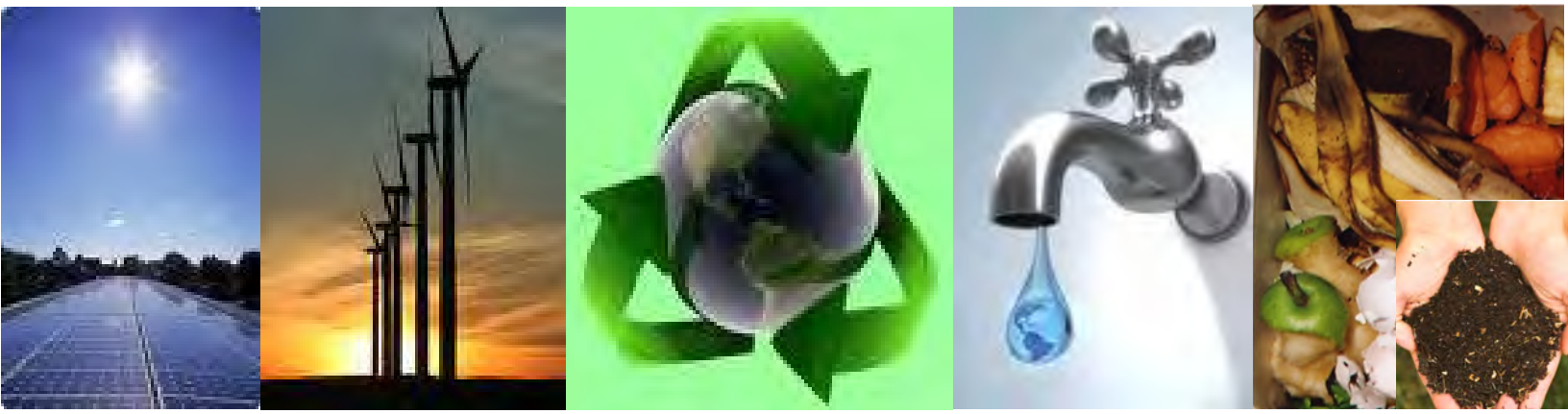
Montclair State University
Environmental Assessment:
MOU SemiAnnual Report
December 19, 2012



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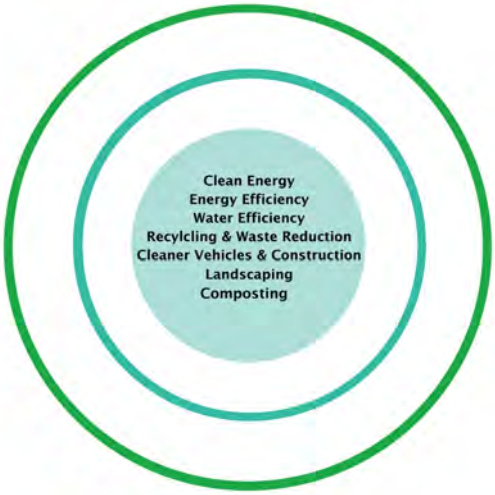
Accomplishments

Reductions of 82,785 MTCO2e



Memorandum of Understanding

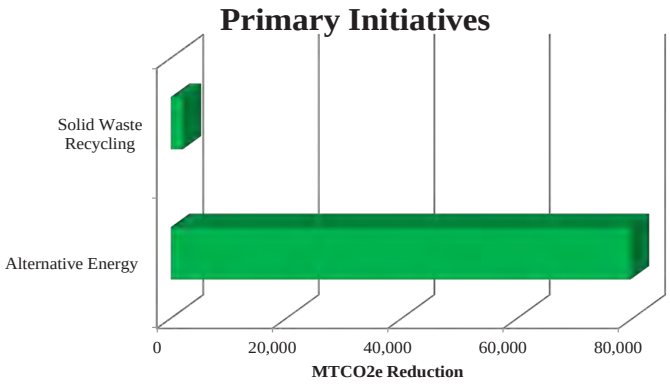
On June 17, 2008, Montclair State University signed a Memorandum of Understanding (MOU) pledging to become an environmental steward by implementing a number of green initiatives that would reduce its carbon footprint and further improve our planet's environment. This partnership with the United States Environmental Protection Agency (EPA) and Montclair State University has resulted in reducing energy, water and solid waste production across campus operations.

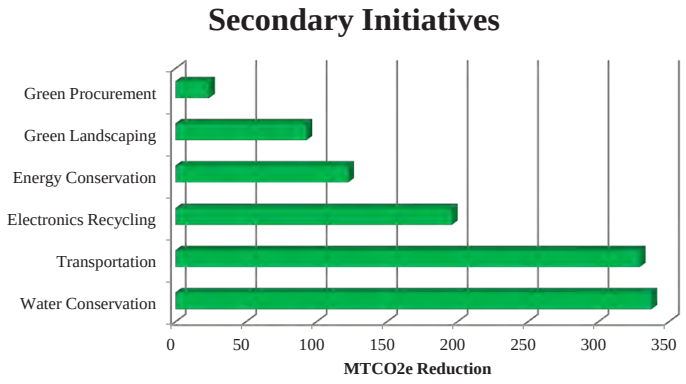
Reduction in Environmental Footprint

In the last four years, Montclair State University 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 university has managed to reduce its carbon footprint by 82,785 MTCO2e* and saved an estimated $6,480,000 in operating expenses.

*Metric Ton Carbon Dioxide Equivalent

Environmental Metrics	Total Sector (MTCO2e)
Energy Conservation	122.6
Alternative Energy	79,628.2
Water Conservation	337.7
Solid Waste	2,054.6
Green Procurement	23.8
Green Landscaping	92.9
Electronics Recycling	196.0
Transportation	329.4
Total (MTCO2e)	82,785.0





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) which converts 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.

Greenhouse Gas Equivalencies

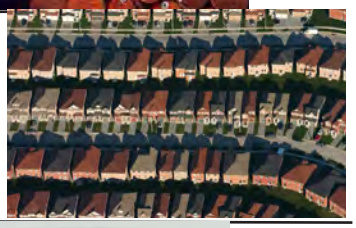
What does the reduction of 82,785 MTCO2e represent ?
The organization's effort is equivalent to any one of the following:

- Annual greenhouse gas emissions from 17,247 vehicles

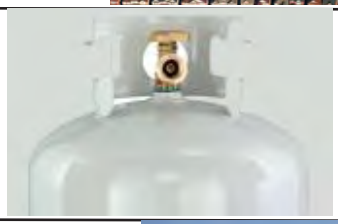
- Carbon dioxide emissions from 9,280,830 gallons of gasoline

- Carbon dioxide emissions from 192,523 barrels of oil consumed

- Carbon dioxide emissions from the energy use of 4,261 homes for one year

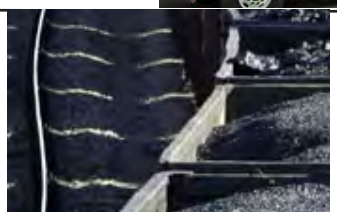


- Carbon dioxide emissions from 3,449,375 propane tanks used for home barbeques



- Carbon dioxide emissions from gasoline carried by 1,092 tanker trucks

- Carbon dioxide emissions from burning 356 railcars' worth of coal (almost 5 1/2 miles long)



Environmental Metrics	Dec 2008 Update	Jun 2009 Update	Jun 2010 Update	Dec 2010 Update	Jun 2011 Update	Dec 2011 Update	Jun 2012 Update	Dec 2012 Update	Total Conversion (MTCO2e)	Cost Savings (Est.)
Energy Conservation/Energy Star										
Total Savings (MTCO2e)			***29.7***	***14.9***	***17.5***	***19.6***	***19.6***	***21.3***	***122.6***	***$16,669***
Miscellaneous Energy Conservation										
Motors and transformers										
Lighting Project Fixtures (Bulbs and Ballast)										
High Temp Hot Water Pipe Replacement										
HVAC, Chiller & Electrical										
Bulb Replacement (CFLs)					150 bulbs	275 bulbs	275 bulbs	375 bulbs	18.5	$2,517
Bulb Replacement (LEDs)			663 Fixtures	663 Fixtures	663 Fixtures	663 Fixtures	663 Fixtures	663 Fixtures	104.0	$14,152
Gas / Fuel Oil / Steam Savings										
Alternative Energy										
Total Savings (MTCO2e)	***5,376.3***	***5,376.3***	***12,095.9***	***9,561.2***	***10,434.8***	***10,434.8***	***10,434.9***	***10,537.8***	***79,628.2***	***$6,352,163***
On-Site Solar	1,712 kwh	1,712kwh	1,712 kwh	1,712 kwh	1,712 kwh	1,712 kwh	1,779 kwh	137,436 kwh	114.7	$15,604
On-Site Wind										
On-Site Geothermal										
On-Site Combined Heat and Power (4.3MW)	16,423.85 MWh	16,423.85 MWh	15,897.5 MWh	15,897.5 MWh	15,897.5 MWh	15,897 MWh	15,897.5 MWh	15,897.5 MWh	53,750.0	$6,249,163
Purchase of Green Energy/Green Power				5,518,000 kwh	5,518,000 kwh	5,518,000 kwh	5,518,000 kwh	5,518,000 kwh	20,924.3	($571,113)
Energy Returned to the Grid			1,772.9 MWh		1,152 MWh	1,152 MWh	1,152 MWh	1,152 MWh	4,839.3	$658,509
Water Conservation/WaterSense										
Total Savings (MTCO2e)					84.4	84.4	84.4	84.4	337.7	$65,430
Miscellaneous Water Conservation										
Low Flow/Hands Free Faucets										
Low Flow Toilets (985)					1,970,000 gal	1,970,000 gal	1,970,000 gal	1,970,000 gal	19.7	$14,405
Low Flow Shower Heads (670)					770,500 gal + 100,500 kwh	770,500 gal + 100,500 kwh	770,500 gal + 100,500 kwh	770,500 gal + 100,500 kwh	312.6	$47,120
Low Flow Urinals (42)					96,600 gal	96,600 gal	96,600 gal	96,600 gal	1.0	$706
Waterless Urinals (35)					437,500 gal	437,500 gal	437,500 gal	437,500 gal	4.4	$3,199
Solid Waste Recycling										
Total Savings (MTCO2e)	***178.5***	***239.1***	***253.0***	***253.0***	***253.0***	***238.6***	***230.6***	***229.8***	***2,054.6***	***$30,062***
Mixed Recyclables (includes WasteWise)	61.5 tons	83 tons	88 tons	88 tons	88 tons	83 tons	80.2 tons	80 tons	2,046.9	$28,528
Pallets Waste Avoided/Wood Recycled										
Steel Recycled during Deconstruction										
Concrete / Asphalt Recycled during Deconstruction										
Recycled C & D Waste (Construction Waste)										
Cardboard (construction/non-construction/sharp containers)										
Mixed Metal (construction/non-construction)										
Paper, Mixed										

Environmental Metrics	Dec 2008 Update	Jun 2009 Update	Jun 2010 Update	Dec 2010 Update	Jun 2011 Update	Dec 2011 Update	Jun 2012 Update	Dec 2012 Update	Total Conversion (MTCO2e)	Cost Savings (Est.)
Plastic, Mixed (bottles, construction/non-construction, sharp containers)										
Blue Wrap										
Can / Bottle Recycling										
Mixed Organics										
Food Donation (Waste diversion)										
Biosolids & Food Waste Recycling / Composting	20,000 lbs	8,914 lbs	4,200 lbs	4,200 lbs	4,200 lbs	4,000 lbs	4,200 lbs	2,000 lbs	7.7	$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)	***0.0***	***0.0***	***0.0***	***0.0***	***11.9***	***0.0***	***11.9***	***0.0***	***23.8***	***$2,880***
Purchase of Materials with Recycled Content (Paper)					1440 cs 30% PC		1440 cs 30% PC		23.8	$2,880
Purchase / Use of Compost Socks										
Purchase of EPEAT Products										
Use of Recycled Steel / Iron during Construction										
Use of Recycled Plastic / Aluminum during Construction										
Use of Recycled Concrete / Asphalt during Construction										
Use of Coal Combustion Products										
Green Landscaping										
Total Savings (MTCO2e)	***10.0***	***8.9***	***17.1***	***9.2***	***9.2***	***9.8***	***9.8***	***8.6***	***92.9***	***$1,316***
Green Roofs										
Porous Pavement										
Grass										
Low/no mow area										
Re-use of Collected Stormwater										
On-Site Re-use of Compost / Mulch	20,000 lbs	8,914 lbs	12,000 lbs	12,000 lbs	12,000 lbs	12,000 lbs	12,000 lbs		11.4	
Moisture Sensing Sprinklers (40)						240,000 gal	240,000 gal	240,000 gal	1.8	$1,316
Number / Acres of Trees	190 trees	190 trees	190 trees	190 trees	190 trees	190 trees	190 trees	190 trees	79.7	

Environmental Metrics	Dec 2008 Update	Jun 2009 Update	Jun 2010 Update	Dec 2010 Update	Jun 2011 Update	Dec 2011 Update	Jun 2012 Update	Dec 2012 Update	Total Conversion (MTCO2e)	Cost Savings (Est.)
Reflective Roof										
Synthetic Turf										
Native Plants										
Leaves Composted										
Electronics/EPEAT										
Total Savings (MTCO2e)			***30.1***		***41.2***	***44.3***	***41.2***	***39.2***	***196.0***	***$1,182***
Recycling of Electronics					145 units	86 units	145 units	100 units	3.8	$95
Re-Use/Donation of Used Computers			2,800 computers		250 computers	600 computers	250 computers	150 computers	43.5	$770
Toner/Ink Recycling and Use of Recycled Ink					906 cartridges	906 cartridges	906 cartridges	900 cartridges	147.6	$289
Battery Recycling					250 batteries	150 batteries	250 batteries	50 batteries	1.1	$28
Mass Transit										
Total Savings (MTCO2e)									***0.0***	***$0***
Miles Avoided										
Transportation										
Total Savings (MTCO2e)	***4.2***	***4.2***	***8.5***	***4.2***	***73.9***	***79.5***	***75.3***	***75.3***	***329.4***	***$13,778***
Hybrid Vehicles										
Gasoline/Ethanol Vehicles					19	19	19	19	228.0	$4,400
Electric Vehicles	3	3	3	3	12	16	13	13	101.4	$9,378
Biodiesel Vehicles										
Clean Construction Vehicles										
LNG Vehicles										
Alternate Fuel Vehicles (ULSDF)					2	13	15	15		
Smartway Transporters							2	2		
Bike Racks					42	27	42	42		
LEED Projects										
Total Savings (MTCO2e)									***0.0***	***$0***
Silver - 10%					1 bldg					
Gold - 17%										
Platinum - 20%					1 bldg					
MTCO2e Savings										
Total (MTCO2e)	***5,569.0***	***5,628.5***	***12,434.3***	***9,842.4***	***10,925.8***	***10,911.1***	***10,907.6***	***10,996.4***	***82,785.0***	***$6,483,480***
Energy	0.0	0.0	29.7	14.9	17.5	19.6	19.6	21.3	122.6	$16,669
Alternative Energy	5,376.3	5,376.3	12,095.9	9,561.2	10,434.8	10,434.8	10,434.9	10,537.8	79,628.2	$6,352,163
Water	0.0	0.0	0.0	0.0	84.4	84.4	84.4	84.4	337.7	$65,430
Solid Waste	178.5	239.1	253.0	253.0	253.0	238.6	230.6	229.8	2,054.6	$30,062
Green Procurement	0.0	0.0	0.0	0.0	11.9	0.0	11.9	0.0	23.8	$2,880
Green Landscaping	10.0	8.9	17.1	9.2	9.2	9.8	9.8	8.6	92.9	$1,316
Electronics	0.0	0.0	30.1	0.0	41.2	44.3	41.2	39.2	196.0	$1,182
Transportation	4.2	4.2	8.5	4.2	73.9	79.5	75.3	75.3	329.4	$13,778

2012

Montclair State University Additional Green MOU Accomplishments and Cost Savings

Green Buildings
Montclair State University has one of its buildings (University Hall) that is Green Building Certified under LEED (Leadership in Environmental and Energy Design).
MSU will soon have three additional Green Buildings that will be LEED Certified:

- John J. Cali School of Music Department Building
- New School of Business Building
- Recreational Center

Green Purchasing
Montclair State University purchases 100% recycled paper to use in their copy machines. The University also purchases rolls of paper towels and toilet paper that are made out of recycled materials, as well as green cleaning supplies. In fact, 80% of all cleaning supplies used on the campus are green cleaning products.

Energy
Co-generation Plant: The Co-generation plant produces thermal energy (steam) and electricity. "The cogeneration facility has a yearly production of over 32 million kilowatt hours. The Co-generation Plant generates more than 160 million pounds of steam every year. The majority of buildings on campus use electricity produced by the Co-generation plant for heating in winter and cooling in the summer.
Combined Heating, Cooling, and Power Project: Montclair State University is currently developing a new combined heating, cooling, and power (CHCP) system for the campus.
The new state-of-the-art facility and its related improvements will replace the campus' existing energy plant which began generating steam in the 1940s and providing electricity as a co-generation plant in 1993. The project's development will result in more cost-effective, efficient, and reliable delivery of heating, cooling, and electrical services to campus buildings.
The plant will provide natural gas-fired electric generation, chilled water for cooling, and steam for heat. The steam, condensate, and chilled water will flow to and from campus buildings through the new energy distribution system. Additionally, the majority of the campus' electricity requirements will be satisfied by the onsite plant, which is designed to operate continuously, producing electric power of approximately 5.4 megawatts.

Organic/Food Waste Composting
Food scraps are collected from two kitchens on campus. The scraps are then processed in an in-vessel aerobic digester after being mixed with wood chips (which serve as a bulking agent and carbon source for the bacteria that biologically decompose the food scraps). The compost is then used for landscaping projects around campus.

Electronic/Electric-waste
Montclair State University contracts with a computer and electronics recycling firm to properly handle the retirement of all E-waste that is not leased or returned to the supplier at the end of the life-cycle. In 2007, MSU launched a recycling program to recycle all brand name ink toner cartridges.

Transportation
To promote the use of public transportation and reduce the number of single occupant vehicles driven to campus, MSU and NJ Transit have partnered to offer full-time undergraduate and graduate students a 25% discount on a rail, bus, or light rail monthly pass.
Alternative fuel vehicles - MSU has electric vehicles for staff to use on campus as an alternative to diesel powered golf carts. These vehicles are used by various shops/departments within Facilities and Dining Services.

Water Use Reduction
Montclair State University has employed a program to reduce water usage at the University. MSU installed waterless urinals in the bathrooms located in University Hall in 2004. The waterless urinals have reduced water usage by 45,000 gallons per year for each urinal. MSU has also reduced water usage by planting drought resistant and native plants for all newly constructed buildings. The facility does not need to install sprinkler systems or irrigation systems to water these plants