



**MetLife Stadium  
(formerly New Meadowlands Stadium)  
Environmental Assessment:  
MOU SemiAnnual Report  
February 22, 2012**



**Environmental Protection Agency  
Region 2**

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

Jose Pillich  
Michael Wanser  
*Research Analysts*

## Accomplishments

**Reductions of 250,650 MTCO<sub>2</sub>e**



## Memorandum of Understanding

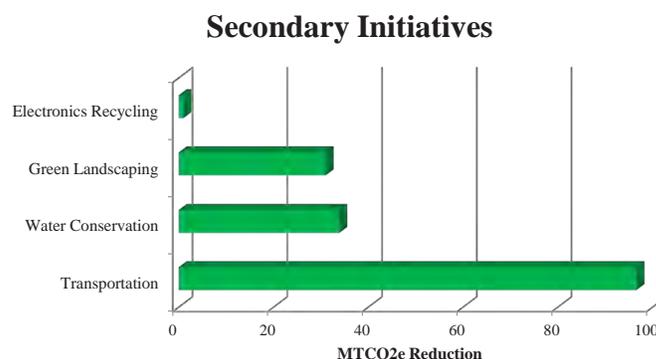
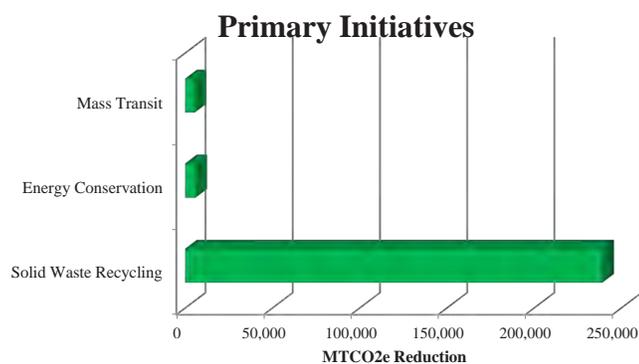
On June 1, 2009, MetLife Stadium, home of the New York Giants and New York Jets, signed a Memorandum of Understanding (MOU) pledging to become an environmental steward by implementing a number of green initiatives that would reduce its carbon footprint and further improve our planet's environment. This partnership with the United States Environmental Protection Agency (EPA) and MetLife Stadium has resulted in reducing energy, water and solid waste production across their entire operations.

## Reduction in Environmental Footprint

In the last three years, the MetLife Stadium has provided five updates documenting its green initiatives. The EPA has analyzed the submitted information and generated an environmental footprint for the organization. Due to their progressive green efforts, the organization has managed to reduce its carbon footprint by 250,650 MTCO<sub>2</sub>e\* and saved an estimated \$15,500,000 in operating expenses.

\*Metric Ton Carbon Dioxide Equivalent

Environmental Metrics	Total Sector (MTCO <sub>2</sub> e)	Cost Savings (Est.)
Energy Conservation	5,842.3	\$843,165
Water Conservation	33.9	\$24,781
Solid Waste Recycling	239,181.7	\$7,701,320
Green Landscaping	31.0	\$22,668
Electronics Recycling	1.0	\$25
Mass Transit	5,464.1	\$6,860,7000
Transportation	96.6	\$60,000
<b>Total (MTCO<sub>2</sub>e)</b>	<b>250,650.6</b>	<b>\$15,512,659</b>



## 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 250,650 MTCO<sub>2</sub>e**

## Greenhouse Gas Equivalencies

What does the reduction of 250,650 MTCO<sub>2</sub>e represent ?

The organization's effort is equivalent to any one of the following:

- Annual greenhouse gas emissions from 49,147 vehicles



- Carbon dioxide emissions from 28,099,888 gallons of gasoline



- Carbon dioxide emissions from 582,099 barrels of oil consumed



- Carbon dioxide emissions from the energy use of 21,701 homes for one year



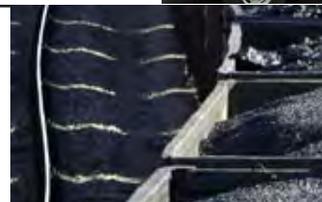
- Carbon dioxide emissions from 10,443,792 propane tanks used for home barbeques



- Carbon dioxide emissions from gasoline carried by 3,306 tanker trucks



- Carbon dioxide emissions from burning 1,365 railcars' worth of coal (nearly 20 3/4 miles long)





Environmental Metrics	Jun 2009 MOU	Dec 2009 Update	Jun 2010 Update	Nov 2010 Update	Jun 2011 Update	Feb 2012 Update	Total Conversion (MTCO <sub>2e</sub> )	Cost Savings (Est.)
<b>Energy Conservation/Energy Star</b>								
<b>Total Savings (MTCO<sub>2e</sub>)</b>		<b>212.3</b>	<b>212.3</b>	<b>108.9</b>	<b>1,896.0</b>	<b>3,412.8</b>	<b>5,842.3</b>	<b>\$843,165</b>
Miscellaneous Energy Conservation		139,370 kwh	139,370 kwh	3,033 kwh	2,500,000 kwh	4,500,000 kwh	5,522.4	\$751,535
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								
Oil Savings		10,424 gal	10,424 gal	10,425 gal			319.9	\$91,630
Steam Savings								
<b>Alternative Energy</b>								
<b>Total Savings (MTCO<sub>2e</sub>)</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 (MTCO<sub>2e</sub>)</b>		<b>0.4</b>	<b>8.6</b>	<b>8.6</b>	<b>8.2</b>	<b>8.2</b>	<b>33.9</b>	<b>\$24,781</b>
Miscellaneous Water Conservation		158,632 gal	158,632 gal	158,632 gal			1.2	\$870
Low Flow/Hands Free Faucets (956)			360,000 gal	360,000 gal	360,000 gal	360,000 gal	3.6	\$2,632
Low Flow Toilets (956)			1,500,000 gal	1,500,000 gal	1,500,000 gal	1,500,000 gal	15.0	\$10,968
Low Flow Shower Heads (96)			60,000 gal	60,000 gal	60,000 gal	60,000 gal	0.6	\$439
Low Flow Urinals								
Waterless Urinals (600)			1,350,000 gal	1,350,000 gal	1,350,000 gal	1,350,000 gal	13.5	\$9,872
<b>Solid Waste/Industrial Materials Reuse/ Green Products</b>								
<b>Total Savings (MTCO<sub>2e</sub>)</b>	<b>224,060.4</b>	<b>2,135.1</b>	<b>9,229.7</b>	<b>2,411.5</b>	<b>518.1</b>	<b>826.9</b>	<b>239,181.7</b>	<b>\$7,701,320</b>
Mixed Recyclables (includes Wastewise)			40 tons	69.5 tons	69.5 tons	123.54 tons	868.3	\$12,102
Reduction/Green Products								
Re-Use/Purchase of Materials with Recycled Content	16,000 tons steel pilings			160,000 sf wood 3,000,000 sf wall-board 250,000 sf ceiling tile	1,000 reams 30% PC		29,450.3	
Pallets Waste Avoided/Wood Recycled			30 tons	25.5 tons	25.5 tons	32.19 tons	278.5	\$4,528
Use of Recycled Steel during Construction	60,000 tons						108,000.0	\$2,400,000
Use of Recycled Iron during Construction	560 tons						3,024.0	\$22,400
Use of Recycled Plastic during Construction	51 tons						76.5	\$2,040
Use of Recycled Aluminum during Construction	40 tons						544.4	\$1,600
Use of Recycled Concrete	102,000 tons		8,000 tons				88,000.0	\$4,400,000



Environmental Metrics	Jun 2009 MOU	Dec 2009 Update	Jun 2010 Update	Nov 2010 Update	Jun 2011 Update	Feb 2012 Update	Total Conversion (MTCO <sub>2</sub> e)	Cost Savings (Est.)
Use of Recycled Asphalt				200 tons + 215,000 cu ft			1,249.3	\$201,500
Use of Coal Combustion Products	5,733 cu yd	5,733 cu yd	5,734 cu yd				3,096.0	\$154,800
Ceiling Tiles Recycled								
Carpet Recycled								
Recycled C & D Waste (Construction Waste)	3,966 tons	3,967 tons	3,967 tons			23.58 tons	2,957.1	\$476,943
Cardboard (construction/non-construction)			78 tons	58 tons	58 tons	58.72 tons	783.4	\$10,109
Mixed Metal (construction/non-construction)				7 tons	7 tons	14.26 tons	152.6	\$1,130
Paper, Mixed		34 tons	34 tons	7.5 tons	7.5 tons	18.77 tons	357.2	\$4,071
Plastic, Mixed (bottles, construction/non-construction)						4.33 tons	6.5	\$173
Blue Wrap								
Mixed Organics								
Food Donation (Waste diversion)				3 tons	5.5 tons	4.2 tons	2.5	\$508
Biosolids & Food Waste Recycling / Composting					20 tons	106.65 tons	25.3	\$5,066
Fluorescent Bulbs								
Waste Oil Recycled			22,000 gal	2 tons	2 tons	11.25 tons	309.8	\$4,350
Magazines/ThirdClass Mail								
Newspaper								
Office Paper								
Textbooks								
Phonebooks								
Dimensional Lumber								
Fly Ash								
Aluminum Cans								
Glass								
HDPE / LDPE / PET								
Appliances								
Non-Ferrous Metals								
Fats, Oils, Grease								
<b>Green Landscaping</b>								
<b>Total Savings (MTCO<sub>2</sub>e)</b>			<b>7.8</b>	<b>7.8</b>	<b>7.8</b>	<b>7.8</b>	<b>31.0</b>	<b>\$22,668</b>
Green Roofs								
Porous Pavement (Granite dust)			1,000,000 gal	1,000,000 gal	1,000,000 gal	1,000,000 gal	10.0	\$7,312
Grass								
Low / no mow area								
Green Space (shrubs and bushes)								
Re-use of Collected Stormwater								
On-Site Re-use of Compost / Mulch								
Moisture Sensing Sprinklers								
Number / Acres of Trees								
Reflective Roof								
Synthetic Turf			1,750,000 gal	1,750,000 gal	1,750,000 gal	1,750,000 gal	17.5	\$12,797



Environmental Metrics	Jun 2009 MOU	Dec 2009 Update	Jun 2010 Update	Nov 2010 Update	Jun 2011 Update	Feb 2012 Update	Total Conversion (MTCO2e)	Cost Savings (Est.)
Native Plants			350,000 gal	350,000 gal	350,000 gal	350,000 gal	3.5	\$2,559
Leaves Composted								
<b>Electronics/EPEAT</b>								
<b>Total Savings (MTCO2e)</b>				<b>1.0</b>			<b>1.0</b>	<b>\$25</b>
Recycling of Electronics				0.625 tons			1.0	\$25
Re-Use/Donation of Used Computers								
Toner/Ink Recycling and Use of Recycled Ink								
Battery Recycling								
Purchase of EPEAT Products								
<b>Mass Transit</b>								
<b>Total Savings (MTCO2e)</b>			<b>1,349.2</b>	<b>1,349.2</b>	<b>1,349.2</b>	<b>1,416.6</b>	<b>5,464.1</b>	<b>\$6,860,700</b>
Vehicles Miles Avoided(VMT)			3,025,000 mi	3,025,000 mi	3,025,000 mi	3,176,250 mi	5,464.1	\$6,860,700
<b>Transportation</b>								
<b>Total Savings (MTCO2e)</b>			<b>1.7</b>		<b>44.3</b>	<b>50.6</b>	<b>96.6</b>	<b>\$60,000</b>
Hybrid / Electric Vehicles					32 vehicles	32 vehicles	94.9	\$60,000
Biodiesel Vehicles								
Clean Construction Vehicles			1.68 MT-CO2e				1.7	
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>224,060.4</b>	<b>2,347.8</b>	<b>10,809.2</b>	<b>3,887.0</b>	<b>3,823.4</b>	<b>5,722.9</b>	<b>250,650.6</b>	<b>\$15,512,659</b>
Energy	0.0	212.3	212.3	108.9	1,896.0	3,412.8	5,842.3	\$843,165
Water	0.0	0.4	8.6	8.6	8.2	8.2	33.9	\$24,781
Solid Waste	224,060.4	2,135.1	9,229.7	2,411.5	518.1	826.9	239,181.7	\$7,701,320
Green Landscaping	0.0	0.0	7.8	7.8	7.8	7.8	31.0	\$22,668
Electronics	0.0	0.0	0.0	1.0	0.0	0.0	1.0	\$25
Mass Transit	0.0	0.0	1,349.2	1,349.2	1,349.2	1,416.6	5,464.1	\$6,860,700
Transportation	0.0	0.0	1.7	0.0	44.3	50.6	96.6	\$60,000



2012

## MetLife Stadium (formerly New Meadowlands Stadium) Additional Green MOU Accomplishments and Cost Savings

MetLife Stadium was named **#1 in the National Football League for Energy Conservation**, according to the Stadium Managers' Association.

In 2011, MetLife Stadium entered into an historic partnership to develop onsite solar elements. As a first step on alternative energy measures, they are constructing an iconic solar ring on top of the new stadium. No other stadium in the nation has such a feature. Construction will commence in March 2012 and the solar ring will be operational in August 2012. At its optimal state, the solar ring will generate approximately 20% of the stadium's power needs on non-game days. This partnership will also include potential future solar installations at the stadium and site.

In the area of recycling, MetLife Stadium exceeded its goals for recycling generally, including tailgate (parking area) recycling during the 2011 football season. They purchased new and improved source separating trash canisters in the concourses that are different in size and shape with the type of trash clearly noted on the new canisters. And they have implemented a fan recycling campaign so that, on game day, these recycling efforts are more clearly understood. The goal is to distinguish more clearly trash vs recycling areas.

MetLife Stadium commenced a robust composting program. They have provided different composting bins in the concession areas, pantries and kitchens in support of these composting initiatives.

MetLife Stadium has established a series of programs and protocols in support of sustainable development:

- Purchase of Energy Star office equipment (cordless telephones, computers, monitors, printers, faxes, copiers, scanners, water coolers).
- Purchase of compact fluorescent bulbs or high efficiency tube fluorescents for all fixtures throughout the new stadium.
- Purchase alternative fuel vehicles for onsite use (gators, carts, etc).
- Assess purchase of green electronic products, as practical.
- Use of 30% post consumer recycled paper supply and publications and the use of 100% recycled soft tissue products.
- Conserve hard copy print run requirements and develop other strategies to reduce use of paper.
- Install automatic hand dryers in office bathrooms (no paper towels).
  - o Automatic hand dryers have been installed in the locker rooms – other areas being assessed.
- Use of green products for cleaning purposes (floor wax, carpet shampoo, window cleaning, etc.). Achieved.
  - o RFP for cleaning services required the use of environmentally friendly cleaning products (Green Seal Standards GS-37) Achieved.
- Develop green procurement standard specifications for maintenance-related RFPs. Achieved.
- Sponsorship of employee "green" programs (e.g., community tree planting, clothes donation programs, etc.). TBD

The fans continue to make extensive use of mass transit on game days. NJ Transit ran trains for all stadium events with expected attendance of 50,000 or more.

- The two football teams actively promote the use of mass transit (train and bus) for events. Achieved. During the planning phase, it was estimated that, through promotional opportunities, 10,000 plus fans could access the new rail system to the Complex on game days and another 2,000-3,000 fans would use the public bus system. In total, approximately 3,000-4,000 cars come off the roadways on game days through these alternative transportation options.
  - o Both teams created and distributed to their fans several mailings that promoted the use of the rail service.
  - o For the average game during the 2011 football season, over 9,500 Jets fans and roughly 9,000 Giants fans took the train to the game.
  - o For both teams, approximately 2000 fans rode the bus for each home game.
- Develop programs that encourage ride sharing/car pooling. Achieved.
  - o A parking by permit only system has been implemented at the new stadium and offers one permit for every four general admission ticket, thereby facilitating car pooling. Average car occupancy has increased from 2.6 passengers per car for the former stadium to over 3 passengers per car for the new stadium.
  - o A parking permit plan was implemented by both the Giants and the Jets.
  - o A park and ride area also opened at the Secaucus Rail Station with 1200 parking spaces to support the use of the rail system.
- Support fans' use of alternative fuel vehicles (by offering preferred "in close" parking for hybrid or biodiesel vehicles or an electric car recharging station).