



**St. John's University**  
**Environmental Assessment:**  
**MOU SemiAnnual Report**  
**December 19, 2012**



**Environmental Protection Agency**  
**Region 2**

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## Accomplishments

### Reductions of 24,013 MTCO<sub>2</sub>e



## Memorandum of Understanding

On December 5, 2008, St. John's 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 St. John's University has resulted in reducing energy, water and solid waste production across campus operations.

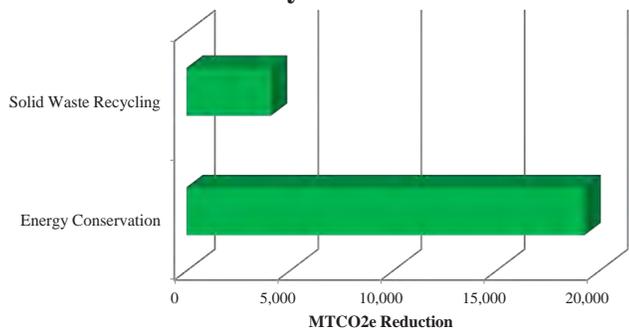
## Reduction in Environmental Footprint

In the last three years, St. John's University has provided seven 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 24,013 MTCO<sub>2</sub>e\* and saved more than \$3,000,000 in operating expenses.

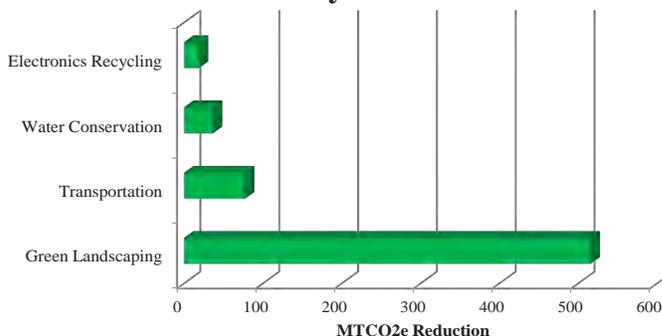
\*Metric Ton Carbon Dioxide Equivalent

Environmental Metrics	Total Sector (MTCO <sub>2</sub> e)
Energy Conservation	19,277.8
Water Conservation	36.7
Solid Waste	4,087.4
Green Landscaping	515.6
Electronics	18.8
Transportation	77.2
<b>Total (MTCO<sub>2</sub>e)</b>	<b>24,013.4</b>

### 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) which converts standard metrics for electricity, green energy, fuel use, chemical use, water use, and sustainable materials management into MTCO<sub>2</sub>e.

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 MTCO<sub>2</sub>e 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 24,013 MTCO<sub>2</sub>e

## Greenhouse Gas Equivalencies

What does the reduction of 24,013 MTCO<sub>2</sub>e represent ?  
The organization's effort is equivalent to any one of the following:

- Annual greenhouse gas emissions from 5,003 vehicles



- Carbon dioxide emissions from 2,692,085 gallons of gasoline



- Carbon dioxide emissions from 55,845 barrels of oil consumed



- Carbon dioxide emissions from the energy use of 1,236 homes for one year



- Carbon dioxide emissions from 1,000,558 propane tanks used for home barbeques



- Carbon dioxide emissions from gasoline carried by 317 tanker trucks



- Carbon dioxide emissions from burning 103 railcars' worth of coal (over 1 1/2 miles long)





Environmental Metrics	Dec 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.)
<b>Energy Conservation/Energy Star</b>									
<b>Total Savings (MTCO2e)</b>	<b>709.6</b>	<b>2,018.3</b>	<b>1,877.1</b>	<b>3,599.4</b>	<b>3,599.4</b>	<b>3,622.9</b>	<b>3,692.4</b>	<b>19,277.8</b>	<b>\$2,938,013</b>
Miscellaneous Energy Conservation	250,000 kwh	846,500 kwh	846,500 kwh	1,269,760 kwh	1,269,760 kwh	1,269,760 kwh	3,388,209 kwh	5,954.0	\$969,098
Miscellaneous Energy Conservation							291,040 therms	1,544.2	\$218,280
Web Based Energy Competition		290,160 kwh				37,071 kwh	(included above)	207.5	\$33,770
Motors and transformers									
Lighting Project Fixtures (Bulbs / Ballast)									
High Temp Hot Water Pipe Replacement									
HVAC, Chiller & Electrical	330,000 kwh	83,335 kwh	83,335 kwh	125,000 kwh	125,000 kwh	125,000 kwh	(included above)	552.7	\$89,956
Chiller Gas Savings		149,500 therms	149,500 therms	224,250 therms	224,250 therms	224,250 therms	(included above)	5,155.8	\$728,813
Bulb Replacement (CFLs, LEDs)									
Construction of St. John's Univ Center	439,655.5 kwh	439,655.5 kwh						557.5	\$90,745
Construction of St. John's Univ Center	11,901 therms	11,901 therms						126.3	\$17,852
Construction/Operation D'Angelo Center			505,692 kwh					320.6	\$52,187
Construction/Operation D'Angelo Center			12,063 therms					64.0	\$9,047
Steam Traps / Insulation		12,512 therms	12,512 therms	18,767.5 therms	18,767.5 therms	18,767.5 therms	(included above)	431.5	\$60,995
Water Projects		8,164 therms	8,164 therms	12,245.5 therms	12,245.5 therms	12,245.5 therms	(included above)	281.5	\$39,798
Boiler Controls				54,562 therms	54,562 therms	54,562 therms	(included above)	868.5	\$122,765
Lighting Upgrades				726,270.5 kwh	726,270.5 kwh	726,270.5 kwh	(included above)	1,381.5	\$224,853
Pipe Insulation				20,704.5 therms	20,704.5 therms	20,704.5 therms	(included above)	329.6	\$46,585
Fume Hoods / Ventilation				511,640.5 kwh	511,640.5 kwh	511,640.5 kwh	(included above)	973.2	\$158,404
Fume Hoods / Ventilation				33,273.5 therms	33,273.5 therms	33,273.5 therms	(included above)	529.6	\$74,865
<b>Alternative Energy</b>									
<b>Total Savings (MTCO2e)</b>								<b>0.0</b>	<b>\$0</b>
On-Site Solar									
On-Site Wind									
On-Site Geothermal									
On-Site Combined Heat and Power									
Purchase of Green Energy/Green Power									
<b>Water Conservation/WaterSense</b>									
<b>Total Savings (MTCO2e)</b>		<b>7.3</b>	<b>5.9</b>	<b>5.9</b>	<b>5.9</b>	<b>5.9</b>	<b>5.9</b>	<b>36.7</b>	<b>\$33,267</b>
Miscellaneous Water Conservation									
Low Flow Devices (3,000)		3,500,000 gal	2,805,025 gal	36.7	\$33,267				
Waterless Urinals									
<b>Solid Waste Recycling</b>									
<b>Total Savings (MTCO2e)</b>	<b>520.0</b>	<b>520.0</b>	<b>506.0</b>	<b>506.0</b>	<b>742.2</b>	<b>742.2</b>	<b>551.2</b>	<b>4,087.4</b>	<b>\$65,118</b>
Mixed Recyclables (includes WasteWise)			2.55 tons	2.55 tons	258 tons	258 tons		1,495.6	\$20,844
Pallets Waste Avoided/Wood Recycled									
Concrete recycled during Deconstruction									
Steel Recycled during Reconstruction									
Recycled C & D Waste (Construction Waste)									
Cardboard (construction/non-construction)	79.15 tons	79.15 tons	99.2 tons	99.2 tons			88.9 tons	1,381.4	\$17,820
Mixed Metal (construction/non-construction)							30 tons	16.2	\$1,200



Environmental Metrics	Dec 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.)
Paper, Mixed							36.5 tons	128.1	\$1,460
Plastic, Mixed (bottles, construction/non-construction, sharp containers)							3.85 tons	5.8	\$154
Blue Wrap									
Can / Bottle Recycling									
Mixed Organics									
Food Donation (Waste diversion)							1500 lbs	0.2	\$30
Biosolids & Food Waste Recycling / Composting	1.8 tons	1.8 tons	3.65 tons	3.65 tons	8.5 tons	8.5 tons	17 tons	9.0	\$1,724
Fluorescent Bulbs									
Ceiling Tiles Recycled									
Carpet Recycled									
Waste Oil Recycled									
Magazines/ThirdClass Mail	6.7 tons	6.7 tons	6.1 tons	6.1 tons				78.6	\$1,024
Newspaper	1.35 tons	1.35 tons	3.3 tons	3.3 tons				26.0	\$372
Office Paper	18.7 tons	18.7 tons	33.9 tons	33.9 tons				299.8	\$4,208
Textbooks	4.4 tons	4.4 tons	1.75 tons	1.75 tons				38.3	\$492
Phonebooks									
Dimensional Lumber	24.4 tons	24.4 tons	11 tons	11 tons			26 tons	238.1	\$3,872
Fly Ash	105.05 tons	105.05 tons	9.05 tons	9.05 tons				198.5	\$9,128
Aluminum Cans	1.7 tons	1.7 tons	0.55 tons	0.55 tons			3.85 tons	113.7	\$334
Glass	.85 tons	.85 tons	1.2 tons	1.2 tons			20 tons	6.8	\$964
HDPE	5.9 tons	5.9 tons	12.75 tons	12.75 tons				51.5	\$1,492
LDPE									
PET									
Appliances									
Non-Ferrous Metals									
Fats, Oils, Grease									
<b>Green Procurement</b>									
<b>Total Savings (MTCO2e)</b>								<b>0.0</b>	<b>\$0</b>
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 / Aluminum during Construction									
Use of Recycled Concrete / Asphalt during Construction									
Use of Coal Combustion Products									
<b>Green Landscaping</b>									
<b>Total Savings (MTCO2e)</b>	<b>29.7</b>	<b>74.2</b>	<b>75.1</b>	<b>75.1</b>	<b>75.1</b>	<b>75.1</b>	<b>81.9</b>	<b>515.6</b>	<b>\$1,360</b>
Green Roofs									
Reflective Roof									
Porous Pavement									
Low/no mow area									



Environmental Metrics	Dec 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.)
Grass / Green Space	700 sq ft	700 sq ft	3,000 sq ft	3,000 sq ft	3,000 sq ft	3,000 sq ft	3,000 sq ft	6.6	
Re-use of Collected Stormwater									
On-Site Re-use of Compost / Mulch							19 tons	3.8	\$760
Moisture Sensing Sprinklers									
Number / Acres of Trees	700 trees	1762 trees	1762 trees	1762 trees	1762 trees	1762 trees	1762 trees	502.2	
Synthetic Turf									
Native Plants									
Leaves Composted							15 tons	3.0	\$600
<b>Electronics/EPEAT</b>									
<b>Total Savings (MTCO2e)</b>			<b>9.4</b>	<b>9.4</b>				<b>18.8</b>	<b>\$332</b>
Recycling of Electronics									
Re-Use/Donation of Used Computers			4.15 tons	4.15 tons				18.8	\$332
Toner/Ink Recycling Use of Recycled Ink									
Battery Recycling									
<b>Mass Transit</b>									
<b>Total Savings (MTCO2e)</b>									
Miles Avoided									
<b>Transportation</b>									
<b>Total Savings (MTCO2e)</b>	<b>9.7</b>	<b>77.2</b>	<b>\$32,640</b>						
Hybrid Vehicles	10 cars	77.2	\$32,640						
Electric Vehicles									
Biodiesel Vehicles									
Clean Construction Vehicles									
LNG Vehicles									
Alternate Fuel Vehicles (Zipcar)									
Smartway Transporters									
Bike Racks									
<b>LEED Projects</b>									
<b>Total Savings (MTCO2e)</b>									
Silver - 10%									
Gold - 17%									
Platinum - 20%									
<b>MTCO2e Savings</b>									
<b>Total (MTCO2e)</b>	<b>1,268.9</b>	<b>2,629.5</b>	<b>2,483.1</b>	<b>4,205.4</b>	<b>4,432.2</b>	<b>4,455.7</b>	<b>4,341.1</b>	<b>24,013.4</b>	<b>\$3,070,730</b>
Energy Conservation	709.6	2,018.3	1,877.1	3,599.4	3,599.4	3,622.9	3,692.4	19,277.8	\$2,938,013
Water Conservation	0.0	7.3	5.9	5.9	5.9	5.9	5.9	36.7	\$33,267
Solid Waste Recycling	520.0	520.0	506.0	506.0	742.2	742.2	551.2	4,087.4	\$65,118
Green Landscaping	29.7	74.2	75.1	75.1	75.1	75.1	81.9	515.6	\$1,360
Electronics / EPEAT	0.0	0.0	9.4	9.4	0.0	0.0	0.0	18.8	\$332
Transportation	9.7	9.7	9.7	9.7	9.7	9.7	9.7	77.2	\$32,640



2012

## St. John's University Additional Green MOU Accomplishments and Cost Savings

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On October 24, 2012, Campus Sustainability Day, St. John's Office of Sustainability boosted student awareness by hosting a movie night on the Great Lawn and showing St. John's new "Red Storm Green Movement" 7-minute video. As the video explains, student workers maintained the St. John's Student Community Garden and, over the entire growing season, the garden produced hundreds of pounds of fresh vegetables and herbs that were harvested weekly and donated to St. John's Bread & Life to help feed those less fortunate.

Throughout growing season, Facilities Services grounds staff use mulching mowers to cut the lawns, leaving most of the campus grass clippings on the lawns. Grass clippings from the ball fields are collected and added to the on-site compost system. About 2-tons of fall leaves were collected and used for on-site composting. There were 2 large trees down and 161 trees with limb damage from Hurricane Sandy. As a result, approximately 15 tons of wood chips have been stockpiled for on-site composting.

As an endorser of EPA's Food Recovery Challenge, St. John's hosted an EPA Food Recovery Challenge event on Campus Sustainability Day. Approximately 60 people from local colleges, municipalities and the St. John's community attended the event.

### Combined Heat and Power (CHP) Partnership

Updated status of engineering the cogeneration project is as follows:

1. Bid proposals for the major equipment (engine / turbine, boiler, chiller, gas compressor etc. has been evaluated.
2. Project managers have visited 10 similar co-gen facilities in the tri-state area.
3. Hourly analysis profiling of campus electrical and thermal loads have been evaluated for the three most promising engines / turbines.
4. Underground conduits for electrical building service loads have been installed and RFPs for load buildings 5KV electrical cabling and switchgear is in process.

### Initiatives Planned for the Next Six Months

- 1) Participate in EPA's Food Recovery Challenge.
- 2) Conduct a Student Move-out recycling campaign in May.
- 3) Participate in The Arbor Foundation's Tree Campus USA program
- 4) Consultant has been hired January through May 2013 to help develop higher diversion rates by increased recycling and composting.
- 5) Participation in RecycleMania 2013 (nation-wide recycling tournament) and Campus Conservation Nationals 2013 (nation-wide energy reduction competition in resident halls)
- 6) Installation is hopeful for new water fill stations in the lobbies of student residence halls to reduce bottled water on campus.
- 7) Screening and spreading compost on the Queens Campus grounds.
- 8) Engineering and contract for co-generation facility looks promising.
- 9) Continue to retro-commission and repair HVAC systems.