduction in the use of imported electricity and natural gas and the correlated decrease in GHGs, the Project will benefit all residents of Oceanside, including economically disadvantaged communities (EDCs). According to Oceanside’s 2020 Urban Water Management Plan, the City has a median household income (MHI) of \$68,652 (in 2018 dollars) and a poverty rate of 11.6%. Approximately 32% of the City’s service area meets the definition of an economically disadvantaged community (DAC), defined as 80% or less than the statewide MHI. Of the total DAC, 28% are considered severely disadvantaged communities (SDAC), with an MHI of 60% or less than the statewide MHI. This analysis used 2018 data, consistent with the DAC Mapping Tool developed by the Department of Water Resources ( <a href="https://gis.water.ca.gov/app/dacs/">https://gis.water.ca.gov/app/dacs/</a> ). The map below in Figure 4.4.3-2 shows DAC census tracts in the Oceanside service area and surrounding sphere of influence.

<p><b>TRIBAL BENEFITS</b></p>	<p>Avoided costs</p>	<p>Members of the San Luis Rey Band of Mission Indians live within City boundaries. All residents, including tribal members, will benefit from the implementation of the Project, which includes those derived from improved energy supply reliability as systems are shifted to locally produced and controlled fuel sources. The shift away from natural gas will protect against likely future cost increases fossil fuel-based resources. The correlated avoidance of GHGs brought about by the Project will contribute to slowing the negative impacts of climate change, benefiting all residents of Oceanside, including tribal members. An increase in the use of organics as a fuel source to the Project will reduce overall dumping fees as more solid waste is diverted from the landfill. This will benefit all residents of Oceanside, including tribal members.</p>
<p><b>OTHER BENEFITS</b></p>	<p>Reduced Urban Runoff</p>	<p>Turf replacement provides the benefit of reducing stormwater runoff while improving water quality and providing ecosystem benefits. Overspray occurs when watering turf as it requires full coverage irrigation by overhead irrigation/sprinklers. Taking turf out and replacing it with climate-appropriate landscape and upgrading irrigation systems to drip irrigation or micro-spray significantly reduces the amount of water used and largely eliminates overspray from sprinklers. When overspray (to concrete or asphalt) is eliminated, it reduces dry weather runoff which is laden with pet feces, fertilizer, pesticides, and other organics. This dry weather runoff would otherwise be collected in the storm drain system and be destined for waterways at discharge points untreated.</p> <p>In addition, participating sites are required to incorporate a rainwater capture or filtration system into the landscape project. This sustainable approach captures rainwater for reuse and reduces stormwater runoff.</p>
	<p>Energy Sustainability</p>	<p>Approximately 72% of the imported water received by the City is comprised of water from the Colorado River, purchased from USBR. The Project will assist the City in meeting nearly 11% of its increased energy requirements from the Pure Water Oceanside IPR initiative in a sustainable manner. Starting in December 2021 Pure Water Oceanside will provide 3,360 acre feet per year (AFY) (15.3% of total supply) of new local, drought-proof water and will reduce the City’s reliance on imported water. MWD requires significant energy to treat and convey water through its regional system. To do so it purchases energy from Western Area Power Administration (WAPA). WAPA’s Desert Southwest region transmits</p>

		wholesale energy produced by USBR’s Boulder Canyon Project to MWD. The Project will produce local, renewable energy to meet the increased energy demands of Pure Water Oceanside. As the demand for imported water from MWD decreases so does the demand for energy supplied by the USBR’s Boulder Canyon Project. This clean hydropower produced by Boulder Canyon may then be used elsewhere.
	Diversion from landfill and compost production	The Project will result in the production of a nutrient-rich byproduct derived from organic solid waste and sludge which will be used in a composting process (not part of this project scope) that can assist with carbon sequestration and reduce GHG emissions (soils contain approximately 75% of the carbon pool on land). The production of compost supports the, a collaboration of state agencies led by the California Department of Food and Agriculture to promote the development of healthy soils. The Healthy Soils Initiative is also supported by the US Department of Agriculture’s Natural Resources Conservation Service (NRCS). “Healthy soil” is achieved by adding organic-rich compost. Increasing soil organic matter by 1% can increase soil available water holding capacity by 3.7%. Healthy soil can hold up to 20 times its weight in water and can promote carbon sequestration by enhancing the uptake of carbon in the soil. This will benefit the City’s robust agricultural sector, further discussed below.
	Carbon Sequestration	Replacing turf with drought-tolerant plants and climate-appropriate shrubs and greenery that is amended with locally produced compost helps to increase soil health and water holding capacity and results in healthy plants, which promotes intake of CO <sub>2</sub> , thus sequestration of carbon that contributes to climate resilience.
	Heat Island Cooling	Replacing turf with a minimum coverage of 50 percent low-water-use plant material and not permitting non-permeable hardscape in the transformed area, maintains a natural landscape that cools the air by providing shade and transpiring water from plant leaves.

**Figure 1.5.3-1 City of Oceanside DAC**



The avoided future increases in operational costs of water treatment facilities disproportionately benefit DACs and SDACs, as higher rates place a proportionately larger burden on economically disadvantaged residents. Table 1.5.3-2 below shows the estimated minimum annual cost savings available to the City for implementing the project. The table includes 2020 energy costs and does not account for inflation of energy prices.

**Table 1.5.3-2 Estimated Minimum Annual Cost Savings**

<b>ESTIMATED MINIMUM ANNUAL COST SAVINGS</b>					
<b>RENEWABLE ENERGY</b>	<b>ANNUAL REDUCTION</b>	<b>UNITS</b>	<b>ENERGY COST PER UNIT</b>	<b>NEW ENERGY COSTS PER UNIT</b>	<b>ANNUAL SAVINGS</b>
Natural Gas	130,000	Therms	\$0.42	\$ -	\$54,600
Electricity	5,280,022	KWh	\$0.19	\$0.05	\$739,203
				<b>Total</b>	<b>\$793,803</b>

#### 1.5.4 Evaluation Criterion D—Complementing On-Farm Irrigation Improvements

The Project does not directly impact on-farm irrigation improvements. However, the Project will play a vital role in the production of a nutrient-rich byproduct derived from organic solid waste which will be composted (not part of this project scope) and available to the public for residential and commercial use, including on farmland. The City of Oceanside partnered with Agri Service, Inc. in 1995 to develop an innovative public-private recycling program. This novel program set out to put incoming organic material to good use at fees below those of landfills. Oceanside’s El Corazon Compost Facility is a landmark green waste compost facility authorized by CalRecycle, a division of the California Department of Natural Resources. The Project will produce digestate that will be trucked to the El Corazon Compost Facility (operated by Agri Service, Inc., a small business located in Oceanside), where it will be converted to compost.

The use of compost produced by the project can assist with carbon sequestration and reduce GHG emissions (soils contain approximately 75% of the carbon pool on land). The production of compost supports the [State’s Healthy Soils Initiative](#), a collaboration of state agencies led by the California Department of Food and Agriculture to promote the development of healthy soils. The Healthy Soils Initiative is also supported by the US Department of Agriculture’s Natural Resources Conservation Service (NRCS). “Healthy soil” is achieved by adding organic-rich compost. Increasing soil organic matter by 1% can increase soil available water holding capacity by 3.7%. Healthy soil can hold up to 20 times its weight in water and can promote carbon sequestration by enhancing the uptake of carbon in the soil. Local farmers in the City and region participate in best management practices (BMPs) advocated by NRCS (application of compost is a BMP) and will have access to compost materials derived from byproducts of the Project. The application of compost as an on-farm improvement will create water-retaining soils, leading to greater water use efficiency and reduced irrigation requirements.

#### 1.5.5 Evaluation Criterion E—Planning and Implementation

##### Subcriterion E.1— Project Planning

The Project components support several local and regional integrated resources management plans and planning efforts, as summarized below.

The 2018 San Diego Basin Study (<https://www.usbr.gov/lc/socal/basinstudies/SDBasin.html>) is a partnership between Reclamation and the City of San Diego Public Utilities Department to assess the region’s water supply and demand. The study aimed to determine the potential effects of climate change impacts within the San Diego IRWM region and analyzed the region’s existing infrastructure to develop adaptation strategies. Task 2.4 of the San Diego Basin Study highlights Structural & Operational Concepts and includes an analysis of the Pure Water Oceanside Project. The Basin Study noted the Project enhances conservation, increases water supplies, optimizes

existing facilities, improves watershed health and ecosystem restoration, and meets the goal to develop local sources to ease the burden on imported water sources.

[City of Oceanside's 2019 Climate Action Plan](#) includes this excerpt regarding goals for the carbon footprint and production of GHGs, for which the Project supports:

Reducing the City's carbon footprint requires both local government action as well as a commitment from residents, business owners, and others in the community to reduce their reliance on fossil fuels; pursue clean and renewable energy sources; reduce, reuse, recycle, and compost solid waste; conserve water and carefully manage the City's land resources. Indeed, given that the vast majority of the City's GHG emissions are generated by activities in the private sector, the bulk of the GHG reduction measures outlined in the City's CAP address emissions associated with residential, commercial, industrial, and agricultural uses.

Nevertheless, the City recognizes its role as an exemplar for the Oceanside community and is thus committed to reducing GHG emissions from municipal operations. Led by the Water Utilities and Public Works Departments, the City has already significantly reduced its GHG emissions through a variety of means, including methane (CH<sub>4</sub>) cogeneration, streetlight retrofitting, solar photovoltaic installation at numerous municipal facilities, solid waste diversion, energy efficiency retrofitting in municipal buildings, and the Green Oceanside campaign's community education programs. The City will continue to pursue GHG reduction in local government operations while encouraging emissions reduction in the community at-large through a combination of requirements, incentives, and community outreach efforts.

The Project moves the City toward achieving its 2020 [Zero Waste Strategic Resources Plan](#) and is an implementation measure in the [City's Climate Action Plan](#) which changes the culture to promote programs and policies that help it to meet its 75% diversion goals by 2020. These cumulative efforts will also assist the City in achieving the State-mandated [SB 1383 goals](#). The City adopted the [SB 1383 Action Plan](#), which includes measures that must be undertaken by the City in order to meet the mandate.

The City of Oceanside's [2020 Water Conservation Master Plan Update](#) evaluates water conservation demand management alternatives, general and sector-specific conservation programs, and other water efficiency measures the City is implementing or may choose to implement. Landscape turf rebate programs are identified as a measure that takes advantage of conservation programs administered by the MWD with minimal cost and effort to the City.

#### [Subcriterion E.2— Readiness to Proceed](#)

The Water Utilities Department has included the Project in its five-year Capital Improvement Plan (CIP) schedule. The City Council has approved the Project in the Capital Improvement Program which includes a portion of the funding to complete engineering. A preliminary analysis of the Project has been completed as part of the Food Waste to Energy/Biosolids Master Plan Project. The City will complete all required environmental and cultural resources reviews (as part of the Conditional Use Permitting process) and will obtain environmental certifications to comply with

CEQA and NEPA prior to the start of the Project. The Project will require a Conditional Use Permit (CUP) to comply with City ordinances. There will be no new policies or administrative actions required to implement the Project.

MWD’s SoCal WaterSmart Turf Replacement Program is currently active. The City will comply with the necessary agreements and administrative processes to add \$1/sq. ft. to MWD’s base rate.

Table 1.5.5-1 below shows the anticipated Project schedule.

**Table 1.5.5-1 Project Schedule**

<b>Anticipated contract approval from USBR</b>	May 2023
<b>Project Administration</b>	May 2023 – February 2026
<b>Conditional Use Permit</b>	October 2022 – October 2023
<b>Design-Builder Contracting</b>	August 2022 – May 2026
<b>Construction Implementation</b>	December 2023 – May 2026

#### 1.5.6 Evaluation Criterion F—Collaboration

##### Describe how the project promotes and encourages collaboration.

The Project supports collaboration through a cooperative and strategic partnership with the City’s franchised waste hauler to support the development of organics to energy pre-processing equipment and then to help capitalize and offset costs for additional intake/receiving infrastructure at the SLRWRF. In addition to addressing an organic waste processing capacity shortfall in North County San Diego, this unique partnership between the City’s Water Utilities Department and its franchise waste hauler will produce electricity and heat to offset the City’s organic waste product procurement under SB 1383. The Project is estimated to divert **9,624 tons** of food waste from landfills, anaerobically digest the food waste to produce biogas, and beneficially reuse the biogas to produce renewable electricity and heat to offset the use of **5.3 million kWh/yr** of electricity and **213,160 Therms** produced from fossil fuels for use in water treatment processes. This strategic partnership, valued at \$5 Million in contractual contributions by the franchise hauler is in addition to City investments. It will help the City meet its organics diversion targets in compliance with State regulations and climate action/zero waste goals and will assist the City in meeting organic waste product procurement targets set by SB 1383, in the form of renewable energy and heating derived from renewable natural gas. It is projected that the renewable energy produced by the Project will account for 49.6% of the City’s recovered organic waste product procurement target established by SB 1383, and the heat will account for 12.9% of the procurement target, with the overall project meeting a cumulative 62.5% of the City’s SB 1383 product procurement goal.



The City has a robust and mature compost program through free residential compost giveaway events, habitat restoration, and utilization of compost and mulch on City-owned and maintained property (parks, medians, etc.). In 2020, the City utilized 4,197.5 yards of mulch which satisfies approximately 20.5% of its recovered organic waste product procurement goal. With limited opportunity for the application of mulch and compost elsewhere in the City, it is imperative that additional avenues for procuring recovered organic waste products through energy and heat production at SLRWRF are explored. This partnership and the resulting compliance strategies for diversion and renewable energy production will further support California’s overarching goal of a green and self-sustaining economy that will also help drive infrastructure investment locally in Oceanside and throughout the region.

Support for the Project has been expressed by numerous organizations and agencies, as demonstrated in the letters included in Appendix A.

#### 1.5.7 Evaluation Criterion G— Addition to Non-Federal Funding

The percentage of non-Federal funding is 69%, which exceeds the required 50% match.

$$\frac{\$4,400,000 \text{ (Non – Federal Funding)}}{\$6,400,000 \text{ (Total Project Cost)}} = 69\% \text{ Cost Share}$$

#### 1.5.8 Evaluation Criterion H— Nexus to Reclamation

The City receives imported water from sources that originate from the Sacramento Bay-Delta and the Colorado River. In 2020, the City purchased 89% of its potable water supply from the SDCWA via MWD. Imported water provided to the City consists of water from DWR’s State Water Project (11%) and USBR’s Lake Mead/Colorado River (72%). The applicant is not a USBR contractor but does receive imported water from MWD, which is a contractor. The Central Valley Project (CVP), which shares conveyance infrastructure with the State of California’s SWP, is also a USBR project. The Project will conserve water that will ultimately result in reduced demand on the SWP/CVP and Colorado River, thereby benefiting USBR. The Project will assist the City in meeting nearly 11% of its increased energy requirements from Pure Water Oceanside in a sustainable manner. Starting in December 2021, Pure Water Oceanside began production of new local, drought-proof water to reduce the City’s reliance on imported water.

MWD requires significant energy to treat and convey water through its regional system. To do so, MWD purchases energy from Western Area Power Administration (WAPA). WAPA’s Desert Southwest region transmits wholesale energy to MWD which is produced by USBR’s Boulder Canyon Project. The Project will produce local renewable energy to meet the increased energy demanded by Pure Water Oceanside. Pure Water Oceanside will minimize the demand for imported water, thus energy supplied by the USBR’s Boulder Canyon Project.

The Project is neither on Reclamation lands nor does it involve USBR facilities; however, the proposed Project will benefit the USBR system by reducing imported water demands. The applicant is not a tribe but does have tribal lands located within its service area.

## 2 Performance Measures

### *Turf Rebate Component*

An analysis of water metering data from a sample set of participating sites can be conducted to quantify the benefits of the Turf Removal Rebate component. Metered water use data for a minimum of one year prior to the landscape conversion can be obtained to establish a baseline water use. Post-conversion metering data can be evaluated annually for three years, with the first year reflecting the establishment period, to determine actual water savings of the established landscape. See the discussion on performance measures in the previous section of this application.

### *Renewable Energy Component*

The City can measure a baseline of digester gas and electricity produced by the existing CHP system prior to implementation of the Project, as well as the natural gas used (via existing natural gas meters). These baseline measurements will be utilized for comparison to post-project digester gas and electricity production and natural gas consumption. Post-project digester gas can be measured through existing and new gas flow meters; electricity produced can be routed through a new electric meter; and natural gas consumption can be measured using an existing gas meter.

### 3 Project Budget

#### 3.1 Budget Proposal

The City of Oceanside will provide the non-Reclamation share of the Project costs through a capital improvement project. A portion of the match will be provided by the MWD \$2 per square foot base turf rebate for 250,000 square feet (\$500,000). The cost breakdown is shown in Table 3.1-1 below. No additional funding commitments have been pursued for the scope of this project at this time.

**Table 3.1-1 Summary of Non-Federal and Federal Funding Sources**

<b>FUNDING SOURCE</b>	<b>% OF PROJECT</b>	<b>FUNDING AMOUNT</b>
<b>Non Federal Entities</b>		
<b>City of Oceanside</b>	61%	<b>\$3,900,000</b>
<b><i>Value of third party contributors</i></b>	8%	<b>\$500,000</b>
<b><i>Non Federal Subtotal:</i></b>	69%	<b>\$4,400,000</b>
<b>Other Federal Entities</b>		
<b><i>Other Federal Subtotal:</i></b>	0%	<b>\$0</b>
<b>Requested USBR Funding:</b>	31%	<b>\$2,000,000</b>
<b>TOTAL PROJECT FUNDING:</b>	<b>100%</b>	<b>\$6,400,000</b>

The proposed budget breakdown by funding source for the Project is provided in Table 3.1-2.

**Table 3.1-2 Total Project Cost Table**

<b>SOURCE</b>	<b>AMOUNT</b>
<b>Costs to be reimbursed with the requested Federal funding*</b>	<b>\$2,000,000</b>
<b>Costs to be paid by the applicant</b>	<b>\$3,900,000</b>
<b>Value of third party contributions</b>	<b>\$500,000</b>
<b>TOTAL PROJECT COST</b>	<b>\$6,400,000</b>

The budget proposal, by budget item is provided in Table 3.1-3.

**Table 3.1-3 Budget Proposal**

BUDGET ITEM DESCRIPTION	COMPUTATION		QUANTITY TYPE	TOTAL COST
	\$/UNIT	QUANTITY		
<b>Salaries and wages</b>				\$0
N/A				\$0
Fringe benefits by \$ or %				\$0
N/A				\$0
Travel				\$0
N/A				\$0
Equipment				\$0
N/A				\$0
Materials and Supplies				\$0
N/A				\$0
<b>Contractual/Construction</b>				<b>\$5,900,000</b>
Turf Rebate Program	\$250,000	1	Lump Sum	\$250,000
Administration	\$160,000	1	Lump Sum	\$160,000
Engineering & Design	\$790,000	1	Lump Sum	\$790,000
Construction	\$4,050,000	1	Lump Sum	\$4,050,000
Construction Support	\$200,000	1	Lump Sum	\$200,000
CM & Inspection	\$400,000	1	Lump Sum	\$400,000
Electrical and I&C Improvements	\$50,000	1	Lump Sum	\$50,000
<b>Environmental and Regulatory Costs</b>				<b>\$0</b>
N/A				\$0
<b>Third-Party Contributions</b>				<b>\$500,000</b>
N/A				\$0
<b>Other</b>				<b>\$0</b>
Contingency				\$0
<b>TOTAL DIRECT COSTS</b>				<b>\$6,400,000</b>
<b>Indirect Costs</b>				<b>\$0</b>
N/A				\$0
<b>TOTAL ESTIMATED PROJECT COSTS</b>				<b>\$6,400,000</b>

## 3.2 Budget Narrative

### *Personnel (Salaries and Wages)*

The Project is not requesting funds for salaries and wages.

### *Fringe Benefits*

The Project is not requesting funds for fringe benefits.

### *Travel*

The Project is not requesting funds for travel.

### *Equipment*

The Project is requesting funding for a CHP system, associated equipment and primary sludge thickening equipment, including associated civil and mechanical improvements, primary sludge thickening equipment, and electrical improvements.

### *Supplies & Materials*

The Project is not requesting funds for supplies and materials.

### *Contractual/Construction*

The requested budget is comprised of costs in the contractual budget category which include: (1) Administration, (2) Engineering and design, (3) Construction, (4) Construction Support, (5) Construction Management & Inspection, and (6) Startup Support. The rebate expense is also included in this category.

The City has developed estimated costs for all near-term and long-term phases of the City's food waste to energy/biosolids program in a 2020 technical memorandum (TM 7 Organic Waste Pre-treatment and Treatment – Alternative Evaluation) prepared by Black & Veatch. Estimated costs provided in that technical memorandum are planning level and include a 30% construction contingency. All costs relevant to this phase of the renewable energy component of the Project have been extracted from TM7 which are included along with the rebate costs, in Table 3.2-1.

**Table 3.2-1 Project Contract/Construction Cost Summary**

<b>Contract Element</b>	<b>Cost Estimate</b>
Administration (Consultant)	\$160,000
Engineering & Design	\$790,000
Construction Support	\$200,000
CM & Inspection	\$400,000
Startup Support	\$50,000
Turf Replacement Rebate	\$250,000
<b>Total Contract Costs</b>	<b>\$1,850,000</b>
<b>Third Party Contributions</b>	<b>Cost Estimate</b>
Metropolitan Water District Turf Replacement Rebate	\$500,000
<b>Total Third-Party Contributions Costs</b>	<b>\$500,000</b>
<b>Construction Element</b>	<b>Cost Estimate</b>
800 kW Combined Heat and Power	\$3,000,000
Primary Sludge Thickening Equipment	\$400,000
Civil Improvements	\$200,000
Mechanical Improvements	\$400,000
Electrical and I&C Improvements	\$50,000
<b>Total Construction Cost</b>	<b>\$4,050,000</b>
<b>Total Project Cost</b>	<b>\$6,400,000</b>

***Third-Party In-Kind Contributions***

The Project includes a third-party in-kind contribution from MWD in the form of \$2 per square foot issued in rebate form to customers participating in the turf removal rebate, for a total of \$500,000.

***Other Direct Costs***

No other direct costs are requested.

***Indirect Costs***

The Project is not requesting funds for indirect costs.

***Total Costs***

The total cost of the proposed project is **\$6,400,000** not including contingency. Funding sources for the Project are the City of Oceanside, Third-Party Contributions and the requested funds from USBR. The City is requesting **\$2,000,000** from USBR to fund the Project. No other Federal funding has been requested or received for the Project.

### 3.3 Letters of Support

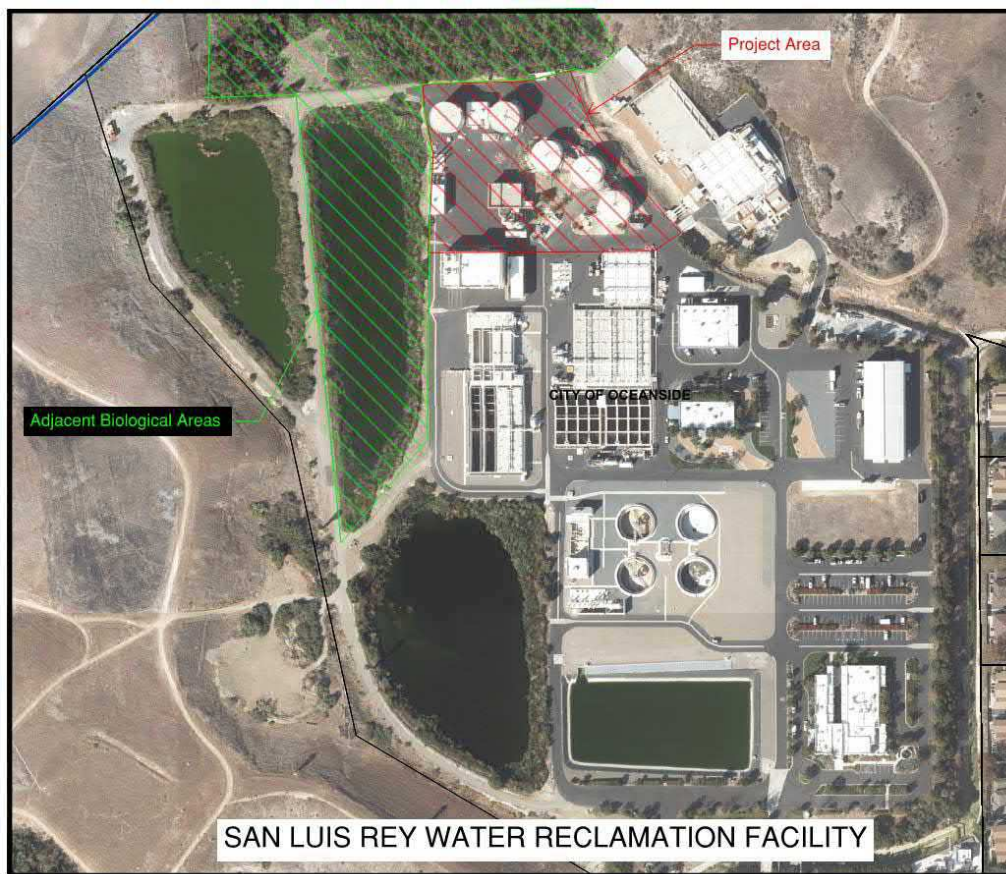
The City has received the following letters of support for the Project, which can be found in Appendix A:

- Surfrider Oceanside
- Janis Jones (Citizen, Educator)
- Oceanside Chamber of Commerce
- Mainstream Oceanside
- Preserver Calavera

## 4 Environmental and Cultural Resources Compliance

The Project will consist of enhancements at the SLRWRF, as described in the previous technical description section. Figure 4-1 shows the anticipated project area, which includes approximately 133,000 square feet of previously disturbed area.

**Figure 4-1 Biological Areas Adjacent to Project Site**



Equipment required during the construction of the Project may include, but is not limited to excavators, flatbed trucks, reach lifts, cranes, and dump trucks. Truck trip generation could be up

to 10 roundtrips per day during construction, including inspectors. No significant impacts to air quality from construction are anticipated.

Noise impacts are anticipated to be mitigated by noise muffling equipment and by restricting construction outside of breeding seasons for critical species. As the Project will be fully constructed on previously disturbed and paved areas, no impacts are anticipated to occur to water quality or the hydrology of the site. No cultural resources are anticipated to be found; however, the City anticipates contracting with cultural monitors to verify that no cultural resources are impacted.

The project area is located within a Multiple Species Conservation Program (MSCP) area and within proximity to U.S. Fish and Wildlife Service (USFWS) Species Critical Habitats for Least Bell's Vireo, Southwestern Willow Flycatcher, and Coastal California Gnatcatcher. Although these species may be located within the project area, they are unlikely to be located within the construction area, which has largely been developed already. Given the small-scale nature of work activities associated with the Project, listed species or designated critical habitat are not expected to be directly affected. Due to the proximity of construction to potential habitat, steps to mitigate noise impacts are anticipated, including but not limited to the use of noise muffling and scheduling construction to begin outside of breeding seasons.

The primary surface water bodies located near the Project include the San Luis Rey River and Whelan Lake. The San Luis Rey River has been identified as a "Waters of the United States." Whelan Lake is a manufactured lake and sanctuary for migratory birds but will not be impacted by the Project. The Project will comply with all applicable permitting requirements if impacts to jurisdictional waters are anticipated.

The City purchased its water system in 1890 from the Oceanside Water Company. Approximately 60% of the City's current water infrastructure system was constructed between the 1960s and 1980s. The Robert A. Weese Water Filtration Plant (WFP), located outside city limits, is the City's potable treatment facility for the treatment of raw water purchased from SDCWA. The WFP was built in 1983 and has undergone several upgrades over the years. The Mission Basin Groundwater Purification Facility is a groundwater desalter and treatment facility that was put into service in 1992 with a capacity of 2.0 MGD and expanded to its current capacity of 6.4 MGD in 2002. The newly constructed (2021) Advanced Water Purification Facility and related infrastructure are currently in the start-up phase. It will produce 3,360 AFY of IPR destined for the City's potable water distribution system.

The Project will not modify or affect individual features of an irrigation system.

A project-level Cultural Resources Assessment was prepared in June 2018 in association with another project developed at the same project site (SLRWRF). That assessment was evaluated to



identify potential impacts to cultural resources that will result from the Project. The Assessment included a search of the cultural resource records housed at the California Historical Resources Information System (CHRIS), South Coastal Informational Center (SCIC) located at San Diego State University on May 21, 2018. The CHRIS search included a review of the California Register of Historical Resources (CRHR), the National Register of Historic Places (NRHP), the California Points of Historical Interest list, the California Historical Landmarks list, the Archaeological Determinations of Eligibility list, and the California State Historic Resources Inventory list. Twenty-nine cultural resources were identified within the 0.5-mile radius of the Project. Of these resources, three are in or adjacent to the project area. No sites within the project area were considered eligible for listing on the NRHP. Nonetheless, in compliance with Assembly Bill 52 (AB 52), the City anticipates consulting with cultural monitors during construction for any excavations on the previously disturbed site.

There are no known archeological sites at the project site. The Project would not result in significant ground-disturbing activity that would pose a significant threat to archaeological sites. Construction will take place in already disturbed areas. Nonetheless, in compliance with AB 52, the City anticipates consulting with cultural monitors during construction for any excavations on the previously disturbed site.

As described previously and shown in Figure 1.5.3-1 the City's service area includes DACs and SDACs. However, the Project construction activities are not anticipated to have a disproportionately high and adverse effect on low income or minority populations. The Project will directly increase the amount of locally produced energy and divert significant solid waste from the landfill located within the City of Riverside and will therefore provide benefits to all City customers within its service area.

It is not anticipated that Project activities will contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species. Project components will take place primarily in disturbed, developed areas and will not disturb native vegetated communities.

The Project will not limit access to and ceremonial use of Indigenous sacred sites or result in other impacts on tribal lands. Impacts on tribal cultural resources are expected to be less than significant with mitigation.

## 5 Required Permits or Approvals

It is anticipated that all work will occur on existing City property and will go through the City's Conditional Use Permit (CUP) process which includes preparation and approval of documents conforming with CEQA and additional NEPA review, as required by USBR. Funding is not being requested for this task and costs are not included in the budget.

## 6 Official Resolution

A resolution will be introduced at the August 10, 2022, City Council meeting to authorize the City Manager to apply for this WaterSmart WEEG grant. A draft resolution is attached in Appendix B, which verifies the following:

- The official with legal authority to enter into an agreement (City Manager or designee)
- City Council support for the application
- Capability of the applicant to provide the funding match
- Willingness of applicant to work with USBR to meet established deadlines for entering into a cooperative agreement

The final executed copy will be submitted to USBR within 30 days of the application submittal.

## 7 Conflict of Interest Disclosure

The City of Oceanside has an active account in the ASAP registration system with current information. The City will maintain an active ASAP account during the period of any federal assistance agreement. The City's ASAP ID is jmcke549.

## 8 Uniform Audit Reporting Statement

The City of Oceanside submitted a Single Audit report for FY 2021. The Auditee EIN associated with the report is 951688570 and the Single Audit Reporting Package Submission for the City of Oceanside for FY 2021 can be found through the Federal Audit Clearing House Website (<https://harvester.census.gov/facides/Account/Login.aspx>).

## 9 Certification Regarding Lobbying

See Section 15. Mandatory Federal Forms for the City's Disclosure of Lobbying Activities Form.

## 10 Automated System Application for Payment (ASAP) Registration

The City of Oceanside has an active account in the ASAP registration system with current information. The City will maintain an active ASAP account during the period of any federal assistance agreement. The City's ASAP ID is jmcke549.

## 11 System for Award Management (SAM) Registration

The City of Oceanside is registered in the SAM and will maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by a Federal awarding agency. The City's unique entity identifier is Q7GAM2JK79C1. The City's CAGE code is 4GD09.

## 12 Mandatory Federal Forms

The City of Oceanside is registered in the SAM and will maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by a Federal awarding agency. The City's unique entity identifier is 073370678. The City's CAGE code is 39BK9. The Mandatory Federal Forms listed below can be found in Appendix C.

- Application for Federal Financial Assistance
- Budget Information
- Assurances
- Disclosure of Lobbying Activities

## 13 References

1. 2018 Organics Feasibility Study, City of Oceanside
2. [World Resources Institute/ World Business Council for Sustainable Development CALCULATION TOOL FOR DIRECT EMISSIONS FROM STATIONARY COMBUSTION Version 3.0 July 2005](#)
3. [2011 USEPA CHP Partnership, Opportunities for Combined Heat and Power at Wastewater Treatment Facilities: Market Analysis and Lessons from the Field](#)
4. [Technical Memorandum 9 Integrated Waste to Energy BioSolids Master Plan](#), Black and Veatch, May 2019
5. [Technical Memorandum 7: Organic Waste Pre-Treatment and Treatment – Alternative Evaluation](#), Black and Veatch, August 2020
6. [City of Oceanside 2020 Urban Water Management Plan](#), City of Oceanside,
7. [Final Draft Method for Estimating Greenhouse Gas Emission Reductions From Diversion of Organic Waste From Landfills to Compost Facilities, prepared by the California Air Resources Board \(CARB\)](#), California Environmental Protection Agency, May 2017
8. 2020 Urban Water Management Plan, Metropolitan Water District of Southern California
9. Alliance for Water Efficiency Landscape Transformation Study: 2018 Analytics Report [https://www.allianceforwaterefficiency.org/sites/www.allianceforwaterefficiency.org/files/assets/LT\\_Analytics\\_Report\\_NonMember\\_Final.pdf](https://www.allianceforwaterefficiency.org/sites/www.allianceforwaterefficiency.org/files/assets/LT_Analytics_Report_NonMember_Final.pdf)
10. [Metropolitan Water District of Southern California 2020 Urban Water Management Plan https://wuedata.water.ca.gov/public/uwmp\\_attachments/5202375113/MWDSC%2020%20Urban%20Water%20Management%20Plan%20-%20June%202021%20WUE%20Portal.pdf](#)
11. [San Diego County Water Authority 2020 Urban Water Management Plan https://wuedata.water.ca.gov/public/uwmp\\_attachments/7444959342/SDCWA\\_DWR%20Submittal%20UWMP\\_Final%20wApp\\_24Jun21.pdf](#)
12. [City of Oceanside Water Conservation Master Plan Update, 2020 https://www.ci.oceanside.ca.us/civicax/filebank/blobdload.aspx?BlobID=56845](#)

13. [EPA Geenhouse Gases Equivalencies Calculator – Calculations and References](https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references)  
<https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>
14. [Mowing Calculator](https://www.mowingmagic.com/2020/06/mowing-calculator-how-long-it-takes-to-mow/)  
<https://www.mowingmagic.com/2020/06/mowing-calculator-how-long-it-takes-to-mow/>

## Appendix A - Letters of Support



July 19,2022

The Honorable Camille Calimlim Touton  
US Bureau of Reclamation  
1849 C Street NW  
Washington DC 20240-0001

Dear Commissioner Touton:

Our organization is writing to express support for the City of Oceanside's grant application to the U.S. Department of the Interior (DOI) Bureau of Reclamation (USBR), Water Resources and Planning Office under the Fiscal Year 2023 WaterSMART: Water and Energy Efficiency Grant.

The City is requesting grant funding from the USBR to pursue two important initiatives: 1) increased water conservation through a turf replacement rebate, and 2) expanded production of renewable energy through the implementation of infrastructure improvements at the San Luis Rey Water Reclamation Facility.

This project will encourage expanded participation in a regional turf replacement rebate program during a time when acute drought conditions are being experienced throughout the State of California and the greater southwest. The project will also increase the amount of biogas produced from the city's food waste stream, which will offset the demand for fossil fuels required to operate the City's wastewater, potable reuse, and recycled water facilities. It will assist in meeting Statewide water conservation targets as well as the food waste diversion targets.

This impactful project will conserve water, one of our most precious natural resources, provide a sustainable energy source, and protect our environment.

Preserve Calavera supports this project as an important step toward creating a more sustainable future. We cannot achieve climate stabilization and preserve biodiversity without taking meaningful action to reduce our reliance on fossil fuels. Our mission to preserve, protect and enhance the natural resources of coastal north San Diego County cannot be achieved without addressing climate change. This project by the City of Oceanside is part of a number of key changes needed to implement this city's Climate Action Plan. We fully support this effort.

Thank you for considering our comments and we urge your support for the City of Oceanside's FY 2023 WaterSmart WEEG funding application for this project.

Sincerely,

Diane Nygaard, President  
On Behalf of Preserve Calavera

5020 Nighthawk Way – Oceanside, CA 92056

[www.pcnc.org](http://www.pcnc.org)  
Nonprofit 501(c)3 ID # 33-0955504



July 18, 2022

The Honorable Camille Calimlim Touton  
Commissioner  
US Bureau of Reclamation  
1849 C Street NW  
Washington DC 20240-0001

Dear Commissioner Touton:

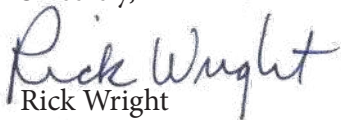
Our organization is writing to express support for the City of Oceanside's grant application to the U.S. Department of the Interior (DOI) Bureau of Reclamation (USBR), Water Resources and Planning Office under the Fiscal Year 2023 WaterSMART: Water and Energy Efficiency Grant (WEEG) Notice of Funding Opportunity (NOFO) #R23AS00008. This vital source of funding would support the City's Turf Replacement Rebate and Renewable Energy Optimization Project.

The City is requesting grant funding from the USBR to pursue two important initiatives: 1) increased water conservation through a turf replacement rebate, and 2) expanded production of renewable energy through the implementation of infrastructure improvements at the San Luis Rey Water Reclamation Facility. This project will encourage expanded participation in a regional turf replacement rebate program during a time when acute drought conditions are being experienced throughout the State of California and the greater southwest. The project will also increase the amount of biogas produced from the municipality's food waste stream, which will offset the demand for fossil fuels required to operate the City's wastewater, potable reuse, and recycled water facilities. It will assist in meeting Statewide water conservation targets as well as the food waste diversion targets established with the passage of California's Senate Bill 1383 in September 2020. This impactful project will conserve water, our most precious resource, provide a sustainable energy source, and protect our environment.

MainStreet Oceanside recognizes the valuable role that this project plays in creating a sustainable future. We are particularly supportive of the project because it will assist in meeting Statewide water conservation targets as well as the food waste diversion targets established with the passage of California's Senate Bill 1383 in September 2020.

Please accept our recommendation for full and fair consideration, as permitted under law, of the City of Oceanside's FY 2023 WaterSmart WEEG funding application for this project.

Sincerely,

  
Rick Wright  
Chief Executive Officer

**701 MISSION AVENUE + OCEANSIDE CA 92054**  
**760-754-4512 + MAINSTREETOCEANSIDE.COM**

*To create a visually pleasing downtown district, adhere to historic preservation ethics, aid downtown merchants in design and city ordinance, develop, implement, and encourage new businesses to sustain the charm of the district.*

July 14, 2022

The Honorable Camille Calimlim Touton  
Commissioner  
US Bureau of Reclamation  
1849 C Street NW  
Washington DC 20240-0001

Dear Commissioner Touton:

I am writing on behalf of the Oceanside Chamber of Commerce to express support for the City of Oceanside's grant application to the U.S. Department of the Interior (DOI) Bureau of Reclamation (USBR), Water Resources and Planning Office under the Fiscal Year 2023 WaterSMART: Water and Energy Efficiency Grant (WEEG) Notice of Funding Opportunity (NOFO) #R23AS00008. This vital source of funding would support the City's Turf Replacement Rebate and Renewable Energy Optimization Project.

The City is requesting grant funding from the USBR to pursue two important initiatives: 1) increased water conservation through a turf replacement rebate, and 2) expanded production of renewable energy through the implementation of infrastructure improvements at the San Luis Rey Water Reclamation Facility. This project will encourage expanded participation in a regional turf replacement rebate program during a time when acute drought conditions are being experienced throughout the State of California and the greater southwest. The project will also increase the amount of biogas produced from the municipality's food waste stream, which will offset the demand for fossil fuels required to operate the City's wastewater, potable reuse, and recycled water facilities. It will assist in meeting Statewide water conservation targets as well as the food waste diversion targets established with the passage of California's Senate Bill 1383 in September 2020. This impactful project will conserve water, our most precious resource, provide a sustainable energy source, and protect our environment.

The Oceanside Chamber recognizes the valuable role that this project plays in creating a sustainable future. The Chamber supports the project because we know our City leadership is truly committed to water conservation and we understand the impact this has on the quality of life enjoyed by our businesses and their employees.

Please accept our recommendation for full and fair consideration, as permitted under law, of the City of Oceanside's FY 2023 WaterSmart WEEG funding application for this project.

Sincerely,



Scott M. Ashton, CEO  
Oceanside Chamber of Commerce



July 15, 2022

The Honorable Camille Calimlim Touton  
Commissioner  
US Bureau of Reclamation  
1849 C Street NW  
Washington DC 20240-0001

Dear Commissioner Touton:

I am writing to express support for the City of Oceanside's grant application to the U.S. Department of the Interior (DOI) Bureau of Reclamation (USBR), Water Resources and Planning Office under the Fiscal Year 2023 WaterSMART: Water and Energy Efficiency Grant (WEEG) Notice of Funding Opportunity (NOFO) #R23AS00008. This vital source of funding would support the City's Turf Replacement Rebate and Renewable Energy Optimization Project.

The City is requesting grant funding from the USBR to pursue two important initiatives: 1) increased water conservation through a turf replacement rebate, and 2) expanded production of renewable energy through the implementation of infrastructure improvements at the San Luis Rey Water Reclamation Facility. This project will encourage expanded participation in a regional turf replacement rebate program during a time when acute drought conditions are being experienced throughout the State of California and the greater southwest. The project will also increase the amount of biogas produced from the municipality's food waste stream, which will offset the demand for fossil fuels required to operate the City's wastewater, potable reuse, and recycled water facilities. It will assist in meeting Statewide water conservation targets as well as the food waste diversion targets established with the passage of California's Senate Bill 1383 in September 2020. This impactful project will conserve water, our most precious resource, provide a sustainable energy source, and protect our environment.

I recognize the valuable role that this project plays in creating a sustainable community. As an educator with the Oceanside Unified School District, I believe this project will help ensure a livable future for our students.

Please accept my recommendation for full and fair consideration, as permitted under law, of the City of Oceanside's FY 2023 WaterSmart WEEG funding application for this project.

Sincerely,



Janis Jones  
Teacher on Special Assignment  
Oceanside Unified School District



July 20, 2022

The Honorable Camille Calimlim Touton  
Commissioner  
US Bureau of Reclamation  
1849 C Street NW  
Washington DC 20240-0001

Dear Commissioner Touton:

The Surfrider Foundation is a non-profit, environmental organization dedicated to the protection and enjoyment of the world's oceans, waves and beaches for all people, through a powerful activist network. With 70 miles of coastline to protect, the San Diego County Chapter (Surfrider San Diego) is one of the largest and most active chapters in the world. We are a grassroots organization, which means the people working to protect our local ocean, waves, and beaches are volunteers who care about the San Diego County coastline and want to protect our home. Surfrider San Diego is an active stakeholder representing the public in environmental issues affecting our coast across the county, including the City of Oceanside.

Our organization is writing to express support for the City of Oceanside's grant application to the U.S. Department of the Interior (DOI) Bureau of Reclamation (USBR), Water Resources and Planning Office under the Fiscal Year 2023 WaterSMART: Water and Energy Efficiency Grant (WEEG) Notice of Funding Opportunity (NOFO) #R23AS00008. This vital source of funding would support the City's Turf Replacement Rebate and Renewable Energy Optimization Project.

The City is requesting grant funding to pursue two important initiatives: 1) increased water conservation through a turf replacement rebate, and 2) expanded production of renewable energy through the implementation of infrastructure improvements at the San Luis Rey Water Reclamation Facility. This project will encourage expanded participation in a regional turf replacement rebate program during a time when acute drought conditions are being experienced throughout the State of California.

In addition to requiring exponentially less water than turf, CA native plants also offer more effective mitigation against stormwater runoff to our coast. Urban runoff is the most persistent threat to coastal water quality in Oceanside, as evidenced by the 72 hour rule which advises surfers and swimmers to stay out of the water for 3 days after a rain event. Shallow-rooted turf



does little to absorb and slow stormwater runoff compared to CA natives, whose deeper roots detain runoff and slow erosion. They also do not require pesticides, which invariably poison our coastal waters after rain events. See our [Ocean Friendly Gardens](#) program for more info.

The project will also increase the amount of biogas produced from the municipality's food waste stream, which will offset the demand for fossil fuels required to operate the City's wastewater, potable reuse, and recycled water facilities. It will assist in meeting Statewide water conservation targets as well as the food waste diversion targets established with the passage of California's Senate Bill 1383 in September 2020. This impactful project will conserve water, our most precious resource, provide a sustainable energy source, and protect our environment. All of these positive environmental outcomes coincide with Surfrider's climate action and water conservation objectives.

Surfrider San Diego recognizes the valuable role that this project plays in creating a sustainable future.

Please accept our recommendation for full and fair consideration, as permitted under law, of the City of Oceanside's FY 2023 WaterSmart WEEG funding application for this project.

For our Ocean, Waves and Beaches,

A handwritten signature in black ink, appearing to read "MS", with a long horizontal flourish extending to the right.

Mitch Silverstein  
San Diego County Policy Coordinator  
The Surfrider Foundation  
[mitch@surfridersd.org](mailto:mitch@surfridersd.org)  
619.736.7757

## Appendix B – Draft Resolution

1 RESOLUTION NO.

2 RESOLUTION OF THE CITY COUNCIL OF THE CITY OF  
3 OCEANSIDE AUTHORIZING WATERSMART WATER AND  
4 ENERGY EFFICIENCY GRANT FISCAL YEAR 2023

5 WHEREAS, the United States Bureau of Reclamation (USBR) is soliciting  
6 applications for authorized projects for WaterSMART: Water and Energy Efficiency  
7 Grant (Program) Funding for Fiscal Year 2023 per Funding Opportunity Announcement  
8 No. R23AS00008; and

9 WHEREAS, Senate Bill 1383 requires a 75-percent reduction in organic waste  
10 landfill disposal from the 2014 level by 2025; and

11 WHEREAS, the City of Oceanside has identified the Renewable Energy from the  
12 Food Waste Diversion Project to meet Senate Bill 1383 landfill reduction requirements;  
13 and

14 WHEREAS, the City of Oceanside is seeking grant funding to further fund  
15 portions of a design and construction of the Project; and

16 WHEREAS, the City of Oceanside has prepared and submitted a grant  
17 application under this Program for Fiscal Year 2023 with an application due date of July  
18 28, 2022;

19 WHEREAS, USBR has directed applicants to include in its application an official  
20 resolution adopted by the applicant's board of directors or governing body verifying 1)  
21 the identity of the official with legal authority to enter into an agreement, 2) the board of  
22 directors, governing body, or appropriate official who has reviewed and supports the  
23 application submitted, 3) the capability of the applicant to provide the amount of  
24 funding and/or in-kind contributions specified in the funding plan, and 4) that the  
25 applicant will work with Reclamation to meet established deadlines for entering into a  
26 grant or cooperative agreement.

27 NOW, THEREFORE, the City Council of the City of Oceanside does resolve as  
28 follows:

1 1. The City Manager or designee is authorized to submit an application to the  
2 United States Bureau of Reclamation (USBR) to obtain a WaterSMART: Water and  
3 Efficiency Grant Funding for Fiscal Year 2023 per Funding Opportunity Announcement  
4 No. R23AS00008; and

5 2. The City Council has reviewed and supports the application submitted on the  
6 28th day of July, 2022; and

7 3. The City of Oceanside is able to provide the minimum 50% funding match  
8 specified in the funding plan for the application; and

9 4. The Water Utilities Director of the City of Oceanside is hereby authorized and  
10 directed to prepare the necessary data, conduct investigations, file such application, and  
11 execute a grant agreement with the USBR in association with this application process.  
12 The City of Oceanside will work with the USBR to meet established deadlines required for  
13 entering into a cooperative agreement to obtain the aforementioned grant funding.

14 PASSED AND ADOPTED by the City Council of the City of Oceanside, California,  
15 this \_\_\_\_\_ day of \_\_\_\_\_, 2022, by the following vote:

16  
17 AYES:

18 NAYS:

19 ABSENT:

20 ABSTAIN:

21  
22 \_\_\_\_\_  
23 MAYOR OF THE CITY OF OCEANSIDE

24 ATTEST:

25 APPROVED AS TO FORM:

26 \_\_\_\_\_  
27 City Clerk

26 \_\_\_\_\_  
27 City Attorney

## Appendix C – Mandatory Federal Forms

# Project Abstract Summary

*This Project Abstract Summary form must be submitted or the application will be considered incomplete. Ensure the Project Abstract field succinctly describes the project in plain language that the public can understand and use without the full proposal. Use 4,000 characters or less. Do not include personally identifiable, sensitive or proprietary information. Refer to Agency instructions for any additional Project Abstract field requirements. If the application is funded, your project abstract information (as submitted) will be made available to public websites and/or databases including USAspending.gov.*

Funding Opportunity Number

R23AS00008

CFDA(s)

Applicant Name

City of Oceanside

Descriptive Title of Applicant's Project

Turf Replacement Rebate and Biogas Renewable Energy Capacity Expansion Project

Project Abstract

The purpose of the Turf Replacement Rebate and Biogas Renewable Energy Capacity Expansion Project (Project) is to increase water supply sustainability by reducing demands on imported water supplies and investing in infrastructure that will increase the capacity to produce renewable energy. The Turf Replacement Rebate component of the Project will provide a \$1/square foot incentive to residential and commercial customers who remove turfgrass and replace the landscape with climate-appropriate landscaping. The Turf Replacement Rebate component activities include supplementing the base rebate offered through a regional rebate program by \$1 per square foot for 250,000 square feet of turf replaced. The expected outcome will be a reduction in water consumption at a rate of 32.1 acre-feet/year (or 963 acre-feet over the lifetime of the project). The Biogas Renewable Energy Capacity Expansion component of the Project will increase the capacity to produce biogas at the City's wastewater treatment facility by 5.3 million kilowatt hours per year (kWh/year) and 213,160 Therms per year through upgrades made to the anaerobic digester system, a combined heat and power (CHP) system, and the expanded use of local food waste as a feed source. The additional local, clean, renewable energy the Project produces will provide for the City's potable reuse, recycled water, and wastewater treatment processes. The component activities will include construction of infrastructure including a CHP system and the facilities required to thicken primary sludge. The expected outcome for the renewable energy component of the Project will be the completion of an operational CHP system and Primary Sludge Thickening Equipment that will have the capacity to produce 5.3 million kWh/year from biogas. The intended beneficiaries of the overall Project include the City of Oceanside residents, adjacent communities and imported water users of the State Water Project and Colorado River Aqueduct. Reducing imported water demand on the existing system through the Turf Replacement Rebate will benefit City residents by reducing water bills, storing imported supplies in greater times of need, and reducing the greenhouse gas (GHG) emissions required to transport water. The renewable energy component will reduce GHG emissions by producing clean, renewable energy to operate the City's water treatment operations to the benefit of the City and the region.



**Standard Forms Submitted with Copy of this Grant Application  
via the Grants.gov Portal.**