

**Low Income Water Use Efficiency Assistance Program
Turf Replacement Rebates**

Water, Energy, and GHG Savings

Step 1: Enter the baseline (pre-project) volume of water associated with the project.

For this project, the baseline is assumed to be the pre-project volume of water that is not conserved. The pre-project volume of water associated with the project is 50.1 MG/year. This is the volume of water that can be saved by replacing 1,138,000 square feet of turf with drought tolerant plants or synthetic turf. This is based on the assumption that 44 gallons are used to water one square foot of typical turf per year according to the City of San Diego's Grass Replacement Rebate Program webpage (see Appendix 2-1, City of San Diego Turf Replacement Program, <http://www.sandiego.gov/water/conservation/rebates/grassreplacement.shtml>).

EMWD is confident that this level of benefit can be achieved given that 26.2 million square feet of landscape area were identified in the project area described in Attachment 3. To date, 1,200 customers have participated in EMWD's turf replacement program, and it's anticipated that future participation will increase with a \$2 per square foot increase in the rebate.

Step 2: Enter the volume of water that will be delivered after the project is implemented.

After the project is implemented, the savings discussed under Step 1 will be realized. Therefore, the Step 2 water volume is assumed to be 0 MG.

Step 3: Enter the volume of hot water saved from the project's electric water heating system (the summation of step 3 and step 4 must not exceed annual volume of water savings). If not applicable, enter "0".

The project is assuming water savings through turf replacement. No water heating savings are applicable.

Step 4: Enter the volume of hot water saved from the project's natural gas water heating system (the summation of step 3 and step 4 must not exceed annual volume of water savings). If not applicable, enter "0".

The project is assuming water savings through turf replacement. No water heating savings are applicable.

Step 5: Enter the useful life in years for the project.

The useful life of the project is assumed to be 10 years (see EMWD Board letter dated February 22, 2012 provided in Appendix 2-1).

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Step 6: Enter the percentage of water that is imported.

EMWD receives imported water, local potable water, local desalinated groundwater, and recycled water. As shown in Table 2-1, EMWD's imported water supply consists of treated and untreated water from Metropolitan Water District of Southern California (MWD) and accounts for approximately **61%** of EMWD's total water supply over the past 5 years.

Table 2-1 Water Supply (AFY) 2007-2011

Type	2009	2010	2011	2012	2013	Average Percent
Imported	84,200	75,000	72,510	53,467	52,013	47%
Imported – Locally Treated	17,000	16,600	17,023	20,274	29,618	14%
Groundwater	18,100	15,800	17,464	15,489	18,823	12%
Desalination	4,800	5,800	5,706	5,666	5,003	4%
Recycled Water	32,441	28,246	31,029	36,763	34,533	23%
Total	156,541	141,446	143,732	131,659	139,990	100%

Step 7: Enter the Energy Intensity (EI) of the System associated with the project's water savings.

According to EMWD's Energy Management Plan, 2014 (Appendix 2-1), the following system energy demands apply to the Project:

Table 2-2 EMWD Water System Electricity Usage

Water Category	Flow (MG)	Electricity Usage (kWh/year)
Water	30,279	36,553,280
Raw Water	n/a	1,990,000
Wastewater	n/a	45,694,000
Total System Energy Usage		84,237,280
Total Flow	30,279	
Total Energy Use/flow		2,782 kWh/MG

- **Water:** The "Water" category includes the facilities that treat and convey potable water to the EMWD service area. This is water treated by EMWD for potable use and purchased

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potable water. This category includes such facilities as wells, water treatment plants, and brine disposal.

- **Raw Water:** The “Raw Water” category includes facilities that import raw, untreated water to EMWD water treatment facilities and to groundwater wells for recharge. This energy demand originates from EMWD’s raw water booster pumping plants. The energy to pump this water back out of the aquifer is included in the “Water” category.
- **Wastewater:** The “Wastewater” category includes facilities that convey and treat wastewater in the EMWD service area. This category includes regional water reclamation facilities, sewage lift stations, and booster pump plants.

Because the Project only involves the potable water distribution system, EMWD’s recycled water system energy requirements and flow are not included in the EI calculation of the system associated with the Project. For a more detailed breakdown of the energy demands of each category, see the attached table from EMWD’s 2014 Energy Management Plan.

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

$$\text{Energy of the (Water + Raw Water + Wastewater)/Total Flow} \\ (84,237,280 \text{ kWh per year}) / (30,279 \text{ MG per year}) = \underline{\mathbf{2,782 \text{ kWh/MG}}}$$

This EI is applied to the project benefit area, but is the EI for EMWD’s entire system.

Step 8: Enter the total output emission rate specific to the power supplier or use the default value of 0.278 kg CO₂e/kWh.

The default value of 0.278 kg CO₂e/kWh is used as the total power supplier output emission rate.

Step 9: Enter EI associated with the Supply and Conveyance segment of the imported water or enter “0” if imported water is not applicable.

Of EMWD’s imported water supplies, approximately 80% is from the SWP and 20% from the CRA (based on EMWD’s 2010 UWMP). EMWD receives water from the SWP from the Pearblossom Pumping Plant at 13,606 kWh/MG and from the CRA at 6,066 kWh/MG. The total EI associated with the supply and conveyance of the imported water is therefore 13,606 kWh/MG x 80% + 6,066 kWh/MG x 20% = **12,098 kWh/MG**

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Step 10: Enter any additional annual energy savings from energy efficiency and renewable energy (EE/RE), etc.

No additional energy savings from energy efficiency and renewable energy are expected through implementation of this project.

**Low Income Water Use Efficiency Assistance
Program**

**Water and Energy Savings
and GHG Calculations**

Appendix 2-1

Supporting Documentation for the Turf Rebates Project

Water

A Branch of Public Utilities

- [WATER HOME](#)
- [GENERAL INFO](#)
- [LAKES AND RECREATION](#)
- [WATER & SEWER BILL/RATES](#)
- [WATER CONSERVATION](#)
- [RECYCLED WATER](#)
- [WATER QUALITY](#)
- [INFRASTRUCTURE IMPROVEMENTS](#)
- [PURE WATER SAN DIEGO PROGRAM](#)

[Water Home](#) • [Water Conservation](#) • [Rebate Programs](#) • [Grass Replacement Rebates](#)

Water Conservation

- [Water Conservation Home](#)
- [Waste No Water Information and Resources](#)
- [Plumbing Retrofit Upon Re-Sale Ordinance](#)
- [Water Survey Programs](#)
- [Rebate Programs](#)
 - [Rain Barrel Rebates](#)
 - [Grass Replacement Rebates](#)
 - [Micro-Irrigation Rebates](#)
 - [Mulch from Miramar Greenery](#)
 - [SoCal Water\\$mart Rebates](#)
- [Kids Water Conservation Corner](#)
- [Contests](#)

Rebate Programs Grass Replacement Rebates

UPDATE: Due to high interest, funding for the grass replacement and micro-irrigation rebate programs has been exhausted. Rain barrel rebates are still available. Please check the [San Diego County Water Authority's Turf Replacement Program](#) and [SoCal Water\\$mart Rebates](#) pages for information on rebate programs offered through those agencies..

Enhanced rebate program

As of September 1, 2014, the City of San Diego is pleased to announce its enhanced Grass Replacement Rebate of \$2 per square foot to residential and commercial customers looking to replace grass with water wise landscapes.

In addition, Metropolitan Water District of Southern California (MWD) offers a similar program, and City of San Diego customers may qualify for both. With each program offering up to \$2 per square foot in rebates, applicants are eligible to receive a total of \$4 per square foot if they qualify for both rebates.

Grass is one of the thirstiest plant materials used in our landscapes. Sustainable landscapes are intended to be in balance with the local climate and environment, and are designed to require few added resources.

Converting a traditional grass lawn to sustainable landscaping can reduce your watering of that area by up to 70%. Put into perspective, switching from grass and conventional, high-precipitation rate sprinklers to water-wise plant material and micro irrigation systems can save up to 44 gallons of water annually for each square foot of landscape area converted.

Be sure to read the [City of San Diego Grass Replacement Guidelines](#) (PDF). Details on the City's program and a link to the SoCalWater\$mart's website are available below.

IMPORTANT: Rebate application must be approved AND a pre-site inspection must be completed prior to starting project. No retroactive rebates available. ARTIFICIAL TURF DOES NOT QUALIFY FOR A REBATE.

City of San Diego Grass Replacement Rebate

Beginning September 1, 2014, City of San Diego customers can receive a rebate of up to \$2.00 per square foot for residential sites that replace existing grass with water wise landscaping. Preliminary site inspection is required to confirm your qualification.

Residential Customers

- Rebate limit is 2,400 square feet and \$4,800 per site for front, side and back yard grass removal. Minimum conversion per application is 400 square feet (If area is less than 400 square feet it must be 100% of front, side or backyard grass area.)

Commercial, Irrigation and Multi-Family Customers

- Rebate limit is up to 30,000 square feet and \$60,000 per site.
- Minimum conversion per application is 1,000 square feet.

All projects must be completed within 120 days of City-designated start date.

Projects that DO NOT qualify for a rebate include those that install artificial turf, other turf grasses or vegetable gardens, as well as sites that use recycled water. Check the guidelines below for more information.

IMPORTANT: First read through the [City of San Diego Grass Replacement Rebate Guidelines](#) (PDF)

Before and after photos of a grass replacement project funded through the City's rebate



[Complete the RESIDENTIAL Outdoor Water Conservation Rebate Application](#) (PDF)

[Complete the COMMERCIAL Outdoor Water Conservation Rebate Application \(PDF\)](#)

Additional Grass Replacement Rebate Opportunity
[SoCal WaterSmart Turf Replacement Program \(Lawn Replacement\)](#)

An additional \$2 per square foot rebate for turf/grass replacement may be available through the regional [SoCal WaterSmart Rebate Program](#). Unlike the City's grass replacement rebate program, customers can participate in this rebate opportunity **only once per site**.

| [Water Home](#) | [General Information](#) | [Lakes and Recreation](#) | [Water & Sewer Bill/Rates](#) | [Water Conservation](#) |
| [Recycled Water](#) | [Water Quality](#) | [Infrastructure Improvements](#) | [Pure Water San Diego Program](#) |

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February 22, 2012

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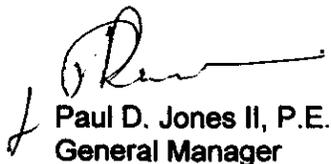
TO: Board of Directors
FROM: General Manager
SUBJECT: Approve and Authorize Appropriation of \$195,000 for Rebates to Customers in the Residential and Commercial Sector

RECOMMENDATION

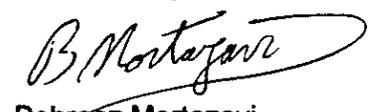
The following proposal was presented to the Board Planning Committee on February 21, 2012, and received its full concurrence. It is recommended that the Board, by Minute Order, approve and authorize the following:

1. Appropriation of funds from the Special Projects Budget in the amount of \$125,000 to be used for residential rebates on water saving devices, including high-efficiency clothes washers, high-efficiency nozzles and smart irrigation controllers; and
2. Appropriation of funds from the Special Projects Budget in the amount of \$70,000 to be used for rebates towards the Turf Replacement Rebate Program.

Concur:


Paul D. Jones II, P.E.
General Manager

Submitted by:


Behrooz Mortazavi
Assistant General Manager
Resources Development

Directors: All
Divisions: All

BACKGROUND

Eastern Municipal Water District (EMWD) has a history of successful rebate programs. Funding for rebates by EMWD is supplemented by The Metropolitan Water District of Southern California (MWD) conservation credits program. Currently, there are three rebate programs available to EMWD customers:

1. A Residential Rebate Program (RRP) administered by MWD through a region-wide program vendor. In 2011, 3,097 devices were retrofitted through the rebate program for a lifetime water savings of 849 acre-feet (AF) at a cost of \$239,506 to EMWD and \$151,981 to MWD;
2. A Commercial Rebate Program (CRP) administered by MWD through a region-wide program vendor. In 2011, 12,874 devices were retrofitted through the rebate program for a lifetime water savings of 646 AF at a cost of \$2,451 to EMWD and \$96,140 to MWD; and
3. A Turf Replacement Rebate Program (TRRP) administered by EMWD; currently funded by MWD with secured grants through the United States Bureau of Reclamation and the Department of Water and Power. Since December 2011, 100,000 square-feet (SF) of turf are scheduled for conversion to water efficient landscape, for a lifetime water savings of 135 AF at a cost of \$0.0 to EMWD and \$100,000 to MWD.

Staff is requesting that funding be added to the RRP and the TRRP. Current rebate amounts are listed in Table 1. The majority of the funding will be used to encourage the purchase of a high efficiency clothes washer in order to meet the requirements of the Best Management Practice No. 3 (BMP 3) and the SBx7 (20x2020 - 20 percent conservation by 2020). The estimated water savings by the RRP with \$125,000 of funding is 500 acre-feet over the lifetime of the devices. The cost per AF of water saved is approximately \$250.

Table 1 - Summary of Water Use Efficiency Rebates

	Program	EMWD Rebate	MWD Rebate	Annual Savings (AFY)	Lifetime Acre Savings (AF)	EMWD Cost per AF Saved
High Efficiency Clothes Washer	Residential	\$140	\$85.00	0.03450	0.48300	\$289.86
Smart Controller	Residential	\$65.00	\$80.00	0.04140	0.41400	\$157.00
High Efficiency Nozzles	Residential/Commercial	\$2.00	\$3.00	0.00400	0.02000	\$100.00
Smart Controller	Commercial	\$8/station	\$25/station	0.0129	0.129	\$62.02
Turf Replacement (current)	Turf	\$0.00/SF	\$1.00/SF	0.00014	.0014	\$257 Average
Turf Replacement (proposed)	Turf	\$0.70/SF	\$0.30/SF	0.00014	.0014	

Funding for the TRRP will allow the current program to continue and will convert an additional 100,000 SF of turf to water efficient landscaping by providing \$1 per SF rebate to the customers. MWD will provide 30 cents per SF for a total of \$30,000 and EMWD will pay 70 cents per SF for a total of \$70,000. The proposed TRRP will provide an additional 135 AF of lifetime water savings. The average cost of the current and proposed TRRP for EMWD is \$257 per AF of water saved.

Funding water-use efficient rebate programs supports the Strategic Plan Objective III (Conservation), Tactic III.C., to "Promote efficient use of water through appropriate rebate programs for replacing excessive water consuming appliances and fixtures."

Finance



Purchasing/Contracts



Author: SR:EL

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Rebates Brd Ltr_022212

August 2014

Energy Management Plan



Prepared by

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Eastern Municipal Water District FINAL Energy Management Master Plan

August 2014



Prepared for

Eastern Municipal Water District
2270 Trumble Road
Perris, CA 92570

K/J Project No. 1244111*00

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

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

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