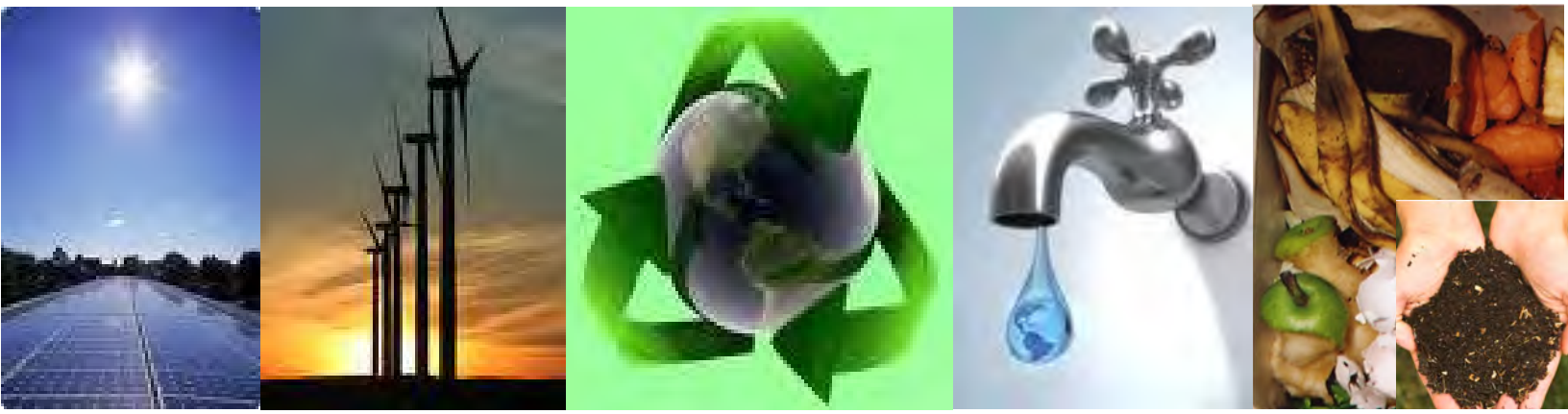
Montclair State University
Environmental Assessment:
MOU SemiAnnual Report
December 28, 2011



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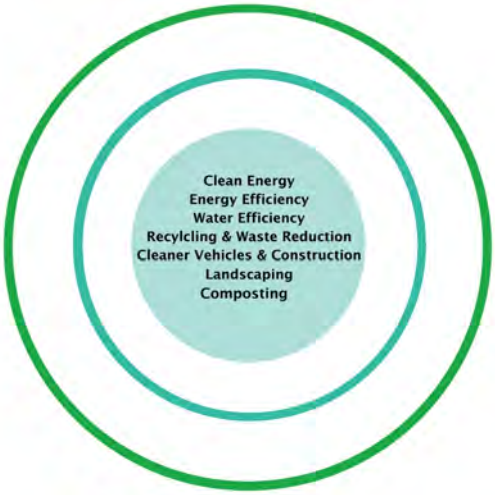
Accomplishments

Reductions of 60,753 MTCO2e



Memorandum of Understanding

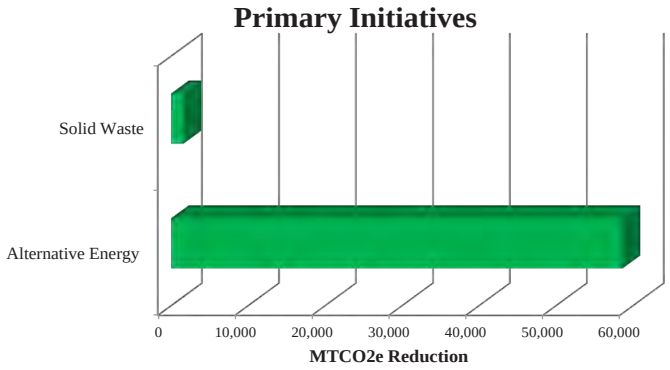
On June 17, 2008, Montclair State University signed a Memorandum of Understanding (MOU) pledging to become an environmental steward by implementing a number of green initiatives that would reduce its carbon footprint and further improve our planet's environment. This partnership with the United States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

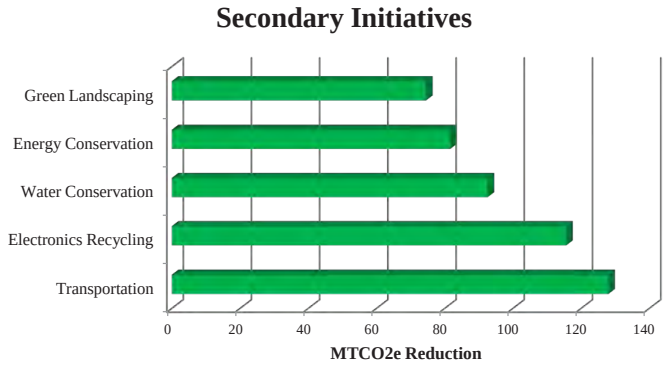
Reduction in Environmental Footprint

In the last three years, Montclair State University has provided six 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 60,753 MTCO2e* and saved an estimated $6,000,000 in operating expenses.

*Metric Ton Carbon Dioxide Equivalent

Environmental Metrics	Total Sector (MTCO2e)
Energy Conservation	81.6
Alternative Energy	58,655.5
Water Conservation	92.6
Solid Waste	1,606.1
Green Landscaping	74.6
Electronics Recycling	115.6
Transportation	128.0
Total (MTCO2e)	60,753.9





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.

The EPA GHG Conversion Tool 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.

Accomplishments

Reductions of 60,753 MTCO2e

Greenhouse Gas Equivalencies

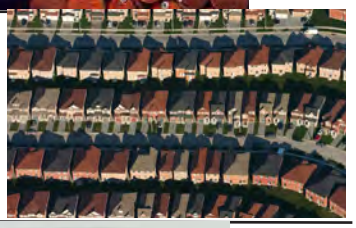
What does the reduction of 60,753 MTCO2e represent ?
The organization's effort is equivalent to any one of the following:

- Annual greenhouse gas emissions from 11,913 vehicles

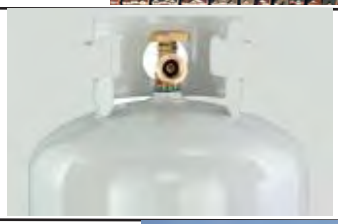
- Carbon dioxide emissions from 6,810,975 gallons of gasoline

- Carbon dioxide emissions from 141,288 barrels of oil consumed

- Carbon dioxide emissions from the energy use of 5,260 homes for one year

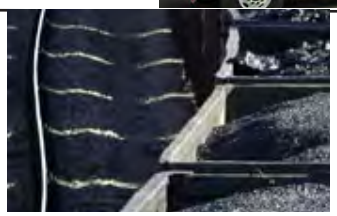


- Carbon dioxide emissions from 2,531,413 propane tanks used for home barbeques



- Carbon dioxide emissions from gasoline carried by 801 tanker trucks

- Carbon dioxide emissions from burning 331 railcars' worth of coal (over 5 miles long)



Environmental Metrics	Jun 2008 MOU	Jan 2009 Update	Jun 2009 Update	Jun 2010 Update	Dec 2010 Update	Jun 2011 Update	Dec 2011 Update	Total Conversion (MTCO2e)	Cost Savings (Est.)
Energy Conservation/Energy Star									
Total Savings (MTCO2e)				***29.7***	***14.9***	***17.5***	***19.6***	***81.6***	***$12,216***
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	7.3	$1,097
Bulb Replacement (LEDs)				663 Fixtures	663 Fixtures	663 Fixtures	663 Fixtures	74.3	$11,119
Gas / Fuel Oil / Steam Savings									
Alternative Energy									
Total Savings (MTCO2e)	***5,376.3***	***5,376.3***	***5,376.3***	***12,095.9***	***9,561.1***	***10,434.8***	***10,434.8***	***58,655.5***	***$5,930,657***
On-Site Solar	1,725 kwh	1,725 kwh	1,725 kwh	1,725 kwh	1,725 kwh	1,725 kwh	1,725 kwh	9.2	$1,246
On-Site Wind / Geothermal									
On-Site Combined Heat and Power (4.3MW)	16,423.85 MWh	16,423.85 MWh	16,423.85 MWh	15,897.5 MWh	15,897.5 MWh	15,897.5 MWh	15,897 MWh	43,000.0	$5,851,343
Purchase of Green Energy/Green Power					5,518,000 kwh	5,518,000 kwh	5,518,000 kwh	12,554.4	($342,668)
Energy Returned to the Grid				1,772.9 MWh		1,152 MWh	1,152 MWh	3,091.9	$420,736
Water Conservation/WaterSense									
Total Savings (MTCO2e)						***46.3***	***46.3***	***92.6***	***$32,716***
Miscellaneous Water Conservation									
Low Flow/Hands Free Faucets									
Low Flow Toilets (985)						1,970,000 gal	1,970,000 gal	9.9	$7,203
Low Flow Shower Heads (670)						770,500 gal + 100,500 kwh	770,500 gal + 100,500 kwh	80.1	$23,560
Low Flow Urinals (42)						96,600 gal	96,600 gal	0.5	$353
Waterless Urinals (35)						437,500 gal	437,500 gal	2.2	$1,600
Solid Waste/Industrial Materials Reuse/ Green Products									
Total Savings (MTCO2e)	***179.0***	***178.5***	***239.1***	***253.0***	***253.0***	***264.9***	***238.6***	***1,606.1***	***$24,970***
Mixed Recyclables (includes WasteWise)	61.5 tons	61.5 tons	83 tons	88 tons	88 tons	88 tons	83 tons	1,587.1	$22,120
Reduction/Green Products									
Re-Use/Purch of Materials with Recycled Content						1440 cases 30% PC		11.9	$1,440
Pallets Waste Avoided/Wood Recycled									
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									
Concrete / Asphalt Recycled									
Ceiling Tiles / Carpet Recycled									
Recycled C & D Waste (Construction Waste)									
Cardboard (construction/non-construction/sharp containers)									
Mixed Metal (construction/non-construction)									
Paper, Mixed									
Plastic, Mixed (bottles, constr./non-constr., sharp containers)									
Can / Bottle Recycling									
Mixed Organics									
Food Donation (Waste diversion)									
Biosolids & Food Waste Recycling / Composting	25,000 lbs	20,000 lbs	8,914 lbs	4,200 lbs	4,200 lbs	4,200 lbs	4,000 lbs	7.1	$1,410
Fluorescent Bulbs									
Waste Oil Recycled									
Magazines / ThirdClass Mail									
Newspaper / Office Paper									

Environmental Metrics	Jun 2008 MOU	Jan 2009 Update	Jun 2009 Update	Jun 2010 Update	Dec 2010 Update	Jun 2011 Update	Dec 2011 Update	Total Conversion (MTCO2e)	Cost Savings (Est.)
Textbooks / Phonebooks									
Dimensional Lumber									
Fly Ash									
Aluminum Cans									
Glass									
HDPE / LDPE / PET									
Appliances / Non-Ferrous Metals									
Fats, Oils, Grease									
Green Landscaping									
Total Savings (MTCO2e)	***10.5***	***10.0***	***8.9***	***17.1***	***9.2***	***9.2***	***9.8***	***74.6***	***$439***
Green Roofs / Reflective Roof									
Porous Pavement									
Grass									
Low/no mow area									
Re-use of Collected Stormwater									
On-Site Re-use of Compost / Mulch	25,000 lbs	20,000 lbs	8,914 lbs	12,000 lbs	12,000 lbs	12,000 lbs	12,000 lbs	10.2	
Moisture Sensing Sprinklers (40)							240,000 gal	0.6	$439
Number / Acres of Trees	190 trees	190 trees	190 trees	190 trees	190 trees	190 trees	190 trees	63.8	
Synthetic Turf / Native Plants									
Leaves Composted									
Electronics/EPEAT									
Total Savings (MTCO2e)				***30.1***		***41.2***	***44.3***	***115.6***	***$901***
Recycling of Electronics						145 units	86 units	1.9	$46
Re-Use/Donation of Used Computers				2,800 computers		250 computers	600 computers	39.2	$694
Toner/Ink Recycling and Use of Recycled Ink						906 cartridges	906 cartridges	73.9	$145
Battery Recycling						250 batteries	150 batteries	0.6	$16
Purchase of EPEAT Products									
Transportation									
Total Savings (MTCO2e)	***4.2***	***4.2***	***4.2***	***8.5***	***4.2***	***35.2***	***67.4***	***128.0***	***$18,800***
Hybrid Vehicles						19	19	36.7	$2,200
Electric Vehicles	3	3	3	3	3	12	16	64.8	$5,992
Biodiesel Vehicles							13	26.5	$10,608
Clean Construction / LNG Vehicles									
Alternate Fuel Vehicles (ULSDF)						2	2		
Smartway Transporters									
Bike Racks						42	27		
LEED Projects									
Total Savings (MTCO2e)								***0.0***	***$0***
Silver - 10%						1 bldg			
Gold - 17%									
Platinum - 20%						1 bldg			
MTCO2e Savings									
Total (MTCO2e)	***5,570.0***	***5,569.0***	***5,628.5***	***12,434.3***	***9,842.4***	***10,849.0***	***10,860.8***	***60,753.9***	***$6,020,699***
Energy	0.0	0.0	0.0	29.7	14.9	17.5	19.6	81.6	$12,216
Alternative Energy	5,376.3	5,376.3	5,376.3	12,095.9	9,561.1	10,434.8	10,434.8	58,655.5	$5,930,657
Water	0.0	0.0	0.0	0.0	0.0	46.3	46.3	92.6	$32,716
Solid Waste	179.0	178.5	239.1	253.0	253.0	264.9	238.6	1,606.1	$24,970
Green Landscaping	10.5	10.0	8.9	17.1	9.2	9.2	9.8	74.6	$439
Electronics	0.0	0.0	0.0	30.1	0.0	41.2	44.3	115.6	$901
Transportation	4.2	4.2	4.2	8.5	4.2	35.2	67.4	128.0	$18,800

2011

Montclair State University Additional Green MOU Accomplishments and Cost Savings

Montclair State University makes sustainability a vital practice in everyday campus activities ranging from instruction in classroom courses, project plans, building design, construction and refurbishing, green purchasing, green landscaping, energy and water use, waste management, etc. MSU is determined to encourage and develop a responsible and responsive campus community that will foster positive behaviors and attitudes towards environmental stewardship for the sustainability of both the present and future generations.

Buildings

Green buildings are structures designed and constructed in a manner to reduce its impact on the environment and public health by efficient utilization of resources. These goals are achieved by incorporating efficient use of water and energy resources; sustainable waste management practices and simultaneously protects occupant's health and maintains their productivity.
Montclair State University has one of its buildings (University Hall) that is Green Building Certified under LEED (Leadership in Environmental and Energy Design). The following is a list of some of the strategies used for LEED Recognition in the New Academic Building: Protect or Restore Open Space Stormwater Management, featuring filtration systems Reduce Heat Island, Trees and pavement selections Light Pollution Reduction Water efficient Landscaping, drought resistant plants, Water Use Reduction, plumbing fixture selections including waterless urinals. Collection of Recycling, built in casework Construction Waste Management, divert +50% Recycled content in steel, concrete, aluminum, gypsum board, ceiling tile, carpet. Local and Regional Materials, <20% Local materials (documented) Certified Wood, specified >50% FSC certified wood, Improved Indoor Air Quality, Carbon Dioxide monitoring, multiple sensors throughout the building. Low emitting materials, adhesives, paint, carpet, composite wood furniture – Green guard certified and recycled content.
MSU will soon have an additional 3 Green Buildings that will be LEED Certified. The green buildings include John J. Cali School of Music Department Building, New School of Business Building and the Recreational Center.

Green Purchasing

MSU purchases 100% recycled paper to use in their copy machines. The University also purchases roll paper towels and toilet paper that are made out of recycled materials. MSU also purchases green cleaning supplies. In fact, 80% of all cleaning products used on the campus are green cleaning supplies including glass cleaners, all purpose cleaners, neutral disinfectant floor cleaner, floor stripper, floor wax, and carpet shampoo. MSU has combined the ordering of chemical products for all their academic labs and now has one chemical storage area for all the chemicals used in the academic labs.

Energy

The Co-generation plant produces thermal energy (steam) and electricity. The cogeneration facility has a yearly availability of over 95% and a production of over 32 million kilowatt hours. Excess energy is sold back to the local distribution utility company under their existing buy back tariff. 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.

Waste Management

Organic/Food Waste Composting – Food scraps are collected from two kitchens on campus. The scraps are collected daily in 5 to 10 gallon buckets; three times a week these buckets are collected and weighed. 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. This activity eliminates the carbon dioxide that results from this process.
Electronic/Electric-waste – MSU 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 in collaboration with Charitable Emporium.com, Inc. to recycle all brand name ink toner cartridges. All the electronic and electrical waste is collected and recycled by Urban Renewal Corp.

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 when they enroll online through NJ TRANSIT's Quik-Tik program.