



Greenhouse Gas (GHG) Emissions Inventory, Fiscal Year 2016



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Acknowledgments

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Scope 1 and 2 Emissions: Data Collection

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Abdul Elqossari, *Energize Colleges: Energy Auditing Intern*

Scope 3 Emissions: Data Collection

Luis Hernandez, *Energize Colleges: Transportation Intern*

Sally Shaff, *Travel Coordinator of Payment Services, Cashier's Office*

Becky Lappin, *Associate Controller of Payment Services, Cashier's Office*

Queen King, *Controller of Payment Services, Cashier's Office*

Sonia Silva, *Study Abroad Office*

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Inventory Reporting Process

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Aaron Hegde, Ph.D., *Associate Professor, Economics*

Evelyn Young Spath, Ed.D., *Chief of Staff to the President*

Human Resources Department of CSUB

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The Inventory Process

The GHG Emissions Inventory was conducted in the Spring of 2018 using the UNHSI Campus Carbon Calculator™ v9.0 which is an MS Excel workbook that calculates GHG Emissions attributable to the various activities and operations of an institution and converts them into metric tons of equivalent carbon dioxide (MT eCO₂). The spreadsheets within the calculator are based on the workbooks by the Intergovernmental Panel on Climate Change (IPCC). The GHG Emissions Inventory identifies the major sources of emissions produced by a campus, which is the first step for focused, collaborative effort on the issue of climate change at a university and is the basis for institutional action. This will allow the institution to develop a better course of action towards reducing our institution's GHG emissions.

Scopes

Emissions arising out of anthropogenic activities which are divided into three main Scopes, based on operational boundaries: Scope 1, Scope 2, and Scope 3.

Scope 1

Direct sources of GHG emissions that are owned or controlled by the campus. Applicable Scope 1 sources on CSUB are on-campus stationary sources, such as purchased natural gas and fuel for the CSU fleet vehicles

Scope 2

Indirect sources of GHG emissions generated while electricity was being produced on behalf on the university's consumption. Applicable Scope 2 source on CSUB is purchased utility electricity.

Scope 3

All other sources of emissions generated because of activities associated or encouraged by the operations of the university. Applicable Scope 3 sources for CSUB are business travel, study abroad air travel, solid waste data, and those related to commuting.

Methodology

All the required data was attained from different departments across campus. In some cases, the data had to be roughly estimated. The following information describes how the data was acquired and the contact.

Scope 1 – Direct Emission Sources and Scope 2 – Indirect Emissions Sources

- On-Campus Stationary Sources: Purchased Natural Gas
- Direct Transportation Sources: CSU Fleet Fuel
- Purchased Utility Electricity
 - Data attained from Monthly Energy Consumption Reports for all three categories
 - Contact: Paula E. Bray, Director of Facilities Operations

Scope 3 – Other Emission Sources

- Student Commuting – Total miles
 - A student transportation survey was sent out where students were asked to report their zip code
 - Numbers of students was attained from Institutional Research, Planning, and Assessment (IRPA)
 - Assuming students travel 4 days a week for 40 weeks, total miles commuted in a year was calculated by adding all the distances per zip code
- Faculty/ Staff Commuting – Total miles
 - Human resources provided staff and faculty count list arranged by their zip code of residency
 - Using Google© maps, the distance from each zip code was calculated
 - An average number of faculty and staff was calculated and multiplied by the distance of their zip code, then by two, assuming a round trip to campus
 - Assuming faculty/staff travel five days a week for 48 weeks, total miles commuted in a year were calculated by adding all the distances per zip code
- Directly Financed Outsourced Travel – Business Travel
 - Annual faculty, staff and student miles traveled on official CSUB business
 - Only private vehicle miles driven was attained
 - Contact: Becky Lappin – Associate Controller of Payment Services, Accounts Payable
- Study Abroad Air Travel – Annual air miles traveled by students studying abroad
 - A list of the countries where students have traveled, and their main destination was attained
 - Miles traveled were calculated using an online flight distance mileage calculator from the Los Angeles airport (LAX) to the student’s main destination
 - Contact: Study Abroad Office (CSU-IP) and Extended University
- Solid Waste
 - Data regarding annual solid waste production and disposal method was attained
 - Contact: Becky Lappin – Associate Controller of Payment Services, Accounts Payable

Results

After acquiring available data and entering it into the UNHSI Campus Carbon Calculator™ v9.0, the net GHG emissions on CSUB’s campus totaled 36,295 MT eCO₂. The largest contributor to net emissions was commuting, within Scope 3 emissions.

Table 1. GHG Emissions by category for CSUB, FY16

Emissions Category	Value	Emissions (MT eCO ₂)
Scope 1		
Purchased Natural Gas	219,606 thms	11,676
CSU Fleet Fuel	13,575 gallons	123
Scope 2		
Purchased Utility Electricity	12,994,324 kWh	7,308
Scope 3		
Student Commuting	36,296,580 miles	13,236
Faculty/Staff Commuting	8,144,640 miles	2,970
Business Travel	610,117 miles	223
Study Abroad Air Travel	72,731 miles	35
Solid Waste	194 tons	60

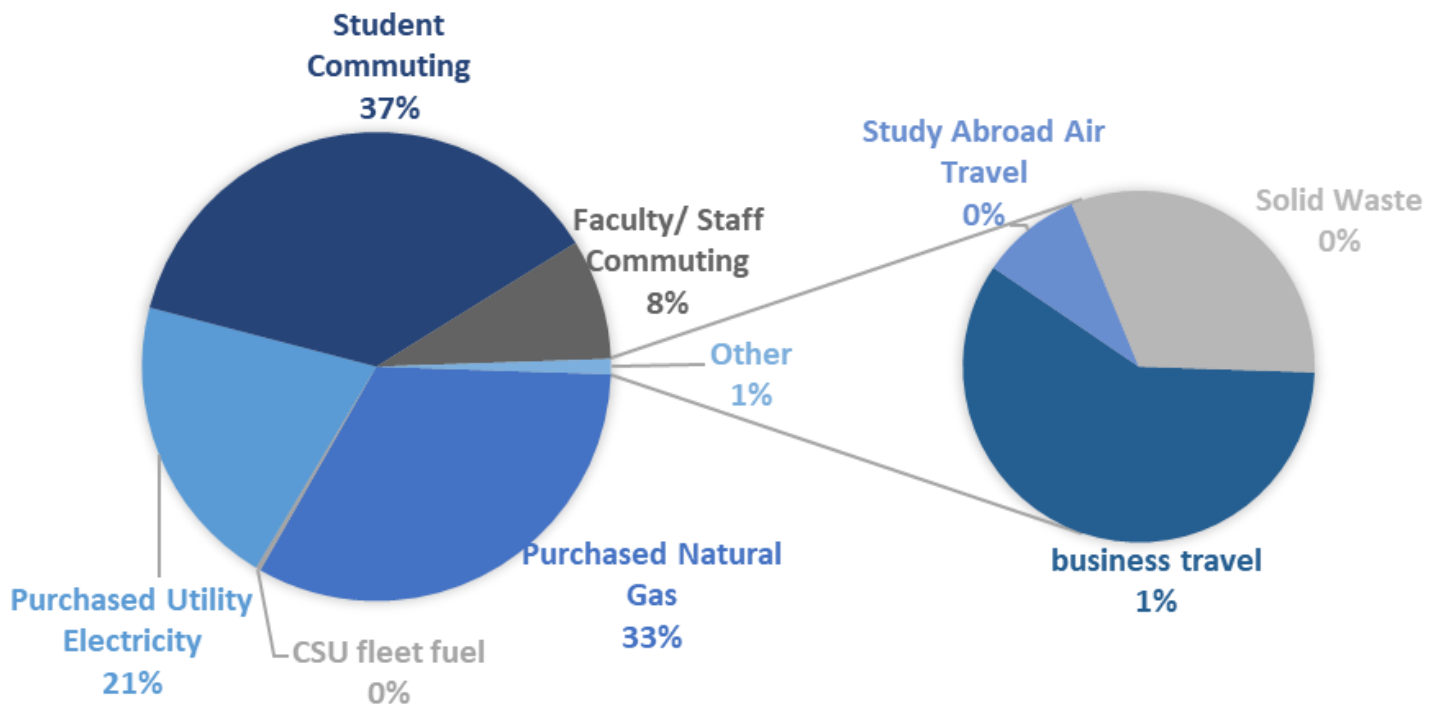


Figure 1. Distribution of MT eCO₂ emissions

Comparing CSU Campuses

The emissions of our campus were compared with other campuses within the CSU system. The campuses displayed in the table below have completed a GHG inventory, with the Adjusted Net Scope 1 and 2 emissions and Weight Campus Users easily accessible within their Sustainability Tracking, Assessment & Rating System™ (STARS) report. A few other campuses had also completed an inventory; however, these figures were not easily accessible. Other campuses were in the process of submitting their first-ever STARS report, so those results were not accessible.

Table 1. GHG emissions by CSU campus along with weighted campus users. All figures are metric tons of CO₂e.

Campus	Adjusted Net Scope 1 and 2 Emissions	
	Total	Weighted Campus Users
Bakersfield	19, 107	5, 565.25
Monterey Bay	4, 825	8, 954.50
Chico	11, 193.80	13, 995.25
Long Beach	24, 593	26, 796.50
San Marcos	6, 946	8, 382.75
Pomona	36, 284	17, 356.50

This comparison is solely for informational purposes. The metrics used at arriving at these figures are not normalized and may be accompanied by measurement errors. Further investigation within the inventories of the campuses must be conducted to make comparisons without prejudice.

Bibliography

ACUPCC. "The Commitment." Presidents' Climate Commitment. March 2007.
<http://www.presidentsclimatecommitment.org/html/commitment.pdf>

STARS Participants and Reports. <https://stars.aashe.org/institutions/participants-and-reports/>

CSUB Sustainability. <http://www.csub.edu/sustainability/>