



**Raritan Valley Community College**  
**Environmental Assessment:**  
**MOU SemiAnnual Report**  
**February 6, 2014**



**Environmental Protection Agency**  
**Region 2**

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## Accomplishments

### Reductions of 24,104 MTCO<sub>2</sub>e



## Memorandum of Understanding

On June 16, 2009, Raritan Valley Community College signed a Memorandum of Understanding (MOU) pledging to become an environmental steward by implementing a number of green initiatives that would reduce its carbon footprint and further improve our planet's environment. This partnership with the United States Environmental Protection Agency (EPA) and Raritan Valley Community College has resulted in reducing energy, water and solid waste production across campus operations.

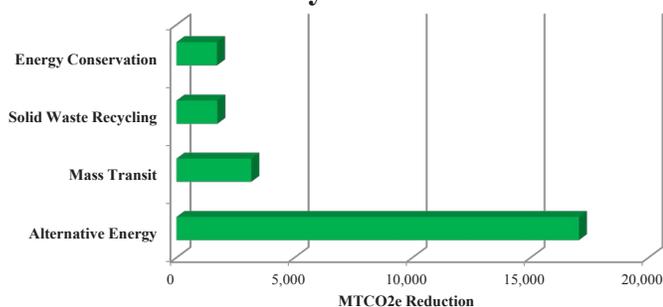
## Reduction in Environmental Footprint

In the last few years, Raritan Valley Community College has provided eight updates documenting its green initiatives. The EPA has analyzed the submitted information and generated an environmental footprint for the organization. Due to the progressive green efforts of the organization, the college has managed to reduce its carbon footprint by 24,104 MTCO<sub>2</sub>e\* and saved an estimated \$5.1 million in operating expenses.

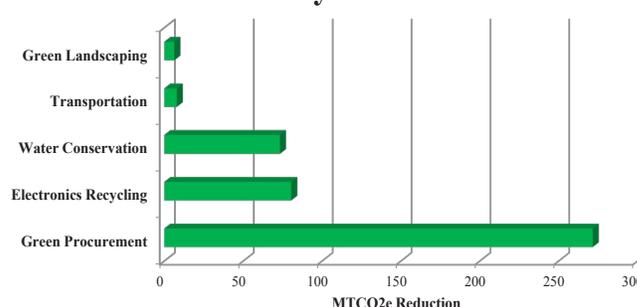
\*Metric Ton Carbon Dioxide Equivalent

Environmental Metrics	Total Savings (MTCO <sub>2</sub> e)
Energy Conservation	1,714.5
Alternative Energy	17,049.5
Water Conservation	73.3
Solid Waste	1,731.9
Green Procurement	271.6
Green Landscaping	6.4
Electronics	80.5
Mass Transit	3,168.6
Transportation	7.9
Total (MTCO <sub>2</sub> e)	24,104.0

### Primary Initiatives



### Secondary Initiatives



## Measurement and Continuous Improvements

EPA uses these environmental conversion models to calculate metric tons of carbon dioxide equivalents:

Greenhouse Gas Equivalencies (GHG) Calculator converts GHG reductions into scenarios that can be easily communicated to the public.

eGRID Version 1.1 (2007) and the EPA Pollution Prevention (P2) GHG Conversion Tool which convert standard metrics for electricity, green energy, fuel use, chemical use, water use, and sustainable materials management into MTCO<sub>2</sub>e.

The EPA WARM Model which helps calculate GHG emission reductions from several different waste management practices, including source reduction, recycling, combustion, composting and landfilling.

The EPA Pollution Prevention (P2) Cost Calculator that estimates cost savings associated with GHG reductions.

Certain environmental data points cannot be converted to MTCO<sub>2</sub>e because scientific models do not currently exist. As methodologies improve, environmental assessments will be updated to include any new GHG reduction estimates.

## Accomplishments

### Reductions of 24,104 MTCO<sub>2</sub>e

## Greenhouse Gas Equivalencies

What does the reduction of 24,104 MTCO<sub>2</sub>e represent ?  
The organization's effort is equivalent to any one of the following:

- Annual greenhouse gas emissions from 5,022 vehicles



- Carbon dioxide emissions from 2,702,242 gallons of gasoline



- Carbon dioxide emissions from 56,056 barrels of oil consumed



- Carbon dioxide emissions from the energy use of 1,204 homes for one year



- Carbon dioxide emissions from 1,004,333 propane tanks used for home barbeques



- Carbon dioxide emissions from gasoline carried by 318 tanker trucks



- Carbon dioxide emissions from burning 104 railcars' worth of coal (over 1 1/2 miles long)





Environmental Metrics	June 2009 MOU	Mar/Nov 2010 Updates	Jul 2011 Update	Jan/Jul 2012 Updates	Jan 2013 Update	Jul 2013 Update	Jan 2014 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
<b>Energy Conservation / Energy Star</b>									
<b>Total Savings (MTCO2e)</b>		<b>250.8</b>	<b>494.4</b>	<b>608.4</b>	<b>267.4</b>	<b>300.2</b>	<b>(206.7)</b>	<b>1,714.5</b>	<b>\$233,756</b>
Miscellaneous Energy Conservation		(321,397 kwh) 83,801 therms	232,048 kwh 56,400 therms	185,000 kwh 80,000 therms	326,000 kwh	599,000 kwh (32,000 therms)	(365,000 kwh) 7,000 therms	1,525.4	\$209,668
Motors and Transformers									
Lighting Project Fixtures (Bulbs and Ballast)									
High Temp Hot Water Pipe Replacement									
HVAC, Chiller & Electrical									
Replace T12 bulbs with T8 bulbs (240)		1268 kwh	960 kwh	1840 kwh	1880 kwh	2400 kwh	2400 kwh	8.0	\$1,347
Replace T8 bulbs with T5 bulbs (80)				400 kwh	400 kwh	400 kwh	400 kwh	1.2	\$200
Bulb Replacement (LEDs) (152)				1625 kwh	3250 kwh	3250 kwh	4940 kwh	9.7	\$1,637
Gas Savings (pool heat exchanger)		8,000 therms	4,000 therms	8,000 therms	4,000 therms	4,000 therms	4,000 therms	170.3	\$20,904
Fuel Oil Savings									
Steam Savings									
<b>Alternative Energy</b>									
<b>Total Savings (MTCO2e)</b>	<b>1,680.0</b>	<b>4,763.0</b>	<b>2,241.5</b>	<b>3,567.1</b>	<b>2,137.3</b>	<b>2,181.8</b>	<b>2,158.8</b>	<b>17,049.5</b>	<b>\$813,354</b>
On-Site Solar		4,000 kwh	2,000 kwh	279,000 kwh	216,000 kwh	276,000 kwh	245,000 kwh	758.7	\$128,057
On-Site Wind									
On-Site Geothermal									
On-Site Combined Heat and Power(1.4 MW)	2,198 MWh	3,914 MWh	2,343 MWh	1,381 MWh	119 MWh	287 MWh	256 MWh	15,400.0	\$685,519
Purchase of Green Energy/Green Power					400 MWh	400 MWh	400 MWh	890.8	(\$222)
<b>Water Conservation / WaterSense</b>									
<b>Total Savings (MTCO2e)</b>	<b>0.2</b>	<b>0.5</b>	<b>0.4</b>	<b>44.0</b>	<b>30.3</b>	<b>(1.4)</b>	<b>(0.6)</b>	<b>73.3</b>	<b>\$60,769</b>
Miscellaneous Water Conservation				17,672,600 gal	12,241,020 gal	(783,000 gal)	(454,784 gal)	70.3	\$58,272
Low Flow/Hands Free Faucets (66)	33,000 gal	46,750 gal	22,000 gal	33,000 gal	16,500 gal	16,500 gal	16,500 gal	0.5	\$374
Low Flow Toilets (8)				32,000 gal	16,000 gal	16,000 gal	16,000 gal	0.2	\$163
Low Flow Shower Heads									
Low Flow Urinals (9)	41,400 gal	58,650 gal	27,600 gal	41,400 gal	20,700 gal	20,700 gal	20,700 gal	0.6	\$470
Waterless Urinals (7)		106,667 gal	106,667 gal	160,000 gal	80,000 gal	140,000 gal	140,000 gal	1.8	\$1,490
<b>Solid Waste Recycling</b>									
<b>Total Savings (MTCO2e)</b>		<b>828.0</b>	<b>262.7</b>	<b>209.9</b>	<b>167.7</b>	<b>139.3</b>	<b>124.8</b>	<b>1,731.9</b>	<b>\$24,738</b>
Mixed Recyclables (includes Wastewise)		48.4 tons	93 tons	20 tons	10.4 tons	12 tons	17.2 tons	562.8	\$8,040
Pallets Waste Avoided/Wood Recycled					60 cu yd approx 25 T)	30 cu yd (approx 12.5T)		92.3	\$1,500
Steel Recycled during Deconstruction									
Concrete / Asphalt Recycled									
Ceiling Tiles recycled									
Carpet recycled									
Recycled C & D Waste (Construction Waste)									
Cardboard (construction/non-construction/ sharp containers)		113 tons		35 tons	11 tons	11 tons	11 tons	562.9	\$7,240
Mixed Metal (construction/non-construction)									
Paper, Mixed		96 tons		11 tons	11 tons	11 tons	11 tons	492.8	\$5,600
Plastic, Mixed (bottles, construction/non- construction, sharp containers)									
Blue Wrap									



Environmental Metrics	June 2009 MOU	Mar/Nov 2010 Updates	Jul 2011 Update	Jan/Jul 2012 Updates	Jan 2013 Update	Jul 2013 Update	Jan 2014 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
Can / Bottle Recycling									
Mixed Organics									
Food Donation (Waste diversion)							5800 lbs	0.6	\$116
Food Waste Recycling/Composting		14 tons	10.64 tons	10 tons	8 tons	2.77 tons	1.62 tons	9.4	\$1,881
Fluorescent Bulbs		1044 lbs	509 lbs	1337 lbs	1045 lbs	6000 lbs		0.6	\$199
Waste Oil Recycled				110 gal			110 gal	2.6	\$38
Magazines/ThirdClass Mail									
Newspaper									
Office Paper									
Textbooks / Phonebooks									
Dimensional Lumber									
Fly Ash									
Aluminum Cans									
Glass									
HDPE / LDPE / PET									
Appliances									
Non-Ferrous Metals									
Fats, Oils, Grease Recycled				165 gal	165 gal			4.0	\$56
Ballast (mixed metal)		147 lbs	93 lbs	400 lbs	165 lbs	404 lbs	600 lbs	3.1	\$36
Water Bottle Filling Stations (plastic saved)				210 lbs	420 lbs (6)	490 lbs (7)	490 lbs (7)	0.8	\$32
<b>Green Procurement</b>									
<b>Total Savings (MTCO2e)</b>		<b>27.2</b>	<b>5.6</b>	<b>116.7</b>	<b>3.6</b>	<b>25.5</b>	<b>93.1</b>	<b>271.6</b>	<b>\$36,450</b>
Purchase of Materials with Recycled Content		14,000 reams 8000@100%PC 6000@30%PC	6800 reams 30% PC	10,400 reams 30%PC	4400 reams 30% PC	6400 reams 30% PC	4800 reams 30% PC	54.2	
Purchase / Use of Compost Socks									
Purchase of EPEAT Products				265 desktops		190 units	303 units	217.4	\$36,450
Use of Recycled Steel during Construction									
Use of Recycled Iron during Construction									
Use of Recycled Plastic during Construction									
Use of Recycled Aluminum dur Construction									
Use of Recycled Concrete / Asphalt									
Use of Coal Combustion Products									
<b>Green Landscaping</b>									
<b>Total Savings (MTCO2e)</b>		<b>0.0</b>	<b>0.0</b>	<b>0.7</b>	<b>0.7</b>	<b>2.5</b>	<b>2.5</b>	<b>6.4</b>	<b>\$3,098</b>
Green Roofs				600 sq ft	600 sq ft	600 sq ft	600 sq ft	2.6	
Porous Pavement									
Grass									
Low/no mow area									
Re-use of Collected Stormwater		4,000 gal	3,000 gal	2,000 gal	1,000 gal	6,600 gal	7,920 gal	0.1	\$50
On-Site Re-use of Compost									
Moisture Sensing Sprinklers (120,000 sq ft)						750,000 gal	750,000 gal	3.7	\$3,048
Number / Acres of Trees									
Reflective Roof									
Synthetic Turf									
Native Plants									
Leaves Composted									



Environmental Metrics	June 2009 MOU	Mar/Nov 2010 Updates	Jul 2011 Update	Jan/Jul 2012 Updates	Jan 2013 Update	Jul 2013 Update	Jan 2014 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
<b>Electronics Recycling</b>									
<b>Total Savings (MTCO2e)</b>		<b>19.8</b>	<b>7.4</b>	<b>10.2</b>	<b>10.0</b>	<b>2.1</b>	<b>31.1</b>	<b>80.5</b>	<b>\$926</b>
Recycling of Electronics		24,248 lbs	1,917 lbs	1,167 lbs	3,000 lbs	1,267 lbs		25.3	\$632
Re-Use/Donation of Used Computers			26 units (208 lbs)		350 units (5645 lbs)		99 units (1336 lbs)	8.5	\$144
Toner/Ink Recycling / Use of Recycled Ink			560 lbs	840 lbs	75 lbs	75 lbs	3075 lbs	44.4	\$92
Battery Recycling		466 lbs	246 lbs	1,478 lbs	294 lbs	417 lbs		2.3	\$58
<b>Mass Transit</b>									
<b>Total Savings (MTCO2e)</b>		<b>216.5</b>	<b>216.5</b>	<b>649.6</b>	<b>576.1</b>	<b>512.8</b>	<b>997.2</b>	<b>3,168.6</b>	<b>\$3,942,976</b>
Miles Avoided		485,500 mi	485,500 mi	1,456,500 mi	1,291,653 mi	1,149,390 mi	2,235,918 mi	3,168.6	\$3,942,976
<b>Transportation</b>									
<b>Total Savings (MTCO2e)</b>		<b>2.7</b>	<b>1.3</b>	<b>1.9</b>	<b>1.0</b>	<b>1.0</b>		<b>7.9</b>	<b>\$3,223</b>
Hybrid Vehicles		1 car (17 mo.)	1 car (8 mo.)	1 car	1 car (1/2 yr)	1 car (1/2 yr)		7.9	\$3,223
Electric Vehicles									
Biodiesel Vehicles									
Clean Construction Vehicles									
LNG Vehicles									
Alternate Fuel Vehicles									
Smartway Transporters									
Bike Racks									
<b>LEED Projects</b>									
<b>Total Savings (MTCO2e)</b>									
Silver - 10%									
Gold - 17%									
Platinum - 20%									
<b>Misc. - Further Clarification</b>									
<b>Total Savings (MTCO2e)</b>									
NOX (equipment only)									
NOX (includes vehicles)									
<b>MTCO2e Savings</b>									
<b>Total (MTCO2e)</b>	<b>1,680.2</b>	<b>6,108.5</b>	<b>3,229.7</b>	<b>5,208.4</b>	<b>3,194.0</b>	<b>3,163.6</b>	<b>3,200.1</b>	<b>24,104.0</b>	<b>\$5,119,290</b>
Energy	0.0	250.8	494.4	608.4	267.4	300.2	(206.7)	1,714.5	\$233,756
Alternative Energy	1,680.0	4,763.0	2,241.5	3,567.1	2,137.3	2,181.8	2,158.8	17,049.5	\$813,354
Water	0.2	0.5	0.4	44.0	30.3	(1.4)	(0.6)	73.3	\$60,769
Solid Waste	0.0	828.0	262.7	209.9	167.7	139.3	124.8	1,731.9	\$24,738
Green Procurement	0.0	27.2	5.6	116.7	3.6	25.5	93.1	271.6	\$36,450
Green Landscaping	0.0	0.0	0.0	0.7	0.7	2.5	2.5	6.4	\$3,098
Electronics	0.0	19.8	7.4	10.2	10.0	2.1	31.1	80.5	\$926
Mass Transit	0.0	216.5	216.5	649.6	576.1	512.8	997.2	3,168.6	\$3,942,976
Transportation	0.0	2.7	1.3	1.9	1.0	1.0	0.0	7.9	\$3,223



2014

## **Raritan Valley Community College Additional Green MOU Accomplishments and Cost Savings**

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### ***Governor's Environmental Achievement Award***

In November 2013, the State of New Jersey awarded Raritan Valley Community College the 2013 New Jersey Governor's Environmental Excellence Award in the Clean Air category, for significantly reducing greenhouse gas emissions. The Governor's Environmental Excellence Awards are the State's premier environmental awards program for recognizing outstanding environmental performance, programs and projects in the state.

### ***WaterSense Products and Water Conservation***

RVCC is partnering with Rutgers University and the New Jersey Water Supply Authority to install two new 550 gallon rain barrels, to be located at the College's conference center. The barrels are in place on a new concrete footing, but still need to be connected to the drainage pipe. The collected water will be gravity-fed to water the planned enabling garden, which RVCC is creating for the community in partnership with the Rutgers Cooperative Extension and Rotary International. The project is still in the planning stages and is expected to be located in front of the conference center.

### ***Sustainable Design, Construction, and Operations Practices***

Construction is almost complete on the new Student Center, which will be LEED Gold and include a rainwater harvesting system, a green wall, and eventually a green roof. The opening ceremony is planned for February 2014.

### ***Transportation and Commuter Programs***

RVCC continues to offer electric car charging through ChargePoint America, a program to provide electric vehicle charging infrastructure to nine selected regions in the United States, made possible by the American Recovery and Reinvestment Act through the Transportation Electrification Initiative administered by the Department of Energy. The chargers serve four preferred parking spaces outside of the West building.

### ***Campus and Community Involvement***

Green activities on campus are highlighted on RVCC's sustainability web site. The Environmental Club, ecology and environmental studies students, and others have been involved in many campus and service learning projects.