Western Michigan University
Greenhouse Gas Emissions Inventory
2012

ENVS 4100
Appropriate Technology and Sustainability – The Campus as a Living, Learning Laboratory

Contact Information

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Introduction

Western Michigan University has been a constant frontrunner in the issue of sustainability and has even been named as one of the "nation's most environmentally responsible 'green colleges"' by Princeton Review. WMU is currently an ACUPCC signatory and has recently developed a Climate Action Plan. As a part of the ACUPCC guidelines, a greenhouse gas (GHG) emissions inventory must be performed every other year. Since signing the ACUPCC, WMU has completed just a few inventories. This presented itself as a project needing immediate attention. This inventory will provide a checkpoint for our commitment to the Climate Action Plan submitted by Dr. Paul Pancella and Dr. Harold Glasser in April of 2012. The Climate Action Plan outlines a strategy to become a zero GHG emissions campus by 2065. In order to follow this Climate Action Plan we must begin to monitor our GHG emissions on an annual basis to ensure that we are meeting the trajectory for climate neutrality. This investigation does just that.

This inventory is also helping to fulfill the Talloires Declaration, another document signed by our university President committing us to environmental sustainability in higher education. With this inventory we are practicing multiple actions outlined by the Talloires Declaration:
1) Increase awareness of environmentally sustainable development, 2) Create and institutional culture of sustainability, 3) Practice institutional ecology, and 4) Maintain the movement.

Methodology

A greenhouse gas emissions inventory can be conducted in a variety of ways. Identifying the sources of data and the depth of data to be collected will aid in the success of a GHG inventory. Some sources of emissions are greater than others and deserve more dedication in this inventory than the others. Some data points are more difficult to obtain than others and will need to be adjusted or altered to fit the calculator. The amount of data points included in the project is a decision made mostly on the accessibility of the data. Points that were too difficult to acquire or too detailed were left out of the project simply because of time constraints. The possible sources of data that could be included in this report are quite extensive.

The Clean Air – Cool Planet campus calculator was decided as the main tool for use in this project due to its extensive detail and the ability to leave out information that is not relevant. This calculator provided a great deal of information that would otherwise be difficult to find (i.e. emission factors for various emission sources).

Emissions are broken down into three different scopes: scope I, II, and III. Scope I emissions are directly associated with and result from university owned sources. Scope II emissions are from non-university owned sources, but are still closely related to energy consumption. Scope III emissions are emissions from outside sources that are either financed or encouraged by the university.

Observations

In 2012 the university produced 103,419.35 metric tons (MT) of eCO_2 in emissions. That equals out to 4.72 MT eCO_2 per full time equivalent (FTE) faculty, staff, and student. The opposite side of this sheet displays the breakdown of emissions by scope.

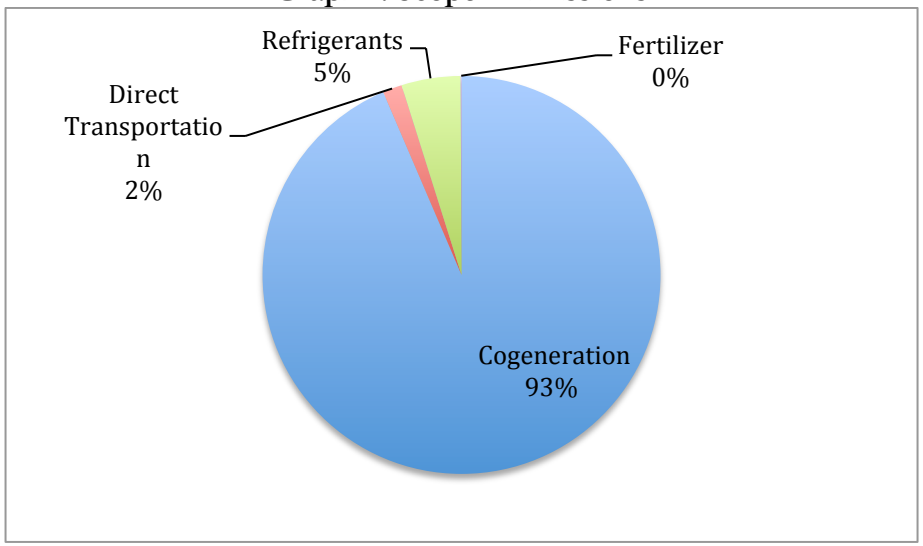
Assessing these emissions allows us to evaluate our current progress with the Climate Action Plan. With a comprehensive and up-to-date GHG inventory, everyone has access to information about emissions across the university.

Summary of Emissions

Scope I: Direct emissions from university owned sources

- Cogeneration: 65,908.5 MT eCO_2
- Direct Transportation: 1,101.4 MT eCO_2
- Refrigerants: 3,384 MT of eCO_2
- Fertilizer: 50.54 MT eCO_2

Graph 1: Scope I Emissions



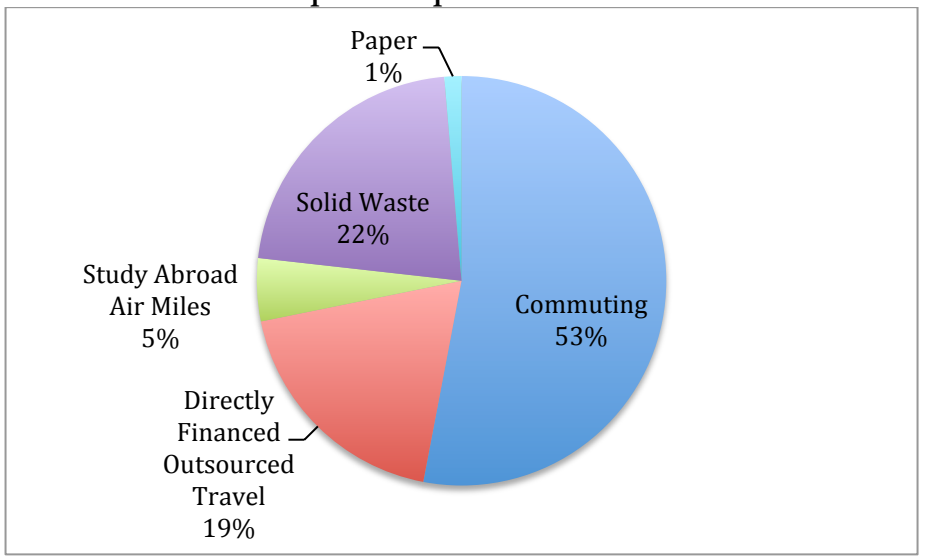
Scope II: Indirect emissions from sources not owned or operated by the university but that still contribute to energy consumption on campus

- Purchased Electricity 5836.5 MT eCO_2

Scope III: Emissions from sources not owned or operated by the university that are encouraged by the university

- Commuting: 14,382.3 MT eCO_2
- Directly Fin. Outsourced. Travel: 5107 MT eCO_2
- Study Abroad Air Miles: 1346.75 MT eCO_2
- Solid Waste: 5936 MT eCO_2
- Paper: 366.4 MT eCO_2

Graph 2: Scope III Emissions



Total Emissions: The total emissions from all 3 scopes combined

- Scope I: 70,444.4 MT eCO_2
- Scope II: 5,836.5 MT eCO_2
- Scope III: 27,138.45 MT eCO_2
- Total: 103,419.35 MT CO_2

Graph 3: Total Emissions