2010 Greenhouse Gas Emissions Inventory

The results of Tulane University's greenhouse gas emissions inventory for the calendar year 2010 are presented below. The greenhouse gas emissions inventory is a critical tool adopted by members of the American College & University Presidents' Climate Commitment who have pledged to lessen their carbon footprint and address climate change. Cataloguing Tulane's emissions allows the university to quantify its environmental impact and assess its emission reduction progress.

This inventory encompasses emissions from January 1, 2010 to December 31, 2010 for all of Tulane's holdings in New Orleans, LA; Covington, LA; Belle Chasse, LA; Biloxi, MS; Madison, MS; and Houston, TX. Scopes 1, 2, and 3 emissions were calculated. Scopes are organizational categories set by the Greenhouse Gas (GHG) Protocol,[1] which strives to encourage consistency in greenhouse gas accounting between international entities. Scope 1 emissions include those directly controlled and released by the university, including emissions from natural gas, diesel, biodiesel, and gasoline usage in vehicles and machinery, as well as direct releases of greenhouse gases from sources such as lab chemicals or refrigerants. Scope 2 emissions are indirectly produced, a result of the generation of the energy purchased by the university; at Tulane, this includes purchased electricity, steam, and chilled water. Scope 3 emissions result from all non-utility related indirect sources over which the university cannot control, but they are linked to university activities. Scope 3 categories included in Tulane's inventory are business travel, study abroad travel, employee and student commute, and waste disposal.

Changes in Methodology

A detailed explanation of the methodology is described in the 2006-2008 emissions inventory at http://green.tulane.edu/PDFs/Inventory_Complete_2008_FINAL.pdf, compiled by Shelley Meaux at the Tulane-Xavier Center for Bioenvironmental Research. Changes in the methodology are described below.

Buildings

All data regarding electricity and natural gas usage for the Madison, MS campus were provided by the School of Continuing Studies in the form of an excel data sheet.

Electricity bills for the Aron apartments were provided by Housing and Residence Life for August 2010 to December 2010. Total 2010 emissions were estimated by finding the percentage of total 2009 electricity usage attributed to August 2009 to December 2009, then applying this proportion to 2010 to find 100 percent.

[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 April 14, 2011.

2010 electricity data for Tulane's Studio in the Woods were provided by Downtown Facility Services, but they were unable to provide data for January 2010 to July 2010. In the manner of the Aron apartments, total 2010 emissions were estimated by finding the percentage of total 2009 electricity usage attributed to August 2009 to December 2009, then applying this proportion to 2010 to find 100 percent.

Employee and Student Commute

In order to update estimated emissions from faculty, staff and student commute, students from Dr. Dana Zartner's fall 2010 political science class conducted a telephone survey about commute habits. In line with employee commute survey methods outlined in the LEED Existing Building: Operations and Maintenance standard, students called faculty, staff, and off-campus students to find how often they traveled to campus and what form of transportation was used for each trip.

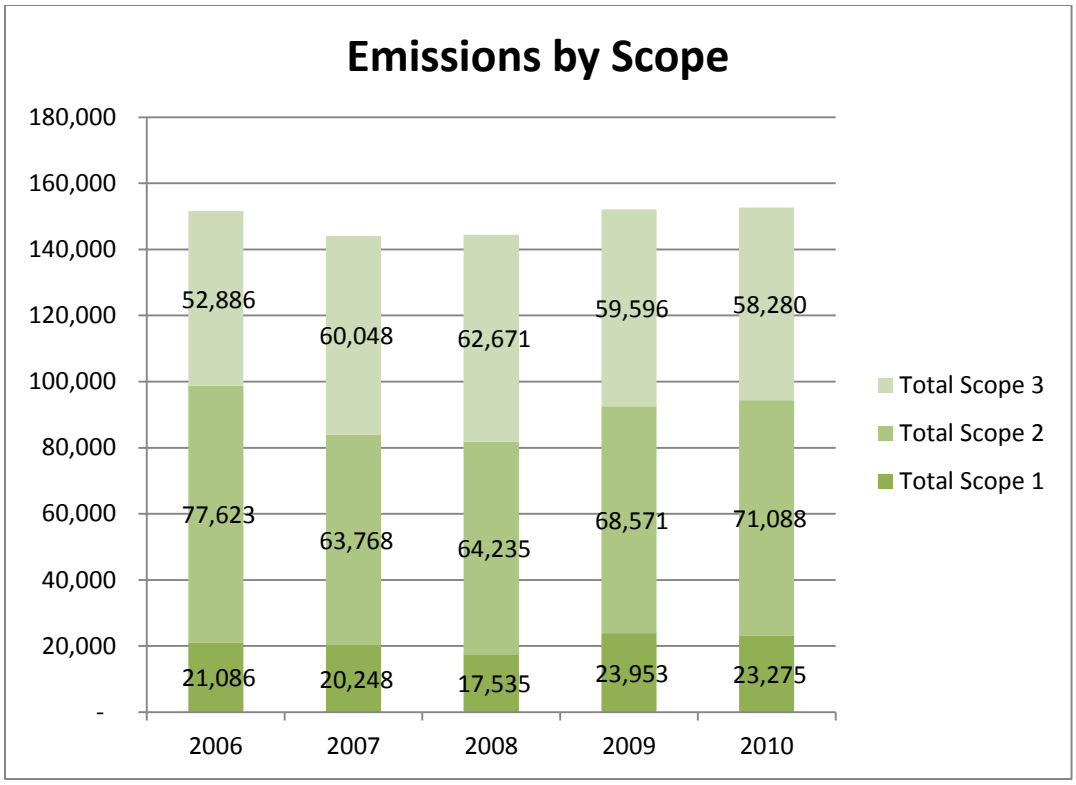
Study Abroad Travel

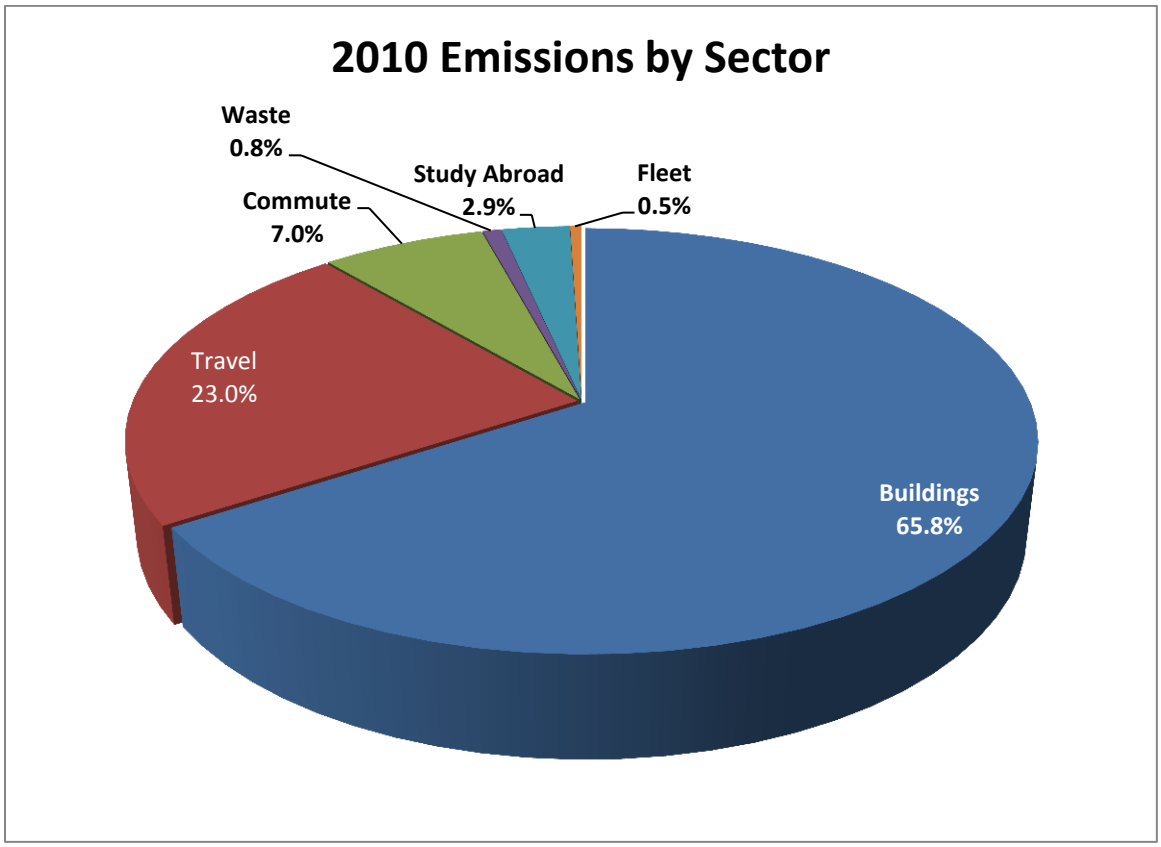
Data on student destinations for Spring 2010, Fall 2010, and academic year 2010-2011 were provided by Tulane's study abroad office and replaced the 2007/2008 data for years 2006 to 2009.

Results

Total emissions from all sources in 2010 were 152,644 metric tons of carbon dioxide equivalents ($MTCO_2e$). It should be noted that for the calendar year 2010, a new campus located in Madison, MS was added to the inventory's evaluation.

Total Emissions by Sector (MTCO2e)					
Sector	**2006**	**2007**	**2008**	**2009**	**2010**
Buildings	105,672	89,583	87,444	97,798	100,458
Travel	32,931	41,128	43,136	38,794	35,153
Commute	9,374	9,731	10,276	11,214	10,622
Waste	955	955	972	895	1,231
Study Abroad	1,986	1,986	1,986	1,986	4,444
Fleet	581	576	533	1,347	754
Offsets	-	-	-	-82	-
Total	**151,498**	**143,959**	**144,347**	**151,951**	**152,644**


Emissions by Scope
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
-
52,886
60,048
62,671
59,596
58,280
77,623
63,768
64,235
68,571
71,088
21,086
20,248
17,535
23,953
23,275
2006
2007
2008
2009
2010
Total Scope 3
Total Scope 2
Total Scope 1


2010 Emissions by Sector
Waste
0.8%
Study Abroad
2.9%
Fleet
0.5%
Commute
7.0%
Travel
23.0%
Buildings
65.8%

Discussion

Emissions increased by .46% between 2009 and 2010. Scope 1 and 2 emissions, those most directly resulting from the university's activities, increased by 1.99%.

A portion of this increase is likely the result of the addition of a satellite campus in Madison, MS possessing 11,542 square feet of building space. Electricity usage also increased at most locations, resulting in an overall usage increase of 3%. Another substantial increase can be attributed to the 2010 update of the study abroad habits of students, which reveals that more students are traveling abroad than in 2008 and are doing so in farther away locations. Waste emissions also increased, attributable to Tulane's uptown campus and perhaps both a greater populous and more adept waste tracking.

Although the Tulane University population has continued to grow, commuting habits as determined by a 2010 survey revealed less emission heavy patterns than in 2008, thus decreasing overall commuting emissions. This may be a reflection of the McAlister Place project, which closed McAlister Drive – a main thoroughfare through the uptown campus – to traffic, encouraging use by pedestrians and cyclists. Emissions due to business travel also lessened, as well as those resulting from gasoline purchased by the university.

Per capita emissions ($MTCO_2e$/FTE) increased from 13.79 to 13.95. It is also notable that the per capita emissions for Tulane are substantially greater than the American College and University Presidents' Climate Commitment (ACUPCC) average at the doctorate-granting institution level. This may be attributed to Tulane's high proportion of the students living on campus as opposed to other universities.

Emissions ($MTCO_2e$) per 1000 square feet also had a slight increase from 21.53 to 21.59. This figure is fairly close to the ACUPCC average of 19.6, but still greater than this figure.

Normalized Emissions						
	2006	2007	2008	2009	2010	ACUPCC Average
Full Time Enrollment (FTE)	9,704	9,642	10,091	10,695	10,945	
Per Capita Emissions (MTCO2e/FTE)	**15.25**	**14.53**	**13.9**	**13.79**	**13.95**	**7.79**
Total Building Area (sq. feet)	6,713,508	6,746,734	7,038,007	7,057,212	7,068,754	
Emissions (MTCO2e) Per 1000 Square Feet	**22.57**	**21.34**	**20.51**	**21.53**	**21.59**	**19.6**

Attached Appendix A catalogues all inputs used for the inventory from 2006 to 2010. Trends in inputs can thus be observed to explain increases or decreases in emissions.

Tulane University's 2010 Greenhouse Gas Emissions Inventory was conducted and authored by Tulane undergraduate Alexandra Yarost, during an internship with Tulane University's Office of Environmental Affairs, ayarost@tulane.edu.