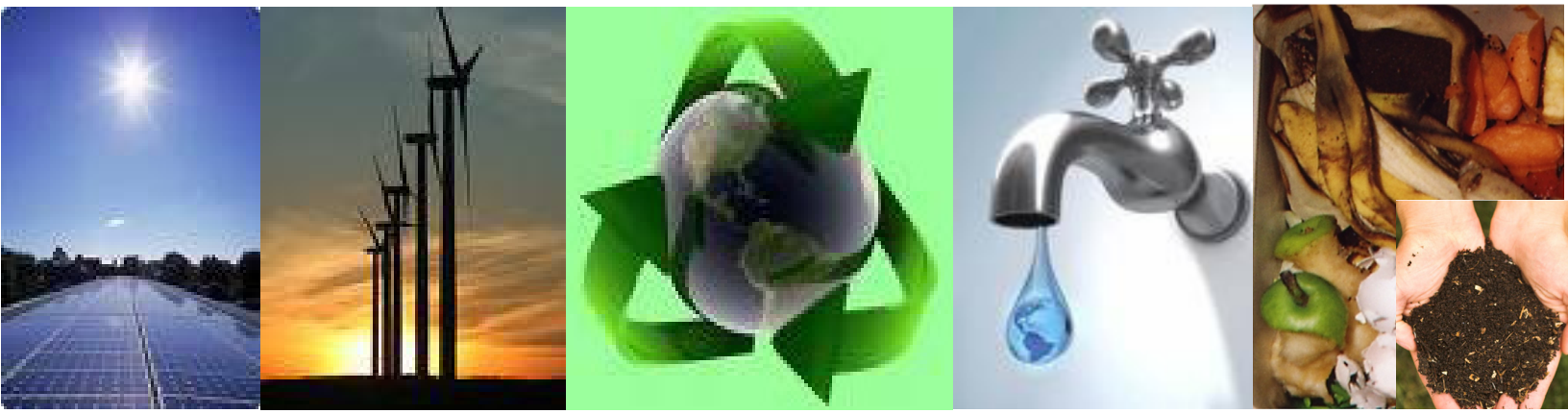
# St. John's University
# Environmental Assessment:
# MOU SemiAnnual Report
# January 10, 2012



## Environmental Protection Agency
## Region 2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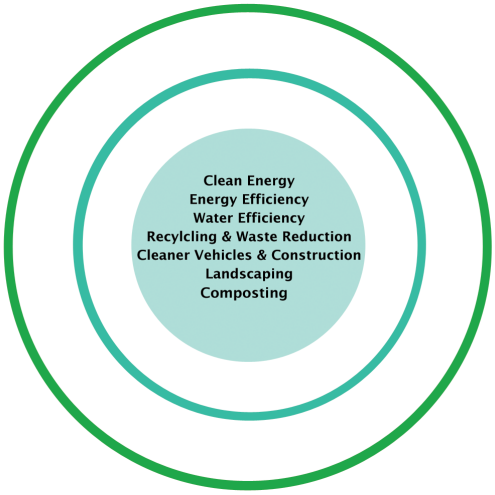
## Accomplishments

**Reductions of 13,498 MTCO2e**




## 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.

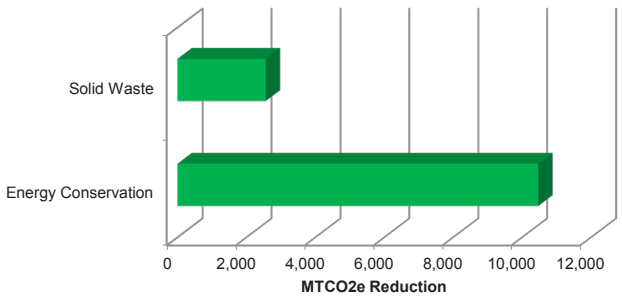
## Reduction in Environmental Footprint

In the last three years, St. John's University has provided 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 13,498 MTCO2e* and saved almost $1,700,000 in operating expenses.

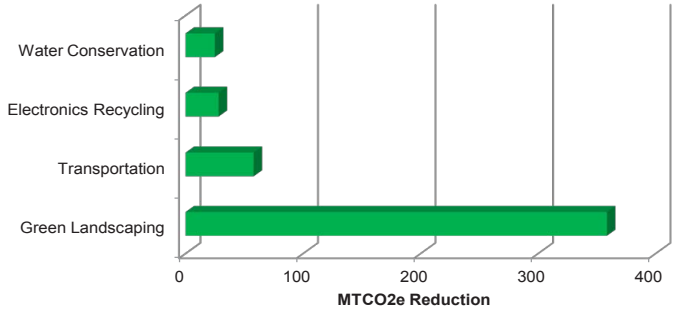
*Metric Ton Carbon Dioxide Equivalent

| Environmental Metrics | Total Sector (MTCO2e) |
|---|---|
| Energy Conservation | 10,469.9 |
| Water Conservation | 24.9 |
| Solid Waste | 2,558.6 |
| Green Landscaping | 358.6 |
| Electronics | 28.1 |
| Transportation | 57.9 |
| Total (MTCO2e) | 13,498.0 |

***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 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 13,498 MTCO2e**

## Greenhouse Gas Equivalencies

What does the reduction of 13,498 MTCO2e represent ?
The organization's effort is equivalent to any one of the following:

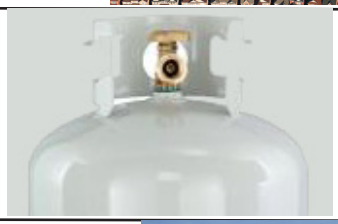
- Annual greenhouse gas emissions from 2,647 vehicles

- Carbon dioxide emissions from 1,513,229 gallons of gasoline

- Carbon dioxide emissions from 31,391 barrels of oil consumed

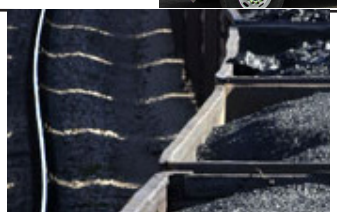
- Carbon dioxide emissions from the energy use of 1,169 homes for one year

- Carbon dioxide emissions from 562,417 propane tanks used for home barbeques



- Carbon dioxide emissions from gasoline carried by 178 tanker trucks


- Carbon dioxide emissions from burning 73.5 railcars' worth of coal (approx. 1 1/8 mile long)



| Environmental Metrics | Jun 2009 Update | Dec 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)*** | ***158.5*** | ***709.6*** | ***2,018.3*** | ***1,877.1*** | ***1,492.5*** | ***4,213.9*** | ***10,469.9*** | ***$1,598,111*** |
| Miscellaneous Energy Conservation | 250,000 kwh | 250,000 kwh | 846,500 kwh | 846,500 kwh | 846,500 kwh | 846,500 kwh | 2,463.9 | $401,035 |
| Web Based Energy Competition | | | 290,160 kwh | | | | 184.0 | $29,945 |
| Motors and transformers | | | | | | | | |
| High Temp Hot Water Pipe Replacement | | | | | | | | |
| HVAC, Chiller & Electrical | | 330,000 kwh | 83,335 kwh | 83,335 kwh | 83,335 kwh | 83,335 kwh | 420.6 | $68,457 |
| Chiller Gas Savings | | | 149,500 therms | 149,500 therms | 149,500 therms | 149,500 therms | 3,172.8 | $448,500 |
| Bulb Replacement (CFLs, LEDs) | | | | | | | | |
| Construction of St. John's University Center | | 439,655.5 kwh | 439,655.5 kwh | | | | 557.5 | $90,745 |
| Construction of St. John's University Center | | 11,901 therms | 11,901 therms | | | | 126.3 | $17,852 |
| Construction/Operation of D'Angelo Center | | | | 505,692 kwh | | | 320.6 | $52,187 |
| Construction/Operation of D'Angelo Center | | | | 12,063 therms | | | 64.0 | $9,047 |
| Steam Traps / Insulation | | | 12,512 therms | 12,512 therms | 12,512 therms | 12,512 therms | 265.5 | $37,536 |
| Water Projects | | | 8,164 therms | 8,164 therms | 8,164 therms | 8,164 therms | 173.3 | $24,492 |
| Boiler Controls | | | | | | 109,124 therms | 579.0 | $81,843 |
| Lighting Upgrades | | | | | | 1,452,541 kwh | 921.0 | $149,902 |
| Pipe Insulation | | | | | | 41,409 therms | 219.7 | $31,057 |
| Fume Hoods / Ventilation | | | | | | 1,023,281 kwh | 648.8 | $105,603 |
| Fume Hoods / Ventilation | | | | | | 66,547 therms | 353.1 | $49,910 |
| | | | | | | | | |
| **Alternative Energy** | | | | | | | | |
| ***Total Savings (MTCO2e)*** | | | | | | | ***0.0*** | ***$0*** |
| On-Site Solar / Wind / Geothermal | | | | | | | | |
| On-Site Combined Heat and Power | | | | | | | | |
| Purchase of Green Energy/Green Power | | | | | | | | |
| | | | | | | | | |
| **Water Conservation/WaterSense** | | | | | | | | |
| ***Total Savings (MTCO2e)*** | | | ***7.3*** | ***5.9*** | ***5.9*** | ***5.9*** | ***24.9*** | ***$22,618*** |
| Miscellaneous Water Conservation | | | | | | | | |
| Low Flow Devices (3,000) | | | 3,500,000 gal | 2,805,025 gal | 2,805,025 gal | 2,805,025 gal | 24.9 | $22,618 |
| Waterless Urinals | | | | | | | | |
| | | | | | | | | |
| **Solid Waste/Industrial Materials Reuse/Green Products** | | | | | | | | |
| ***Total Savings (MTCO2e)*** | | ***520.0*** | ***520.0*** | ***483.1*** | ***483.1*** | ***552.3*** | ***2,558.6*** | ***$49,402*** |
| Mixed Recyclables (includes WasteWise) | | | | 2.55 tons | 2.55 tons | 2.55 tons | 22.0 | $306 |
| Re-Use/Purchase of Materials with Recycled Content | | | | | | | | |
| 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) | | 79.15 tons | 79.15 tons | 99.2 tons | 99.2 tons | 99.2 tons | 1,344.8 | $24,548 |
| Mixed Metal (construction/non-construction) | | | | | | | | |
| Paper, Mixed / Phonebooks | | | | | | | | |
| Plastic, Mixed (bottles, construction/non-construction) | | | | | | | | |
| Can / Bottle Recycling | | | | | | | | |
| Mixed Organics | | | | | | | | |
| Food Donation (Waste diversion) | | | | | | | | |

| Environmental Metrics | Jun 2009 Update | Dec 2009 Update | Jun 2010 Update | Dec 2010 Update | Jun 2011 Update | Dec 2011 Update | Total Conversion (MTCO2e) | Cost Savings (Est.) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| Biosolids & Food Waste Recycling / Composting | | 1.8 tons | 1.8 tons | 3.65 tons | 3.65 tons | 3.65 tons | 2.9 | $362 |
| Fluorescent Bulbs | | | | | | | | |
| Waste Oil Recycled / Fats, Oils, Grease | | | | | | | | |
| Magazines/ThirdClass Mail | | 6.7 tons | 6.7 tons | 6.1 tons | 6.1 tons | 6.1 tons | 97.3 | $1,268 |
| Newspaper | | 1.35 tons | 1.35 tons | 3.3 tons | 3.3 tons | 3.3 tons | 35.3 | $504 |
| Office Paper | | 18.7 tons | 18.7 tons | 33.9 tons | 33.9 tons | 33.9 tons | 396.4 | $5,564 |
| Textbooks | | 4.4 tons | 4.4 tons | 1.75 tons | 1.75 tons | 24 tons | 112.9 | $1,452 |
| Dimensional Lumber | | 24.4 tons | 24.4 tons | 11 tons | 11 tons | 11 tons | 201.2 | $3,272 |
| Fly Ash | | 105.05 tons | 105.05 tons | 9.05 tons | 9.05 tons | 9.05 tons | 206.4 | $9,490 |
| Aluminum Cans | | 1.7 tons | 1.7 tons | 0.55 tons | 0.55 tons | 0.55 tons | 68.7 | $202 |
| Glass | | .85 tons | .85 tons | 1.2 tons | 1.2 tons | 1.2 tons | 1.5 | $212 |
| HDPE | | 5.9 tons | 5.9 tons | 12.75 tons | 12.75 tons | 12.75 tons | 69.1 | $2,002 |
| LDPE / PET | | | | | | | | |
| Appliances / Non-Ferrous Metals | | | | | | | | |
| | | | | | | | | |
| **Green Landscaping** | | | | | | | | |
| ***Total Savings (MTCO2e)*** | ***29.4*** | ***29.7*** | ***74.2*** | ***75.1*** | ***75.1*** | ***75.1*** | ***358.6*** | ***$0*** |
| Green Roofs / Reflective Roof | | | | | | | | |
| Porous Pavement | | | | | | | | |
| Low/no mow area | | | | | | | | |
| Grass / Green Space | | 700 sq ft | 700 sq ft | 3,000 sq ft | 3,000 sq ft | 3,000 sq ft | 4.2 | |
| Re-use of Collected Stormwater | | | | | | | | |
| On-Site Re-use of Compost / Mulch | | | | | | | | |
| Moisture Sensing Sprinklers | | | | | | | | |
| Number / Acres of Trees | 700 trees | 700 trees | 1762 trees | 1762 trees | 1762 trees | 1762 trees | 354.4 | |
| Synthetic Turf / Native Plants | | | | | | | | |
| Leaves Composted | | | | | | | | |
| | | | | | | | | |
| **Electronics/EPEAT** | | | | | | | | |
| ***Total Savings (MTCO2e)*** | | | | ***9.4*** | ***9.4*** | ***9.4*** | ***28.1*** | ***$498*** |
| Recycling of Electronics / Battery Recycling | | | | | | | | |
| Re-Use/Donation of Used Computers | | | | 4.15 tons | 4.15 tons | 4.15 tons | 28.1 | $498 |
| Toner/Ink Recycling and Use of Recycled Ink | | | | | | | | |
| Purchase of EPEAT Products | | | | | | | | |
| | | | | | | | | |
| **Transportation** | | | | | | | | |
| ***Total Savings (MTCO2e)*** | ***9.7*** | ***9.7*** | ***9.7*** | ***9.7*** | ***9.7*** | ***9.7*** | ***57.9*** | ***$24,480*** |
| Hybrid Vehicles | 10 cars (1/2 yr) | 10 cars (1/2 yr) | 10 cars (1/2 yr) | 10 cars (1/2 yr) | 10 cars (1/2 yr) | 10 cars (1/2 yr) | 57.9 | $24,480 |
| Electric / Biodiesel Vehicles | | | | | | | | |
| LNG Vehicles | | | | | | | | |
| Alternate Fuel Vehicles (Zipcar) | | | | | | | | |
| Smartway Transporters | | | | | | | | |
| Bike Racks | | | | | | | | |
| | | | | | | | | |
| **MTCO2e Savings** | | | | | | | | |
| ***Total (MTCO2e)*** | ***197.5*** | ***1,268.9*** | ***2,629.5*** | ***2,460.2*** | ***2,075.6*** | ***4,866.3*** | ***13,498.0*** | ***$1,695,109*** |
| Energy Conservation | 158.5 | 709.6 | 2,018.3 | 1,877.1 | 1,492.5 | 4,213.9 | 10,469.9 | $1,598,111 |
| Water Conservation | 0.0 | 0.0 | 7.3 | 5.9 | 5.9 | 5.9 | 24.9 | $22,618 |
| Solid Waste | 0.0 | 520.0 | 520.0 | 483.1 | 483.1 | 552.3 | 2,558.6 | $49,402 |
| Green Landscaping | 29.4 | 29.7 | 74.2 | 75.1 | 75.1 | 75.1 | 358.6 | $0 |
| Electronics / EPEAT | 0.0 | 0.0 | 0.0 | 9.4 | 9.4 | 9.4 | 28.1 | $498 |
| Transportation | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 57.9 | $24,480 |

2011

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

**EnergyStar Building & Plant Partnership**
Within the past six months, St. John's has installed basic metering in its steam plants and is collecting data in the campus-wide building automation system. Data from the meters will be used to document and improve efficiency, i.e. identify problems and increase steam condensate return to boiler plants and, hourly analysis to support feasibility study for co-generation system waste heat utilization.
In August 2011, a detailed room-by-room lighting audit and design specifications were developed for all buildings on the Staten Island Campus and the ten story building Manhattan Campus.

**WasteWise Partnership and Solid Waste Recycling**
Within the past six months the following work has been implemented in an effort to reduce waste and increase recycling:
1. New hire of a Sustainability Office Assistant to organize student involvement and make inspections and make improvements on the campus-wide recycling program.
2. Floor-to-floor recycling campaign and competition conducted for four weeks of November in Donovan Hall. Recycling volumes were counted and displayed on charts for each floor each day.
3. Site- specific recycling posters and signage developed and installed with plexiglass protection in resident hall common areas.
4. Progress to a point of 80% complete in building the "o2" compost system in GreenScapes Partnership.
5. Sign up to participate in EPA's "Food Waste Challenge" and, Recyclemania 2012.

**Combined Heat and Power (CHP) Partnership**
The status of the feasibility of cogeneration at St. John's is as follows:
1. Technical study was submitted to NYSERDA in May 2011. NYSERDA reviewed and the technical study was revised and re-submitted to NYSERDA in November 2011. Consultants involved in the technical study included: Air emissions; Noise; Geotechnical; Engineering and equipment selection;
2. St. John's is presently investigating the detail of cogeneration performance risk with the local utility tariffs, outsource maintenance & operations plan, and construction cost estimating.

**WaterSense Products**
Within the past six months, St. John's has increased its utility tracking system monthly reporting capability to include trending water consumption by meter utilizing the newly installed NYC DEP web-based automatic meter reading system.

**Initiatives Planned for the Next Six Months**
1) 'o2' compost system construction will be completed by end of January 2012. Plan is to collect all pre-consumer food waste from the four major kitchens on Queens Campus.
2) Relocate St. John's small in-vessel food waste compost machine and begin pre-consumer food waste recycling on the Staten Island campus.
3) Design of a 750 ton high efficiency chilled water generation plant for Bent Hall / Carnesecca Hall and install underground chilled water piping from Law School to Bent Hall.
4) Consolidate eight utility company electrical services into one main campus substation by installing underground high voltage feeders and switchgear.
5) Participate in EPA's Food Waste Challenge and host a food waste recycling workshop with EPA and the manufacturer of the o2 compost system on St. John's Queens Campus.
6) Compete in the 2012 Campus Conservation National (energy reduction competition in residence halls).
7) Add an additional 21 building's electrical consumption to the current 9 residence buildings presently on the Dashboard system – real-time monitoring and reporting capability of energy consumption. And, determine additional KW to bid into the market of NYS Demand Response Program.
8) Submit an application to NYC DEP in their Green Infrastructure Grant Project program. This competitive grant program is to fund private property owners to build projects that will reduce combined sewer overflows and improve water in NY Harbor. Application deadline for this program is February 15, 2012.
9) Continue to refine the energy measurement and verification system to track energy savings from capital projects and improvements in building operations.