



Montclair State University
Environmental Assessment:
MOU SemiAnnual Report
December 19, 2014

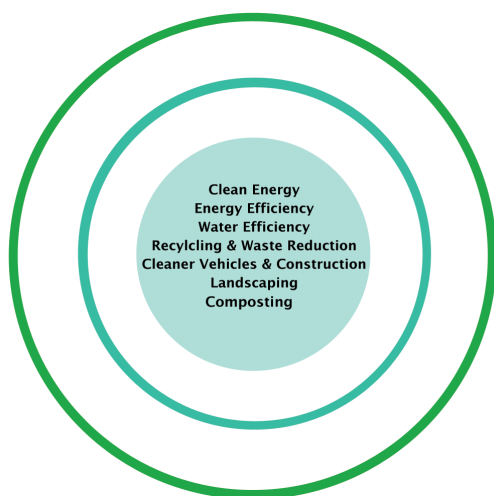


Environmental Protection Agency
Region 2

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Accomplishments

Reductions of 127,667 MTCO₂e



Memorandum of Understanding

On June 17, 2008, Montclair State University 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 Montclair State University has resulted in reducing energy, water and solid waste production across campus operations.

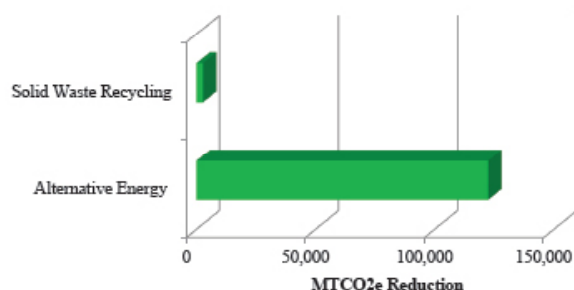
Reduction in Environmental Footprint

In the last six years, Montclair State University has provided twelve 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 university has managed to reduce its carbon footprint by 127,667 MTCO₂e* and saved an estimated \$15.8 million in operating expenses.

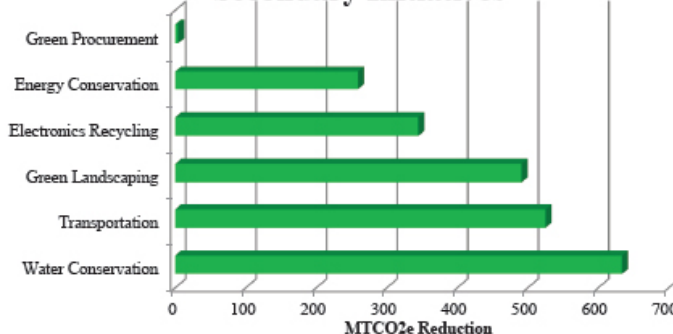
*Metric Ton Carbon Dioxide Equivalent

Environmental Metrics	Total Sector (MTCO ₂ e)
Energy Conservation	259.2
Alternative Energy	122,602.7
Water Conservation	634.0
Solid Waste	2,805.8
Green Procurement	4.2
Green Landscaping	491.4
Electronics Recycling	345.1
Transportation	525.4
Total (MTCO ₂ e)	127,667.7

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 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 127,667 MTCO₂e



Greenhouse Gas Equivalencies

What does the reduction of 127,667 MTCO₂e represent ?

The organization's effort is equivalent to any one of the following:

- Annual greenhouse gas emissions from 26,877 vehicles



- Carbon dioxide emissions from 14,365,669 gallons of gasoline



- Carbon dioxide emissions from 296,902 barrels of oil consumed



- Carbon dioxide emissions from the energy use of 11,649 homes for one year



- Carbon dioxide emissions from 5,319,488 propane tanks used for home barbeques



- Carbon dioxide emissions from gasoline carried by 1,690 tanker trucks



- Carbon dioxide emissions from burning 685 railcars' worth of coal (nearly 10.4 miles long)





Environmental Metrics	Jun 2008 MOU	Dec 2008 Update	Jun 2009 Update	Jun/Dec 2010 Updates	Jun/Dec 2011 Updates	Jun/Dec 2012 Updates	Jun/Dec 2013 Updates	June 2014 Update	Dec 2014 Update	Total Conversion (MTCO2e)	Cost Savings (Est.)
Energy Conservation											
Total Savings (MTCO2e)				46.0	38.3	42.3	55.9	36.1	40.7	259.2	\$45,616
Miscellaneous Energy Conservation											
Motors and transformers											
Lighting Project Fixtures											
Hot Water Pipe Replacement											
HVAC, Chiller & Electrical											
Bulb Replacement (CFLs) total 375					10,625 kwh	16,250 kwh	18,750 kwh	9375 kwh	9375 kwh	45.8	\$8,066
Bulb Replacement (LEDs) total 1470				64,642.5 kwh	43,095 kwh	43,095 kwh	59,800 kwh	41,275 kwh	47,775 kwh	213.4	\$37,550
Gas / Oil / Steam Savings											
Alternative Energy											
Total Savings (MTCO2e)	5,161.2	5,161.2	5,161.2	20,673.5	19,820.4	19,917.1	21,560.7	12,204.4	12,942.8	122,602.7	\$15,445,707
On-Site Solar	1,712 kwh	1,712 kwh	1,712kwh	3,424 kwh	3,424 kwh	139,215 kwh	233,944 kwh	125,000 kwh	125,049 kwh	452.3	\$79,590
On-Site Wind											
On-Site Geothermal											
On-Site Combined Heat and Power (5.4MW)	16,423.85 MWh	16,423.85 MWh	16,423.85 MWh	31,795 MWh	31,795 MWh	31,795 MWh	31,795 MWh	19,964 MWh	19,964 MWh	74,880.0	\$14,129,585
Purchase of Green Energy/ Green Power				5,518,000 kwh	11,036,000 kwh	11,036,000 kwh	13,249,626.7 kwh	7,800,000 kwh	7,800,000 kwh	40,184.7	(\$10,441)
Energy Returned to the Grid				1,772.9 MWh	2,304 MWh	2,304 MWh	2,304 MWh	115 MWh	1,152 MWh	7,085.7	\$1,246,973
Water Conservation											
Total Savings (MTCO2e)					158.5	158.5	158.5	79.3	79.3	634.0	\$153,975
Miscellaneous Water Conservation											
Low Flow/Hands Free Faucets											
Low Flow Toilets (985)					3,940,000 gal	3,940,000 gal	3,940,000 gal	1,970,000 gal	1,970,000 gal	37.0	\$32,026
Low Flow Shower Heads (670)					1,541,000 gal 201,000 kwh	1,541,000 gal 201,000 kwh	1,541,000 gal 201,000 kwh	770,500 gal + 100,500 kwh	770,500 gal + 100,500 kwh	586.9	\$113,267
Low Flow Urinals (42)					193,200 gal	193,200 gal	193,200 gal	96,600 gal	96,600 gal	1.8	\$1,570
Waterless Urinals (35)					875,000 gal	875,000 gal	875,000 gal	437,500 gal	437,500 gal	8.2	\$7,112
Solid Waste Recycling											
Total Savings (MTCO2e)	175.9	175.6	235.6	498.7	484.6	453.8	481.1	164.7	135.8	2,805.8	\$41,110
Mixed Recyclables	61.5 tons	61.5 tons	83 tons	176 tons	171 tons	160.2 tons	170 tons	58.2 tons	48 tons	2,800.0	\$39,576
Pallets / Wood Recycled											
Steel Recycled											
Concrete / Asphalt Recycled											
Recycled C & D Waste											
Cardboard											
Mixed Metal											
Paper, Mixed											
Plastic, Mixed											
Blue Wrap											
Can / Bottle Recycling											



Environmental Metrics	Jun 2008 MOU	Dec 2008 Update	Jun 2009 Update	Jun/Dec 2010 Updates	Jun/Dec 2011 Updates	Jun/Dec 2012 Updates	Jun/Dec 2013 Updates	June 2014 Update	Dec 2014 Update	Total Conversion (MTCO2e)	Cost Savings (Est.)
Mixed Organics											
Food Donation (Waste diversion)											
Biosolids and Food Waste Recycling / Composting	25,000 lbs	20,000 lbs	8,914 lbs	8,400 lbs	8,200 lbs	6,200 lbs				5.8	\$1,534
Fluorescent Bulbs											
Ceiling Tiles Recycled											
Carpet Recycled											
Waste Oil Recycled											
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											
Green Procurement											
Total Savings (MTCO2e)					1.2	1.2	0.6	0.6	0.6	4.2	\$0
Purchase of Materials w/ Recycled Content (Paper)					144 cs 30%PC	144 cs 30%PC	77.2 cs 30%PC	77 cs 30%PC	70 cs 30%PC	4.2	
Purchase / Use of Compost Socks											
Purchase of EPEAT Products											
Use of Recycled Steel during Construction											
Use of Recycled Iron during Construction											
Use of Recycled Plastic											
Use of Recycled Aluminum											
Use of Recycled Concrete / Asphalt											
Use of Coal Combustion Products											
Green Landscaping											
Total Savings (MTCO2e)	9.9	9.5	8.6	25.6	18.3	18.0	18.0	8.5	374.9	491.4	\$3,414
Green Roofs											
Porous Pavement									4.78 acres	6.3	
Grass									3.84 acres		
Low/no mow area											
Re-use of Collected Storm-water											
Re-use of Compost / Mulch	25,000 lbs	20,000 lbs	8,914 lbs	24,000 lbs	24,000 lbs	12,000 lbs	12,200 lbs			9.5	
Moist. Sens. Sprinklers (40)					240,000 gal	480,000 gal	480,000 gal	240,000 gal	240,000 gal	4.0	\$3,414

Environmental Metrics	Jun 2008 MOU	Dec 2008 Update	Jun 2009 Update	Jun/Dec 2010 Updates	Jun/Dec 2011 Updates	Jun/Dec 2012 Updates	Jun/Dec 2013 Updates	June 2014 Update	Dec 2014 Update	Total Conversion (MTCO2e)	Cost Savings (Est.)
Number / Acres of Trees	190 trees	190 trees	190 trees	190 trees	190 trees	190 trees	190 trees	190 trees	43 acres	471.7	
Reflective Roof											
Synthetic Turf											
Native Plants											
Leaves Composted											
Electronics/EPEAT											
Total Savings (MTCO2e)				33.4	82.2	76.6	81.0	36.0	35.9	345.1	\$1,777
Recycling of Electronics					231 units	245 units	290 units	200 units		7.7	\$193
Re-Use/Donation of Used Computers				2800 computers	850 computers	400 computers	525 computers	150 computers	250 computers	59.3	\$945
Toner/Ink Recycling / Use of Recycled Ink					1812 cartridges	1806 cartridges	1865 cartridges	840 cartridges	850 cartridges	275.4	\$574
Battery Recycling					400 batteries	300 batteries	468 batteries	250 batteries	200 batteries	2.6	\$65
Mass Transit											
Total Savings (MTCO2e)										0.0	\$0
Miles Avoided											
Transportation											
Total Savings (MTCO2e)	9.0	9.0	9.0	27.0	180.0	150.6	53.5	42.3	45.1	525.4	\$143,000
Hybrid Vehicles											
Gasoline/Ethanol Vehicles	3	3	3	3	19	19				282.0	\$4,400
Electric Vehicles					16	13	19	30	32	216.9	\$138,600
Biodiesel Vehicles					13					26.5	
Clean Construction Vehicles											
LNG Vehicles											
Alt Fuel Vehicles (ULSDF)					2	2	3	3	3		
Smartway Transporters						2	2	2	2		
Bike Racks					42	42	42	42	42		
LEED Projects											
Total Savings (MTCO2e)										0.0	\$0
Silver – 30%											
Gold – 40%											
Platinum – 45%											
MTCO2e Savings											
Total (MTCO2e)	5,356.0	5,355.2	5,414.4	21,304.3	20,783.4	20,818.1	22,409.3	12,571.9	13,655.1	127,667.7	\$15,834,599
Energy	0.0	0.0	0.0	46.0	38.3	42.3	55.9	36.1	40.7	259.2	\$45,616
Alternative Energy	5,161.2	5,161.2	5,161.2	20,673.5	19,820.4	19,917.1	21,560.7	12,204.4	12,942.8	122,602.7	\$15,445,707
Water	0.0	0.0	0.0	0.0	158.5	158.5	158.5	79.3	79.3	634.0	\$153,975
Solid Waste	175.9	175.6	235.6	498.7	484.6	453.8	481.1	164.7	135.8	2,805.8	\$41,110
Green Procurement	0.0	0.0	0.0	0.0	1.2	1.2	0.6	0.6	0.6	4.2	\$0
Green Landscaping	9.9	9.5	8.6	25.6	18.3	18.0	18.0	8.5	374.9	491.4	\$3,414
Electronics	0.0	0.0	0.0	33.4	82.2	76.6	81.0	36.0	35.9	345.1	\$1,777
Transportation	9.0	9.0	9.0	27.0	180.0	150.6	53.5	42.3	45.1	525.4	\$143,000



2014

Montclair State University Additional Green MOU Accomplishments and Cost Savings

Nothing new to report