

## CMSA GREEN BUSINESS REPORT – FY 2014

### 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	52
<b>2) Aluminum</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	0 <i>(will be sold in near future)</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	18
<b>4) Scrap Metal</b>	Iron, steel, and related metals are collected and then sold for scrap at a Richmond recycling facility.	lbs. of metal	67,124
<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
<b>6) Greenwaste</b>	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 utilized it in a composting operation.	# of 3 yard bins	48

### II. Reused Agency Products

Metric	Definition	Reuse Measurement	Quantity
<b>1) Reclaimed Water</b>	Treated wastewater that is reused for Agency landscape irrigation, tank washdown, and cogeneration engine cooling, and offsite at the Remillard Pond in Larkspur.	million gallons/year % of effluent	395 15.8
<b>2) Biosolids</b>	Treated biosolids that are beneficially reused as: - alternate daily cover at Redwood landfill - soil amendment/fertilizer for land application	wet tons/year wet tons/year	3,582 1,868
<b>3) Biogas</b>	Biogas that is generated in the Agency's anaerobic digesters and used for fuel in an cogeneration system to produce on-site electricity.	ft <sup>3</sup> of biogas	73,193,317

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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: 605 gal Coolant: 305 gal  (2) 55gal drum of used oil filters. (2) 55gal drum of pig mats
<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 are exchanged for digital thermometers at CMSA	kg linear feet # of thermometers	30 512 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	6,433
<b>4) Batteries</b>	Depleted, used, or damaged batteries collected by staff and brought to the Marin Household Hazardous Waste Facility. Sources of batteries include: - Agency vehicles - Devices (D,C, AAA, 9V, 6V, etc.) and employee batteries brought from home	# of batteries lbs.	19 – 12V 12 – 6V 45
<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	38
<b>6) Herbicides and Pesticides</b>	The Agency uses the same types of herbicide 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	Herbicide: 220 gal Pesticide: 3.0 gal

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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.	Reduced potable water use. 156 CCFS or 116,688 gallons used in FY14. <i>67,320 less gallons used than FY13.</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.	14 Agency employees participated in the program in FY14, 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.	30 days in FY14 that resulted in lower emissions and GHG reduction
<b>4) Increased Digital Document Management</b>	Digital and email correspondence is used to minimize hard-copy mailing. Many agency documents are posted on the Agency website for viewing electronically.	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 – hybrid or compressed natural gas.	Fuel savings and reduced GHG emissions

### V. Energy Saving Activities

Project/Initiative	Description of Environmental Benefit
<b>1) Aeration Blowers Optimization</b>	The Aeration blower capacity optimization project (Project) has been completed, and included replacing the existing turbo blower cores with new cores that can meet air flow demands through the entire operating range. The Project also replaced four existing air flow meters with new meters that are more accurate and create less air flow restrictions, which lowers the system pressure and saves energy. Operating the optimized high speed turbo blowers provides about a 25% energy savings, which is equivalent to 21.3 kW of power demand savings and 187,000 kWh of annual electricity saving when compare to operating the original multistage centrifugal blowers.
<b>2) Computer Server Virtualization and Desktop Replacement</b>	Two desktop computers were replaced in FY 14 with energy efficient units. No additional server virtualization will occur because the new SCADA system is being installed on the existing virtual servers. The two servers operating the existing SCADA system will be removed from service in the fall of 2014.

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### V. Energy Saving Activities, cont.

Project/Initiative	Description of Environmental Benefit
<b>3) Energy Efficient Metering Pumps</b>	<p><u>Ferric Chloride Metering Pumps</u>: The original diaphragm pumps in the Headworks facility were at the end of their service life, and were replaced with more energy efficient magnetically coupled gear pumps. New energy efficient variable frequency drive units replaced power hungry pump starter units during this conversion work as well.</p> <p><u>Sludge Feed Pumps</u>: The first of three outmoded and energy inefficient hydrostatic drive units for the digested sludge pumps were replaced with modern variable frequency drive units (VFD). The hydrostatic drives use an average of 7 amps, while the new VFD uses 4 amps. Assuming these sludge feed pumps operate 8 hours per day, the drive replacement will result in a power demand saving of 2.5 kW, and annual electricity savings of 7,300 kWh.</p>
<b>4) Lighting System Replacement</b>	<p>Replace fluorescent, incandescent, and metal halide fixtures/bulbs throughout the Agency’s facilities with energy efficient lighting – electronic ballast fluorescents or LEDs. Light pollution is considered while researching replacement fixtures.</p> <p><u>LED Wall Pack Lighting Replacement</u>: Twenty four high efficiency LED wall pack lighting fixtures replaced original high pressure sodium fixtures throughout the Agency in FY14. These fixtures are expected to generate a calculated electricity savings of 630 kWh.</p> <p><u>Roadway Lighting Replacement Project</u>: All of the original high pressure sodium roadway lighting fixtures were converted to LED by installing a custom LED module conversion kit. The original fixtures had a power demand of 150 W per fixture whereas the new fixtures have a power demand of 50 W per fixture, resulting in an estimated annual net savings of approximately 6,570 kWh per year.</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 90% 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 demands fluctuate. For FY14, metrics for energy generation and the resulting electricity procurement savings are:</p> <ul style="list-style-type: none"> <li>- Biogas generation (from Table 3):        73.2 million cubic feet (46.2 million cubic feet of NG equivalent gas)</li> <li>- Natural gas purchase:                        272,940 therms (from SPURR invoices)</li>   <li>- Annual energy costs without cogeneration: \$ 882,747 (assumes purchasing all electricity and 1/6 current NG for boiler fuel)</li> <li>- Electricity savings due to cogeneration:    \$ 639,096 (non-cogen energy costs, less electric usage in FY 14)</li> <li>- Electricity savings due to biogas use:       \$ 391,882 value of biogas used as engine fuel (used during peak and part-peak hours)</li> </ul>