

## GREEN BUSINESS REPORT – FY 2017

### I. Agency Recycling

Item	Description	Recycling Measurement	Quantity
<b>1) Paper</b>	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	62 <i>FY16 - 58</i>
<b>2) Aluminum cans</b>	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	127 <i>FY16 - 273</i>
<b>3) Plastics</b>	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	9 <i>FY16 - 8</i>
<b>4) Scrap Metal</b>	Iron, steel, and related metals are collected and sold for scrap at a recycling facility in Richmond.	lbs. of metal	134,650 <i>FY16 -128,780</i>
<b>5) Cardboard</b>	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	52 <i>FY16 - 50</i>
<b>6) Green waste</b>	Grass clippings, tree branches, and trimmings from pruning and landscaping activities are deposited in 3-yard dumpsters, and used by Marin Sanitary Service in a composting operation.	# of 3 yard bins	89 <i>FY16 - 78</i>

### II. Reused Agency Products

Metric	Definition	Reuse Measurement	Quantity
<b>1) Recycled water</b>	Treated wastewater that is reused for Agency landscape irrigation, tank wash down, and cogeneration engine cooling, used offsite at the Remillard Pond, and delivered through the Agency's truck fill station.	million gallons/year % of effluent	273 5.8% <i>FY16 – 14.6%</i>
<b>2) Biosolids</b>	Treated biosolids that are beneficially reused as: - alternate daily cover at Redwood landfill - soil amendment/fertilizer for land application - biofertilizer production for agricultural use	wet tons/year wet tons/year wet tons/year	3,692 1,645 1,306
<b>3) Biogas</b>	Biogas generated in the Agency's anaerobic digesters is used for fuel in an engine-generator to produce on-site electricity.	Million ft <sup>3</sup> of biogas	104.7 <i>FY16 - 91.9</i>

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### III. Hazardous Material Collection and Disposal

Metric	Description	Recycling Measurement	Quantity
<b>1) Oils and Lubricants</b>	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: 983 <i>FY16 – 700</i>  Coolant: 200 <i>FY16 – 50</i>
<b>2) Mercury</b>	Collected mercury containing devices: - 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	3.7 1,288' 0
<b>3) Pharmaceuticals</b>	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	7,413 <i>FY-16 – 7,073</i>
<b>4) Batteries</b>	Depleted, used, or damaged batteries 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.	24 55
<b>5) Electronic Waste</b>	Electronic products that contain toxic materials, from Agency facilities and employees - 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	341
<b>6) Herbicides and Pesticides</b>	The Agency uses the same types of herbicides and pesticide 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/lbs	Herbicide: 2.82 <i>FY16 – 2.3 gal</i>  Insecticide: 0 <i>FY16 – 0.1 lb</i>  Fungicide: 0 <i>FY16 – 8.1 gal</i>

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### IV. Green Activities

Metric	Description	Environmental Benefit
<b>1) Potable Water Conservation</b>	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 FY17 was 169,048 gal <i>FY16 – 179,520 gallons</i>
<b>2) Green Commuting</b>	Programs encourage employees to use alternate commute methods such as carpool, 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 FY17, 11 Agency employees participated in the program, which reduces the number of vehicles on roads during commute hours, emissions and fossil fuel use.
<b>3) Spare the Air Days</b>	Participation in the Bay Area Air Quality Management District’s Spare the Air Day program. The Agency does not use gasoline fueled landscape maintenance equipment on these specified days.	27 days in FY17 that resulted in lower emissions and GHG reduction
<b>4) Increased Digital Document Management</b>	Digital and email correspondence to replace hard copy mailing. Many agency documents are now posted on the Agency website for viewing.	Reduced use of paper, toner, and postage
<b>5) Green vehicle fleet</b>	Agency staff use bicycles and electric carts to travel around Agency property and within the treatment plant, and 40% of Agency vehicles are alternate fuel – Hybrids.	Fuel savings and reduced GHG emissions

### V. Energy Saving Activities

Project/Initiative	Description of Energy Saving Aspect of initiative
<b>1) PG&amp;E Interconnection Agreement Modification Project</b>	CMSA’s electrical cogeneration system currently powers the Agency’s facilities for an average 23 hours per day with biogas as its fuel source. There have been numerous days over the past year when CMSA could have generated enough electricity to meet the facility’s power demand and supply excess power to the electrical grid. In May 2017, CMSA obtained a new utility interconnection agreement (IA) from PG&E that allows CMSA to supply power. The Agency is working with PG&E to upgrade on-site and off-site electrical systems to allow CMSA to supply excess generated power to the grid. The upgrades are expected to be completed by March 2018. CMSA is also negotiating a power sale agreement with Marin Clean Energy.
<b>2) Power Monitoring Equipment</b>	The Agency installed a power monitoring system in the switchgear building, which will track and record the facility’s electricity usage at each distribution circuit breaker. The recorded power data provides the basic electrical characteristics and the data trends provide better knowledge of how energy is used within the facility. Data have been used for analyzing how to minimize waste, reduce energy consumption, and improve efficiency.

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### VI. Energy Saving Activities, cont.

Project/Initiative	Description of energy saving aspect of initiative
<b>3) Lighting System Replacement</b>	<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 17, the Agency replaced seventy-two high-pressure sodium fixtures in the RAS Basement, Biotower Basement, Gallery B, Solids Handling Building Equipment Room, Centrifuge Room, Area 10 Basement, Digester Basement, and Aeration Blower Room with high-efficiency LED fixtures. These fixtures will save the Agency 40,953 kWh of electricity annually.</p>
<b>5) Energy Generation</b>	<p>The Agency uses a cogeneration system comprised of an internal combustion engine coupled to a generator to produce over 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. For FY17, metrics for energy generation and the resulting electricity procurement savings are:</p> <ul style="list-style-type: none"> <li>- Biogas generation (from Table 2):        <i>104.7 million cubic feet or 67.0 million cubic feet of NG (equivalent gas)</i></li> <li>- Natural gas purchase:                        <i>49,980 therms</i></li>   <li>- Annual energy costs without cogeneration: <i>\$ 1,098,107 (assumes purchasing all electricity and 1/6 current NG for boiler fuel)</i></li> <li>- Electricity savings due to cogeneration:    <i>\$ 908,282 (non-cogen energy costs less electric usage FY 16)</i></li> <li>- Electricity savings due to biogas use:        <i>\$ 846,862 (value of biogas used as engine fuel used during peak and part-peak hours)</i></li> </ul>