

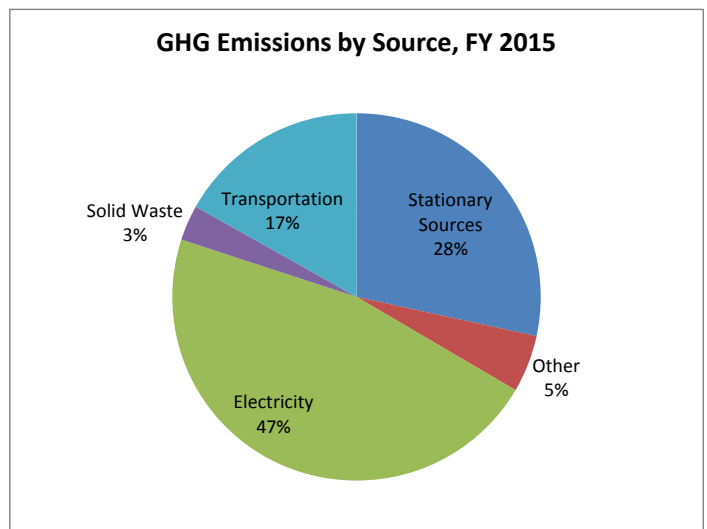
# GREENHOUSE GAS INVENTORY FY 2015 UPDATE

## OVERVIEW

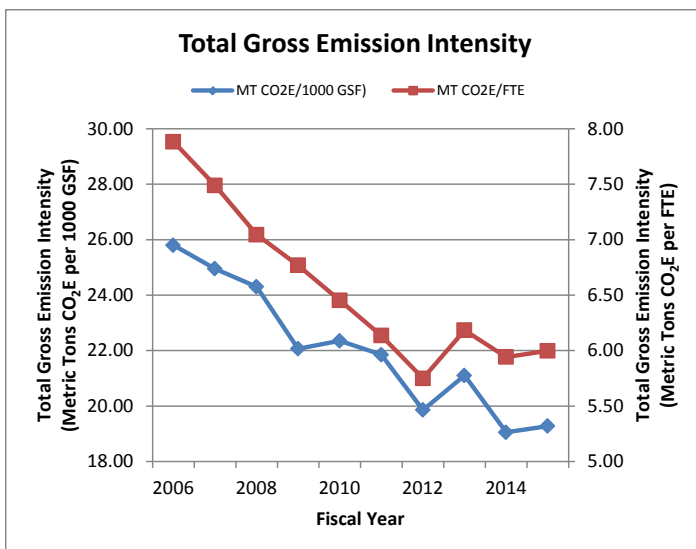
Temple University (Temple) has prepared a greenhouse gas (GHG) inventory program in support of its participation in Second Nature’s Climate Commitment. This inventory is an update which summarizes Temple’s fiscal year (FY) 2015 GHG emissions and supplements the previously published inventory for fiscal years 2006 through 2014.

In FY 2015, Temple University’s total gross emissions were 203,673 metric tons of carbon dioxide equivalent (MTeCO<sub>2</sub>). Of the total emissions, 47% were attributable to purchased electricity consumption, 28% to stationary sources, 17% to transportation activities with a large portion attributable to commuting and 3% 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 200,573 MTeCO<sub>2</sub> through carbon offsets.

The primary emission sources were: purchased electricity, stationary combustion, and commuting (student, faculty and staff). This collectively accounted for approximately 88% of total annual gross emissions.



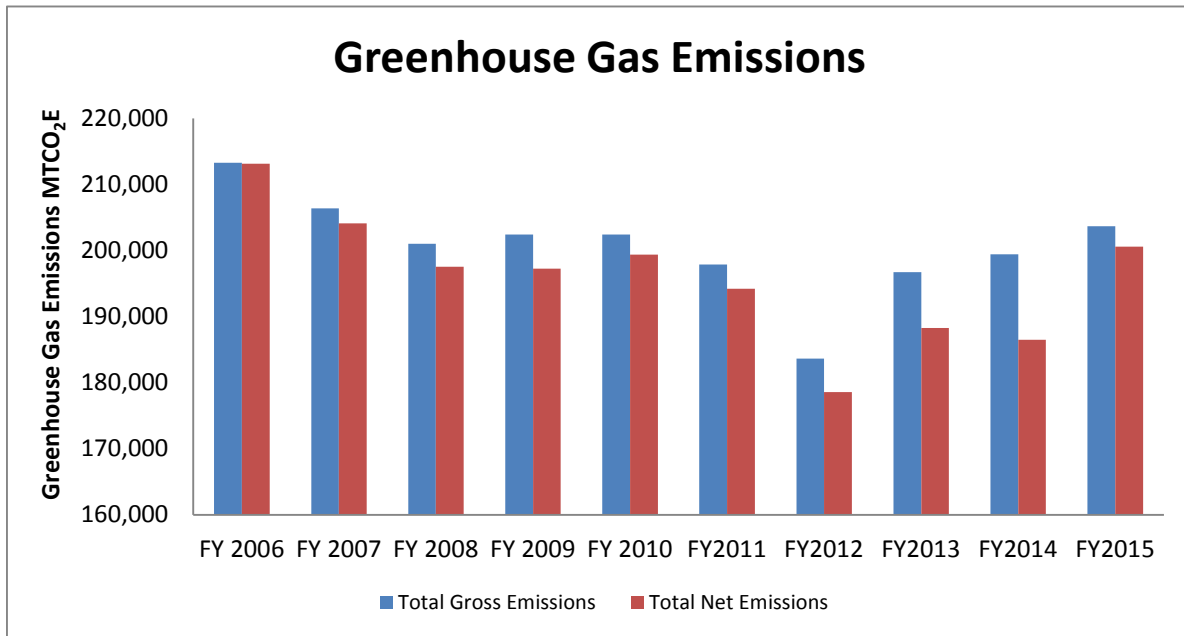
## TRENDS FROM FY 2014 TO FY 2015



Total gross emissions increased by 2% from FY 2014 to FY 2015 which is attributed primarily to increased use of energy for building operations.

In FY 2015, total gross emission intensity per 1000 gross square feet (GSF) and total gross emission intensity per full-time equivalent students (FTE) increased by 1% relative to FY 2014. Normalizing emissions by variables such as square footage and population is helpful to establish trends. As of January 2016, average emission intensities for reporting Second Nature peer institutions were 16.83 MTeCO<sub>2</sub>/1000 GSF and 7.01 MTeCO<sub>2</sub>/FTE. Temple’s emission intensity is higher on a GSF basis and lower on a FTE basis when compared to peer institutions.





## 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 (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). 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>)<sup>2</sup>, GHG emissions are expressed in Metric Tons of Carbon Dioxide Equivalents (MTeCO<sub>2</sub>). 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 MTeCO<sub>2</sub> 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 2015 GHG Inventory: Peter Bloomer, Facilities Management; Kurt Bresser, Facilities Management; Phil Carpenter, Liacouras Center; Janice Dietz, Campus Safety Services; Mark H. Gottlieb, Facilities Management; Joe Imszennik, Facilities Management; Vincent James, Athletics; Jonathan Latko, Computer Recycling Center; Jason Levy, Division of Student Affairs; David J. McDonough, Environmental Health & Radiation Safety; Andrew McGinley, Office of Research Administration; Anthony Morris, Facilities Management Podiatric Medicine; Kurt Pflugfelder, Scheduling and Space Management; Domenic Rudi, Jr., Office of University Housing; Lydia Perez, Accounts Payable; Rodney Timmons, Facilities Management; and, Delores Tyler, Purchasing. The Office of Sustainability would also like to thank James Gill from Gold Medal.

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

# Greenhouse Gas Inventory Scorecard

Temple University  
Philadelphia, Pennsylvania

	Units	Baseline Year FY2006	Previous Year FY 2014	Current Year FY 2015
<b>INSTITUTIONAL DATA</b>				
<b>Population</b>				
Full Time Equivalent Students		27,055	33,563	33,955
Full Time Staff		4,239	4,174	4,195
Part Time Staff				1,993
Full Time Faculty		2,239	2,034	2,089
Part Time Faculty			1,514	1,599
<b>Budget</b>				
Total Operating Budget	\$	804,240,000	1,210,566,000	1,262,639,737
Research Budget	\$	83,062,000	117,183,602	123,352,974
Energy Budget	\$	23,319,394	26,023,819	25,697,223
<b>Physical Space</b>				
Total Space	ft <sup>2</sup>	8,266,175	10,468,357	10,564,903
Laboratory Space	ft <sup>2</sup>	775,083	936,639	951,628
<b>SCOPE 1 DATA</b>				
<b>On-Campus Stationary Sources</b>				
Natural Gas	MMBtu	156,252	973,117	1,068,915
No. 2 Fuel Oil	Gallon	369,875	112,008	46,041
No. 6 Residual Oil	Gallon	3,982,568	186,319	49,633
<b>Mobile Sources (owned/leased fleet)</b>				
Diesel	Gallon	20,131	11,211	12,898
Gasoline	Gallon	43,804	69,014	63,883
Compressed Natural Gas	GGE	3,533	29,116	27,000
<b>Fugitive Sources</b>				
Cryogenic CO2 (Dry Ice)	Pounds	227,322	153,960	178,952
HFC-134a Refrigerant Leakage	Pounds	2,817	3,753	3,753
<b>Fertilizer</b>				
Organic	Pounds	50	5,400	5,400
Synthetic	Pounds	17,130	7,125	4,325
<b>SCOPE 2 DATA</b>				
Purchased Electricity	kWh	200,479,805	209,574,776	220,411,133
Purchased Steam	MMBtu	3,807	5,018	14,100
<b>SCOPE 3 DATA</b>				
<b>Student Daily Commute</b>				
Personal Car	Miles	18,880,359	19,993,333	20,226,885
Carpool	Miles	3,241,722	2,161,441	2,186,690
Bus	Miles	4,389,338	3,730,100	3,773,673
Subway	Miles	5,779,597	7,829,849	7,921,313
Rail	Miles	12,270,728	20,700,372	20,942,183
<b>Faculty Daily Commute</b>				
Personal Car	Miles	4,364,556	4,842,749	5,001,243
Carpool	Miles	212,905	94,585	97,681
Bus	Miles	65,700	96,718	99,884
Subway	Miles	424,467	558,976	577,270
Rail	Miles	2,190,545	2,260,082	2,334,050
<b>Staff Daily Commute</b>				
Personal Car	Miles	6,946,154	10,349,430	12,713,793
Carpool	Miles	987,656	434,850	534,193
Bus	Miles	960,100	985,370	1,210,481
Subway	Miles	1,775,972	1,951,607	2,397,458
Rail	Miles	2,774,440	3,480,192	4,275,253
University Funded Travel (Air)	Miles	9,076,920	18,713,173	14,046,495
University Funded Travel (Rail)	Miles	-	-	148,479

# Greenhouse Gas Inventory Scorecard

Temple University  
Philadelphia, Pennsylvania

	Units	Baseline Year FY2006	Previous Year FY 2014	Current Year FY 2015
<b>SCOPE 3 DATA Continued</b>				
<b>Solid Waste</b>				
Landfilled	U.S. Tons	4,440	3,039	2,052
Energy-from-Waste	U.S. Tons	0	125	775
Incinerated	U.S. Tons	35	18	17
<b>OFFSETS</b>				
Renewable Energy Credits	kWh	240,000	21,086,000	108,236
Composting (on-campus)	U.S. Tons	8	46	46
Computer Recycling	MTeCO <sub>2</sub>	0	2,611	2,563
Construction Waste Recycling	MTeCO <sub>2</sub>	0	1,258	491

## INVENTORY NOTES

- 1) Inventory includes only those campuses where the university has operational control: Main, Tyler, Podiatry, Ambler, Health Sciences (excluding hospital buildings) and Residence Halls
- 2) Faculty and staff counts include Harrisburg, TUCC and Fort Washington campuses, but are assumed to be non material
- 3) FY 2009 is the first year that Athletic's vehicles included in inventory
- 4) Air travel mileage is not representative of all university air travel, only trips booked through Temple Concur