

GREEN BUSINESS REPORT – FY 2016

I. Agency Recycling

Item	Description	Recycling Measurement	Quantity
1) Paper	Paper cups, plates, printer paper, newspaper, magazines, and other paper-based materials are separately disposed of in office containers, collected by staff, and transferred to 64-gallon bins that are picked up and recycled weekly by Marin Sanitary Service.	# of 64 gallon bins	58 <i>FY15 – 60</i>
2) Aluminum cans	Aluminum beverage cans, aluminum foil, and other aluminum materials are deposited by employees in bins outside the Agency lunch room. The bin contents are periodically transferred to a larger storage area, and the aluminum is sold at a Richmond recycling facility.	lbs. of aluminum	273 <i>FY15 – 300</i>
3) Plastics	Plastic food, beverage, and storage containers and other plastic materials (labeled #1-#7) are deposited by employees in bins outside the Agency lunch room. The bin contents are periodically transferred to a larger storage area, and the plastic is sold at the Marin Recycling Center.	# of 64 gallon bins	8 <i>FY15 – 12</i>
4) Scrap Metal	Iron, steel, and related metals are collected and then sold for scrap at a recycling facility in Richmond.	lbs. of metal	128,780 <i>FY15 -120,450</i>
5) Cardboard	Waste cardboard boxes, packing, and similar material are collected in a 3-yard dumpster. Marin Sanitary Service picks up the dumpster and recycles the materials.	# of 3 yard bins	50 <i>FY15 - 48</i>
6) Greenwaste	Grass clippings from lawn mowing, and tree branches and leaves from pruning and landscaping activities are deposited in 3-yard dumpsters. Marin Sanitary Service picks up the material and utilizes it in a composting operation.	# of 3 yard bins	78 <i>FY15 - 72</i>

II. Reused Agency Products

Metric	Definition	Reuse Measurement	Quantity
1) Reclaimed water	Treated wastewater is reused for Agency landscape irrigation, tank washdown, and cogeneration engine cooling, and used offsite at the Remillard Pond.	million gallons/year % of effluent	416.6 14.6%
2) Biosolids	Treated biosolids are beneficially reused as: - alternate daily cover at Redwood Landfill - soil amendment/fertilizer for land application	wet tons/year wet tons/year	3,675 2,555
3) Biogas	Biogas that is generated in the Agency's anaerobic digesters is used for fuel in an engine-generator to produce on-site electricity.	ft ³ of biogas	91.9M <i>FY15 - 78.9M</i>

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III. Hazardous Material Collection and Disposal

Metric	Description	Recycling Measurement	Quantity
1) Oils and Lubricants	Used oils and lubricants from CMSA equipment, vehicles, and engine-generators are collected and stored in a waste oil facility. The supplier periodically collects the materials for recycling.	gallons	Oil: 700 <i>FY15 – 950</i> Coolant: 50 <i>FY15 - 5,500</i>
2) Mercury	Collected mercury-containing devices materials: - amalgam waste at dental offices is collected and disposed of by certified haulers - fluorescent tubes are collected by the public education program agencies - mercury thermometers exchanged for digital thermometers at CMSA	kg linear feet # of thermometers	6.8 kg (15 lbs) 3,723 + 10
3) Pharmaceuticals	Old or unused pharmaceuticals are brought to pharmacies and police stations by the public for proper disposal. CMSA and the Marin County public education program agencies fund the collection and disposal expenses, and the program is administered by the Marin County Environmental Health Department.	lbs. of pharmaceuticals	7,073 <i>FY15 - 5,500</i>
4) Batteries	Depleted, used, or damaged batteries are collected by staff and brought to a hazardous waste facility and Interstate Battery. Sources of batteries include: - Agency vehicles - Devices (AA, C, D, 9V, etc.) and employee batteries brought from home	# of batteries lbs.	11 - 12V 45
5) Electronic Waste	Electronic products from Agency facilities and employees that contain toxic materials - cell phones, computers, computer monitors, process instrumentation, etc. – are collected and stored on site, then periodically disposed of at the Marin Hazardous Household Waste Facility.	# of devices	207 <i>FY15 - 60</i>
6) Herbicides and Pesticides	The Agency uses the same types of herbicides, pesticides, and fungicide products utilized by the County of Marin as part of their Integrated Pest Management Program. Waste products are disposed of at the Marin Sanitary Service Household Hazardous Waste Facility.	gallons or lbs.	Herbicide: 2.3 gal <i>FY15 – 34 gal</i> Pesticide: 0 .10 lb <i>FY15 – 25 lb</i> Fungicide: 8.1 gal <i>FY15 - 0</i>

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IV. Green Activities

Metric	Description	Environmental Benefit
1) Potable Water Conservation	High-efficiency water fixtures have been installed in all Agency facilities and buildings. Staff records the Agency's daily potable water use.	Potable water use in FY16 was 179,520 gal <i>FY15 – 113,696 gal</i>
2) Green Commuting	Programs encourage employees to use alternate commute methods such as carpools, biking, public transit, etc., when convenient and affordable for Agency employees. Administrative procedures are in place to assist in registering, tracking, and utilizing these modes of transportation.	In FY 16, 18 Agency employees participated in the program, which reduces the number of vehicles on roads during commute hours, GHG emissions and fossil fuel use.
3) Spare the Air Days	The Agency participates in the Bay Area Air Quality Management District's Spare the Air Day program, and on these specified days does not use gasoline fueled landscape maintenance equipment.	10 days in FY 16 that resulted in lower GHG emissions
4) Increased Digital Document Management	Digital and email correspondence replaces hard copy mailing when appropriate. Many agency documents are now posted on the Agency website for viewing.	Reduced use of paper, toner, and postage
5) Green Vehicle Fleet	Agency staff use bicycles and electric carts to travel around Agency property and within the treatment plant, and 33% of Agency vehicles are alternate fuel – Hybrids.	Fuel savings and reduced GHG emissions

V. Energy Saving Activities

Project/Initiative	Description
1) Sludge Thickening System Replacement Project	The Project replaced the original dissolved air flotation (DAF) thickeners with rotary drum thickeners (RDT). The RDTs have a significantly smaller footprint than the DAFs, require less energy to operate, and are fully enclosed for more effective odor control. Construction activities were completed in April 2016, and CMSA received a rebate incentive of \$8,242 from PG&E's Customized Retrofit Program. The RDT system saves 66,182 kWh of electricity annually over the original DAF system, and does not emit odorous compounds.
2) Desktop Computer Replacement	Twelve desktop SCADA workstations and one conference room computer were replaced with new, energy-efficient units. The computer replacements are estimated to have an annual electricity savings of 8,409 kWh.
3) Reclaimed Water and Carrier Water Pumps VFD Installation	Three 40-horsepower reclaimed water pumps and three 30-horsepower carrier water pumps were converted to energy-efficient variable frequency drives (VFD). These VFDs allow the reclaimed and carrier water pumps to run more efficiently at a lower operating pressure. This project has estimated electricity saving of 123,000 kWh annually.

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VI. Energy Saving Activities, cont.

Project/Initiative	Description
4) Lighting System Replacement	<p>The Agency has a multi-year program to replace fluorescent, incandescent, and metal halide fixtures/bulbs throughout the Agency’s facilities with energy-efficient lighting – electronic ballast fluorescents or LEDs. In FY 15, the Agency replaced 73 high-pressure sodium fixtures in the Headworks, Aeration, Secondary Clarifiers, Chlorine Contact Tanks, Gallery A Extension, DAF Equipment Room, and Generator Room with high-efficiency LED fixtures. These fixtures will save the Agency approximately 8,453 kWh of electricity annually.</p>
5) Energy Generation	<p>The Agency uses a cogeneration system comprised of an internal combustion engine coupled to a generator to produce approximately 95% of the Agency’s energy needs. The system is fueled by biogas generated in the Agency’s anaerobic digesters and purchased natural gas; a small amount of utility electricity is purchased to minimize system disruptions when energy demand instantaneously changes. FY 16 metrics for energy generation and the resulting electricity procurement savings are shown below:</p> <ul style="list-style-type: none"> - Biogas generation (from Table 2): <i>91.9 million cubic feet or 58.8 million cubic feet of NG (equivalent gas)</i> - Natural gas purchase: <i>135,380 therms</i> - Annual energy costs without cogeneration: <i>\$ 1,067,051 (assumes purchasing all electricity and 1/6 current natural gas for boiler)</i> - Electricity savings due to cogeneration: <i>\$ 871,684 (non-cogen energy costs less electric usage FY 15)</i> - Electricity savings due to biogas use: <i>\$ 712,182 (value of biogas used as engine fuel used during peak and part-peak hours)</i>