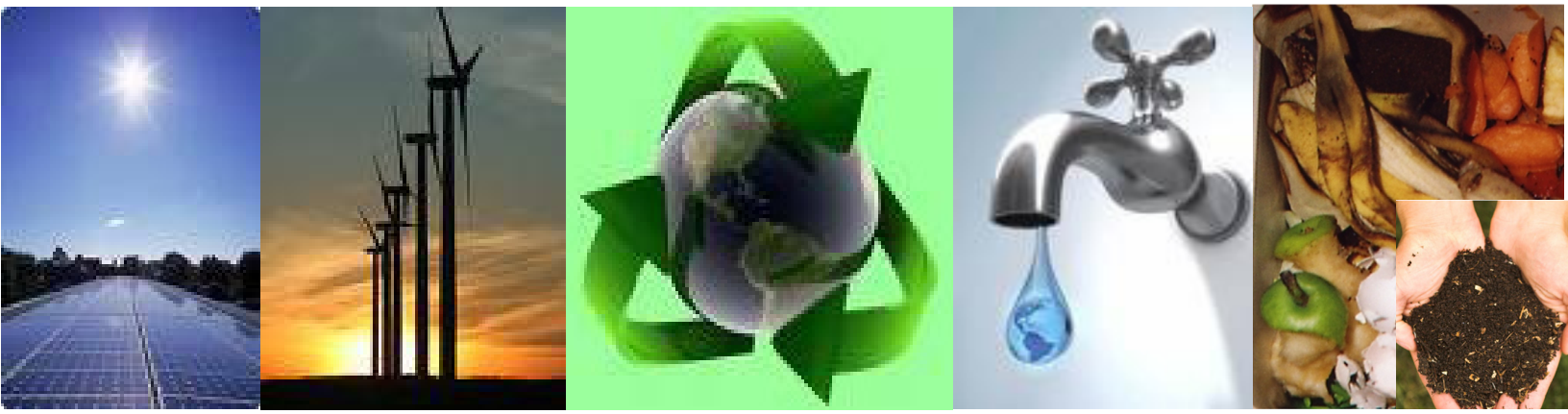
SUNY - Buffalo
Environmental Assessment:
Green MOU Annual Report
November 26, 2013



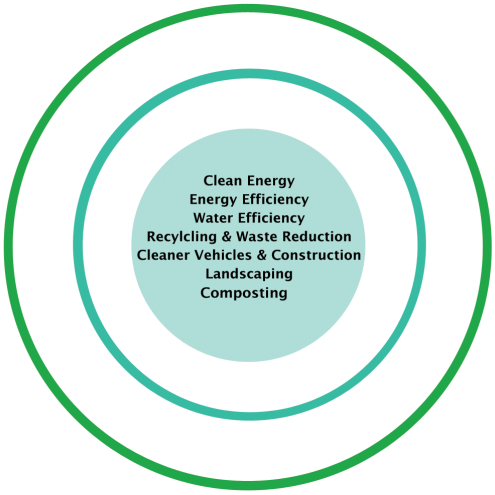
Environmental Protection Agency
Region 2

Andrew Bellina, PE
Senior Policy Advisor
212-637-4126

Jose Pillich
Michael Wanser
Research Analysts

Accomplishments

Reductions of 119,278 MTCO2e



Memorandum of Understanding

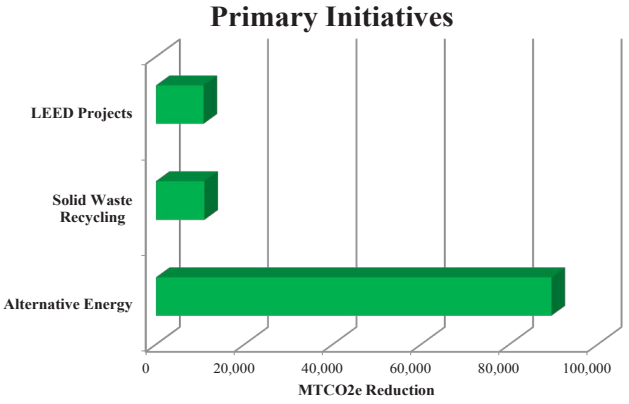
On August 2, 2011, SUNY - Buffalo signed a Memorandum of Understanding (MOU) pledging to become an environmental steward by implementing a number of green initiatives that would reduce its carbon footprint and further improve our planet's environment. This partnership with the United States Environmental Protection Agency (EPA) and SUNY - Buffalo has resulted in reducing energy, water and solid waste production across their entire operations.

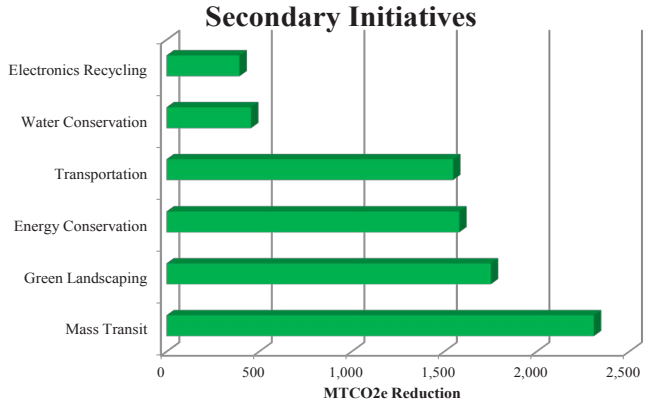
Reduction in Environmental Footprint

This is the second update SUNY - Buffalo has provided documenting its green initiatives. The EPA has analyzed the submitted information and generated an environmental footprint. Due to the progressive green efforts of the university, SUNY - Buffalo has managed to reduce its carbon footprint by 119,278 MTCO2e* and saved an estimated $7.1 million in operating expenses.

*Metric Ton Carbon Dioxide Equivalent

Environmental Metrics	Total Sector (MTCO2e)
Energy Conservation	1,582.4
Alternative Energy	89,527.2
Water Conservation	456.9
Solid Waste Recycling	10,936.8
Green Landscaping	1,753.1
Electronics Recycling	394.5
Mass Transit	2,309.8
Transportation	1,548.8
LEED Projects	10,768.8
Total (MTCO2e)	119,278.3





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.

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 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 119,278 MTCO2e

Greenhouse Gas Equivalencies

What does the reduction of 119,278 MTCO2e represent ?
The organization's effort is equivalent to any one of the following:

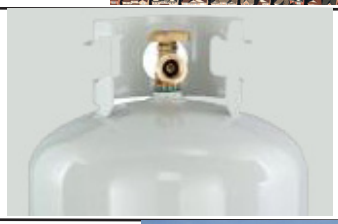
- Annual greenhouse gas emissions from 24,850 vehicles

- Carbon dioxide emissions from 13,371,973 gallons of gasoline

- Carbon dioxide emissions from 277,391 barrels of oil consumed

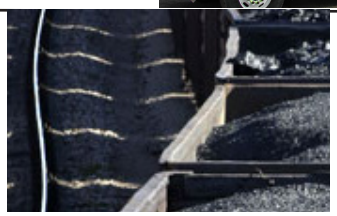
- Carbon dioxide emissions from the energy use of 5,958 homes for one year

- Carbon dioxide emissions from 4,969,917 propane tanks used for home barbeques



- Carbon dioxide emissions from gasoline carried by 1,573 tanker trucks

- Carbon dioxide emissions from burning 512 railcars' worth of coal (over 7 3/4 miles long)



Environmental Metrics	Aug 2011 MOU	Sep 2012 Update	Sept 2013 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
Energy Conservation/Energy Star					
Total Savings (MTCO2e)		***791.2***	***791.2***	***1,582.4***	***$372,512***
Miscellaneous Energy Conservation		1,100,000 kwh	1,100,000 kwh	1,350.4	$317,900
Web Based Energy Competition					
Motors and Transformers					
Lighting Project Fixtures (bulbs and ballast)					
High Temp Hot Water Pipe Replacement					
HVAC, Chiller & Electrical					
Bulb Replacement (CFLs)					
Bulb Replacement (LEDs)					
Gas Savings					
Fuel Oil Savings					
Steam Savings		540,000 lbs	540,000 lbs	232.0	$54,612
Alternative Energy					
Total Savings (MTCO2e)		***41926.7***	***47600.4***	***89,527.2***	***$253,104***
On-Site Solar (855 KW)		580,726 kwh	864,158 kwh	886.9	$208,786
On-Site Wind					
On-Site Geothermal					
On-Site Combined Heat and Power		245,477 kwh	245,477 kwh	301.4	$70,943
Purchase of Green Energy/Green Power		67,480,000 kwh	76,440,000 kwh	88,338.9	($26,625)
Water Conservation/WaterSense					
Total Savings (MTCO2e)		***228.4***	***228.5***	***456.9***	***$196,693***
Miscellaneous Water Conservation					
Low Flow/Hands Free Faucets (3,000)		1,500,000 gal	1,500,000 gal	6.1	$7,541
Low Flow Toilets (2,100)		8,400,000 gal	8,400,000 gal	34.0	$42,228
Low Flow Shower Heads (1,000)		2,300,000 gal + 300,000 kwh	2,300,000 gal + 300,000 kwh	377.6	$98,262
Low Flow Urinals (2,100)		9,660,000 gal	9,660,000 gal	39.1	$48,562
Waterless Urinals (1)			40,000 gal	0.1	$100
Solid Waste Recycling					
Total Savings (MTCO2e)		***5363.9***	***5572.9***	***10,936.8***	***$283,994***
Mixed Recyclables (includes Wastewise)		824.53 tons	824.53 tons	4,617.4	$65,962
Pallets Waste Avoided / Wood Recycled					
Steel Recycled Offsite during Deconstruction					
Concrete / Asphalt Recycled during Deconstruction		2,000 tons	2,000 tons	2,096.0	$160,000
Recycled C&D Waste (construction waste)					
Cardboard (construction/non-construction/sharp containers)			22 tons	68.4	$880
Mixed Metal (construction/non-construction)		480 tons	515.7 tins	3,952.9	$39,828
Paper, Mixed					
Plastic, Mixed (bottles,construction/non-construction,sharp containers)					
Can / Bottle Recycling					
Mixed Organics					
Food Donation (Waste diversion)					
Biosolids and Food Waste Recycling / Composting		172 tons	172 tons	68.8	$13,760

Environmental Metrics	Aug 2011 MOU	Sep 2012 Update	Sept 2013 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
Fluorescent Bulbs		13.2 tons	13.2 tons	3.3	$1,056
Ceiling Tiles Recycled		10 tons		4.6	$400
Carpet Recycled		10,300 sq yds / 25.75T	10,300 sq yds / 25.75T	122.1	$2,060
Waste Oil Recycled					
Magazines / Third Class Mail					
Newspapers					
Office Paper					
Phonebooks					
Textbooks					
Dimensional Lumber					
Fly Ash					
Aluminum Cans					
Glass					
HDPE / LDPE / PET					
Appliances					
Non-Ferrous Metals					
Fats, Oils, Grease			281.6 gal	3.4	$48
Instrument Recycling					
Ballast					
Green Procurement					
Total Savings (MTCO2e)				***0.0***	***$0***
Re-Use/Purchase of Materials with Recycled Content					
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 during Construction					
Use of Recycled Aluminum during Construction					
Use of Recycled Concrete / Asphalt during Construction					
Use of Coal Combustion Products					
Green Landscaping					
Total Savings (MTCO2e)		***869.6***	***883.5***	***1,753.1***	***$547,298***
Green Roofs		1,512 sq ft	7,912 sq ft	20.6	
Porous Pavement		11,352 sq ft	11,352 sq ft	0.7	
Grass					
Low / No Mow Area		123 acres	123 acres	1,660.5	$492,000
Green Space					
Re-use of Collected Stormwater					
On-Site Use of Compost / Mulch					
Moisture Sensing Sprinklers (covers 600,000 sq ft)		7,700,000 gal	7,700,000 gal	31.2	$38,709
Number / Acres of Trees		160 trees	160 trees	26.8	
Reflective Roof					
Synthetic Turf (104,000 sq ft)		3,300,000 gal	3,300,000 gal	13.4	$16,589
Native Plants					
Leaves Composted					

Environmental Metrics	Aug 2011 MOU	Sep 2012 Update	Sept 2013 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
Electronics/EPEAT					
Total Savings (MTCO2e)	***104.0***	***142.8***	***147.7***	***394.5***	***$9,863***
Recycling of Electronics	65 tons	89 tons	89.89 tons	390.2	$9,755
Re-Use/Donation of Used Computers					
Toner/Ink Recycling and Use of Recycled Ink					
Battery Recycling		502 lbs	2.44 tons	4.3	$108
Mass Transit					
Total Savings (MTCO2e)		***1,154.9***	***1,154.9***	***2,309.8***	***$2,874,270***
Miles Avoided		2,589,432 mi	2,589,432 mi	2,309.8	$2,874,270
Transportation					
Total Savings (MTCO2e)		***610.9***	***937.9***	***1,548.8***	***$43,500***
Hybrid Vehicles		4	5	17.4	$13,500
Gasoline / Ethanol Vehicles			52 (flex Fuel)	312.0	
Electric Vehicles		10	10	56.3	$30,000
Biodiesel Vehicles		26	25	127.5	
Commuter Gas Savings					
Clean Construction Vehicles					
LNG Vehicles			35	15.6	
Alternate Fuel Vehicles (Zipcar)		5	5	1,020.0	
Smartway Transporters					
Bike Racks		89	90		
LEED Projects					
Total Savings (MTCO2e)		***5384.4***	***5384.4***	***10,768.8***	***$2,535,154***
Silver - 30% (total 163,822 sq ft)		1,463,389 kwh	1,463,389 kwh	1,796.5	$422,920
Gold - 40% (total 613,646 sq ft)		7,308,769 kwh	7,308,769 kwh	8,972.3	$2,112,234
Platinum - 45%					
Misc. - Further Clarification					
Total Savings (MTCO2e)					
NOX (equipment only)					
NOX (includes vehicles)					
MTCO2e Savings					
Total (MTCO2e)	***104.0***	***56,472.8***	***62,701.5***	***119,278.3***	***$7,116,388***
Energy Conservation	0.0	791.2	791.2	1,582.4	$372,512
Alternative Energy	0.0	41,926.7	47,600.4	89,527.2	$253,104
Water Conservation	0.0	228.4	228.5	456.9	$196,693
Solid Waste	0.0	5,363.9	5,572.9	10,936.8	$283,994
Green Landscaping	0.0	869.6	883.5	1,753.1	$547,298
Electronics	104.0	142.8	147.7	394.5	$9,863
Mass Transit	0.0	1,154.9	1,154.9	2,309.8	$2,874,270
Transportation	0.0	610.9	937.9	1,548.8	$43,500
LEED Projects	0.0	5,384.4	5,384.4	10,768.8	$2,535,154

2013

SUNY - Buffalo Additional Green MOU Accomplishments

SUNY - Buffalo has embarked upon numerous endeavors to reduce its environmental impact, setting the standard for public research universities.

Top Honors
The U.S. Environmental Protection Agency has named SUNY - Buffalo one of its Top 10 College and University Green Power Partners.

The Solar Strand
SUNY - Buffalo is an innovator in solar energy on campus through The Solar Strand, a one-of-a-kind solar array designed by landscape architect Walter Hood that serves as a model for blending art, science, accessibility and technology at public research institutions. The SUNY - Buffalo Solar Strand is reducing the university's carbon footprint by using renewable energy from the sun to power the equivalent of hundreds of student apartments on campus.

Climate Commitment
SUNY – Buffalo is one of the first universities to sign on to the American College and University Presidents' Climate Commitment to achieve climate neutrality.

The State of Sustainability
SUNY - Buffalo is benchmarking its sustainability performance with the State of Sustainability Infographic. This will help communicate the university's goals and achievements to both the campus and the broader community.

Climate Action Plan
SUNY - Buffalo developed a world-class climate action plan with one-, three- and five-year goals for six committees that span the university's sustainability spectrum.

Green Building
SUNY – Buffalo has made a commitment to sustainable buildings. Greiner Hall debuted in August 2011 and represented the first LEED gold designed student residence hall in the State University of New York System and also was designed with the practice of Universal Design in mind.

Renewable Energy
SUNY - Buffalo is a leader in purchasing renewable energy. The university is the largest purchaser of wind energy in New York State - moving toward purchasing 30 percent of its electricity from wind power.

Green Information Technology
SUNY – Buffalo's IT department increased the efficiency of the computing power at its Center for Computational Research. The project decreased total energy consumption at the data center by 20%.

Recycling Made Easier
Recycling on campus is easier than ever with single-stream, "all-in-one" recycling at SUNY - Buffalo.

Food Composting
SUNY - Buffalo's decomposer system processes well over 600 pounds of food waste each day, producing 43,000 pounds of soil amendment each year.