

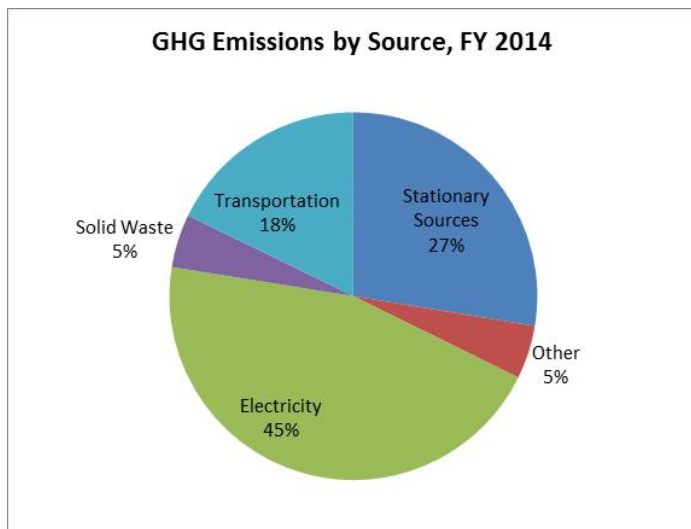
GREENHOUSE GAS INVENTORY FY 2014 UPDATE

OVERVIEW

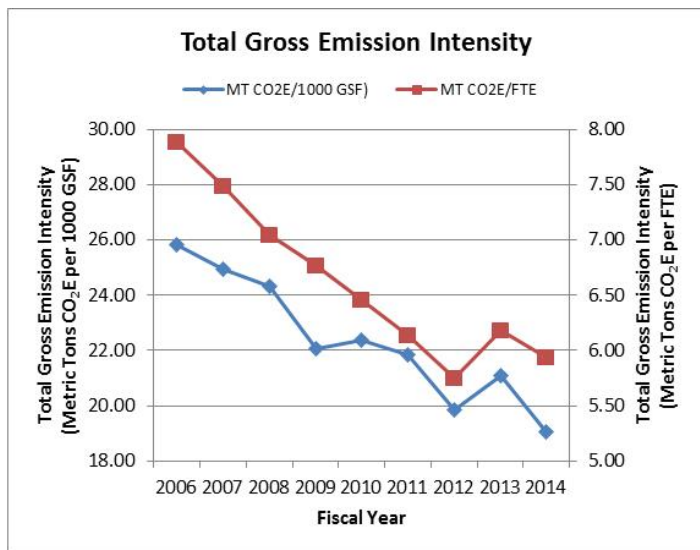
Temple University (Temple) has prepared a greenhouse gas (GHG) inventory program in support of its participation in the American College and University Presidents' Climate Commitment (ACUPCC). This inventory is an update which summarizes Temple's fiscal year (FY) 2014 GHG emissions and supplements the previously published inventory for fiscal years 2006 through 2013.

In FY 2014, Temple University's total gross emissions were 199,438 metric tons of carbon dioxide equivalent (MTeCO₂). Of the total emissions, 45% were attributable to purchased electricity consumption, 27% to stationary sources, 18% to transportation activities with a large portion attributable to commuting and 5% to solid waste. Mobile sources (university fleet), refrigerants, fertilizers, purchased steam, and transmission and distribution losses made up the remainder, approximately 5% of the total emissions. Temple's total gross emissions were reduced to a net of 186,493 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.



TRENDS FROM FY 2013 TO FY 2014



Total gross emissions increased by 1% from FY 2013 to FY 2014 which is attributed primarily to air travel and solid waste.

In FY 2014, total gross emission intensity per 1000 gross square feet (GSF) decreased by 10% and total gross emission intensity per full-time equivalent students (FTE) decreased by 4% relative to FY 2013. Normalizing emissions by variables such as square footage and population is helpful to establish trends. As of November 2014, average emission intensities for reporting ACUPCC peer institutions were 17.34 MTeCO₂/1000 GSF and 6.84 MTeCO₂/FTE. Temple's emission intensity of 19.05 is slightly higher on a GSF basis. Temple's emission intensity of 5.94 is slightly lower on a FTE basis.

GREENHOUSE GAS EMISSIONS SUMMARY

Emissions Source		FY 2006 Baseline	FY 2013	FY 2014	% Change FY06 to FY14	% Change FY13 to FY14
Scope 1 Emissions (MTCO ₂ E)	Stationary <i>(oil, natural gas, propane)</i>	57,166	55,573	55,015	-4%	-1%
	Mobile <i>(University fleet)</i>	628	959	921	47%	-4%
	Fugitive & Process <i>(Refrigerants, CO₂, fertilizer)</i>	1,945	2,510	2,509	29%	0%
	Total Gross Emissions Scope 1	59,739	59,042	58,446	-2%	-1%
Scope 2 Emissions (MTCO ₂ E)	Purchased Electricity	104,685	91,155	90,205	-14%	-1%
	Purchased Steam	278	435	366	32%	-16%
	Total Gross Emissions Scope 2	104,962	91,590	90,571	-14%	-1%
Scope 3 Emissions (MTCO ₂ E)	Commuting	22,616	23,813	24,416	8%	3%
	Air Travel	5,726	9,739	11,016	92%	13%
	Solid Waste	13,761	6,892	9,416	-32%	37%
	Transmission & Distribution Losses	6,469	5,633	5,574	-14%	-1%
	Total Gross Emissions Scope 3	48,573	46,076	50,422	4%	9%
Scope 1-3 Gross Emissions (MTCO ₂ E)	Total Gross Emissions	213,274	196,708	199,438	-6%	1%
	Gross Square Footage (GSF)	8,266,175	9,320,791	10,468,357	27%	12%
	Full-time Equivalent Students (FTE)	27,055	31,811	33,563	24%	6%
	Total Gross Emission Intensity/1000 GSF	25.80	21.10	19.05	-26%	-10%
	Total Gross Emission Intensity/FTE Student	7.88	6.18	5.94	-25%	-4%
Scope 1-3 Net Emissions (MTCO ₂ E)	Offsets	-125	-8,433	-12,945	10230%	54%
	Total Net Emissions	213,149	188,275	186,493	-13%	-1%
	Total Net Emission Intensity/1000 GSF	25.79	20.20	17.81	-31%	-12%
	Total Net Emission Intensity/FTE	7.88	5.92	5.56	-29%	-6%

TOTAL GROSS EMISSIONS REPORTED TO ACUPCC¹ 226,219 200,113

The largest contributor to the increase in total gross emissions from FY2013 to FY2014 was in Scope 3 emissions from the following:

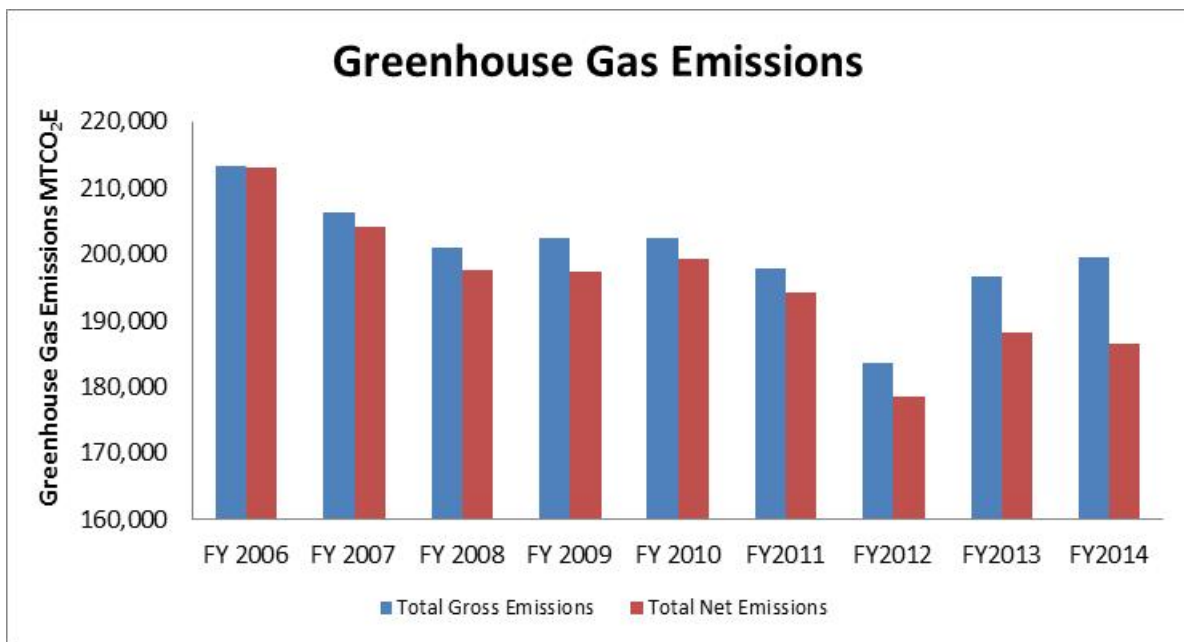
- The increase in air travel mileage;
- The reduction in the amount of solid waste being transported to an Energy from Waste facility.

Electricity usage, the largest contributor to Temple’s emissions, reduced slightly in FY 2014. The university expanded its on-site renewable energy generation via the addition of a 4,500 square foot, 63-kilowatt solar array on the Edberg Olson football training facility.

Temple reduced its FY 2014 GHG gross emissions from 199,438 MTeCO₂ to 186,493 MTeCO₂ (an 12,945 MTeCO₂ reduction) through offsets generated by the following activities:

- The purchase of renewable energy credits;
- On-campus composting at Ambler Campus;
- University computer reuse and recycling;
- Construction waste recycling.

¹ Refer to Reporting Methodology section of this report



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>)², 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 2014 GHG Inventory: Peter Bloomer, Facilities Management; Kurt Bresser, Facilities Management; Janice Dietz, Campus Safety Services; Chuong Doan, Office of University Housing; Mark H. Gottlieb, Facilities Management; Joe Imszennik, Facilities Management; Vincent James, Athletics; 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; Evelyn Rush, Business Services; Sunaina Soars, Research and Strategic Initiatives; Rodney Timmons, Facilities Management; and, Delores Tyler, Purchasing. The Office of Sustainability would also like to thank Jennifer Smith from Waste Management.

² Electricity transmission and distribution losses are not accounted for in CarbonMAP and were calculated separately using 5.82% eGrid Gross Loss Factor

TEMPLE UNIVERSITY FY 2014 Greenhouse Gas Inventory
Greenhouse Gas Emissions Summary FY2006 - FY2014
prepared by the Office of Sustainability

Emissions Source		FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY2011	FY2012	FY2013	FY2014
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	55,015
	Mobile (University fleet)	628	654	634	908	874	923	885	959	921
	Fugitive & Process (Refrigerants, CO ₂ , fertilizer)	1,945	1,879	1,861	2,529	2,520	2,516	2,510	2,510	2,509
	Total Gross Emissions Scope 1	59,739	58,060	49,509	65,399	60,322	55,826	51,050	59,042	58,446
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	90,205
	Purchased Steam	278	318	330	360	353	349	294	435	366
	Total Gross Emissions Scope 2	104,962	100,185	103,618	90,319	92,945	92,901	93,454	91,590	90,571
	Commuting	22,616	22,675	23,273	24,084	24,846	24,519	25,096	23,813	24,416
	Air Travel	5,726	6,187	6,028	6,524	7,486	8,643	479	9,739	11,016
	Solid Waste	13,761	13,110	12,211	10,509	11,079	10,255	7,781	6,892	9,416
	Transmission & Distribution Losses	6,469	6,171	6,383	5,559	5,722	5,719	5,757	5,633	5,574
	Total Gross Emissions Scope 3	48,573	48,144	47,894	46,677	49,134	49,136	39,112	46,076	50,422
Scope 1-3 Gross Emissions (MT CO ₂ E)	Total Gross Emissions	213,274	206,389	201,021	202,394	202,401	197,863	183,616	196,708	199,438
	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	10,468,357
	Full-time Equivalent Students (FTE)	27,055	27,560	28,535	29,901	31,363	32,251	31,939	31,811	33,563
	Total Gross Emission Intensity/1000 GSF	25.80	24.95	24.30	22.07	22.35	21.85	19.86	21.10	19.05
	Total Gross Emission Intensity/FTE	7.88	7.49	7.04	6.77	6.45	6.14	5.75	6.18	5.94
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	-12,945
	Total Net Emissions	213,149	204,086	197,547	197,264	199,359	194,204	178,577	188,275	186,493
	Total Net Emission Intensity/1000 GSF	25.79	24.67	23.88	21.51	22.02	21.45	19.31	20.20	17.81
	Total Net Emission Intensity/FTE	7.88	7.41	6.92	6.60	6.36	6.02	5.59	5.92	5.56
Total Gross Emissions Reported to ACUPCC*:		226,219	223,497	218,284	233,138	230,567	218,783	195,033	200,113	

* GHG Emissions recalculated using CarbonMAP (previously used Campus Carbon Calculator)
Transmission & Distribution Losses are not accounted for in CarbonMAP and were calculated using 5.82% eGrid Gross Loss Factor

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	8	13	38	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.							

GHG SCORECARD ^a Reporting Years FY 2011 - FY 2014	Temple University Philadelphia, PA (Main, Tyler, Podiatry, Ambler, Health Sciences, and Residence Halls)					
	Units	FY 2006 Baseline	FY 2011	FY 2012	FY 2013	FY 2014
Intensity Metrics						
Total Building Space Gross Square Footage	ft ²	8,266,175	9,055,532	9,245,532	9,320,791	10,468,357
Full Time Equivalent Students ^b	Unitless	27,055	32,251	31,939	31,811	33,563
Operating Budget	\$	804,240,000	1,073,697,000	1,123,257,000	1,153,890,000	1,210,566,000
Research Expenditures	\$	83,062,000	102,985,869	103,924,252	115,656,070	117,183,602
Energy Expenses	\$	23,319,394	24,679,710	24,388,493	22,196,921	26,023,819
Research Building Space Gross Square Footage	ft ²	775,083	929,079	907,048	916,757	936,639
Full Time Students	Unitless	25,280	30,861	30,592	30,426	31,533
Part Time Students	Unitless	5,325	4,171	4,040	4,154	6,086
Summer School Students (FTE Sessions I & II)	Unitless	4,282	5,752	3,810	4,535	4,535
Faculty (Full Time Equivalent) ^b	Unitless	2,239	2,416	2,452	2,462	2,539
Staff (Full Time Equivalent) ^b	Unitless	4,239	3,998	4,075	4,166	4,351
Scope 1 Emissions						
Stationary Sources						
Natural Gas	MMBtu	156,252	957,074	867,460	1,011,076	973,117
No. 2 Fuel Oil	Gallon	369,875	140,763	147,319	174,507	112,008
No. 6 Residual Oil	Gallon	3,982,568	2,955	0	0	186,319
Propane	Gallon	4,474	0	0	0	0
Mobile Sources - Owned and Leased						
Diesel	Gallon	20,131	20,354	14,232	11,194	11,211
Gasoline ^d	Gallon	43,804	63,476	63,302	74,688	69,014
Compressed Natural Gas	GGE	3,533	22,182	26,567	26,830	29,116
Fugitive Sources						
Cryogenic CO ₂	Pounds	227,322	165,901	157,100	153,880	153,960
HFC-134a Refrigerant Leakage	Pounds	2,817	3,753	3,753	3,753	3,753
Agriculture						
Fertilizer Application - Synthetic	Pounds	17,130	6,176	5,123	7,623	7,125
Fertilizer Application - Organic	Pounds	50	4,700	4,175	6,175	5,400
Scope 2 Emissions						
Electricity usage	kWh	200,479,805	215,028,902	216,440,406	211,782,921	209,574,776
Purchased Steam	Klb	3,807	4,785	4,032	5,960	5,018
Scope 3 Emissions						
Commuting						
Students - Personal Vehicle	miles	18,880,359	22,506,393	22,288,663	18,976,095	19,993,333
Students - Carpool	miles	3,241,722	3,864,305	3,826,921	2,089,307	2,161,441
Students - Bus	miles	4,389,338	5,232,325	5,181,707	3,540,375	3,730,100
Students - Light Rail	miles	5,779,597	6,889,588	6,822,937	7,436,951	7,829,849
Students - Commuter Rail	miles	12,270,728	14,627,360	14,485,854	19,676,577	20,700,372
Faculty - Personal Vehicle	miles	4,364,556	4,709,588	4,779,764	4,707,172	4,842,749
Faculty - Carpool	miles	212,905	229,736	233,159	95,138	94,585
Faculty - Bus	miles	65,700	70,894	71,951	95,032	96,718
Faculty - Light Rail	miles	424,467	458,023	464,847	540,233	558,976
Faculty - Commuter Rail	miles	2,190,545	2,363,714	2,398,935	2,188,475	2,260,082
Staff - Personal Vehicle	miles	6,946,154	6,551,244	6,677,419	10,883,085	10,349,430
Staff - Carpool	miles	987,656	931,505	949,445	468,506	434,850
Staff - Bus	miles	960,100	905,516	922,956	1,037,192	985,370
Staff - Light Rail	miles	1,775,972	1,675,002	1,707,262	2,057,390	1,951,607
Staff - Commuter Rail	miles	2,774,440	2,616,705	2,667,102	3,671,504	3,480,192
Summer School Students - Personal Vehicle	miles	597,640	802,808	531,762	541,049	541,049
Summer School Students - Carpool	miles	205,227	275,681	182,605	119,141	119,141
Summer School Students - Bus	miles	138,940	186,638	123,625	100,944	100,944
Summer School Students - Light Rail	miles	182,948	245,753	162,781	212,043	212,043
Summer School Students - Commuter Rail	miles	388,418	521,761	345,603	561,022	561,022
Employee Business Air Travel ^e	miles	9,076,920	14,682,240	813,067	16,544,135	18,713,173
Solid Waste						
Solid Waste landfilled	U.S. Tons	4,440	3,308	2,517	2,204	3,039
Solid Waste Energy-from-Waste	U.S. Tons			735	686	125

GHG SCORECARD ^a Reporting Years FY 2011 - FY 2014	Temple University Philadelphia, PA <i>(Main, Tyler, Podiatry, Ambler, Health Sciences, and Residence Halls)</i>					
	Units	FY 2006 Baseline	FY 2011	FY 2012	FY 2013	FY 2014
Incinerated Waste ^c	U.S. Tons	35	16.5	18.2	22.1	18.4
Offsets						
Renewable Energy Credits	kWh	240,000	0	0	0	21,086,000
Composting (on-campus)	U.S. Tons	8	24.0	28.4	28.4	46.2
Computer recycling	MTeCO ₂	0	3,107.0	3,005.0	3,043.0	2,611.0
Construction Waste Recycling	MTeCO ₂	0	552.0	2,034.0	5,390.0	1,258.4
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.						
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