



Hackensack University Medical Center
Environmental Assessment:
Green MOU SemiAnnual Report
September 10, 2013



Environmental Protection Agency
Region 2

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Accomplishments

Reductions of 16,797 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.

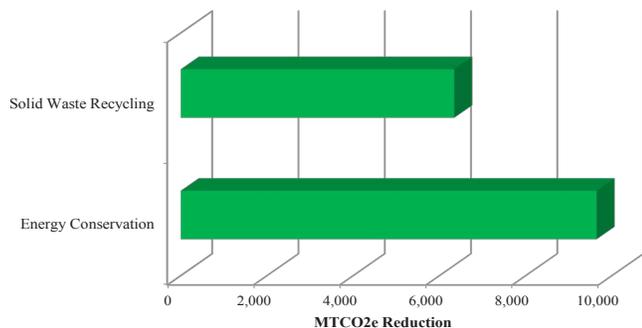
Reduction in Environmental Footprint

This is the third 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 16,797 MTCO₂e* and saved an estimated \$1.6 million in operating expenses.

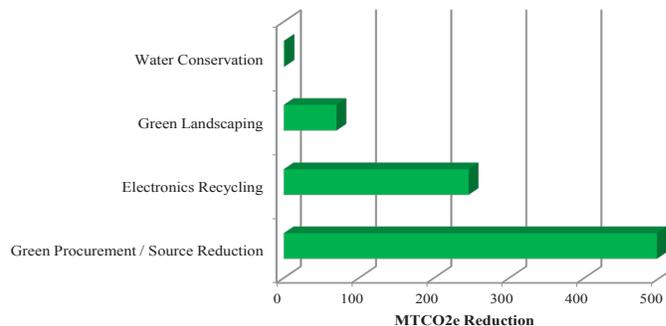
*Metric Ton Carbon Dioxide Equivalent

Environmental Metrics	Total Sector (MTCO ₂ e)
Energy Conservation	9,642.6
Water Conservation	1.1
Solid Waste Recycling	6,341.5
Green Procurement / Source Reduction	496.6
Green Landscaping	70.1
Electronics Recycling	246.0
Total (MTCO ₂ e)	16,797.9

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 16,797 MTCO₂e

Greenhouse Gas Equivalencies

What does the reduction of 16,797 MTCO₂e represent ?
The organization's effort is equivalent to any one of the following:

- Annual greenhouse gas emissions from 3,500 vehicles



- Carbon dioxide emissions from 1,883,173 gallons of gasoline consumed



- Carbon dioxide emissions from 39,065 barrels of oil consumed



- Carbon dioxide emissions from the energy use of 865 homes for one year



- Carbon dioxide emissions from 699,913 propane tanks used for home barbeques



- Carbon dioxide emissions from gasoline carried by 222 tanker trucks



- Carbon dioxide emissions from burning 72.2 railcars' worth of coal (approx. 1 1/10 miles long)





Environmental Metrics	Feb 2012 MOU	Aug 2012 Update	Feb 2013 Update	Aug 2013 Update	Total Conversion (MTCO _{2e})	Cost Savings (est.)
Energy Conservation/Energy Star						
Total Savings (MTCO_{2e})		4102.8	3567.8	1972.0	9,642.6	\$1,451,408
Miscellaneous Energy Conservation				733,488 kwh	544.5	\$91,906
Web Based Energy Competition						
Motors and Transformers						
Lighting Project Fixtures (bulbs and ballast)		250 bulbs	250 bulbs	434 bulbs	17.3	\$2,926
High Temp Hot Water Pipe Replacement		56,490 therms	56,490 therms	56,490 therms	901.7	\$110,706
HVAC, Chiller & Electrical		3,900,698 kwh	3,186,763 kwh	397,235 kwh	5,556.3	\$937,832
Bulb Replacement (CFLs)						
Bulb Replacement (LEDs)		68 bulbs	116 bulbs	164 bulbs	8.4	\$1,417
Gas Savings		154,054 therms	154,054 therms	154,054 therms	2,459.1	\$301,907
Fuel Oil Savings						
Steam Savings		310,000 lbs	286,326 lbs		154.9	\$4,651
New Washers (energy saved)				504.4 kwh	0.4	\$63
Alternative Energy						
Total Savings (MTCO_{2e})					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 (MTCO_{2e})		0.3	0.2	0.6	1.1	\$925
Miscellaneous Water Conservation						
Low Flow/Hands Free Faucets (4)		2,000 gal	1,000 gal	1,000 gal	0.0	\$8
Low Flow Toilets (6 flushometers)		24,000 gal	12,000 gal	12,000 gal	0.1	\$98
Low Flow Shower Heads						
Low Flow Urinals						
Waterless Urinals (4)		80,000 gal	80,000 gal	80,000 gal	0.6	\$488
New Washers (water saved)				163,020 gal	0.4	\$331
Solid Waste Recycling						
Total Savings (MTCO_{2e})	1102.0	1812.3	1600.9	1826.2	6,341.5	\$110,070
Mixed Recyclables (includes Wastewise)	383.7 tons	602.9 tons	451.09 tons	517.86 tons	5,475.5	\$78,222
Pallets Waste Avoided / Wood Recycled			41.25 tons	49.5 tons	223.2	\$3,630
Steel Recycled Offsite during Deconstruction				66.88 tons	120.4	\$2,675
Concrete / Asphalt Recycled during Deconstruction			96.75 tons		50.7	\$3,870
Recycled C&D Waste (construction waste)			15.12 tons	78.23 tons	23.2	\$3,734
Cardboard (construction/non-construction/sharp containers)			1,899 lbs	2,180 lbs	6.3	\$82
Mixed Metal (construction/non-construction)		16.21 tons	32.09 tons	20.74 tons	274.1	\$2,762
Paper, Mixed						
Plastic, Mixed (bottles, construction/non-construction, sharp containers)		23,007 sharps	43,960 lbs		49.7	\$2,030
Can / Bottle Recycling						
Blue Wrap Waste Reduction		9,300 lbs			4.6	\$186
Mixed Organics						



Environmental Metrics	Feb 2012 MOU	Aug 2012 Update	Feb 2013 Update	Aug 2013 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
Food Donation (Waste diversion)		4,000 lbs	12,460 lbs	5,300 lbs	2.2	\$435
Biosolids and Food Waste Recycling / Composting	224,524 lbs	112,262 lbs	113,622 lbs	126,019 lbs	57.6	\$11,529
Fluorescent Bulbs	9,000 (approx 5740 lbs)	4,500 (approx 2870 lbs)	4,500 (approx 2870 lbs)	4,500 (approx 2870 lbs)	0.9	\$287
Ceiling Tiles Recycled						
Carpet Recycled						
Waste Oil Recycled	2970 lbs	1485 lbs	4630 lbs	3600 lbs	19.0	\$254
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	15,000	1.0	\$42
Medical Device Reprocessing		6,455 lbs	5,098 lbs	5,044 lbs	32.9	\$332
Green Procurement / Source Reduction						
Total Savings (MTCO2e)			422.8	73.8	496.6	\$37,209
Re-Use/Purchase of Materials with Recycled Content (Paper towels)				24.5 tons 100%PC	27.2	
Purchase / Use of Compost Socks						
Purchase of EPEAT Products			678 monitors	636 units	53.6	\$8,541
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						
Paper Reduction				2.7 tons	21.6	\$24,288
Green Landscaping						
Total Savings (MTCO2e)		23.4	23.4	23.4	70.1	\$0
Green Roofs		7,000 sq ft	7,000 sq ft	7,000 sq ft	22.9	
Porous Pavement			120 sq ft	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						



Environmental Metrics	Feb 2012 MOU	Aug 2012 Update	Feb 2013 Update	Aug 2013 Update	Total Conversion (MTCO2e)	Cost Savings (est.)
Number / Acres of Trees						
Reflective Roof		21,000 sq ft	21,000 sq ft	21,000 sq ft	47.3	
Synthetic Turf						
Native Plants						
Leaves Composted						
Electronics/EPEAT						
Total Savings (MTCO2e)	43.01	52.5	71.4	79.1	246.0	\$2,382
Recycling of Electronics		35,472 lbs	27,297 lbs	31,984 lbs	75.8	\$1,895
Re-Use/Donation of Used Computers						
Toner/Ink Recycling and Use of Recycled Ink	1120 cartridges	560 cartridges	1246 cartridges	1356 cartridges	164.4	\$343
Battery Recycling		3,279 lbs	2,115 lbs	1,826 lbs	5.8	\$144
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	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)	1,145.0	5,991.2	5,686.5	3,975.2	16,797.9	\$1,601,994
Energy Conservation	0.0	4,102.8	3,567.8	1,972.0	9,642.6	\$1,451,408
Water Conservation	0.0	0.3	0.2	0.6	1.1	\$925
Solid Waste	1,102.0	1,812.3	1,600.9	1,826.2	6,341.5	\$110,070
Green Procurement / Source Reduction	0.0	0.0	422.8	73.8	496.6	\$37,209
Green Landscaping	0.0	23.4	23.4	23.4	70.1	\$0
Electronics	43.0	52.5	71.4	79.1	246.0	\$2,382



2013

HackensackUMC Additional Green MOU Accomplishments

HackensackUMC Waste Recycling and Re-use Operations:

In keeping with its commitment to continuously improve its environmental practices, HackensackUMC became the first hospital in the country to partner with innovative recycler TerraCycle to recycle diaper packaging, chip bags, keyboards, and mice, and up cycle those items into other products. HackensackUMC also partnered with Green Demolitions® and Renovation Angel™ to donate used furniture that would have otherwise gone to a landfill. In addition, HackensackUMC implemented a 2nd state of the art recycling station on campus, providing a more efficient, environmentally-sensitive way for staff and visitors to access the new containers.

Regulated Medical Waste Reduction

HackensackUMC is now recycling bottles and packaging that were previously being placed in red bags. Additionally, this has led to reductions in energy use due to reduced autoclaving.

As a result of our RMW reduction, HackensackUMC has gone from transporting RMW (via an 18 wheeler), approximately 400 miles from an average 8-9 times per month to an average 3-4 times per month, significantly reducing our environmental footprint.

Electronics Waste (E-Waste) Recycling

HackensackUMC held its first ever e-waste collection open to all staff of the medical center during Earth Week in April. Year to date, HUMC has collected over 35,500 lbs. of e-waste.

Energy Conservation and EnergyStar Program

HackensackUMC completed the installation of a new efficient 1,500 ton chiller. Estimated savings are 4,100 – 5,400 kWh/day and \$680 - \$880/ day for the last 15 days. (This savings of 4,100 kWh and \$680/day is derived by assuming that the Chiller 6 load would be picked up by a Chiller (or Chillers) with an average efficiency of 0.55 kW/Ton (conservative estimate). The savings of 5,400 kWh and \$880/day was derived by assuming that the Chiller 6 load would be picked up by a Chiller (or Chillers) with an average efficiency of 0.6 kW/Ton).

Through sustainability measures with its partnership with utiliVisor, HUMC has reduced its electric use by 733,488 kWh over the last 6 months and saved HackensackUMC more than \$1,000,000 over the past 2 ½ years.

Paper Reduction

HackensackUMC has eliminated the use of paper for employee evaluations; expense tracking and processing; and forms for tuition reimbursement for more than 6,000 employees. HUMC is on track to reduce its paper usage on campus by over 25% in 2013. In addition, HUMC will begin to move its printers to a new pilot server to baseline print output as well as introduce paper reduction policies.

Water Conservation

In January and June the Sterile Processing Department installed three new water efficient washers. The old washers were 19 years old.

Mercury, DEHP, PVC Reduction

HackensackUMC has instituted a new purchasing program designed to reduce items containing Mercury, DEHP and PVC. The following items were converted to DEHP Free alternatives - Sucrose Solution, Power Port Kits, Pediatric and Neonatal Internal Feeding Pumps and Atrium Catheters.

Employee Education and Training Program

HackensackUMC now has a total of 115 green champions from units throughout the medical center. The Sustainability Coordinator now presents at new hire orientation as well as manager orientation. Interns from the Ramapo College Masters in Sustainability Studies program have developed resources for the HackensackUMC intranet helping to educate staff on the importance of sustainability. In addition, sustainability progress and updates are presented quarterly to Management.