Saint Louis University
Greenhouse Gas Inventory
Executive Summary

FY2016

Introduction

A greenhouse gas (GHG) inventory is a comprehensive analysis of all emissions created from energy used by an institution. Greenhouse gases are gases which absorb radiated heat in the atmosphere. As these gases absorb heat, the atmospheric temperature rises. This creates climate change. The most common and impactful greenhouse gases are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).

The tool used to complete the greenhouse gas inventory, is the Carbon MAP – Management and Analysis Platform. This online tool measures SLU's emissions from six primary greenhouse gases:

- Carbon dioxide ($CO_{2)}$
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFC)
- Perfluorocarbons (PFC)
- Sulphur hexafluoride (SF_6)

These six greenhouse gases measured in the Carbon MAP are equated into a unit of CO_2e (carbon dioxide equivalent). Carbon dioxide is used as the normalizing factor because it is so prevalently produced through fossil fuel burning, and it is the most widely-known greenhouse gas.

This greenhouse gas inventory report for FY16 marks the completion of Saint Louis University's third comprehensive greenhouse gas inventory.

Methodology

The Carbon MAP details what data are needed for the inventory. As an online tool created specifically for colleges and universities to measure their greenhouse gas emissions, the Carbon MAP streamlines the process and provides an accessible platform to conduct a greenhouse gas inventory. Once all data are entered in the Carbon MAP, the tool calculates all amounts entered and creates total emissions measured in metric tons of carbon dioxide equivalent ($mtCO_2e$).

Emissions are categorized by source into three categories: Scope 1, Scope 2, and Scope 3.

Scope 1 emissions are from sources owned and operated by the University; these emissions are also combusted on-site. Scope 2 emissions are from sources that are purchased by the University, and combusted off-site. Scope 3 emissions are from sources neither owned nor operated by the University, but are created as a result of University activities.

Summary Statistics

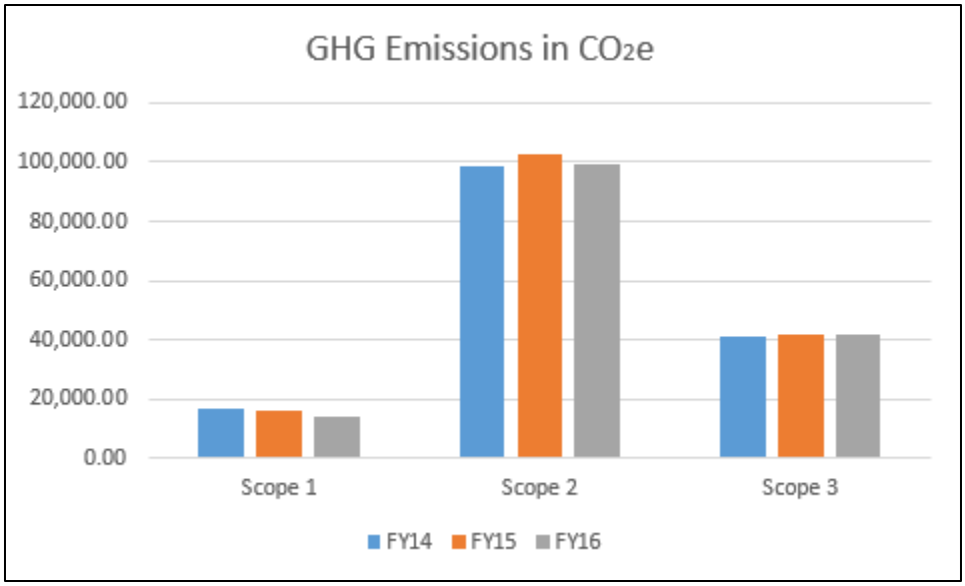
FY16 Metrics	Total	Per Campus User	Per Student	Per 1,000 Sq.Ft.	% Offset
Gross Emissions (Scope 1 + 2)	113,015.72	14.94	9.42	19.90	0%
Gross Emissions (Scope 1 + 2 + 3)	154,567.55	20.43	12.88	27.21	0%
Net Emissions	154,388.53	20.40	12.87	27.18	0. 12%

Results

In FY16, SLU's gross GHG emissions totaled 154,567.55 $mtCO_2e$. Based on EPA conversions, this is equivalent to the amount of emissions created by about 32,650 vehicles driven for one year or the amount of electricity used by about 16,322 homes in one year. If 39 wind turbines were installed, SLU's total emissions could be offset. This amount of emissions could be sequestered by 146,314 acres of U.S. forests, equivalent to 512 times the size of SLU's 286-acre campus.

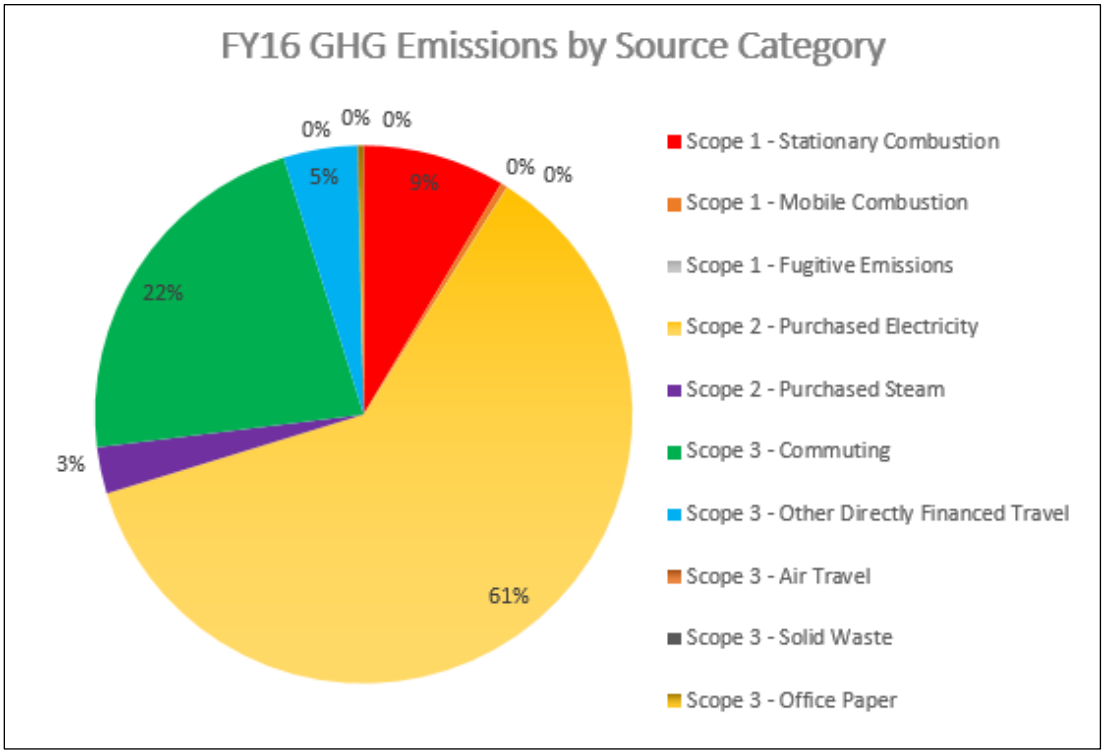
Net GHG emissions totaled 154,388.53 $mtCO_2e$. The small decrease in the net emissions was due in part to the installation of nine solar arrays at the University. They showed a 0.12% decrease in overall emissions; this number will continue to grow as SLU utilizes solar energy and continues to implement energy reduction measures.

In FY16, SLU's total Scope 1 emissions were lowered due to a reduction in stationary combustion sources (refrigerants, fertilizers, natural gas) and mobile combustion (fleet vehicles). Scope 2 emissions were reduced due to a decrease in purchased electricity at the University. The slight increase in FY15 and FY16 over FY14 Scope 3 data is due to a slight increase in "other directly financed travel" and increased data integrity.



Emissions by Scope

The following figures show emissions by category per scope. Some contributing categories account for one percent or smaller of total emissions. The table below the pie chart shows the amounts of each source category in $mtCO_2e$. The negative number for solid waste represents the landfill type used, which is CH_4 recovery and electric generation. The use of waste to create electricity allows for a negative amount of emissions in this category.



Data & Explanation of FY16 GHG Emissions by Source Category

Category	$mtCO_2e$
Scope 1 - Stationary Combustion (refrigerants, fertilizers, natural gas)	13,236.18
Scope 1 - Mobile Combustion (fleet)	618.87
Scope 1 - Fugitive Emissions (leaks and escapee gases and vapors from pressurized equipment)	47.47
Scope 2 - Purchased Electricity	94,787.14
Scope 2 - Purchased Steam	4,324.06
Scope 3 - Commuting	34,235.57
Scope 3 - Other Directly Financed Travel (University funded travel of bus, car, and rail)	6,857.89
Scope 3 - Air Travel (from University funded travel - does not include air fleet)	18.01
Scope 3 - Solid Waste	-71.19
Scope 3 - Office Paper	511.55

Comparisons

City of St. Louis

When compared to the city of St. Louis, Missouri, SLU's FY16 net emissions contribute roughly 2.0% to the total measured emissions of St. Louis' calendar year 2010 emissions. The city of St. Louis measured emissions in two groups: community emission and government emissions. These combined emissions equal 7,857,132 $mtCO_2e$. SLU's campus is 286 acres. The city of St. Louis is 42,240 acres. SLU accounts for 0.7% of the total city's acreage.

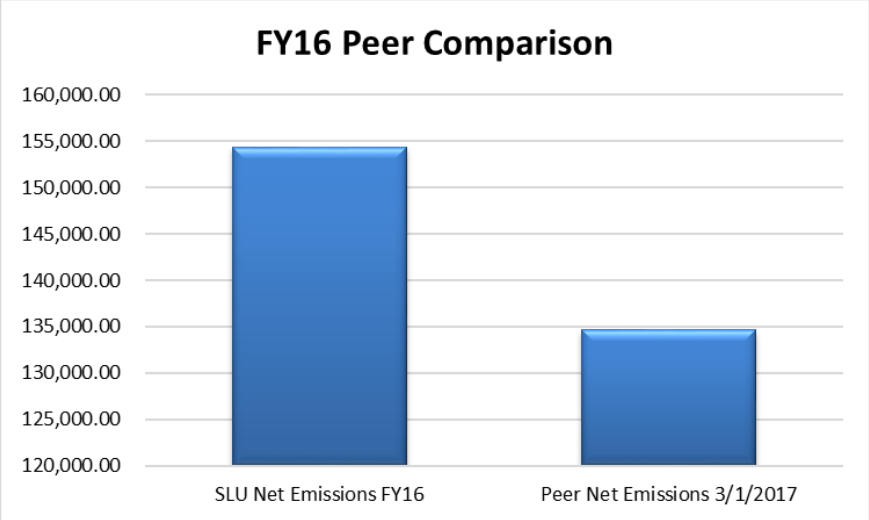
Peer Group

Compared to inventories of other universities, SLU's emissions are higher than the average. Some possible reasons for higher emissions are related to: a) an older building portfolio compared to other higher education institutions, b) energy-intense medical and research spaces, c) regional fuel sources that are primarily coal-based, and d) regional climate patterns which reach temperature extremes throughout the year.

FY16 Metrics ($MTCO_2e$)	Total	Per Student FTE	Per 1,000 Sq. Ft.
SLU Net Emissions FY16	154,389	12.87	27.18
Peer Net Emissions*	134,672	6.75	16.68

**In comparison with doctorate-granting university Second Nature signatories*

Net emissions created by SLU are higher than the peer average. The peer group used for comparison consists of 126 national doctorate-granting universities who are signatories of the Second Nature Climate, Carbon or Resilience Commitments. A list of all universities submitting GHG inventories to Second Nature can be found at reporting.secondnature.org.



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