GREENHOUSE GAS INVENTORY
FISCAL YEAR 07/08

For questions please contact:

Greenhouse Gas Inventory Team
Craig M. Ross – Chair, Presidents Climate Commitment Subcommittee
Email: rossc@geneseo.edu
Phone: 585-245-5990

Alicia Kowsky – SUNY Geneseo Student
Email: Amk15@genseo.edu

TABLE OF CONTENTS

INTRODUCTION....3

INSITUTIONAL INFORMATION AND EMISSIONS DATA....4

EMISSIONS TOTALS BY SCOPE....5

OVERVIEW OF TOTAL ANNUAL EMISSIONS....6

EMISSIONS BY SECTOR IN CARBON DIOXIDE EQUIVALENT (CO_2e)....7

TOTAL METHANE (CH_4) AND CARBON DIOXIDE (CO_2) EMISSIONS....8

TOTAL NITROUS OXIDE (N_2O) EMISSIONS....9

DEFINITION OF TERMS....10

REFERENCES....11

INTRODUCTION

The State University of New York (SUNY) College at Geneseo established the Environmental Impact and Sustainability Task Force on November 6, 2006 and became a charter signatory of the Presidents Climate Commitment (PCC) on June 26, 2007. For the past year fulfilling the requirements of the PCC has been one of the Task Force's many initiatives. The first major requirement was to complete a comprehensive Greenhouse gas (GHG) inventory within one year of signing the PCC. Geneseo is proud to set the example for SUNY institutions by being the first SUNY PCC Charter Signatory to report the comprehensive GHG inventory to AASHE.

In order to accomplish this goal, the Task Force decided that an easily attainable GHG inventory baseline be established. This was determined after investigating the complexity of calculating a GHG inventory as far back as '89/'90. As it turns out, the data gathering for the past years will be difficult and time consuming to perform. Therefore, we found that it was more important that Geneseo fulfill the requirements of the PCC in a timely matter.

Now that Geneseo has completed the GHG inventory we can focus on the next requirement of the PCC, which is to develop an institutional action plan for becoming climate neutral. In the coming year the Task Force will attempt to complete GHG emissions data for years prior to '07/'08.

The format of this report has followed the recommended structure from AASHE's GHG reporting tool. To compute the GHG inventory Geneseo used the Campus Carbon Calculator obtained from the Clean Air Cool Planet Website. It should be noted that SUNY Geneseo's fiscal year runs from July 1 to June 30. The GHG inventory was calculated by gathering data from the following categories:

- Purchased Electricity

- On-campus Stationary
  - Natural Gas for heating
  - Propane for on-campus vehicle use

- Transportation
  - Student Study Abroad, Faculty, and Staff Air Travel
  - Student, Faculty and Staff Commuting
  - Faculty and Staff Travel by motor vehicle
  - Fleet Gasoline and Diesel Consumption

- Agriculture
  - Fertilizer

- Solid Waste
  - Geneseo and Campus Auxiliary Service's Garbage

- Refrigeration
  - Accidental releases of the following refrigerants and other greenhouse gases: HFC-134a, HFC-404a,HCFC-22, HCFE-235da2, and HG-10.

- Offsets
  - On-Campus Forest Preservation

INSTITUTIONAL INFORMATION

State University of New York College at Geneseo

1 College Circle

Geneseo, NY 14454

Carnegie Classification: Baccalaureate College

Control: Public

Community Type: rural

CBECS Climate Zone: 1

Athletic Conference: NCAA Division III, State University of New York Athletic Conference (SUNYAC)

Gross square footage of building space: 2,306,785

Gross square footage of teaching research lab space: N/A

Gross square footage of medical/dental facilities: N/A

Gross square footage of residential space: N/A

Endowment size: $10,337,140 million

POPULATION

Total Student Enrollment (FTE) – 5,274

Residential Students – 2,964

Full-Time Commuter Students - 468

Part-time Commuter Students – N/A

Non-Credit Students – N/A

Full-time Faculty - 334

Part-time Faculty - 84

Full-time Staff – 677

Part-time Staff - 180

EMISSIONS DATA

Emissions calculation tool used: Clean Air Cool Planet

This tool was used because it was recommended by sustainability peers at other institutions of higher education. This tool was created for institutions of higher education.

The GHG inventory involved all college owned buildings and buildings owned by Campus Auxiliary Services (CAS) such as the Campus House and Big Tree Inn. There were no buildings affiliated with the campus that were omitted from the GHG inventory.

EMISSION TOTALS BY SCOPE

Scope 1

Onsite Fuel Combustion: **184,407.26 MMBtu – Natural Gas**

Fleet: **184,093 Gallons Gasoline, 4,258 Gallons Diesel, and 619 gallons of Propane**

Institution-owned farm animals – **N/A**

Refrigerants – **no releases in 07/08**

Total CO_2e in metric tons: **11,455**

Scope 2

Purchased Electricity: **21,658,391kWh**

Purchased Steam: **N/A**

Total CO_2e in metric tons: **9,047**

Scope 3

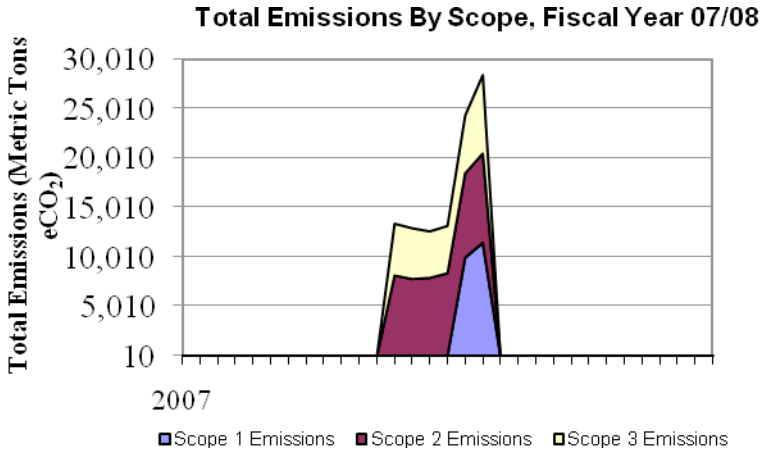
Commuting: Total Faculty, Staff & Students – **656,321 Gallons of Gasoline**

Air Travel: Total Faculty, Staff & Student Study Abroad – **1,785,075 Miles**

Solid Waste: **701 Short Tons with no CH_4 recovery**

Total CO_2e in metric tons: **7,945**

TOTAL EMISSIONS CO_2E: 28,446



Carbon offsets purchased (metric tons of CO_2e): **N/A**

Percent of total Scope 1 and 2 emissions offset:

Description of offsets purchased (including vendor, project source, and any 3rd party verification): **N/A**

Renewable Energy Certificates (RECs) purchased (kWh): **N/A**

Emissions reductions from REC purchases (metric tons of CO_2e): **N/A**

Percent of total electricity consumption mitigated through the purchase of RECS: **N/A**

Description of RECs purchased (including vendor, project source, and any 3rd party verification): **N/A**

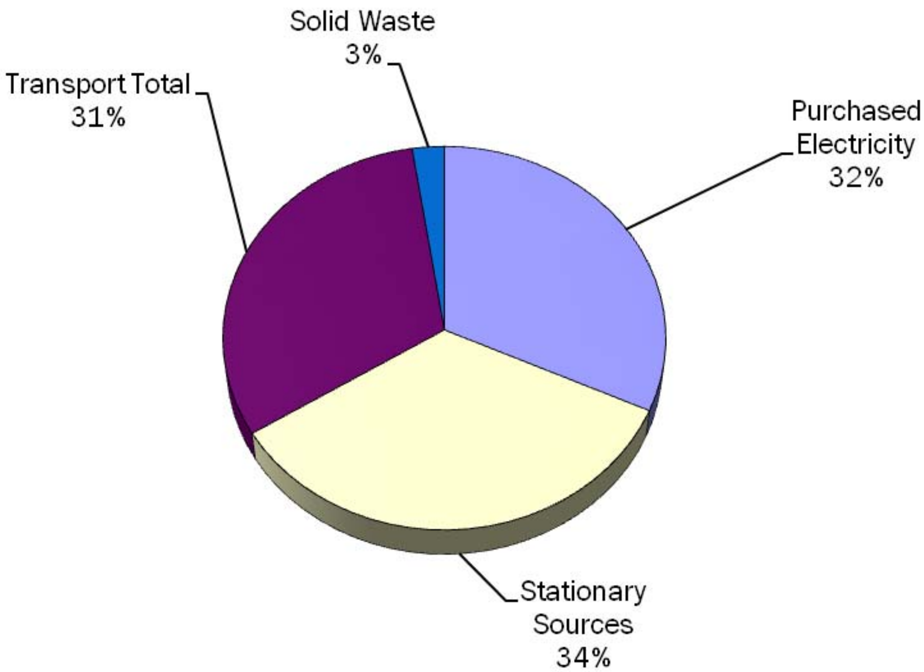
Net Emissions: **28,380 CO_2e**

OVERVIEW OF TOTAL ANNUAL EMISSIONS

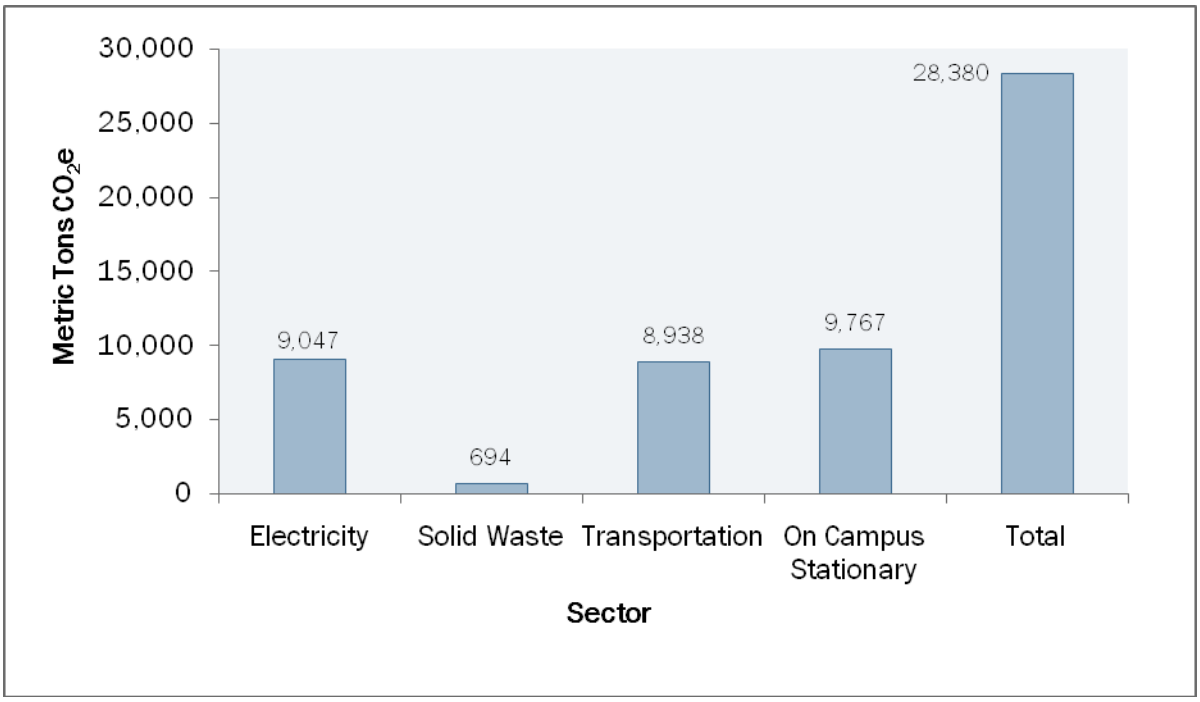
MODULE	**Summary**							
WORKSHEET	**Overview of Annual Emissions**							
UNIVERSITY	**SUNY Geneseo**							
Select Year -->	**07/08**	Energy Consumption	CO_2	CH_4	N_2O	Other Chemicals	eCO_2	eCO_2
		MMBtu	kg	kg	kg	Kg	Short Tons	Metric Tons
Purchased Electricity		121,094	8,983,182	119	205		9,972	**9,047**
Purchased Steam/Chilled Water		-	-	-	-		-	-
Stationary Sources		184,461	9,738,461	979	19		10,766	**9,767**
	Non Co-Gen	184,461	9,738,461	979	19		10,766	**9,767**
	Co-Gen Electric	-	-	-	-		-	-
	Co-Gen Steam	-	-	-	-		-	-
Transport Total		111,972	8,750,279	1,480	521		9,853	**8,938**
	University Fleet	23,446	1,647,296	323	111		1,860	**1,688**
	Student Commuters	7,550	530,015	106	36		599	**543**
	Faculty/Staff Commuters	73,944	5,191,156	1,037	357		5,865	**5,321**
	Air Travel	7,033	1,381,813	14	16		1,529	**1,387**
Agriculture Total		-	-	-	1		0	**0**
Solid Waste		-	-	30,167	-		765	**694**
Refrigeration						-	-	-
Total		**417,527**	**27,471,922**	**32,745**	**746**	**-**	**31,356**	**28,446**
Offsets							**(73)**	**(66)**
	'Green' Electric Credits						-	-
	Composting						-	-
	Forest Preservation						**(73)**	(66)

Net Emissions	**31,283**	**28,380**

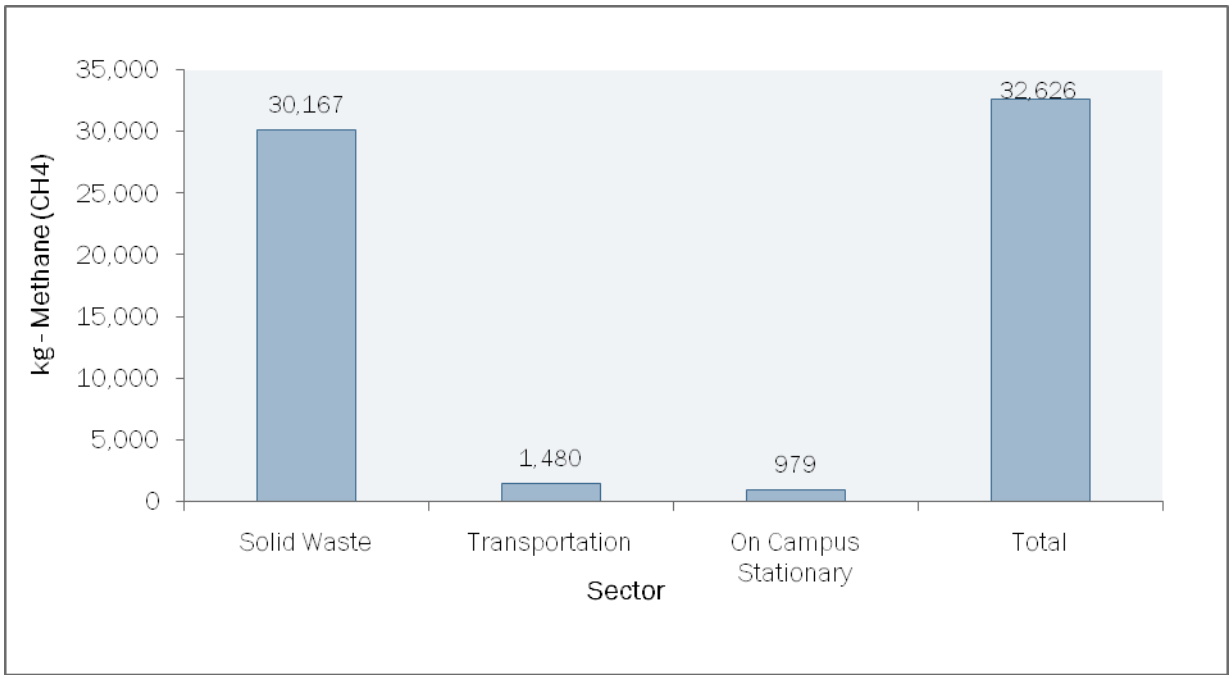
GENESEO'S GREENHOUSE GAS EMISSIONS BY SECTOR



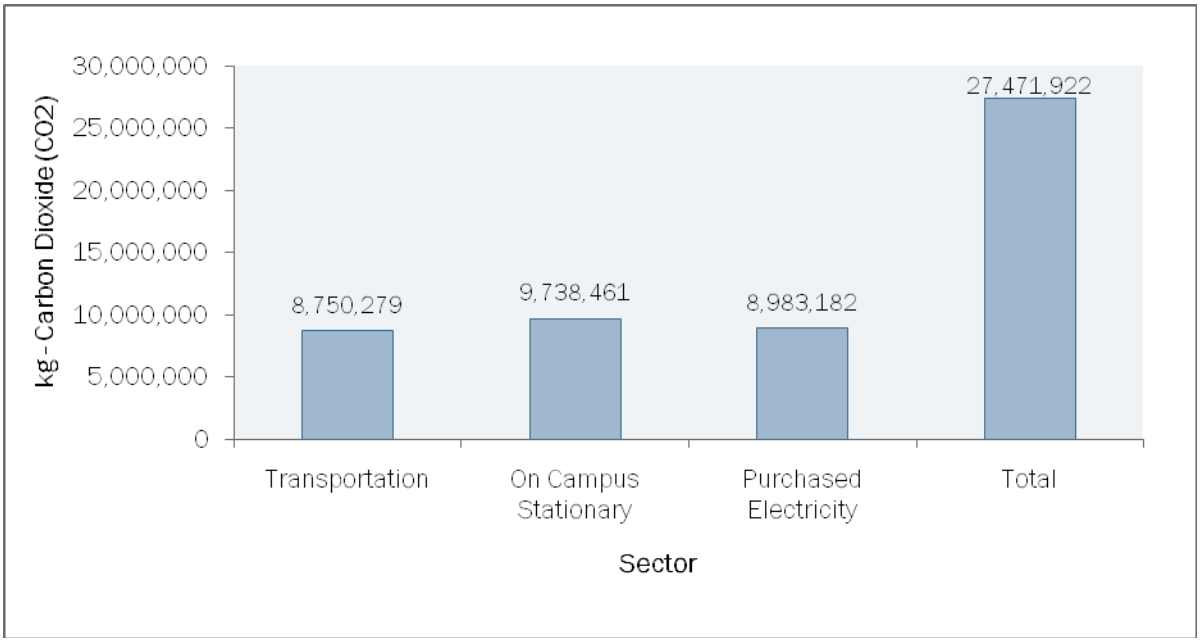
TOTAL EMISSIONS (CO_2e) BY SECTOR, FISCAL 07/08


30,000
25,000
20,000
15,000
10,000
5,000
0
Metric Tons CO_2e
9,047
694
8,938
9,767
28,380
Electricity
Solid Waste
Transportation
On Campus Stationary
Total
Sector

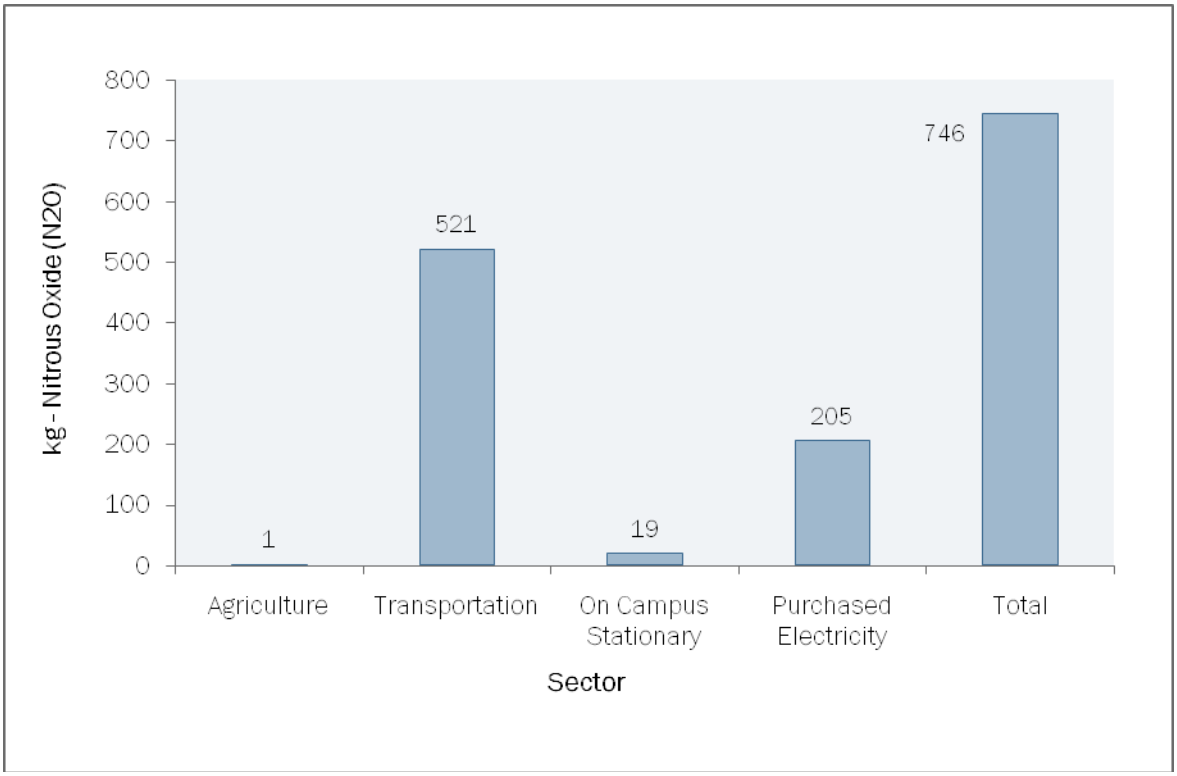
TOTAL METHANE (CH_4) EMISSIONS, FISCAL 07/08



TOTAL CARBON DIOXIDE (CO_2) EMISSIONS, FISCAL 07/08



TOTAL NITROUS OXIDE (N_2O) EMISSIONS, FISCAL 07/08



METHOD OF DATA GATHERING

This section is intended as a road map so that future GHG inventories can be completed using the same methodology for the data gathering. It is also intended as a way for our inventory to be validated by individuals or organizations who wish to do so. The information will be in a bulleted format which will include as much information as possible as to how the GHG inventory data was gathered.

Scope 1 Emissions

Type: Onsite Fuel Combustion – Natural Gas or #2/#6 Fuel Oil

Data: Onsite fuel combustion is the amount of fuel we use for the heating plant and for other institution owned or affiliated buildings. These include the Heating Plant, President's House, McClellan House, 11 Bank Street, Big Tree Inn, and the Campus House.

Location: Facilities Services has documentation in big blue binders in Clark 116.

Owner: Bill Cox, Plant Utilities Engineer.

Notes: Neil is retiring in Oct 2008 so there will be a new owner of this information in 08/09. It may not matter who replaces Neil because the blue books in Clark will be updated by this person. The heating plant has three 25,000 gallon tanks filled with #2 oil but they have not used any in two years. Today's price of natural gas is less expensive than #2 oil which why the college is using natural gas fuel only. In future GHG inventories it will be important to look for the heating plant switch from natural gas to #2 oil. Onsite fuel combustion is 1/3 of Geneseo's CO2e emissions.

Type: Onsite Fuel Combustion – Natural Gas

Data: Purchased natural gas for the Campus House and Big Tree Inn.

Location: Campus Auxiliary Services, Blake A 108

Owner: Donna Bardeen, Accounting Manager. Bardeen@geneseo.edu, ext. 5648

Type: Propane

Data: Propane use for the hockey rink Zamboni

Location: Athletics Department, Merritt 215.

Owner: Christopher George, Stores Clerk 2, George@geneseo.edu, ext. 5183

Type: Fleet

Data: All campus owned vehicles that are operated on campus or taken off campus for travel that have access to the on-campus gas or diesel pumps.

Location: Facilities Services, Clark 119B.

Owner: Darlene Campbell, Business Manager, Campbell@geneseo.edu, ext 5662.

Notes: Facilities Services implemented new gas pump accounting software in fiscal 07/08 which will allow easy access to the number of gallons used in a fiscal year. When a fleet vehicle is taken off campus for a trip the gas tank will be filled off campus which is done by using the gas card. This information is included in the travel section of the GHG inventory.

Type: Refrigerants

Data: There can be accidental releases of refrigerants such as HFC-404a, HCFC-22, HCFE-235da2, and HG-10.

Location: Facilities Services, Clark 118

Owner: Charles Reyes, Environmental Health & Safety Director, reyes@geneseo.edu, ext. 5512

Notes: Any release of these refrigerants needs to be reported to the EPA, which will be done by Charles.

Scope 2 Emissions

Type: Purchased Electricity

Data: Purchased electricity for the college included the following: On Campus, President's House, McClellan House, 11 Bank Street, 11 Bank Street Apt, B Lot Lights

Location: Facilities Services has documentation in big blue binders in Clark 116.

Owner: Bill Cox, Plant Utilities Engineer. Ext 5662

Notes: Purchased electricity accounts for approximately 1/3 of Geneseo's CO2e emissions.

Type: Purchased Electricity

Data: Purchased electricity for the Campus House and Big Tree Inn.

Location: Campus Auxiliary Services, Blake A 108

Owner: Donna Bardeen, Accounting Manager. Bardeen@geneseo.edu, ext. 5648

Scope 3 Emissions

Type: Commuting

Data: Faculty/Staff Commuting

Notes: To calculate commuting we first determined the number of commuters that we have. We did this by going to Human Resources and asking them for the home addresses of all of the college's employees. The spreadsheet that I received was titled slbHomeAddresses_RossC.xlsx. From there, a student on our committee took all of the addresses and plugged them into Google Maps to determine an average round trip commute. We determined it to be 30 miles per trip. In the Clean Air Cool Planet spreadsheet there is an Input_Commuter tab. The number of faculty/staff during different times of the year will vary. During the summer there is fewer faculty then staff. The exact number of can be obtained from Institutional Research (IR), in the clean air cool planet spreadsheet there is a tab called FacultyStaff that has this information.

Type: Commuting

Data: Students

Notes: Information was gathered from University Police of the number of students per year with commuter passes. The percentage of commuters each year was found based on the number of students that year. This was plugged into the carbon calculator, with estimations about the number of commuting miles as approximately 25mi per student, 10 trips per week and 28 weeks per year with 0% carpooling.

Type: Air Travel

Data: School Funded

Owner: Jane Towne

Data: 2 years of data were found for this (2007, 2008). For 1990-2006, the percent difference between faculty and staff for 2007 and the year in question was found. This percentage was than taken from 2007 air travel miles. If there was an increase in the year in question of faculty/ stuff members from 2007, his percentage was added to the number for 2007. If there was a decrease in faculty +staff members from 2007, than the percentage was subtracted from 2007.

Type: Waste Water

Owner: Bill Cox

Data: Data was collected from the Blue Books located in Clark. Data is patchy for Waste water, and any actual data found before 2000 was gathered from the SUNY systems records. If actual data was not found, the average number of gallons (64,051,283) was entered into the calculator.

Type: Solid Waste

Owner: Beth Standish, Clark 119

Owner: Kirk Spangler

Data: Data was collected from the GLOW reports located in Clark 119

Offsets

Type: Composting

Data: Composting by CAS and Grounds behind the Geneseo track

Location: Campus Auxiliary Services, Blake A 108

Owner: Becky Stewart, Marketing Coordinator, sutherr@geneseo.edu, 5666

Co-Owner – William McDevitt, Assistant Director Grounds & Landscaping, mcdevitt@geneseo.edu, 5681

Notes: She is working with Bill McDevitt in Grounds to dump CAS food waste and compost, this was just starting in fiscal 08-09.

DEFINITION OF TERMS

AASHE	Association for the Advancement of Sustainability in Higher Education
Charter Signatory	A president or chancellor who signs the Commitment by September 15, 2007.[1]
CH_4	Methane, a greenhouse gas.
CO_2	Carbon Dioxide, A naturally occurring gas that is a by-product of burning fossil fuels and biomass, land use changes and other industrial processes. Carbon dioxide is the reference gas against which other greenhouse gases are measured
CO_2e	Carbon Dioxide Equivalent, The universal unit of measurement used to indicate the global warming potential (GWP) of each of the 6 greenhouse gases. It is used to evaluate the impacts of releasing (or avoiding the release of) different greenhouse gases.
HFC	Hydro Fluorocarbons, a greenhouse gas.
Greenhouse Gas (GHG)	For the purposes of the ACUPCC, GHGs are the six gases covered under the Kyoto Protocol: carbon dioxide (CO2); methane (CH4); nitrous oxide (N2O); hydro fluorocarbons (HFCs); perfluourocarbons (PFCs); and sulphur hexafluoride (SF6).[1]
N_2O	Nitrous Oxide, a greenhouse gas.
On campus Stationary	This category includes all stationary sources of emissions on campus (heating, cooling, cooking, laboratories, etc) & the same stationary sources from an On-Campus CoGen Plant.
PFC	Perfluorocarbons, a greenhouse gas.
Presidents Climate Commitment (PCC)	is a high-visibility effort to address global warming by garnering institutional commitments to neutralize greenhouse gas emissions. Presidents signing the Commitment are pledging to eliminate their campuses' greenhouse gas emissions over time.[1]
Renewable Energy Certificates (REC)	Are tradable environmental commodities in the United States which represent proof that 1 megawatt-hour (MWh) of electricity was generated from an eligible renewable energy source.[3]
Scope 1 Emissions	A reporting category that accounts for direct GHG emissions from sources the institution owns or controls.[1]
Scope 2 Emissions	A reporting category that accounts for indirect GHG emissions from the generation of purchased electricity consumed by equipment or operations owned or controlled by the institution.[1]

Scope 3 Emissions	A reporting category that accounts for indirect GHG emissions from all other sources that occur as a consequence of the institution's activities but are not owned or operated by the institution.[1]
SF_6	Sulphur Hexafluoride, a greenhouse gas.

REFERENCES

1. American College and University Presidents Climate Commitment, Implementation Guide, Information and Resources for Participating Institutions, September 2007 v1.0. , Definition of Terms, pg 29

2. Minter Ellison, Glossary of Terms. http://www.minterellison.com/public/connect/Internet/Home/Legal+Insights/Newsletters/Previous+Newsletters/A-G-Glossary

3. www.wikipedia.com, Renewable Energy Certificates, http://en.wikipedia.org/wiki/Green_tags#REC_Certification