

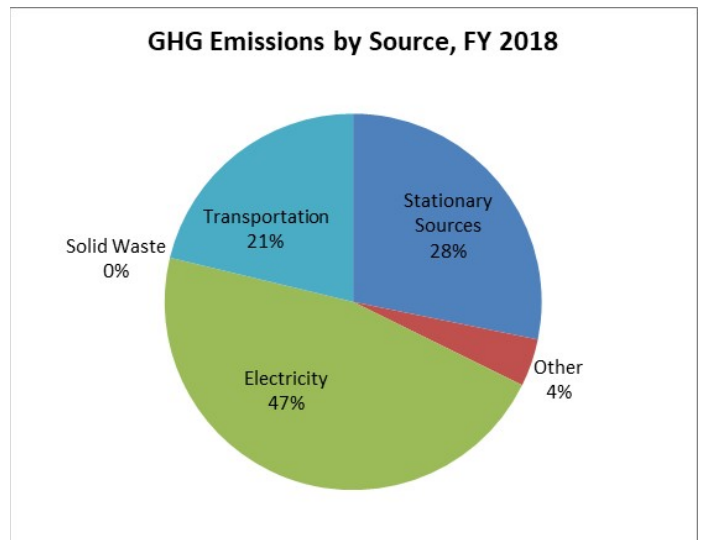
GREENHOUSE GAS INVENTORY FY 2018 UPDATE

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) 2018 GHG emissions and supplements the previously published inventory for fiscal years 2006 through 2017.

In FY 2018, Temple University’s total gross emissions were 197,554 metric tons of carbon dioxide equivalent (MTeCO₂). Of the total emissions, 47% were attributable to purchased electricity consumption, 28% to stationary sources, and 21% to transportation activities with a large portion attributable to commuting. Mobile sources (university fleet), refrigerants, fertilizers, purchased steam, and transmission and distribution losses made up the remainder, approximately 4% of the total emissions.

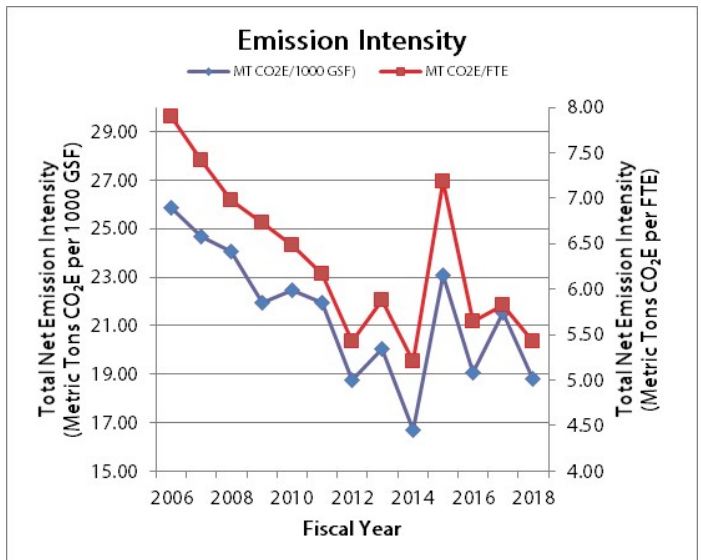
The primary emission sources were: purchased electricity, stationary combustion, and commuting (student, faculty and staff). This collectively accounted for approximately 91% of total annual gross emissions.



TRENDS FROM FY 2006 TO FY 2018

Total gross emissions decreased by 5% from FY 2017 to FY 2018 which is due primarily to the decrease of greenhouse gasses attributed to purchased electricity and solid waste. Temple’s gross emissions reduction of almost 7.5% since FY 2006 equates to the annual energy usage of 1,917 homes.

Normalizing emissions by variables such as square footage and population is helpful to establish trends. In FY 2018, total gross emission intensity per 1000 gross square feet (GSF) decreased relative to FY 2017 and total gross emission intensity per full-time equivalent students (FTE) decreased relative to FY 2017. Overall, Temple’s gross emission intensity has decreased since FY 2006 (27% for GSF and 31% for FTE).

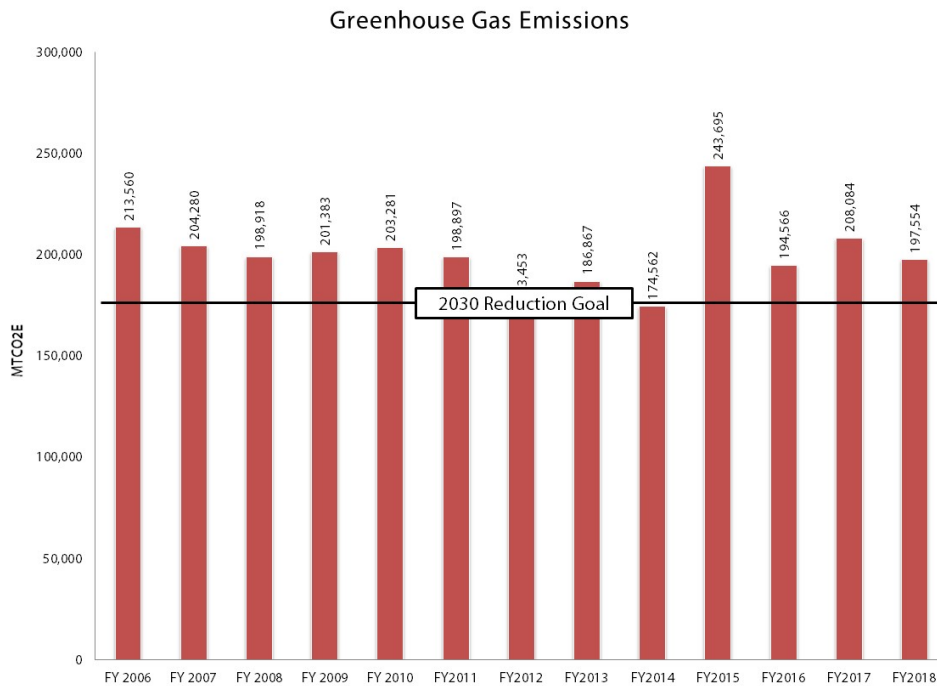


GREENHOUSE GAS EMISSIONS SUMMARY

Emissions Source ¹		Baseline FY 2006	FY2017	FY2018	% Change FY06 to FY18	% Change FY17 to FY18
Scope 1 Emissions (MT CO ₂ E)	Stationary (<i>oil, natural gas, propane</i>)	57,151	49,395	55,728	-2.5%	12.8%
	Mobile (<i>University fleet</i>)	625	871	1,027	64.3%	18.0%
	Refrigerants & Chemicals	1,930	151	127	-93.4%	-16.1%
	Fertilizer	14	3	3	-77.6%	2.9%
	Total Gross Emissions Scope 1	59,722	50,420	56,886	-4.7%	12.8%
Scope 2 Emissions (MT CO ₂ E)	Purchased Electricity	104,559	100,759	91,823	-12.2%	-8.9%
	Purchased Steam	278	1,074	803	189.2%	-25.2%
	Total Gross Emissions Scope 2	104,837	101,833	92,626	-11.6%	-9.0%
Scope 3 Emissions (MT CO ₂ E)	Faculty Commuting	2,236	2,939	2,950	31.9%	0.4%
	Staff Commuting	4,139	7,625	8,210	98.4%	7.7%
	Student Commuting	12,935	20,247	20,613	59.3%	1.8%
	University Financed Travel	5,582	10,481	10,160	82.0%	-3.1%
	Solid Waste	13,760	7,969	-3	-100.0%	-100.0%
	Transmission & Distribution Losses	10,353	6,583	6,113	-41.0%	-7.1%
	Total Gross Emissions Scope 3	49,005	55,844	48,043	-2.0%	-14.0%
Scope 1-3 Gross Emissions (MT CO ₂ E)	Total Gross Emissions	213,564	208,097	197,554	-7.5%	-5.1%
	Gross Square Footage (GSF)	8,266,175	9,665,936	10,509,012	27.1%	8.7%
	Full-time Equivalent Students (FTE)	27,055	35,750	36,397	34.5%	1.8%
	Total Gross Emission Intensity/1000 GSF	25.84	21.53	18.80	-27.2%	-12.7%
	Total Gross Emission Intensity/FTE	7.89	5.82	5.43	31.2%	-6.8%
Scope 1-3 Net Emissions (MT CO ₂ E)	Offsets (On-site Compost)	-3.4	-13.5	0.0	-100.0%	-100.0%
	Total Net Emissions	213,560	208,084	197,554	-7.5%	-5.1%
	Total Net Emission Intensity/1000 GSF	25.84	21.53	18.80	-27.2%	-12.7%
	Total Net Emission Intensity/FTE	7.89	5.82	5.43	-31.2%	-6.7%

¹GHG Emissions recalculated via SIMAP using market-based accounting per Second Nature's new protocol (location-based accounting utilized FY2006 through FY2017).

The reduction in greenhouse gas emissions from FY 2017 to FY 2018 came from Scope 2 sources (purchased electricity). Temple saw an increase in its overall energy consumption by 3.5%; however, the amount of emissions associated with purchased electricity dropped by 9%. This is likely due to a mix of improved building efficiency and the university's commitment to purchase renewable energy credits to offset 25% of its electricity buy. The largest increase in greenhouse gas emissions from FY 2017 to FY 2018 came from stationary sources with almost a 13% increase in emissions. This was due to the increase in burning of #2 oil.



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, and Podiatric campuses).

Using the methodology of SIMAP (<https://unhsimap.org/>), 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 and Carbon Map. 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 2018 GHG Inventory: Nicholas Beale, Facilities Management; Peter Bloomer, Facilities Management; Kurt Bresser, Facilities Management; Craig Jankowski, Liacouras Center; Janice Dietz, Campus Safety Services; Mark H. Gottlieb, Service Operations; Andrew Holden, Facilities Management; Joe Imszennik, Service Operations; Vincent James, Athletics; Jonathan Latko, Computer Recycling Center; David J. McDonough, Environmental Health & Radiation Safety; Anthony Morris, Facilities Management Podiatric Medicine; Kurt Pflugfelder, Scheduling and Space Management; Domenic Rudi, Jr., Office of University Housing; Clare McGee, Accounts Payable; and, Delores Tyler, Purchasing. The Office of Sustainability would also like to thank Miranda Andrew from Gold Medal.