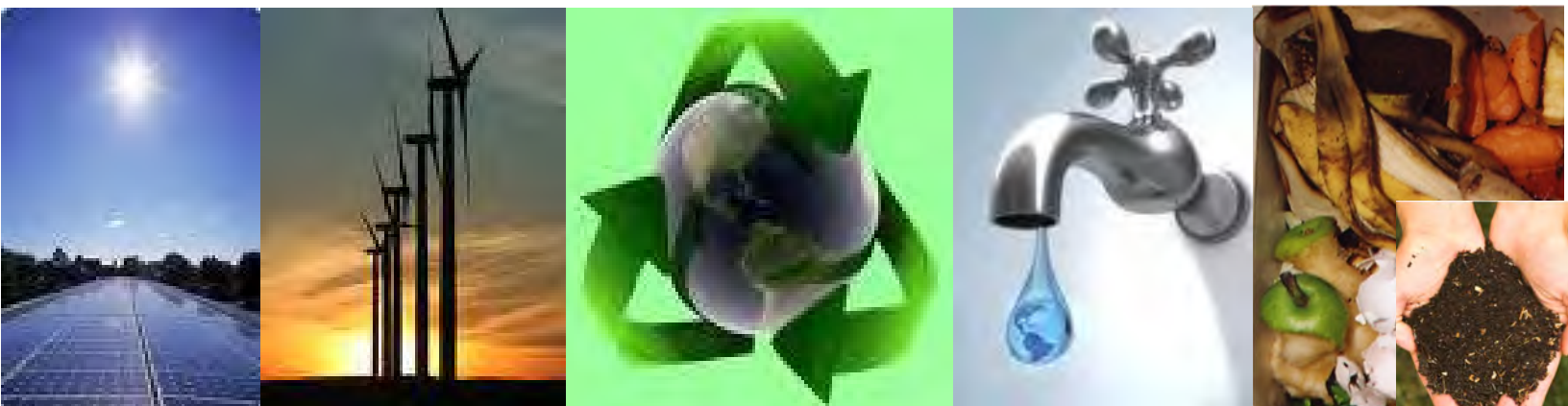




Hackensack University Medical Center
Environmental Assessment:
Green MOU SemiAnnual Report
March 6, 2013



Environmental Protection Agency
Region 2

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

Jose Pillich
Michael Wanser
Research Analysts

Accomplishments

Reductions of 13,908 MTCO₂e



Memorandum of Understanding

On February 23, 2012, Hackensack University Medical Center 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 HackensackUMC has resulted in reducing energy, water and solid waste production across their entire operations.

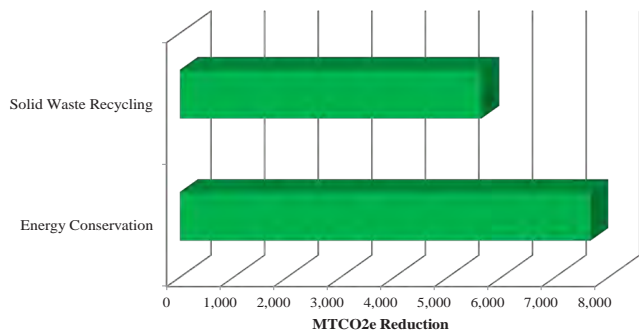
Reduction in Environmental Footprint

This is the second update HackensackUMC 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 organization, HackensackUMC has managed to reduce its carbon footprint by 13,908 MTCO₂e* and saved an estimated \$1.3 million in operating expenses.

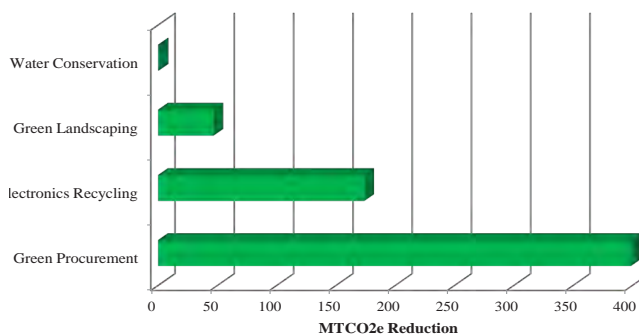
*Metric Ton Carbon Dioxide Equivalent

Environmental Metrics	Total Sector (MTCO ₂ e)
Energy Conservation	7,661.3
Water Conservation	0.5
Solid Waste Recycling	5,627.0
Green Procurement	398.8
Green Landscaping	46.8
Electronics Recycling	173.9
Total (MTCO ₂ e)	13,908.3

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) 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 13,908 MTCO₂e

Greenhouse Gas Equivalencies

What does the reduction of 13,908 MTCO₂e represent ?
The organization's effort is equivalent to any one of the following:

- Annual greenhouse gas emissions from 2,898 vehicles



- Carbon dioxide emissions from 1,559,226 gallons of gasoline



- Carbon dioxide emissions from 32,345 barrels of oil consumed



- Carbon dioxide emissions from the energy use of 716 homes for one year



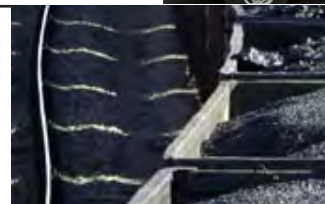
- Carbon dioxide emissions from 579,513 propane tanks used for home barbeques



- Carbon dioxide emissions from gasoline carried by 183 tanker trucks



- Carbon dioxide emissions from burning 59.8 railcars' worth of coal (over 9/10 mile long)





Environmental Metrics	Feb 2012 MOU	Aug 2012 Update	Feb 2013 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
Energy Conservation/Energy Star					
Total Savings (MTCO2e)		4098.2	3563.2	7,661.3	\$1,190,031
Miscellaneous Energy Conservation					
Web Based Energy Competition					
Motors and Transformers					
Lighting Project Fixtures (bulbs and ballast)					
High Temp Hot Water Pipe Replacement		56,490 therms	56,490 therms	601.1	\$73,804
HVAC, Chiller & Electrical		3,900,698 kwh	3,186,763 kwh	5,261.4	\$888,059
Bulb Replacement (CFLs)					
Bulb Replacement (LEDs)		68 bulbs	116 bulbs	4.4	\$749
Gas Savings		154,054 therms	154,054 therms	1,639.4	\$201,272
Fuel Oil Savings					
Steam Savings		310,000 lbs	286,326 lbs	154.9	\$26,147
Alternative Energy					
Total Savings (MTCO2e)				0.0	\$0
On-Site Solar					
On-Site Wind					
On-Site Geothermal					
On-Site Combined Heat and Power					
Purchase of Green Energy/Green Power					
Water Conservation/WaterSense					
Total Savings (MTCO2e)		0.3	0.2	0.5	\$404
Miscellaneous Water Conservation					
Low Flow/Hands Free Faucets (4)		2,000 gal	1,000 gal	0.0	\$6
Low Flow Toilets (6 flushometers)		24,000 gal	12,000 gal	0.1	\$73
Low Flow Shower Heads					
Low Flow Urinals					
Waterless Urinals (2)		80,000 gal	80,000 gal	0.4	\$325
Solid Waste Recycling					
Total Savings (MTCO2e)	1129.1	1899.8	2598.1	5,627.0	\$94,904
Mixed Recyclables (includes Wastewise)	383.7 tons	602.9 tons	451.09 tons	4,126.2	\$57,508
Pallets Waste Avoided / Wood Recycled			41.25 tons	101.5	\$1,650
Steel Recycled Offsite during Deconstruction			96.75 tons	174.2	\$3,870
Concrete / Asphalt Recycled during Deconstruction			662,400 lbs	265.0	\$13,248
Recycled C&D Waste (construction waste)			30,240 lbs	3.8	\$605
Cardboard (construction/non-construction/sharp containers)			1,899 lbs	2.9	\$38
Mixed Metal (construction/non-construction)		32,424 lbs	255,353 lbs	777.0	\$5,755
Paper, Mixed					
Plastic, Mixed (bottles,construction/non-construction,sharp containers)		23,007 sharps	43,960 lbs	76.1	\$2,030
Can / Bottle Recycling					
Blue Wrap Waste Reduction		9,300 lbs		7.0	\$186
Mixed Organics					
Food Donation (Waste diversion)		4,000 lbs	12,460 lbs	1.6	\$329
Biosolids and Food Waste Recycling / Composting	224,524 lbs	112,262 lbs	113,622 lbs	45.0	\$9,008



Environmental Metrics	Feb 2012 MOU	Aug 2012 Update	Feb 2013 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
Fluorescent Bulbs	9,000 (approx 5740 lbs)	4,500 (approx 2870 lbs)	4,500 (approx 2870 lbs)	0.7	\$230
Ceiling Tiles Recycled					
Carpet Recycled					
Waste Oil Recycled	2970 lbs	1485 lbs	4630 lbs	13.6	\$182
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					
Water Coolers (Plastic bottles saved)	30,000	15,000	15,000	1.3	\$34
Medical Device Reprocessing		6,455 lbs	5,098 lbs	31.2	\$231
Green Procurement					
Total Savings (MTCO2e)			398.8	398.8	\$5,056
Re-Use/Purchase of Materials with Recycled Content					
Purchase / Use of Compost Socks					
Purchase of EPEAT Products			678 monitors	4.6	\$676
Use of Recycled Steel during Construction			219 tons	394.2	\$4,380
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)		23.4	23.4	46.8	\$0
Green Roofs		7,000 sq ft	7,000 sq ft	15.3	
Porous Pavement			120 sq ft	0.0	
Grass					
Low / No Mow Area					
Green Space					
Re-use of Collected Stormwater					
On-Site Use of Compost / Mulch					
Moisture Sensing Sprinklers					
Number / Acres of Trees					
Reflective Roof		21,000 sq ft	21,000 sq ft	31.5	
Synthetic Turf					



Environmental Metrics	Feb 2012 MOU	Aug 2012 Update	Feb 2013 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
Native Plants					
Leaves Composted					
Electronics/EPEAT					
Total Savings (MTCO2e)	45.7	53.9	74.4	173.9	\$1,597
Recycling of Electronics		35,472 lbs	27,297 lbs	50.2	\$1,255
Re-Use/Donation of Used Computers					
Toner/Ink Recycling and Use of Recycled Ink	1120 cartridges	560 cartridges	1246 cartridges	119.4	\$234
Battery Recycling		3,279 lbs	2,115 lbs	4.3	\$108
Mass Transit					
Total Savings (MTCO2e)					
Miles Avoided					
Transportation					
Total Savings (MTCO2e)				0.0	\$0
Hybrid Vehicles					
Electric Vehicles					
Biodiesel Vehicles					
Clean Construction Vehicles					
LNG Vehicles					
Alternate Fuel Vehicles (Zipcar)					
Smartway Transporters					
Bike Racks		3	3		
LEED Projects					
Total Savings (MTCO2e)					
Silver - 10%					
Gold - 17%					
Platinum - 20%					
Misc. - Further Clarification					
Total Savings (MTCO2e)					
NOX (equipment only)					
NOX (includes vehicles)					
MTCO2e Savings					
Total (MTCO2e)	1,174.8	6,075.4	6,658.1	13,908.3	\$1,291,992
Energy Conservation	0.0	4,098.2	3,563.2	7,661.3	\$1,190,031
Water Conservation	0.0	0.3	0.2	0.5	\$404
Solid Waste	1,129.1	1,899.8	2,598.1	5,627.0	\$94,904
Green Procurement	0.0	0.0	398.8	398.8	\$5,056
Green Landscaping	0.0	23.4	23.4	46.8	\$0
Electronics	45.7	53.9	74.4	173.9	\$1,597
Transportation	0.0	0.0	0.0	0.0	\$0

HackensackUMC Additional Green MOU Accomplishments

HackensackUMC Waste Recycling and Re-use Operations

HackensackUMC has increased the recycling of cans, bottles, plastics, blue wrap, corrugated and mixed office paper from 22% in June to 27%. HUMC installed its first cafeteria recycling station, which has two food waste bins, two recycling bins and one garbage bin. Construction on the next recycling station is underway, and will help achieve HUMC's recycling goal of 35%.

Regulated Medical Waste Reduction

On December 11, HUMC's Center for Ambulatory Surgery implemented the recycling of medical waste. On February 1st, the Cath Lab introduced recycling in many of their facilities. This resulted in the reduction of medical waste by 85%.

Electronics Waste (E-waste) Recycling

In January of 2013, HackensackUMC partnered with Terracycle to collect HUMC's broken and outdated keyboards and mouses.

Energy Conservation and the EnergyStar Program

HackensackUMC has been a partner with Utilivisor since 2010 to help provide us with real-time oversight of all of the medical centers energy systems. HackensackUMC took 11 boilers offline, resulting in reduced PTE of NOx at 63 tons/year to PTE at 43 tons/year.

Incorporating Green Technologies in new and renovated buildings, and Leadership in Energy and Environmental Design

HackensackUMC has utilized 219 tons of recycled steel in its Emergency Department Expansion.

Water Conservation

Plant Operations installed four sensor faucets and two more waterless urinals. The pilot has been successful, and HUMC is looking to install more equipment. The Sustainability Team is also developing a water conservation program that will implement infrastructure upgrades and promote behavior change.

Reprocessing Medical Equipment

HackensackUMC purchases reprocessed medical equipment for the OR, such as burrs, bits, blades, endoscopic trocars, external fixation, suture passers, tourniquet cuffs and ultrasonic scalpels.

Mercury, DEHP, PVC Reduction

Recently, HackensackUMC introduced a new product value add facilitator that will oversee all new products entering the Medical Center. Going forward, products will be evaluated based on whether or not they contain DEHP, PVC, Mercury, or Latex.

HUMC is currently re-auditing its facility to identify and eliminate any remaining mercury devices in the medical center.

Non-toxic cleaning products

Environmental Services will consult the Environmentally Preferable Products List, which promotes minimized toxins and re-use of materials. HackensackUMC will continue to use non-toxic cleaning products throughout campus.

Green Roof Garden

On August 9, 2012, Josephine's Garden was created in memory of a young girl who passed away at the Medical Center. HUMC has been testing various techniques to reduce storm water runoff.

Water Coolers/Water Bottles

Plastic bottled water was eliminated from all meetings on campus. HackensackUMC continues to utilize Quench water coolers on campus, preventing approximately 30,000 plastic jugs per year from entering landfills.

Employee Green and Sustainability Education and Training Program

The HackensackUMC Green Team expanded to over 40 members, as well as additional nursing-unit-based Green Teams. The Green Team has been instrumental in spreading awareness around campus on our green commitments, as well as developing solutions for problems they identify.

Transportation

HackensackUMC upgraded our vehicle fleet by purchasing several new fuel-efficient vehicles to replace older less efficient ones.

EPA GreenScapes

Over the last year, HUMC implemented Xeriscape Landscaping, which requires less watering and maintenance. They installed river rock stone along our Admissions Paver Walk to reduce storm water run-off. They monitored the sprinkler systems throughout campus and made adjustments to reduce water use and run-off. Shrubs and trees have been transplanted from construction areas to other parts of campus and more drought-tolerant grass seed is now used in our lawn areas. HUMC has also installed perennial flowers, plants with lower water needs, mulch areas, and ornamental grasses. They will consult EPA's GreenScapes recommendations to work towards reusing landscape materials where possible, recycle organic materials, and make purchasing decisions for environmentally preferable products.