Tulane University
2011 & 2012 Greenhouse Gas Emissions Inventory

This report encompasses the results for the 2012 greenhouse gas inventory for Tulane University. As a signatory of the American College and University Presidents' Climate Commitment, the results from this inventory allow Tulane to assess the nature of our carbon footprint and determine solutions for reducing its environmental impact. The goal of the ACUPCC is to encourage its members to reduce their carbon emissions and take part in addressing climate change. Those who have pledged to this commitment have embraced the greenhouse gas inventory as the essential tool to monitor their progress and improve their respective universities.

Since 2007, the baseline year for Tulane University emissions, the general trend in greenhouse gas emissions has remained stable. Without efforts to reduce energy use and emissions, it is projected that Tulane's total emissions would have significantly increased due to a steady growth in student population and building space.

This inventory totals all emissions beginning January 1, 2012 to December 31, 2012. The following holdings of Tulane University are included: New Orleans, LA; Covington, LA; Belle Chasse, LA; Biloxi, MS; Madison, MS; and Houston, TX. Emissions are organized by three Scopes as proposed by the Greenhouse Gas (GHG) Protocol[1]. Scope 1 includes all direct emissions from the institution such as onsite fossil fuel combustion from vehicles and boilers, as well as refrigerants and chemicals that have a global warming effect. Scope 2 includes emissions that are indirect and result from purchased electricity, steam, and chilled water emissions created at the utility. All other indirect emissions from the institution's activities and policies that are not directly released on campus comprise Scope 3. This includes commuting by students and employees, business travel, study abroad travel and waste disposal.

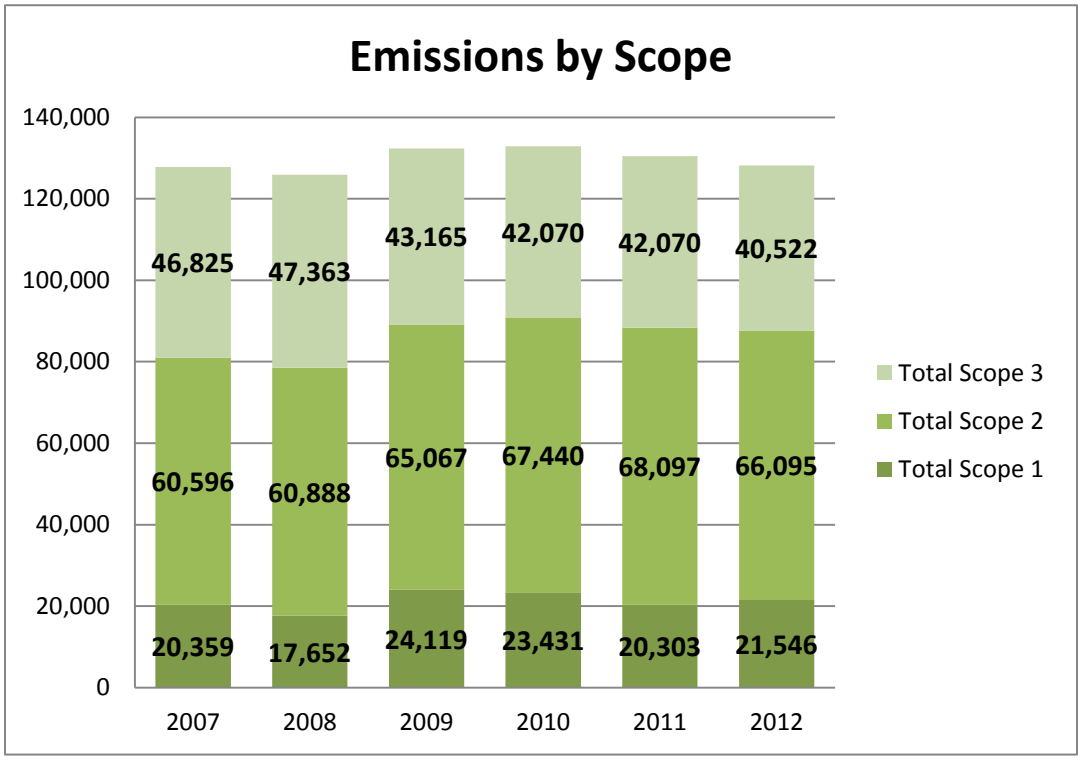
Results

Total emissions from all sources in 2012 were **128,162.9** metric tons of carbon dioxide equivalents (MTCO2e).

Table A

Total Emissions by Sector (MTCO2e)						
Sector	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Buildings	86,183	83855	94065	96554	94138	92855
Travel	32,746	33178	28223	24807	25925	24216
Commute	5,630	5728	6261	6423	6616	7108
Waste	1,053	1072	987	1249	1579	1383
Study Abroad	1,578	1524	1440	3126	1358	1301
Fleet	590	545	1376	781	852	1301
Offsets	-				-82	
Total	**127,781**	**125902**	**132352**	**132940**	**130386**	**128163**

Graph B



Discussion

The percent change in total emissions from the year 2011 to 2012 is -1%. Scopes 1 and 2, which represent emissions resulting from more direct activities of Tulane University, remain essentially the same.

Scope 1 (Transportation, Fleet, & Chemicals) may have experienced an increase due to the growth of the Shuttles and Transportation department, which took over TUPD and Facilities Services shuttles in 2010. The addition of multiple lines and destinations, as well as the addition of new buses is likely to have slightly increased emissions. An updated commuting survey is needed to determine if the availability of shuttles has reduced emissions from commuting. On the downtown campus, the addition of on-campus boilers to replace purchased steam is also responsible for a jump in Scope 1 emissions, but should likewise contribute to a decrease in Scope 2 emissions.

Scope 2 (Buildings) shows a slight decrease that may be due to changes in fuel use at Tulane's downtown campus and energy efficient upgrades.

Scope 3 (Commute, Travel, Waste) has decreased in the past year that could be a result of not only less air travel, but a change in the calculation of air travel for study abroad. This year Houston George Bush Intercontinental Airport (IAH) was chosen as the departure point for all study abroad travel. All destination points were picked based on the largest international airport near the program's site. A decrease in waste disposal is also a contributing factor, though the university is still working to establish consistent waste data.

Table C

Normalized Emissions							
	2007	2008	2009	2010	2011	2012	ACUPCC Average
Total Population (FTE)	13,629	14,358	15,333	16,197	16,539	16,651	
Per Capita Emissions (MTCO2e/person)	**9.37**	**8.77**	**8.63**	**8.21**	**7.88**	**7.69**	**7.01**
Total Building Area (sq. feet)	6,746,734	7,038,007	7,057,212	7,068,754	7,192,811	7,209,993	
Emissions (MTCO2e) Per 1000 Square Feet	**18.94**	**17.88**	**18.75**	**18.81**	**18.13**	**17.77**	**17.77**

Per capita emissions (MTCO2e/FTE) have shown a progressive decrease over the years; however, it is still higher than the ACUPCC average for doctorate granting universities. This could be due to the fact that Tulane has a higher number of students who stay on campus in proportion to those that live off campus.

Emissions relative to total building area (MTCO2e/1000 sq. ft.) have decreased over the past two years and are in line with the ACUPCC's doctorate granting university average, perhaps in part due to more energy efficient operation.

Notes on Data and Methodology

The 2006-2008 emissions inventory provides an in-depth description of the methodology that has been used as a precedent for all of the proceeding inventories. The original inventory was created by Shelly Meaux at the Tulane-Xavier Center for Bioenvironmental Research and is located at http://green.tulane.edu/PDFs/Inventory_Complete_2008_FINAL.pdf. All changes made to the methodology for this year have been explained below.

Calculator

For our previous inventories, we have used The CA – CP Campus Carbon Calculator. It has been in the format of a Microsoft Excel workbook with input worksheets and formulae developed specifically for college campuses and based on the widely used GHG Protocol. As of March 2013, CA-CP released an improved online version of their Campus Calculator that is more user-friendly, intuitive, and powerful. The new calculator includes a customization tool, which will allow each campus to tailor the calculator to their specific needs. For example, the new calculator allows for us to include recycled waste data into future inventories. Due to time constraints, the new online calculator was not able to be used for the inventory this year.

Buildings

The Medical Arts building that was included in our past inventories is no longer a part of our campus area. In 2012, Tulane has added a new building, Flower Hall, to replace Taylor Labs. This contributes 8,839 sq. ft. to the building area. In 2011, the increase in Total Gross Square Footage was due to the opening of Weatherhead Hall (80,749 sq. ft.) and the Hertz Center (43,310 sq. ft.).

Fleet

On July 1, 2010 Shuttles and Transportation was formed on Tulane's Campus. This department took over existing shuttles from TUPD and CPS vans from CPS. All fueling at

this time was done on-campus at Facilities Services, with the exception of one (diesel) vehicle fueled offsite. Shuttles and Transportation has added multiple routes, drivers and buses to their operations. Currently, S&T has more diesel buses that fuel offsite because they were too large to fuel at Facilities Services. We have now included a separate calculation for Shuttles and Transportation to account for all offsite fueling, which the department is moving toward exclusively.

Study Abroad Travel

Data on student destinations for Spring 2012, Fall 2012, and academic year 2012-2013 were provided by Tulane's study abroad office. The mileage was calculated using the Inter-Airport Distance tool on the webpage of The Research and Innovative Technology Administration Bureau of Transportation Statistics. George Bush Intercontinental Airport was chosen as the origin city, as it was the closest major international airport to the city of New Orleans and assumed as a common departure airport. The destination was chosen by selecting the largest international airport in the study abroad program's country.

See http://www.transtats.bts.gov/Distance.asp?pn=0

Commuting

The most recent survey of commuting choices by Tulanians was conducted by service-learning students in 2010. For 2011 and 2012, the percentage of different types of trips and the average commute distance are from the 2010 survey; however, updated university population figures were used. As a result, the total miles for each type of trip grew as the overall university population grew.

Refrigerants

In past years, chemical and refrigerant data were obtained from the Office of Environmental Health and Safety, which pulled the data from chemical inventories. This year, refrigerant purchase data are now collected by contacting both Uptown and Downtown Facilities Services. Upon analysis, we determined that CO2, NO2, and CH4 had negligible impacts (<1%) on our emission total and did not ask OEHS to collect this data this this year.

In the Excel calculator, the refrigerants HFC-408a (R408a) and HFC-410a (R410a) are not listed because they are blends of other refrigerants. The Global Warming Potentials[3] were obtained for both of these refrigerant blends and added to the calculator on the EF_GWP page.

See http://www.ghgprotocol.org/files/ghgp/tools/hfc-cfc.pdf

[1] World Resources Institute and World Business Council for Sustainable Development, *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, revised edition,* accessed at http://www.ghgprotocol.org/standards/corporate-standard on May 29, 2013.

Appendix A is attached and contains the inputs used from 2006-2012. The data from previous inputs can be used to observe trends that function to explain increases and decreases of emissions.

Tulane University's 2012 Greenhouse Gas Emissions Inventory was conducted and authored by Tulane undergraduate Jeanette Frascello, during an internship with Tulane University's Office of Environmental Affairs. Data collection and analysis for 2011 were completed by Tulane undergraduate Lauren Newton. Jiaxin Fan updated the 2012 inventory and charts to include late-arriving data.