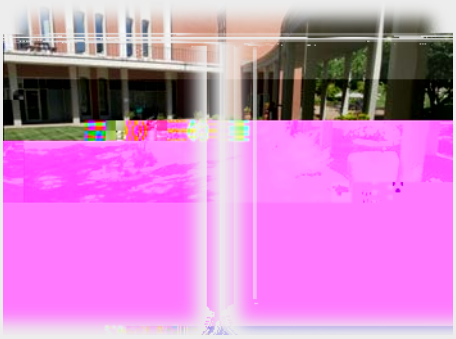

A greenhouse gas (GHG) inventory is a comprehensive analysis of all emissions created-3(nGHG0ur2(o)4(m)- (v)-1(e)-3(n)

EXECUTIVE SUMMARY

Climate change and the increase of GHGs in our atmosphere is one of the most pressing issues of our age. To work toward positive global citizenship, Saint Louis University recognizes the need to actively participate in creating a more sustainable environment by minimizing emissions. The first step toward that is to develop a grasp of the impact that campus operations have on the environment and to identify improvement areas. This first-ever Greenhouse Gas (GHG) emissions inventory, produced by the Department of Sustainability & Benchmarking, does just that.

Guided by the framework provided in the CarbonMAP campus carbon calculator, this inventory has allowed for the establishment of a baseline for Saint Louis University's (SLU) carbon footprint. This baseline is based on fiscal year 2014 (FY14) and utilized the Operational Control Approach, which meant inclusion of operations located in metro St. Louis that are owned and operated by the University.

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FIGURE 2 BREAK OUT OF EMISSIONS

FULL REPORT

INTRODUCTION

Data Collection Process

In order to collect all necessary data, all relevant departments of the University should be aware of the process and impact of the GHG inventory. There was only one outlier in the data collection process, but all other necessary data was collected over a period of 3 months as data requirements were better understood. All data requirements were met by either collection from existing public sources or from simple in-house communications and outreach techniques. Depending on the nature of the data gathered and the data needed for the CarbonMAP, some calculations were used to achieve exact numbers. See Detailed Data Collection in the Appendix for the listed departments of contact, data sources, and explanations for any assumptions made for all components of the GHG inventory.

Data Concepts

Greenhouse Gases

Greenhouse gases are gases which absorb infrared radiation (or radiated heat) in the atmosphere. The increase of these gases in the Earth's atmosphere creates atmospheric warming, which impacts global climate change. Carbon dioxide (CO_2) is the most commonly heard of greenhouse gas because it is the most prevalent greenhouse gas in the Earth's atmosphere. Other significant greenhouse gases are methane (CH_4), nitrous oxide (N_2O), and fluorinated gases such as per fluorocarbons (PFCs) and hydro fluorocarbons (HFCs).

FIGURE 1: U.S. GREENHOUSE GAS EMISSIONS IN 2012
Note: Obtained from EPA website
http://www.epa.gov/climatechange/ghgemissions/gases.html

Emission Scopes

Data for emissions is broken into three categories: Scope 1, Scope 2, and Scope 3. The minimum requirements for a GHG Inventory include Scopes 1 and 2, while Scope 3 remains optional. This is due to the nature of the emissions sources; Scopes 1 and 2 encompass concrete data of University operations, while Scope 3 includes data which is more difficult to track and is often extrapolated.

Saint Louis University attempted a full detail of emissions; all of Scopes 1 and 2 were tracked, and major components of Scope 3. While most data in Scope

The aviation gasoline emissions factor came from the EPA published document,

EMISSIONS CATEGORY COMPONENTS

SCOPE 1 DETAILS

- On-campus Stationary Natural Gas Usage – Though natural gas is purchased, which originally lead us to believe it should be categorized in Scope 2, it is categorized in Scope 1 because the natural gas is combusted on-site at the University.

3 0 Tw 5.913 0 0 ... (n)]TJ EMC ... 8 >>BDC 34TT3 1 Tf

The total gross emissions for Scope 1 totaled 17,216.82 metric tons CO2e, Scope 2 totaled 98,559.89 metric tons CO2e, and for Scope 3 the items included totaled 37,630.99 metric tons CO2e. SLU currently does not purchase any carbon offsets, so the total net emissions for the University equaled 153,407.70 metric tons CO2e. The emissions are shown by scope in Figure 3.

FIGURE 3: GHG EMISSIONS BY SCOPE IN MT CO2e
Note: Image captured from CarbonMAP

RECOMMENDATIONS & CONCLUSION

This section aims to provide recommendations and observations for future reporting by reflecting upon this GHG Inventory pilot process.

OBSERVATIONS

- Learning about greenhouse gases was a bigger undertaking than expected. It would be difficult for the inventory to be done by individuals with no prior experience/ knowledge in areas of energy usage and data gathering, collecting, and compounding.
- This should not be done alone - it must be a collaborative effort and requires support and cooperation from many different departments and offices.
- Ample time to complete a full GHG Inventory should be allowed – this may be at least 2 months, but could be up to a full semester.

RECOMMENDATIONS

It is first of all recommended that a GHG Inventory be conducted at a minimum biennially. It is advisable at this point to consider any emission sources that may have been overlooked in this baseline inventory, as well as to establish a formal framework for ongoing reporting. On the heels of completing this first inventory, it will be necessary to proactively plan for conducting the next inventory, so as to ensure that all sources and data contacts

are identified and data will be readily accessible. For example, the GHG team had difficulty collecting all fleet vehicle consumption data due to the decentralization of records and data for university travel was only available in dollars spent versus passenger miles, making only estimates available. Formalizing the GHG Inventory process will allow for data to be formatted more uniformly.

The GHG team also recognized that in the future it would be most beneficial to obtain supporting documentation, such as a sample of an invoice or report used, or at a minimum the file name/source/location, for all data points for additional validation. This would not only ensure the accuracy and replication of data collection, but also would be necessary for review in an internal and/or external verification process. SLU does participate in AASHE STARS reporting, which includes the credit OP-1: Greenhouse Gas Emissions. In OP-1, STARS asks if the GHG accounting and reporting process has been validated internally or externally. Due to time constraints, we were unable to have this GHG inventory verified. However, a logical outgrowth and current consideration stemming from this process is development of an emissions inventory management procedure that will include an internal review and verification by an independent party.

CONCLUSION

Saint Louis University has made some tremendous strides in the past three years, including the establishment of waste diversion, energy intensity, and water intensity goals. The waste diversion goal is to achieve 30% waste diversion, while energy and water goals challenge the University to reduce consumption by 20% by 2020 over a 2013 baseline. Efforts and initiatives toward obtaining these goals will ultimately help to reduce the GHG emissions from campus operations. Additionally, the University recently began installation of solar photovoltaic arrays on nine buildings on-campus, which is only the beginning of bringing renewable energy sources to campus and reducing the campus carbon footprint. The immensity of information obtained in this GHG Inventory pilot process will allow for SLU to further its mission and reduce its ecological impact in line with creating "Higher Purpose. Greater Good." "

GLOSSARY

Carbon MAP	Carbon Management and Analysis Platform. A web-based carbon calculator for college and university campuses.
CO2e	Carbon dioxide equivalent. Also called eCO2 or global warming potential. This is a normalized

APPENDICES

EMISSIONS INVENTORY METHODOLOGY AND BOUNDARIES

Period covered in this report

7,554,573
408,652

SCOPE 3 - COMMUTING

STUDENT COMMUTING

Comments:

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