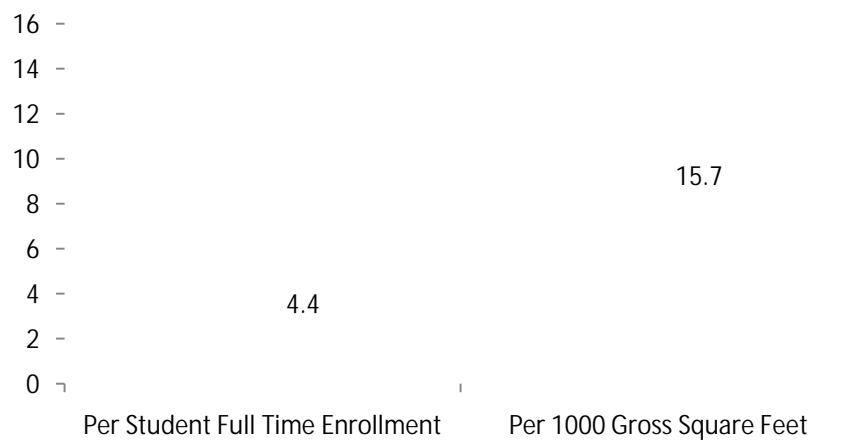




sustainABILITY

Radford University Greenhouse Gas

Figure 1 Net Emissions (MTCO₂e)



Introduction

Radford University is a coeducational, comprehensive public university offering 67 degree programs at the undergraduate level and 20 fields of study at the graduate level that have 18 options or specializations and seven post baccalaureate certificates. With approximately 9,000 students enrolled, RU recently celebrated its Centennial year (1910-2010). Most students live in one of the 15 university residence halls or in private accommodations within walking distance of the campus. RU's campus is located on the New River and provides great access to Claytor Lake, the Appalachian Trail, Blue Ridge Parkway, several parks (Radford Mountain Bike park, Bissett Park, Claytor Lake State Park, New River Trail, etc.), and nearby ski resorts.

Radford University's President Penelope W. Kyle signed the ACUPCC document in celebration of Campus Sustainability Day in October 2009 (implementation start date January 15, 2010). As an ACUPCC signatory, RU has committed itself to becoming climate neutral at some point in the future. Commitment step 1 included a) creating an institutional structure to guide the development and implementation of a CAP, b) completing a comprehensive GHG inventory within one year of the implementation start date, and c) developing a CAP within two years of the implementation start date. Commitment step 2 included initiating two or more actions from a list of seven to reduce greenhouse gases. At the time of the signing, RU had already taken many of the commitment steps that are outlined by the ACUPCC. RU had an institutional structure in place, the

Methods

RU selected the Clean Air-Cool Planet (CACP) Campus Carbon Calculator to assist with the collection, calculation, and analysis of its emissions. The CACP Campus Carbon Calculator is a preferred tool of the ACUPCC as it was designed specifically for campuses, is consistent with GHG protocol standards, and is commonly used. While starting the collection process with earlier versions of the calculator, the CACP Campus Carbon Calculator (V.6.6) was the latest at the time of reporting with which incorporated data from the IPCC's Third and Fourth Assessment Reports.

The organizational boundary selected included all RU buildings under operational control or the control approach. The determination whether to include or exclude certain buildings was based on whether or not the university paid the utility bills. The temporal boundary selection was based on the fiscal year 2010 data (July 1, 2009-June 30, 2010). These determinations were largely selected for future reporting consistency and the relative ease of data collection.

The greenhouse gas inventory process included many individuals, departments, and the continued support from the SustainABILITY Steering Committee (SSC), the administration, and others without whom this inventory could not be completed. Every effort was made to provide the most comprehensive snapshot of Radford University's greenhouse gas emissions including the most accurate and up to date data available with the resources available. However, some assumptions were made due to limitations in data, time, or other resources. Some of the assumptions include air travel, faculty and student commuting, and weights of paper purchased.

- Air Travel- data were collected for fiscal year 2008 from the university travel partner and used for the most recent fiscal year. The departure and arrival locations were entered into a spreadsheet and the total distance of the flights were determined by using an external website (www.webflyer.com). Since campus individuals are now allowed to procure travel from various sources, this was the most recent year that campus travel was available from a single source.
- Faculty Commuting- data were collected for academic year 2008-2009 and, since the faculty numbers did not change significantly, they are used as a proxy for fiscal year 2010 figures. The report is available on the RU sustainABILITY publications website: www.radford.edu/rugreen
- Student Commuting- data were collected for the Spring 2010 semester and then doubled to include the Fall semester. To account for summer school student travel, roughly 28% of the Spring semester figure was added to get the total for the year since the enrollment was approximately 28% of the Spring semester. The report is available on the RU sustainABILITY publications website: www.radford.edu/rugreen
- Paper Purchased Weights- paper purchasing data were collected from RU's Materiel Management & Contracts Department. The paper figure is limited to general purpose/copier paper purchases from different suppliers and does not include every type of paper utilized within a year by the university. A single ream of paper was weighed and used to calculate the estimated total pounds of paper.

The greenhouse gas inventory process began with the data collection phase and the recognition that some data were not readily accessible or did not exist at all. It for this reason, that some data were collected over years while other data collected are for the most recent fiscal year only. An additional benefit from this method allows for the distribution of time, costs, and other resources to be dispersed over years. The next phase of the inventory included calculating the greenhouse gas emissions. As data were collected, they were entered into the CACP calculator to determine the relative amount of emissions. The final phase of the inventory includes the analyzing and summarizing of the results. Analyzing the data helps to understand what actions are contributing to the most emissions and where they come from. By summarizing the inventory and emissions results, the university is able to educate individuals and to take the steps necessary to reach its goal of carbon neutrality.

Figure 3 Percentage GHG Emissions by Source

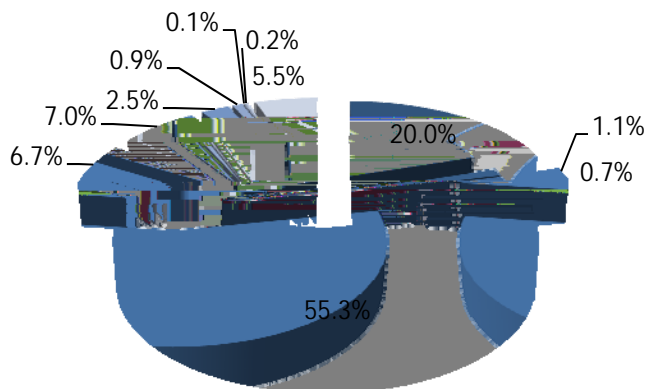


Table 2 Percentage GHG Emissions by Source

Scope 1	21.9%
Natural Gas	20.0%
Fleet Fuel	1.1%
Refrigerant & Chemicals	0.7%
Agriculture	0.1%
Scope 2	55.3%
Purchased Electricity	55.3%
Scope 3	22.8%
Faculty/Staff Commuting	6.7%
Student Commuting	7.0%
Air Travel	2.5%
Solid Waste	0.9%
Wastewater	0.1%
General Purpose/Copier Paper	0.2%
Transmission & Distribution Losses	5.5%

Directly comparing the total emissions inventories of other institutions to RU should be done with extreme caution due to the fact that no two institutions are exactly alike. Many factors affecting the emissions including the location of the institution (urban or rural), the educational focus (liberal arts, comprehensive, or research), and the type of facilities that exist on campus (e.g. a hospital) vary widely. However, the ACUPCC reporting website does try to normalize some of the data to allow for some comparability or benchmarking. The ACUPCC summary statistics include emissions per total student enrollment (FTE) and per 1,000 gross square feet of building space.

Conclusions & Recommendations

RU has been taking steps to educate the campus community and to reduce energy consumption and the associated costs and emissions for many years. Many of the efforts, on both the academic and facility side, can be found in the sustainABILITY reports located on the sustainABILITY website.

Recommendations developed from this effort include initiating a system to track the air travel mileage of faculty/staff and students, study abroad, and continuing to conduct periodic research reports relating to the commuting patterns of RU's faculty, staff, and students that allows for the specific values to be entered into the CACP calculator so that all GHGs (methane, nitrous oxide, etc.) will be individually measured.

Reporting RU's GHG emissions annually is one way to benchmark the university's efforts for the coming years. The FY 2010 emissions inventory baseline will serve as the foundation for the development and implementation of the CAP and subsequent emission inventories. As reporting protocols evolve over the coming years, this inventory can and should be updated along with the subsequent inventories to track RU's mitigation progress. While specific emission-reducing strategies will be considered as part of the CAP process, efforts to ease the data collection process can and should be implemented sooner rather than later.

Acknowledgements

Without the assistance, research, support, and efforts of many individuals, departments, and other structures, this GHG baseline inventory would not have been possible. Thank you to all involved many who are unnamed. If you have questions, feedback concerning this report, or want to find out more about RU's efforts, contact the SustainABILITY office by the website (www.radford.edu/rugreen) or by email at rugreen@radford.edu.

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