



Raritan Valley Community College
Environmental Assessment:
MOU Annual Report
September 18, 2015

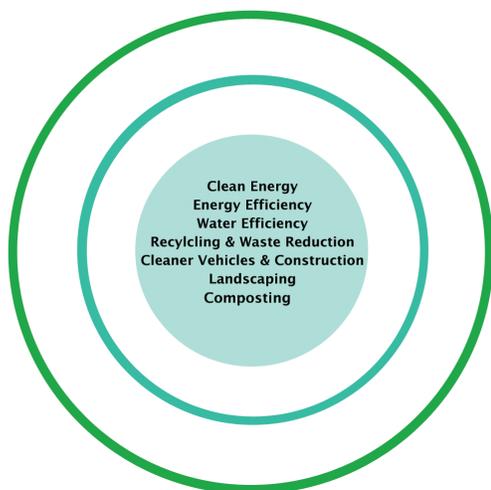


Environmental Protection Agency
Region 2

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Accomplishments

Reductions of 38,122 MTCO₂e



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 nine 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 38,122 MTCO₂e* and saved over an estimated \$7.3 million in operating expenses.

*Metric Ton Carbon Dioxide Equivalent

Environmental Metrics	Total Savings (MTCO ₂ e)
Energy Conservation	1,493.2
Alternative Energy	28,826.4
Water Conservation	735.9
Solid Waste	2,102.3
Green Procurement	442.4
Green Landscaping	11.5
Electronics	100.6
Mass Transit	4,402.2
Transportation	7.9
Total (MTCO₂e)	38,122.3

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. This report utilized conversion factors developed from prior report(s).

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 MTCO₂e.

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 MTCO₂e 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 38,122 MTCO₂e

Greenhouse Gas Equivalencies

What does the reduction of 38,122 MTCO₂e represent ?
The organization's effort is equivalent to any one of the following:

- Annual greenhouse gas emissions from 8,026 vehicles



- Carbon dioxide emissions from 4,289,637 gallons of gasoline



- Carbon dioxide emissions from 88,656 barrels of oil consumed



- Carbon dioxide emissions from the energy use of 3,478 homes for one year



- Carbon dioxide emissions from 1,588,417 propane tanks used for home barbeques



- Carbon dioxide emissions from gasoline carried by 505 tanker trucks



- Carbon dioxide emissions from burning 204 railcars' worth of coal (over 3 miles long)





Environmental Metrics	June 2009 MOU	Mar/Nov 2010 Updates	Jul 2011 Update	Jan/Jul 2012 Updates	Jan/Jul 2013 Update	Jan 2014 Update	Jan 2015 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
Energy Conservation / Energy Star									
Total Savings (MTCO2e)		251	494	608	568	(207)	(221)	1,493	\$202,942
Miscellaneous Energy Conservation		(321,397 kwh) 83,801 therms	232,048 kwh 56,400 therms	185,000 kwh 80,000 therms	925,000 kwh (32,000 therms)	(365,000 kwh) 7,000 therms	(121,000 kwh) (37,000 therms)	1,243	\$170,337
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)		1,268 kwh	960 kwh	1840 kwh	4280 kwh	2400 kwh	4800 kwh	11	\$1,948
Replace T8 bulbs with T5 bulbs (80)				400 kwh	800 kwh	400 kwh	800 kwh	2	\$300
Bulb Replacement (LEDs) (318)				1625 kwh	6500 kwh	4940 kwh	20,670 kwh	24	\$4,227
Gas Savings (pool heat exchanger)		8,000 therms	4,000 therms	8,000 therms	8,000 therms	4,000 therms	8,000 therms	213	\$26,130
Fuel Oil Savings									
Steam Savings									
Alternative Energy									
Total Savings (MTCO2e)	1,680	4,763	2,241	3,567	4,319	2,159	10,097	28,826	\$944,700
On-Site Solar		4,000 kwh	2,000 kwh	279,000 kwh	492,000 kwh	245,000 kwh	495,000 kwh	1,111	\$190,081
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	406 MWh	256 MWh	1,087 MWh	20,440	\$756,500
Purchase of Green Energy/ Green Power					800 MWh	400 MWh	8,967 MWh	7,275	(\$1,881)
Water Conservation / WaterSense									
Total Savings (MTCO2e)	0	1	0	44	29	(1)	663	736	\$633,808
Miscellaneous Water Conservation				17,672,600 gal	11,458,020 gal	(454,784 gal)	281,287 kgal	731	\$629,871
Low Flow/Hands Free Faucets (87)	33,000 gal	46,750 gal	22,000 gal	33,000 gal	33,000 gal	16,500 gal	43,500 gal	1	\$462
Low Flow Toilets (26)				32,000 gal	32,000 gal	16,000 gal	104,000 gal	0	\$374
Low Flow Shower Heads									
Low Flow Urinals (9)	41,400 gal	58,650 gal	27,600 gal	41,400 gal	41,400 gal	20,700 gal	41,400 gal	1	\$554
Waterless Urinals (13)		106,667 gal	106,667 gal	160,000 gal	220,000 gal	140,000 gal	520,000 gal	3	\$2,547



Environmental Metrics	June 2009 MOU	Mar/Nov 2010 Updates	Jul 2011 Update	Jan/Jul 2012 Updates	Jan/Jul 2013 Update	Jan 2014 Update	Jan 2015 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
Solid Waste Recycling									
Total Savings (MTCO2e)		837	265	211	309	126	354	2,102	\$30,610
Mixed Recyclables (includes Wastewise)		48.4 tons	93 tons	20 tons	22.4 tons	17.2 tons	24 tons	637	\$9,000
Pallets Waste Avoided/ Wood Recycled					37.5 tons			92	\$1,500
Steel Recycled during De-construction									
Recycled C & D Waste (Construction Waste)							36.2 tons	9	\$1,448
Cardboard (construction/ non-construction/sharp containers)		113 tons		35 tons	22 tons	11 tons	35 tons	674	\$8,640
Mixed Metal (construction/ non-construction)							6.37 tons	28	\$255
Paper, Mixed		96 tons		11 tons	22 tons	11 tons	35 tons	628	\$7,000
Plastic, Mixed (bottles, construction/non-construction, sharp containers)									
Blue Wrap									
Can / Bottle Recycling									
Mixed Organics									
Food Donation (Waste diversion)						5800 lbs		0	\$116
Biosolids & Food Waste Recycling/Composting		14 tons	10.64 tons	10 tons	10.77 tons	1.62 tons	4.26 tons	8	\$2,051
Fluorescent Bulbs		1044 lbs	509 lbs	1337 lbs	7045 lbs		813 lbs	1	\$215
Waste Oil Recycled				110 gal		110 gal	60 gal	3	\$48
Magazines/ThirdClass Mail									
Newspaper									
Office Paper									
Non-Ferrous Metals									
Tires							400 lbs	0	\$8
Fats, Oils, Grease Recycled				165 gal	165 gal		958 gal	15	\$219
Ballast (mixed metal)		147 lbs	93 lbs	400 lbs	569 lbs	600 lbs	385 lbs	5	\$44
Water Bottle Filling Stations (plastic bottles saved)				210 lbs	910 lbs	490 lbs (7)	1680 lbs (12)	2	\$66
Green Procurement									
Total Savings (MTCO2e)		27	6	117	29	93	171	442	\$64,112
Purchase of Materials with Recycled Content		14,000 reams	6800 reams 30% PC	10,400 reams 30%PC	10,800 reams 30%PC	4800 reams 30%PC	9600 reams 30%PC	62	
Purchase / Use of Compost Socks									
Purchase of EPEAT Products				265 desktops	190 units	303 units	554 units	380	\$64,112



Environmental Metrics	June 2009 MOU	Mar/Nov 2010 Updates	Jul 2011 Update	Jan/Jul 2012 Updates	Jan/Jul 2013 Update	Jan 2014 Update	Jan 2015 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
Green Landscaping									
Total Savings (MTCO2e)		0	0	1	3	3	5	12	\$6,455
Green Roofs				600 sq ft	600 sq ft	600 sq ft	600 sq ft	4	
Porous Pavement									
Grass									
Low/no mow area									
Green Space									
Re-use of Collected Storm-water		4,000 gal	3,000 gal	2,000 gal	7,600 gal	7,920 gal	152,000 gal	0	\$359
On-Site Re-use of Compost									
Moisture Sensing Sprinklers (120,000 sq ft)					750,000 gal	750,000 gal	1,500,000 gal	7	\$6,096
Electronics Recycling									
Total Savings (MTCO2e)		20	7	10	12	31	20	101	\$1,195
Recycling of Electronics		24,248 lbs	1,917 lbs	1167 lbs	4,267 lbs		9,997 lbs	33	\$832
Re-Use/Donation of Used Computers			26 units (208 lbs)		5,645 lbs	99 units (1336 lbs)	88 units (1760 lbs)	11	\$179
Toner/Ink Recycling and Use of Recycled Ink			560 lbs	840 lbs	150 lbs	3075 lbs	973 lbs	54	\$111
Battery Recycling		466 lbs	246 lbs	1478 lbs	711 lbs		741 lbs	3	\$73
Mass Transit									
Total Savings (MTCO2e)		217	217	650	1,089	997	1,234	4,402	\$5,478,028
Miles Avoided		485,500 mi	485,500 mi	1,456,500 mi	2,441,043 mi	2,235,918 mi	2,765,859 mi	4,402	\$5,478,028
Transportation									
Total Savings (MTCO2e)		3	1	2	2			8	\$3,223
Hybrid Vehicles		1 car (17 mo.)	1 car (8 mo.)	1 car	1 car			8	\$3,223
Electric Vehicles									
Biodiesel Vehicles									
MTCO2e Savings									
Total (MTCO2e)	1,680	6,117	3,232	5,210	6,360	3,201	12,322	38,122	\$7,365,073
Energy	0	251	494	608	568	(207)	(221)	1,493	\$202,942
Alternative Energy	1,680	4,763	2,241	3,567	4,319	2,159	10,097	28,826	\$944,700
Water	0	1	0	44	29	(1)	663	736	\$633,808
Solid Waste	0	837	265	211	309	126	354	2,102	\$30,610
Green Procurement	0	27	6	117	29	93	171	442	\$64,112
Green Landscaping	0	0	0	1	3	3	5	12	\$6,455
Electronics	0	20	7	10	12	31	20	101	\$1,195
Mass Transit	0	217	217	650	1,089	997	1,234	4,402	\$5,478,028
Transportation	0	3	1	2	2	0	0	8	\$3,223



2015

Raritan Valley Community College Additional Green MOU Accomplishments and Cost Savings

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 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.

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.