

GREENHOUSE GAS INVENTORY FY 2013 UPDATE

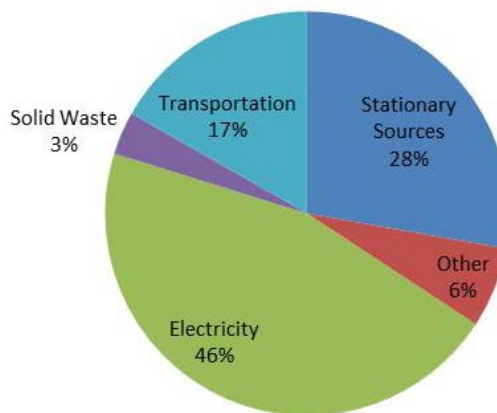
OVERVIEW

Temple University (Temple) has prepared a greenhouse gas (GHG) inventory program in support of its participation in the American College and University Presidents' Climate Commitment (ACUPCC). This inventory is an update which summarizes Temple's fiscal year (FY) 2013 GHG emissions and supplements the previously published inventory for fiscal years 2006 through 2012.

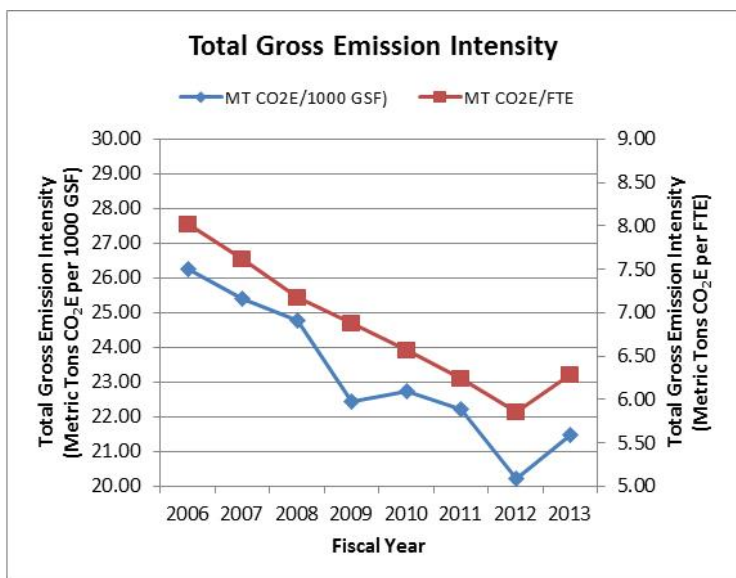
In FY 2013, Temple University's total gross emissions were 200,113 metric tons of carbon dioxide equivalent (MTeCO₂). Of the total emissions, 46% were attributable to purchased electricity consumption, 28% to stationary sources and 17% to transportation activities with a large portion attributable to commuting. Mobile sources (university fleet), refrigerants, fertilizers, purchased steam, solid waste, and transmission and distribution losses made up the remainder, approximately 9% of the total emissions. Temple's total gross emissions were reduced to a net of 191,680 MTeCO₂ through carbon offsets.

The primary emission sources were: purchased electricity, stationary combustion, and commuting (student, faculty and staff). This collectively accounted for approximately 85% of total annual gross emissions.

GHG Emissions by Source, FY 2013



TRENDS FROM FY 2012 TO FY 2013

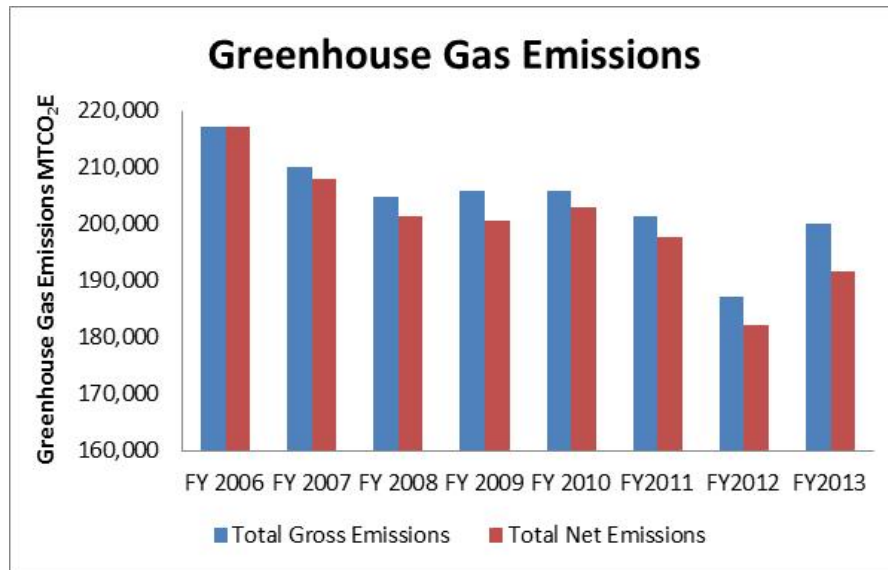


Total gross emissions increased by 7% from FY 2012 to FY 2013 which is attributed primarily to stationary sources and air travel.

In FY 2013, total gross emission intensity per 1000 gross square feet (GSF) increased by 6.1% and total gross emission intensity per full-time equivalent students (FTE) increased by 7.4% relative to FY 2012. Normalizing emissions by variables such as square footage and population is helpful to establish trends. As of March 2014, average emission intensities for reporting ACUPCC peer institutions are 17.45 MTeCO₂/1000 GSF and 6.93 MTeCO₂/FTE. Temple's emission intensity of 21.47 is higher on a GSF basis. Temple's emission intensity of 6.29 is slightly lower on a FTE basis.

Temple reduced FY 2013 GHG emissions from 200,113 MTeCO₂ to 191,680 MTeCO₂ (an 8,433 MTeCO₂ reduction) through offsets generated by the following on-campus activities:

- Composting at Ambler campus;
- University computer reuse and recycling;
- Construction waste recycling.



REPORTING METHODOLOGY

The Greenhouse Gas Inventory quantifies Temple’s anthropogenic GHG emissions from energy consumption, waste disposal, agricultural activities, use of chemicals and refrigerants, and commuter transportation choices and tracks emissions of three primary greenhouse gases: carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Greenhouse Gas reporting includes only those campuses where the university has operational control and can enforce a change in policy (Main, Ambler, Health Sciences, Podiatric and Tyler campuses).

Using the methodology of CarbonMAP (<http://campuscarbon.com>), GHG emissions are expressed in Metric Tons of Carbon Dioxide Equivalents (MTeCO₂). The individual greenhouse gases are converted to carbon dioxide equivalent values using the global warming potential (GWP) of the respective gases to convert them to common units. The total MTeCO₂ is the sum of the emissions from each source. Previous inventories were generated using Clean Air – Cool Planet’s Campus Carbon Calculator. Temple’s emissions data is recalculated annually to reflect updates to emission factors and global warming potentials.

ACKNOWLEDGEMENTS

The Office of Sustainability would like to thank the following Temple University affiliates who contributed information and data to the FY 2013 GHG Inventory: Kurt Bresser, Facilities Management; Janice Dietz, Campus Safety Services; Chuong Doan, Office of University Housing; Kristen Eaton, Office of Institutional Research and Assessment; Patricia Finley, Faculty Affairs & Faculty Development; Robert Gage, Sponsored Research Programs; Jon Gold, Facilities Management; Mark H. Gottlieb, Facilities Management; Craig Jankowski, Liacouras Center; Jonathan Latko, Computer Recycling Center; Jason Levy, Division of Student Affairs; Tom McCreesh, Facilities Management; David J. McDonough, Environmental Health & Radiation Safety; Anthony Morris, Facilities Management Podiatric Medicine; Kurt Pflugfelder, Scheduling and Space Management; Craig Roncace, Facilities Management; Evelyn Rush, Business Services; Tim Thies, Athletics Business and Administration; and, Delores Tyler, Purchasing. The Office of Sustainability would also like to thank Jennifer Smith from Waste Management.

TEMPLE UNIVERSITY FY 2013 Greenhouse Gas Inventory
Greenhouse Gas Emissions Summary FY2006 - FY2013
prepared by the Office of Sustainability

Emissions Source		FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY2011	FY2012	FY2013
Scope 1 Emissions (MT CO ₂ E)	Stationary (oil, natural gas, propane)	57,166	55,527	47,014	61,962	56,929	52,386	47,655	55,573
	Mobile (University fleet)	628	654	634	908	874	923	885	959
	Fugitive (Refrigerants & Cryogenic CO ₂)	1,930	1,868	1,848	2,522	2,516	2,510	2,506	2,504
	Process (Agriculture/Fertilizer)	14	11	13	6	4	6	4	6
	Total Gross Emissions Scope 1	59,739	58,060	49,509	65,399	60,322	55,826	51,050	59,042
Scope 2 Emissions (MT CO ₂ E)	Purchased Electricity	104,685	99,867	103,287	89,959	92,592	92,552	93,160	91,155
	Purchased Steam	278	318	330	360	353	349	294	435
	Total Gross Emissions Scope 2	104,962	100,185	103,618	90,319	92,945	92,901	93,454	91,590
	Commuting	22,616	22,675	23,273	24,084	24,846	24,519	25,096	23,813
	Air Travel	5,726	6,187	6,028	6,524	7,486	8,643	479	9,739
	Solid Waste	13,761	13,110	12,211	10,509	11,079	10,255	7,781	6,892
	Transmission & Distribution Losses	10,368	9,894	10,233	8,916	9,176	9,172	9,229	9,038
	Total Gross Emissions Scope 3	52,471	51,866	51,744	50,033	52,588	52,589	42,584	49,481
Scope 1 - 3 Gross Emissions (MT CO ₂ E)	Total Gross Emissions	217,173	210,111	204,871	205,751	205,855	201,316	187,088	200,113
	Gross Square Footage (GSF) ¹	8,266,175	8,271,765	8,271,765	9,171,147	9,055,532	9,055,532	9,245,532	9,320,791
	Full-time Equivalent Students (FTE)	27,055	27,560	28,535	29,901	31,363	32,251	31,939	31,811
	Total Gross Emission Intensity/1000 GSF	26.27	25.40	24.77	22.43	22.73	22.23	20.24	21.47
	Total Gross Emission Intensity/FTE	8.03	7.62	7.18	6.88	6.56	6.24	5.86	6.29
Scope 1 - 3 Net Emissions (MT CO ₂ E)	Purchased Offsets / Other Offsets	-125	-2,303	-3,474	-5,130	-3,042	-3,659	-5,039	-8,433
	Total Net Emissions	217,047	207,808	201,397	200,621	202,813	197,657	182,049	191,680
	Total Net Emission Intensity/1000 GSF	26.26	25.12	24.35	21.88	22.40	21.83	19.69	20.56
	Total Net Emission Intensity/FTE	8.02	7.54	7.06	6.71	6.47	6.13	5.70	6.03
Total Gross Emissions Reported to ACUPCC*:		226,219	223,497	218,284	233,138	230,567	218,783	195,033	

* Changes from the FY2006-FY2012 reported inventories are due to updated emissions data:
 GHG Emissions for FY2006-FY2012 calculated using CA-CP v6.x
 GHG Emissions for FY2013 calculated using CarbonMAP

updated March 2014

GHG SCORECARD ^a Reporting Years FY 2006 - FY 2010	Temple University Philadelphia, PA (Main, Tyler, Podiatry, Ambler, Health Sciences, and Residence Halls)					
	Units	FY 2006 Baseline	FY 2007	FY 2008	FY 2009	FY 2010
Intensity Metrics						
Total Building Space Gross Square Footage	ft ²	8,266,175	8,271,765	8,271,765	9,171,147	9,055,532
Full Time Equivalent Students ^b	Unitless	27,055	27,560	28,535	29,901	31,363
Operating Budget	\$	804,240,000	842,030,000	902,984,000	974,851,000	1,004,230,000
Research Expenditures	\$	83,062,000	75,754,000	80,724,000	88,836,915	97,983,104
Energy Expenses	\$	23,319,394	20,838,548	23,760,037	25,655,691	23,193,373
Research Building Space Gross Square Footage	ft ²	775,083	778,779	789,632	856,684	893,309
Full Time Students	Unitless	25,280	25,863	26,892	28,513	30,034
Part Time Students	Unitless	5,325	5,092	4,929	4,165	3,987
Summer School Students (FTE Sessions I & II)	Unitless	4,282	4,360	4,223	4,244	3,914
Faculty (Full Time Equivalent) ^b	Unitless	2,239	2,209	2,260	2,354	2,419
Staff (Full Time Equivalent) ^b	Unitless	4,239	4,307	4,351	4,395	4,171
Scope 1 Emissions						
Stationary Sources						
Natural Gas	MMBtu	156,252	316,359	849,082	732,042	1,036,547
No. 2 Fuel Oil	Gallon	369,875	183,084	168,099	160,666	162,986
No. 6 Residual Oil	Gallon	3,982,568	3,254,949	9,315	1,888,688	9,606
Propane	Gallon	4,474	4,039	3,249	4,565	2,198
Mobile Sources - Owned and Leased						
Diesel	Gallon	20,131	23,030	19,349	26,576	24,241
Gasoline ^d	Gallon	43,804	43,264	45,095	66,506	63,008
Compressed Natural Gas	GGE	3,533	3,337	3,868	4,598	8,126
Fugitive Sources						
Cryogenic CO ₂	Pounds	227,322	90,357	46,613	193,720	179,820
HFC-134a Refrigerant Leakage	Pounds	2,817	2,817	2,817	3,753	3,753
Agriculture						
Fertilizer Application - Synthetic	Pounds	17,130	14,581	14,223	7,501	4,510
Fertilizer Application - Organic	Pounds	50	375	0	0	500
Scope 2 Emissions						
Electricity usage	kWh	200,479,805	207,550,363	214,657,304	209,003,913	215,121,198
Purchased Steam	Klb	3,807	4,357	4,528	4,933	4,832
Scope 3 Emissions						
Commuting						
2010 Survey						
Students - Personal Vehicle	miles	18,880,359	19,232,774	19,913,178	20,866,443	21,886,701
Students - Carpool	miles	3,241,722	3,302,231	3,419,055	3,582,729	3,757,905
Students - Bus	miles	4,389,338	4,471,268	4,629,450	4,851,066	5,088,258
Students - Light Rail	miles	5,779,597	5,887,477	6,095,761	6,387,571	6,699,890
Students - Commuter Rail	miles	12,270,728	12,499,769	12,941,978	13,561,524	14,224,610
Faculty - Personal Vehicle	miles	4,364,556	4,306,076	4,405,492	4,588,729	4,715,436
Faculty - Carpool	miles	212,905	210,052	214,902	223,840	230,021
Faculty - Bus	miles	65,700	64,820	66,317	69,075	70,982
Faculty - Light Rail	miles	424,467	418,780	428,448	446,269	458,591
Faculty - Commuter Rail	miles	2,190,545	2,161,194	2,211,090	2,303,056	2,366,649

GHG SCORECARD ^a Reporting Years FY 2006 - FY 2010		Temple University Philadelphia, PA (Main, Tyler, Podiatry, Ambler, Health Sciences, and Residence Halls)					
		Units	FY 2006 Baseline	FY 2007	FY 2008	FY 2009	FY 2010
Staff - Personal Vehicle	miles	6,946,154	7,057,581	7,129,681	7,201,781	6,834,727	
Staff - Carpool	miles	987,656	1,003,500	1,013,751	1,024,003	971,813	
Staff - Bus	miles	960,100	975,502	985,468	995,433	944,699	
Staff - Light Rail	miles	1,775,972	1,804,461	1,822,895	1,841,330	1,747,482	
Staff - Commuter Rail	miles	2,774,440	2,818,947	2,847,745	2,876,543	2,729,934	
Summer School Students - Personal Vehicle	miles	597,640	608,526	589,405	592,336	546,278	
Summer School Students - Carpool	miles	205,227	208,966	202,399	203,406	187,590	
Summer School Students - Bus	miles	138,940	141,471	137,026	137,707	127,000	
Summer School Students - Light Rail	miles	182,948	186,280	180,427	181,324	167,225	
Summer School Students - Commuter Rail	miles	388,418	395,493	383,066	384,971	355,037	
Employee Business Air Travel ^e	miles	9,076,920	10,134,582	10,240,294	11,083,249	12,717,634	
Solid Waste							
Solid Waste landfilled	U.S. Tons	4,440	4,229	3,940	3,390	3,574	
Solid Waste Energy-from-Waste	U.S. Tons						
Incinerated Waste ^c	U.S. Tons	35	31	42	12.6	12.8	
Offsets							
Renewable Energy Credits	kWh	240,000	4,786,000	4,546,000	0	0	
Composting (on-campus)	U.S. Tons	80	80	0	35.9	36.8	
Computer recycling	MTeCO ₂	0	0	0	3,199	3,042.0	
Construction Waste Recycling	MTeCO ₂	0	0	1,287	1,931	0.0	
Notes:							
a Inventory includes only those campuses where the university has operational control (excludes Center City, Harrisburg, Ft. Washington, Japan, and the Health System facilities, including Temple University Hospital buildings located on the Health Sciences Campus)							
b FTE numbers reflected are those reported by Temple University. Faculty and staff counts include Harrisburg, TUCC and Fort Washington campuses, but are assumed to be non material.							
c Total includes Temple University Hospital							
d FY 2009 is the first year that Athletics vehicle consumption counted in inventory							
e Air travel mileage is not representative of all university air travel. Miles reported in the GHG inventory includes travel booked by Temple Campus Travel and does not include travel booked independently through exceptions.							

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	Units	FY 2006 Baseline	FY 2011	FY 2012	FY 2013	
Intensity Metrics						
Total Building Space Gross Square Footage	ft ²	8,266,175	9,055,532	9,245,532	9,320,791	
Full Time Equivalent Students ^b	Unitless	27,055	32,251	31,939	31,811	
Operating Budget	\$	804,240,000	1,073,697,000	1,123,257,000	1,153,890,000	
Research Expenditures	\$	83,062,000	102,985,869	103,924,252	115,656,070	
Energy Expenses	\$	23,319,394	24,679,710	24,388,493	22,196,921	
Research Building Space Gross Square Footage	ft ²	775,083	929,079	907,048	916,757	
Full Time Students	Unitless	25,280	30,861	30,592	30,426	
Part Time Students	Unitless	5,325	4,171	4,040	4,154	
Summer School Students (FTE Sessions I & II)	Unitless	4,282	5,752	3,810	4,535	
Faculty (Full Time Equivalent) ^b	Unitless	2,239	2,416	2,452	2,462	
Staff (Full Time Equivalent) ^b	Unitless	4,239	3,998	4,075	4,166	
Scope 1 Emissions						
Stationary Sources						
Natural Gas	MMBtu	156,252	957,074	867,460	1,011,076	
No. 2 Fuel Oil	Gallon	369,875	140,763	147,319	174,507	
No. 6 Residual Oil	Gallon	3,982,568	2,955	0	0	
Propane	Gallon	4,474	0	0	0	
Mobile Sources - Owned and Leased						
Diesel	Gallon	20,131	20,354	14,232	11,194	
Gasoline ^d	Gallon	43,804	63,476	63,302	74,688	
Compressed Natural Gas	GGE	3,533	22,182	26,567	26,830	
Fugitive Sources						
Cryogenic CO ₂	Pounds	227,322	165,901	157,100	153,880	
HFC-134a Refrigerant Leakage	Pounds	2,817	3,753	3,753	3,753	
Agriculture						
Fertilizer Application - Synthetic	Pounds	17,130	6,176	5,123	7,623	
Fertilizer Application - Organic	Pounds	50	4,700	4,175	6,175	
Scope 2 Emissions						
Electricity usage	kWh	200,479,805	215,028,902	216,440,406	211,782,921	
Purchased Steam	Klb	3,807	4,785	4,032	5,960	
Scope 3 Emissions						
Commuting						
Students - Personal Vehicle	miles	18,880,359	22,506,393	22,288,663	18,976,095	
Students - Carpool	miles	3,241,722	3,864,305	3,826,921	2,089,307	
Students - Bus	miles	4,389,338	5,232,325	5,181,707	3,540,375	
Students - Light Rail	miles	5,779,597	6,889,588	6,822,937	7,436,951	
Students - Commuter Rail	miles	12,270,728	14,627,360	14,485,854	19,676,577	
Faculty - Personal Vehicle	miles	4,364,556	4,709,588	4,779,764	4,707,172	
Faculty - Carpool	miles	212,905	229,736	233,159	95,138	
Faculty - Bus	miles	65,700	70,894	71,951	95,032	
Faculty - Light Rail	miles	424,467	458,023	464,847	540,233	
Faculty - Commuter Rail	miles	2,190,545	2,363,714	2,398,935	2,188,475	

GHG SCORECARD ^a Reporting Years FY 2011 - FY 2013		Temple University Philadelphia, PA (Main, Tyler, Podiatry, Ambler, Health Sciences, and Residence Halls)					
		Units	FY 2006 Baseline	FY 2011	FY 2012	FY 2013	
	Staff - Personal Vehicle	miles	6,946,154	6,551,244	6,677,419	10,883,085	
	Staff - Carpool	miles	987,656	931,505	949,445	468,506	
	Staff - Bus	miles	960,100	905,516	922,956	1,037,192	
	Staff - Light Rail	miles	1,775,972	1,675,002	1,707,262	2,057,390	
	Staff - Commuter Rail	miles	2,774,440	2,616,705	2,667,102	3,671,504	
	Summer School Students - Personal Vehicle	miles	597,640	802,808	531,762	541,049	
	Summer School Students - Carpool	miles	205,227	275,681	182,605	119,141	
	Summer School Students - Bus	miles	138,940	186,638	123,625	100,944	
	Summer School Students - Light Rail	miles	182,948	245,753	162,781	212,043	
	Summer School Students - Commuter Rail	miles	388,418	521,761	345,603	561,022	
	Employee Business Air Travel ^e	miles	9,076,920	14,682,240	813,067	16,544,135	
Solid Waste							
	Solid Waste landfilled	U.S. Tons	4,440	3,308	2,517	2,204	
	Solid Waste Energy-from-Waste	U.S. Tons			735	686	
	Incinerated Waste ^c	U.S. Tons	35	16.5	18.2	22.1	
Offsets							
	Renewable Energy Credits	kWh	240,000	0	0	0	
	Composting (on-campus)	U.S. Tons	80	24.0	28.4	28.0	
	Computer recycling	MTeCO ₂	0	3,107.0	3,005.0	3,043.0	
	Construction Waste Recycling	MTeCO ₂	0	552.0	2,034.0	5,390.0	
Notes:							
a Inventory includes only those campuses where the university has operational control (excludes Center City, Harrisburg, Ft. Washington, Japan, and the Health System facilities, including Temple University Hospital buildings located on the Health Sciences Campus)							
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