

Weber State University

Climate Action Plan

Progress Report for Fiscal Year 2010

Introduction

The intent of this report is to help understand and communicate both the success and failure of Weber State University's efforts as we work to reduce our carbon footprint and become more sustainable. Many companies and institutions use their marketing division to write progress and sustainability reports in order to downplay/hide their failures and highlight their successes. In this report we will try to communicate Weber State University's sustainability progress as it is. We will use both absolute and relative metrics to best communicate our current status and progress.

As a signatory to the American College and University President's Climate Commitment, Weber State has committed to achieve carbon neutrality by the year 2050. This is an ambitious, but we feel achievable goal if given adequate resources to invest in sustainability and energy reduction initiatives, and with the necessary attitudinal and behavioral changes required of students, staff and faculty. This report is the annual report of progress towards that ultimate strategic goal of carbon neutrality by 2050.

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Leadership Statement

Weber State Sustainability Progress

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The opportunities and challenges we have encountered on our journey towards carbon neutrality have been many and varied. What we have learned so far on our journey is that there are great opportunities, and these new opportunities present themselves in many and varied ways. We have been very proactive in trying to capitalize on these opportunities. We have also found that once momentum is established, many of the programs and initiatives take on a life of their own and become much more self sustaining, both financially and with manpower support. All of that is very encouraging and helps keep enthusiasm high for those participating in the various energy reduction, sustainability, and carbon footprint reduction programs.

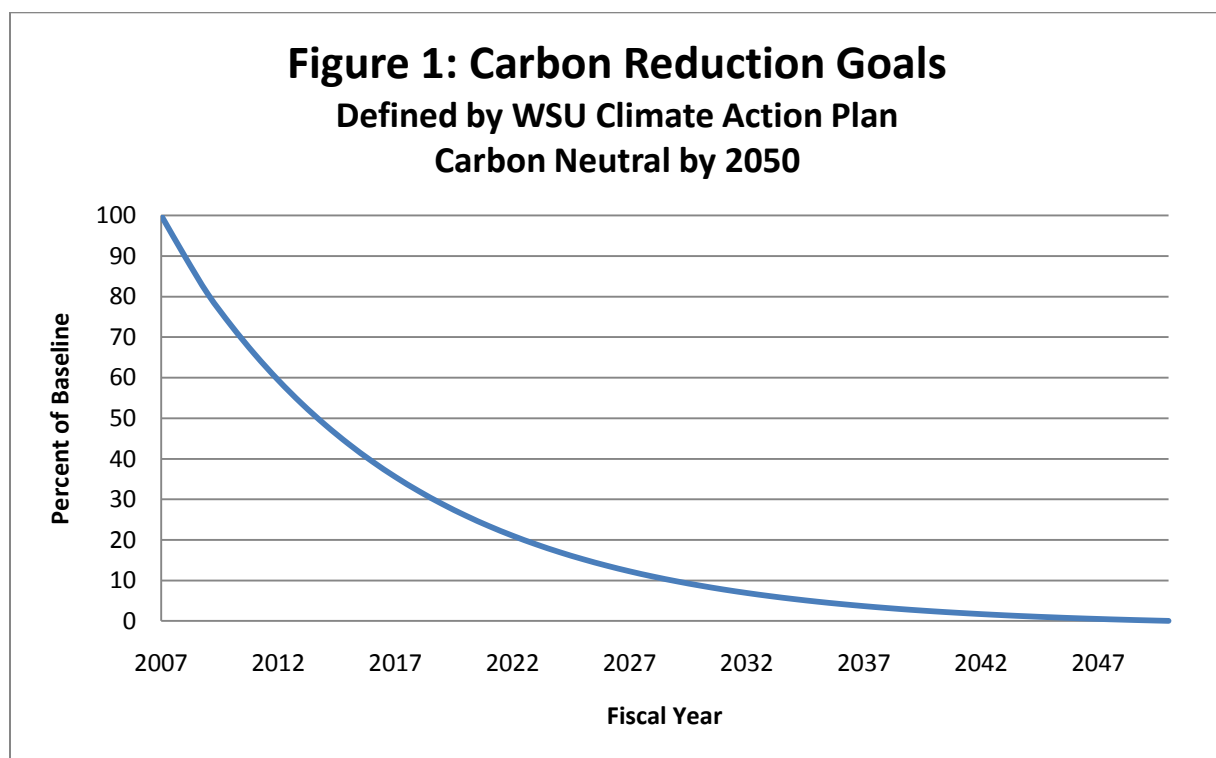
What we have also learned, sometimes painfully, is how simple little things can have a tremendous adverse impact on our overall success if they are not addressed promptly and with the appropriate attention to detail. An example of this is the natural gas consumption, as identified later in this report, that was skewed so heavily by new construction. That new construction had to be performed over the winter, and trying to get the building contractor to fully enclose the structure to retain heat turned out to be an exercise that bordered on futility. As a consequence of that one activity, the entire University program suffered.

Despite these challenges and diversions, we are more convinced than ever that we can attain carbon neutrality by 2050, as is our goal. As we show success in our programs to reduce energy consumption and reduce our carbon footprint, new resources are being made available to help us move towards our goal even more aggressively. In just the last year, we have found new ways to offset air travel emissions, found alternative funding sources for renewable power initiatives, and have gotten more people involved in behavior modification programs. More and more people in our University community are getting involved, and thus the momentum is growing.

Green House Gas (GHG) Emissions

Carbon Reduction Goals

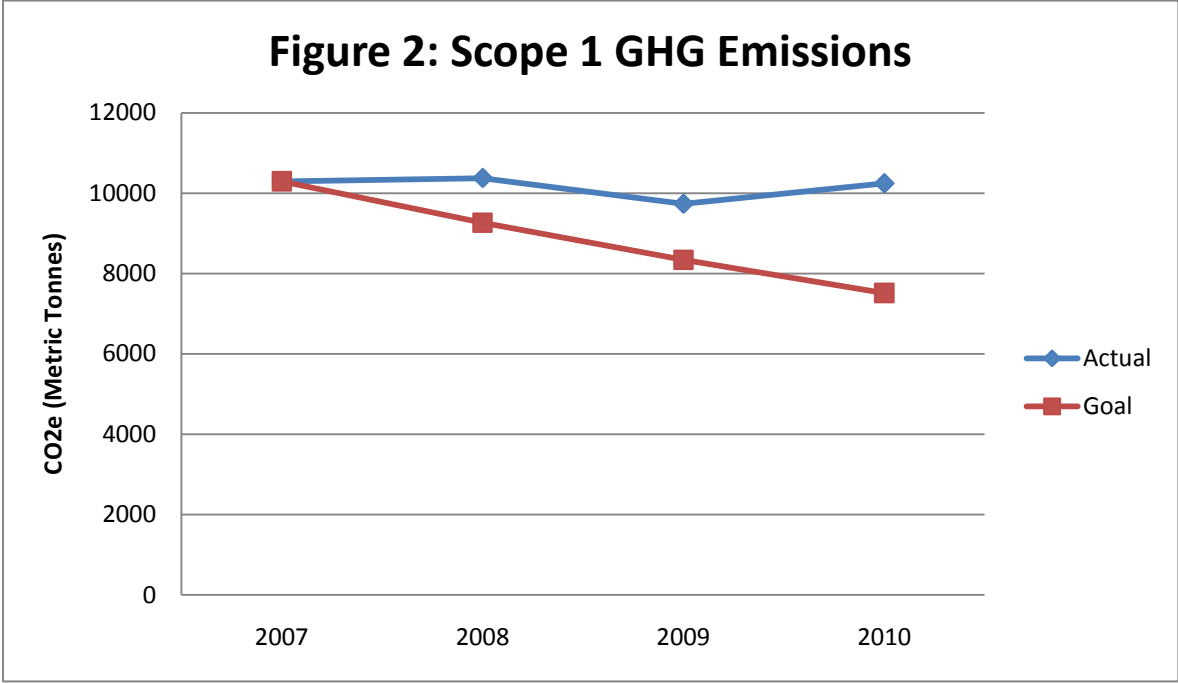
The carbon reduction goals outlined in Weber State University’s Climate Action Plan are ambitious. The long term goal is to achieve carbon neutrality by 2050 with several intermediate goals in years 2012, 2022, and 2035. WSU’s first intermediate carbon reduction goal is to achieve a 40% reduction in emissions (from the baseline year of 2007) by 2012. To stay on track towards meeting that goal, this year, WSU needs to have reduced its emissions by approximately 27%.



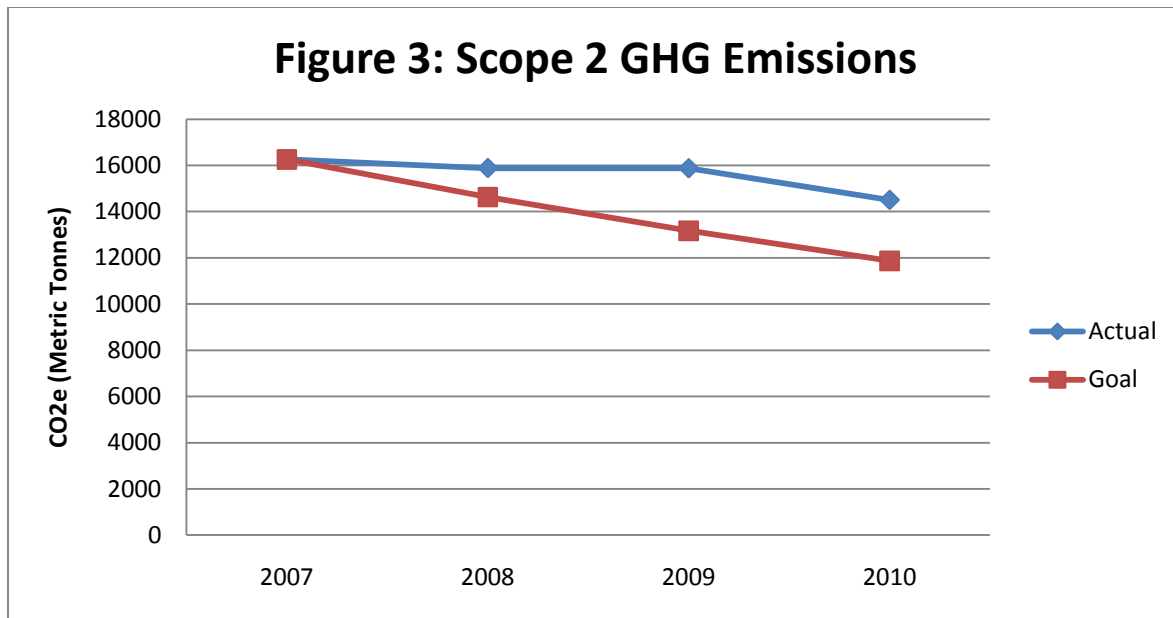
Carbon Emissions Inventory

Carbon emissions are typically reported in three categories: Scope 1, Scope 2 and Scope 3 emissions. Scope 1 emissions are defined as those emissions occurring from sources that are owned or controlled by the institution, including: on-campus stationary combustion of fossil fuels; mobile combustion of fossil fuels by institution owned/controlled vehicles, and “fugitive” emissions. For Weber State University, Scope 1 emissions are derived from the central heat plant which runs on natural gas (diesel during emergencies) and the University fleet which runs on traditional gasoline, diesel and compressed natural gas (CNG).

As can be seen from the graph below, WSU’s Scope 1 emissions have not been reduced significantly from the 2007 baseline. The increase in emissions from 2009 to 2010 can be attributed to construction on the new housing project and the fact that 2010 was a colder year. It is also important to note that the majority of the energy efficiency projects to date have had an impact on electricity consumption (Scope 2 emissions) rather than natural gas consumption.



Scope 2 emissions are defined as indirect emissions generated in the production of electricity consumed by the institution. Figure 3 below shows that while WSU has not achieved its emissions reduction goal, Scope 2 emissions have been reduced by 1,368 metric tonnes over the past year. These savings can largely be attributed to the various energy efficiency projects completed (please see section on Energy Consumption and Conservation for details).



Scope 3 emissions are defined as other indirect emissions that are a consequence of the activities of the institution, but occur from sources not owned or controlled by the institution. Scope 3 emissions include University-related air travel, student commuters, staff/faculty commuters, and solid waste generation.

Air travel data was collected by multiplying total WSU flights (obtained from WSU's Purchasing Department) by national average flight miles (see http://www.bts.gov/press_releases/). Data regarding WSU's solid waste generation were obtained from the University's contractor, Waste Management.

This year, the Energy & Sustainability Office (housed in the Facilities Management Department) conducted a survey of students, faculty and staff through WSU's Student Voice to obtain updated commuting information. Surveys were sent to a random sample of students and to a random sample of faculty and staff. Survey participants were asked to report on the mode(s) of transportation used to travel to campus, the distance from their home to campus, and the average number of days per week traveled to campus. If respondents indicated that they traveled to both the Ogden and Davis Campuses, then data for travel to both campuses was collected.

The data obtained from this survey concluded that emissions from commuting students, faculty and staff are significantly greater than previously thought. The table below provides commuting emissions data provided in earlier reports. As can be seen in Table 1 below, student emissions were thought to be around 6,000 to 7,000 metric tonnes and faculty/staff emissions were thought to be between 500 and 600 metric tonnes. Based upon the new survey data, student emissions for this year were found to be 29,538 metric tonnes and faculty/staff emissions were determined to be 5,356 metric tonnes.

Table 1: Previously Reported Emissions Data From Commuting

Year	Students	Faculty/Staff
2007	6,604 CO ₂ e metric tonnes	591 CO ₂ e metric tonnes
2008	7,288 CO ₂ e metric tonnes	574 CO ₂ e metric tonnes
2009	7,886 CO ₂ e metric tonnes	568 CO ₂ e metric tonnes

The discrepancy between the new and the old data can be attributed to the fact that it was assumed that students commuted (on average) five or fewer miles to campus and that faculty/staff commuted (on average) four or fewer miles. Actual commuting distance (as determined by the survey) was found to be significantly greater (see Tables 2 and 3).

Table 2: Average Distance Students Live From the Ogden and Davis Campuses

Average Distance From Ogden Campus	14.9 miles
Average Distance From Davis Campus	13.9 miles

Table 3: Average Distance Faculty and Staff Live From the Ogden and Davis Campuses

Average Distance From Ogden Campus	12.7 miles
Average Distance From Davis Campus	15.3 miles

Additionally, earlier commuting emissions calculations did not take into account the fact that many students and faculty/staff will commute to both the Ogden and Davis Campuses on the same day. Thus the average annual mileage per campus community member was found to be much greater than indicated by earlier data.

The findings from the old and new data were similar with regard to modes of transportation used by students, faculty and staff. The majority of students, faculty, and staff (over 70%) were found to travel to campus in single-occupancy vehicles. Please see Appendix A for the full WSU commuter survey results.

In an attempt to more accurately compare the 2010 commuting emissions to preceding years, the new data gathered through the survey was applied to the WSU populations that existed in years 2007, 2008 and 2009. Table 4 provides the corrected emissions results.

Table 4: Commuting Emissions Results (Utilizing Survey Data)

Year	Students	Faculty/Staff
2007	22,984 CO ₂ e metric tonnes	5,568 CO ₂ e metric tonnes
2008	26,499 CO ₂ e metric tonnes	5,412 CO ₂ e metric tonnes
2009	28,187 CO ₂ e metric tonnes	5,341 CO ₂ e metric tonnes
2010	29,538 CO ₂ e metric tonnes	5,356 CO ₂ e metric tonnes

Scope 3 emissions are depicted in Figure 4. As can be seen from the graph below, Scope 3 emissions have been increasing over the past few years. This can be credited to WSU's increasing student, faculty and staff population. The drop in emissions in 2008 is due to a slight decrease in faculty and staff numbers for that year and a significant drop in airline travel.

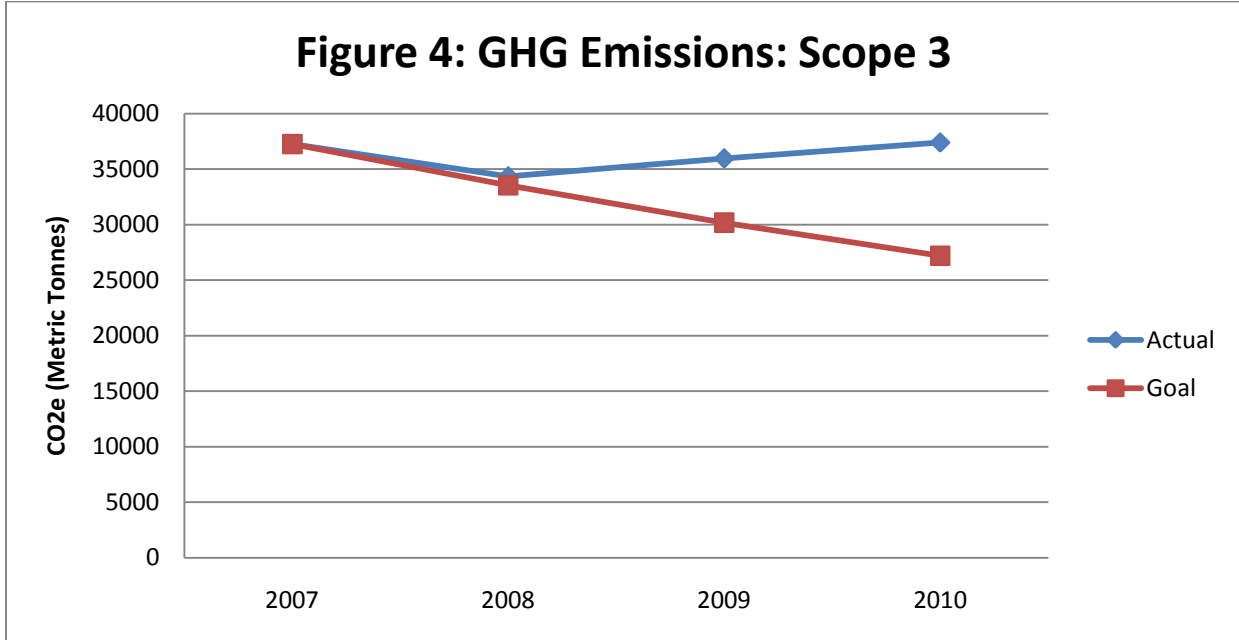
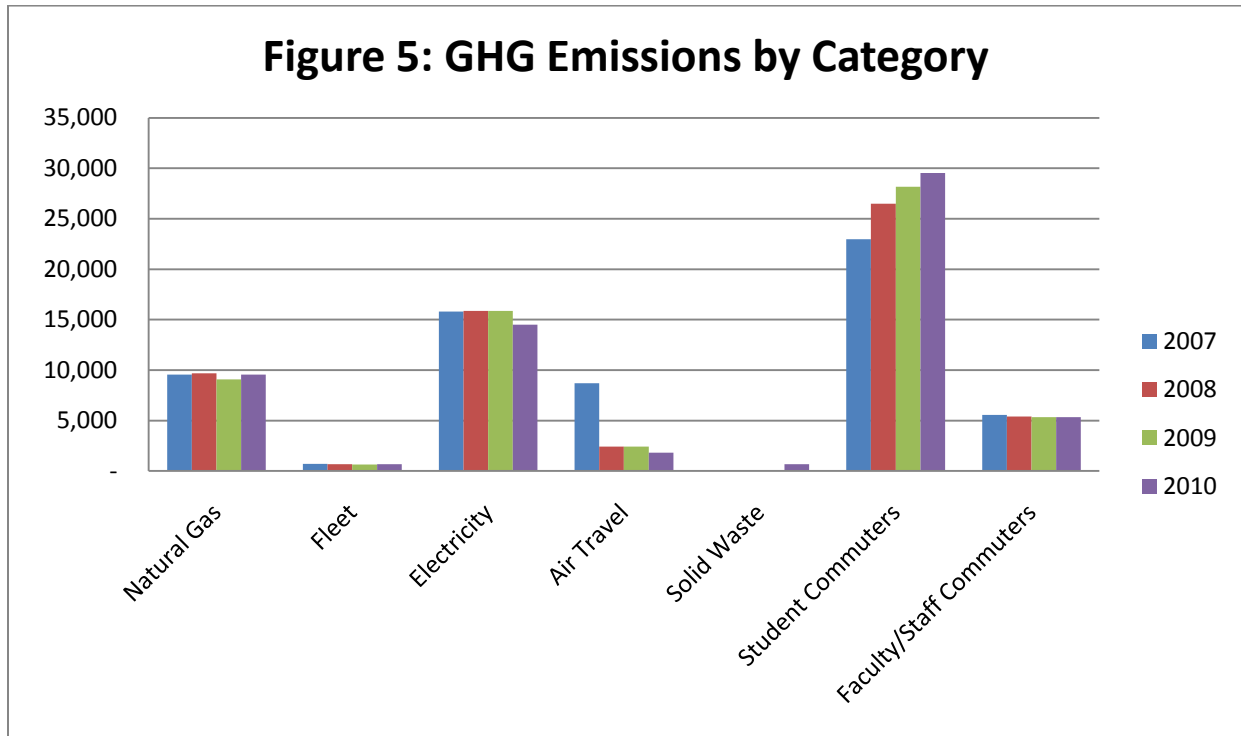


Figure 5 compares Scope 1, Scope 2, and Scope 3 emissions sources side by side. As can be seen from the chart, student commuting represents the largest source of emissions followed by electricity and natural gas consumption. As long as the vast majority of the WSU community chooses to travel to campus in a single-occupancy vehicle, it is anticipated that emissions from University commuters will only increase as the population rises.



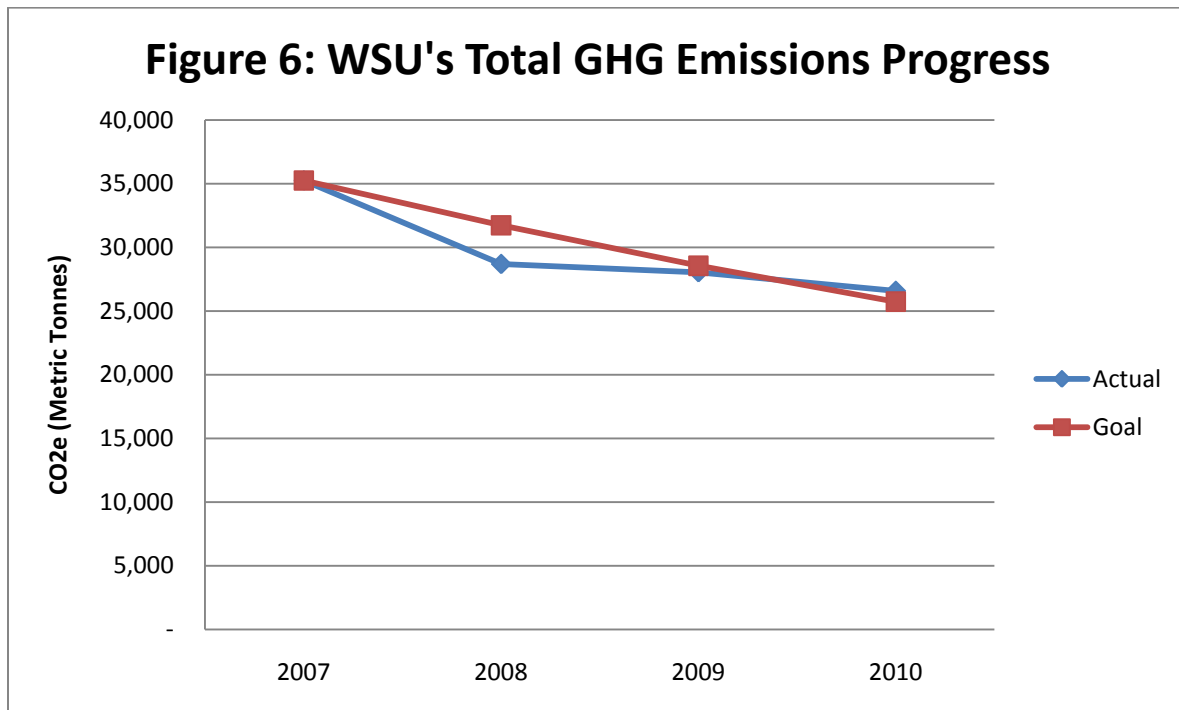
- The change in air travel from 2007 to 2008 is due to decreased air travel and due to a change in how the data is collected
- Solid waste emissions increased this year not because overall waste generation increased, but because the University decided to send the waste to a new landfill that does not have methane recovery capabilities

Progress Report on Total GHG Emissions Controlled by WSU

Reporting WSU's Scope 1, Scope 2, and Scope 3 emissions is important because it provides the campus community and the public with the information necessary to understand the University's total carbon footprint. However, to gauge WSU's progress with regard to emissions reductions, it is equally important to examine only those emissions directly controlled by the University. This allows the University administration to determine the effectiveness of the energy-saving projects and programs that have been implemented.

All Scope 1 and Scope 2 emissions are included in the total GHG progress report below (see Figure 6). Scope 1 and 2 emissions are controlled by WSU in the sense that the University has the authority to decide exactly how much natural gas, diesel, electricity, etc. will be purchased and consumed. All Scope 3 emissions however are out of the direct control of the University with the exception of airline travel. Airline travel for University-related business can be reduced or restricted by WSU. On the other hand, WSU cannot force people to abandon their single-occupancy vehicles for mass transit when traveling back and forth to campus. Therefore, University-related airline travel emissions are included in the total GHG progress report.

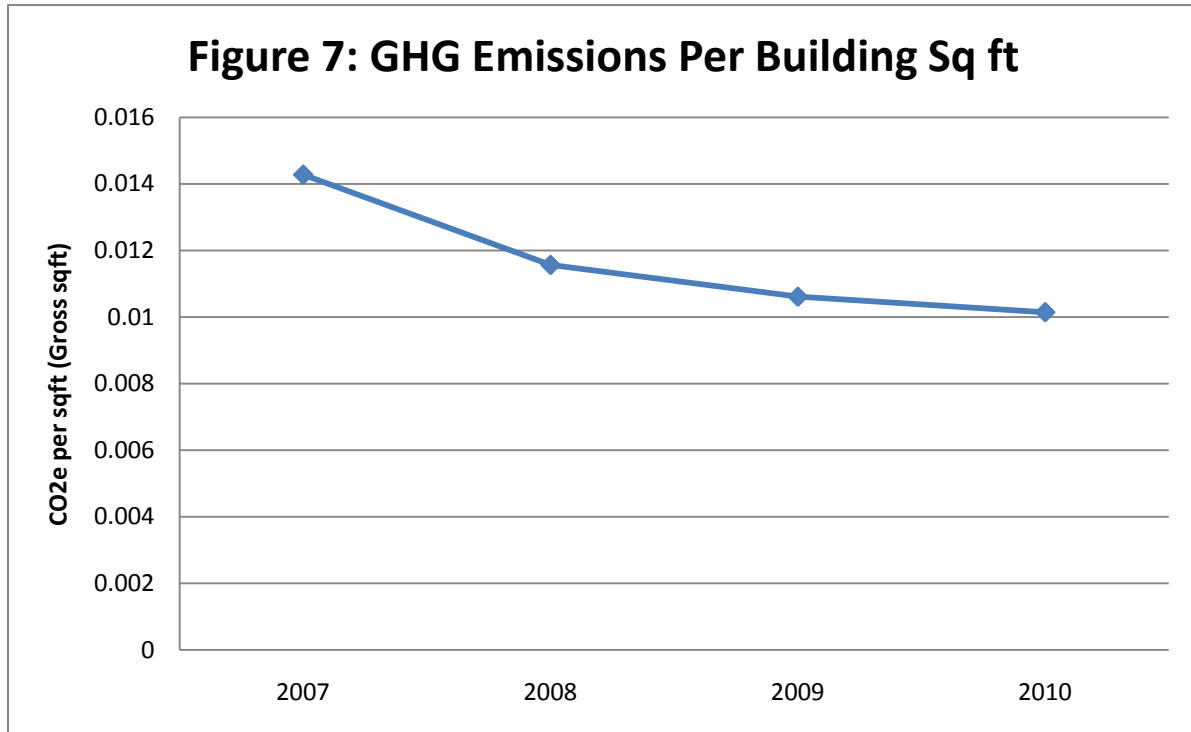
As stated previously, to meet this year's goal, WSU needed to have its emissions reduced by 27% from the 2007 baseline. To date, total emissions (Scope 1, Scope 2, and airline emissions) have been reduced by nearly 25% from the baseline (see Figure 6). Therefore, the University is on track to meeting its carbon emissions reduction goals.



GHG Emissions per building square foot

Table 5: WSU Gross Building Square Footage by Year

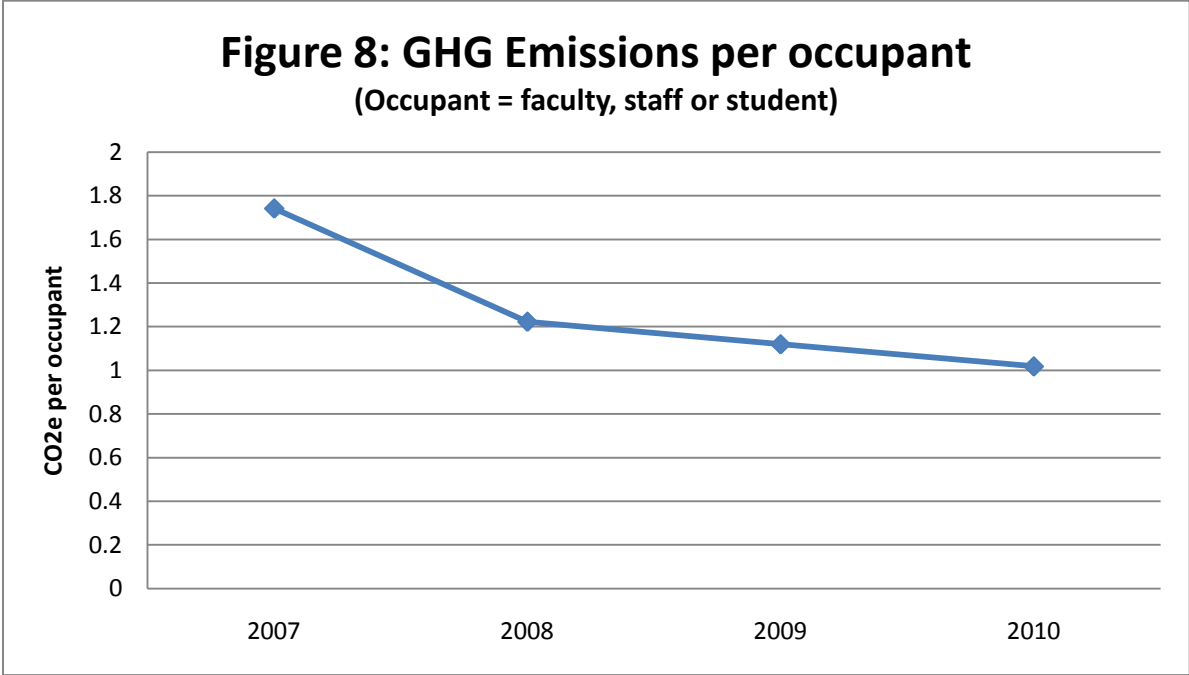
Fiscal Year	Gross Building Square Footage
2007	2,469,079
2008	2,480,723
2009	2,642,600
2010	2,619,259



GHG Emissions per occupant

Table 6: WSU Population by Year

Fiscal Year	Total Students, Faculty, and Staff
2007	20,246
2008	23,460
2009	25,046
2010	26,099



Energy Consumption and Conservation

Energy consumption (electricity and natural gas) represents a considerable portion of the University's GHG emissions. Energy conservation also represents an opportunity for the University to save significant amounts of money. For these two reasons most of the initial sustainability effort is being expended towards making the University as energy efficient as possible.

University Energy Consumption

Table 7: WSU Energy Consumption

Fiscal Year	Electricity (kwh)	Natural Gas (MMBTU)
2007	38,714,341	174,846
2008	38,927,520	176,545
2009	38,905,072	170,782
2010	38,082,772	180,215

Energy Conservation/Efficiency Projects Completed To Date

- A new chiller plant has been built with the most cost effective, efficient chillers available in the market for its operating condition and life cycle. This single project is reducing our electrical consumption by 1,006,800 Kwh per year.
- A new boiler has replaced two old, inefficient boilers in our heat plant. The new boiler is in the 80% plus range for efficiency and is already saving approximately 7300 decatherms of natural gas energy per year.
- Since 2006, energy efficiency projects have been completed that save over 2,505,000 Kwh of electricity annually (an annual reduction of 3,759,000 pounds of carbon dioxide). These projects include, but are not limited to:
 - Exterior parking lot lighting upgrades
 - Lind Lecture Hall lighting
 - Swenson building lighting and mechanical upgrades
 - Computer Center lighting
 - Recommissioning of the Student Services Center and the Browning Center
 - Some new high efficiency electric motors throughout campus
 - Stromberg Center lighting
 - New Dee Events Center scoreboard
 - New variable frequency drives in several HVAC systems throughout campus
 - High efficiency electrostatic filters have been installed in the HVAC systems in several campus buildings
 - Various small lighting and sensor upgrades throughout both campuses
 - Exterior walkway lighting upgrades

- Total lighting upgrade in the Engineering Technology Building.
 - Total mechanical and lighting upgrade in the Training and Learning Center.
- Renovation of the Union Building has reduced our electrical demand by approximately 569,000 Kwh per year.
- Dee Events Center lighting upgrades resulted in reduced electrical consumption of 268,000 Kwh.
- Electric meters are now installed on each of our major buildings to better measure and control electrical consumption.
- In addition, several other projects have been completed to improve efficiency in use of natural resources. They include:
 - New cool roof on the Library
 - New cool roof on the Social Sciences Building
 - New cool roof on the Miller Administration Building
 - Several annexes have received insulation upgrades

Initiated and On-going Energy Conservation/Efficiency Projects

- In 2009, AMERESCO (an energy services company) completed an investment grade audit for WSU and WSU has started working on 23 projects that will reduce energy consumption, improve efficiency, or otherwise save natural resources. Some of these projects include:
 - Campus-wide interior and exterior lighting upgrade to high efficiency fluorescents, CFLs and LEDs.
 - Work to upgrade the campus steam system (including the installation of new steam traps, expansion joints, and insulation) is currently underway.
 - Recommissioning of the Social Sciences Building, the McKay Education Building and the Sky-Suites to improve building systems efficiency will occur in 2011.
 - Solar photovoltaic systems are funded and will be installed on the Davis campus building and the Shepherd Union Building over the summer.
 - A solar hot water system will be installed on the Swenson Building this summer.
 - Installing a new chilled water plant and HVAC equipment in the Dee Events Center in 2011.
- Weber State University has subscribed to the Rocky Mountain Power Blue Sky program and purchases approximately 13 percent of the University's electrical power from renewable energy resources (wind power) through that program.
- Operational Reductions
 - i. Day Cleaning – In 2009, the custodial staff tested many buildings to perform cleaning during the daytime which allows the facilities to be “put to bed” at night. Those test results proved positive and thus the program was extended campus-wide over this past year.

- ii. Space Heater Exchange – Facilities Management initiated a space heater exchange in order to reduce utility loads on buildings. Space heaters can be exchanged for more energy efficient foot heating pads. There has been some progress with the space heater exchange, but many more remain in use on both campuses.

Reasons for Removing Space Heaters

1. It is against state policy to have space heaters in state owned buildings.
 2. Space heaters represent a significant fire hazard.
 3. They consume excessive electrical energy. (\$300-\$400 each annually to operate)
 4. They overload electrical systems. (One space heater is equivalent to 5-10 computers on a circuit)
 5. They cause an imbalance with the buildings HVAC system. (Make it difficult to properly heat and cool spaces and balance systems.)
- iii. PC Power Conservation – Information Technology and Facilities Management are working together to implement software that will cause campus computers to hibernate when not in use.

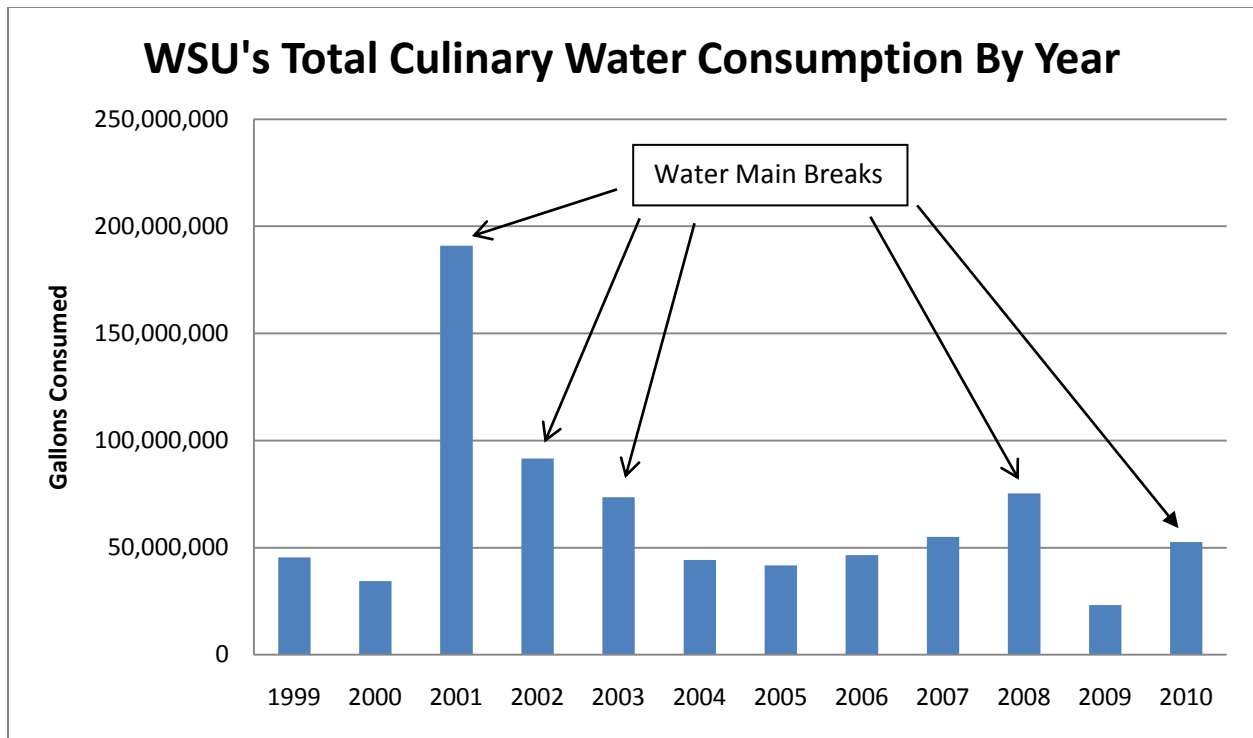
Additional Sustainability Projects & Programs

In addition to conserving and reducing the University's energy consumption, Weber State University has worked to reduce water consumption, reduce waste generation, encourage the use of alternative transportation, offset university-related travel, increase biodiversity protection, and incorporate the principles of sustainability into all new construction.

Water Conservation Efforts

Figure 9 depicts Weber State University's culinary water consumption over the past 12 years. The spikes in water consumption in years 2001, 2002, 2003, and 2008 are due to water main breaks that occurred in those years. This year (2010) WSU had a few smaller water main breaks that increased the University's water consumption above what would have been typical consumption.

Culinary water consumption is being reduced in campus buildings by installing low flow toilets and urinals, and low flow faucets in lavatories. While most landscape irrigation water on campus is secondary, some areas on campus are still irrigated using culinary water. Where possible and feasible, WSU is converting those landscaped areas over to secondary water. For example, last year, the landscaping around the tennis courts on the Ogden Campus was converted from culinary to secondary water use.



Irrigation (secondary) water consumption is estimated at 60,000,000 gallons annually based on data obtained from Pine View Water Company. The following conservation efforts have been implemented to reduce WSU's consumption of secondary water.

- Modernized campus irrigation systems are saving water, improving irrigation, and reducing pumping costs (with consequent energy savings). Virtually the entire Ogden campus has received new irrigation systems in the past five years. These new irrigation systems are computer controlled, linked to a weather station, and have reduced irrigation water requirements by several million gallons per year.
- Using the Lindquist pond as a collection basin, recycling campus storm water has reclaimed as much as 1.2 million gallons of irrigation water per week.
- Added water conserving landscape in several areas on campus, using the seven principles of xeriscaping, including native plants, drought tolerant vegetation, mulches and drip irrigation systems.

Waste Reduction

Table 8 provides data on WSU's waste generation. WSU's waste production has likely gone down due to increased recycling. This year, 137.82 short tons of recycled materials were collected which represents 17% of the total waste stream. However, this represents a reduction in recycling from previous years. For example, last year, approximately 1/3 of the waste generated on campus was recycled. To increase recycling efforts, WSU recently implemented the recycling Tuesday program, where individual recycling bins in offices are emptied each Tuesday in lieu of emptying the trash can.

Table 8: WSU’s Waste Generation in Short Tons

Year	Short Tons
2007	741
2008	730
2009	730
2010	687

In addition to general recycling, WSU currently has the following waste reduction/recycling programs:

- a. Green Waste Recycling
 - i. Landscape purchased a chipper in Fall 2009 and is using it to mulch and recycle green waste on both campuses. This has resulted in approximately a 12% waste reduction.
- b. Reduction Efforts
 - i. Many departments on both campuses are proactively engaging in printed media reductions; however, no policies have been established regarding printed media.
- c. Property Control
 - i. Materials processed through property control are made available to other departments or sold to the community. Sending items to the landfill is the last option.
 - ii. Electronics Recycling – Electronics are recycled as funds permit. The current cost for recycling electronics is approximately 50 cents per lb. Last year, WSU recycled 100 desktop computers and 225 CRT monitors.

Encouraged Use of Alternative Modes of Transportation

- In 2006, prepared and published the University Transportation Master Plan that emphasizes mass transit, pedestrian movement, bicycles, and car pooling to reduce single occupancy vehicle movements. Initiatives identified in this plan are for the most part complete or are being vigorously pursued.
- WSU participates in the Ed Pass program with UTA, with ridership gradually increasing each year. This program now includes UTA busses, the Frontrunner light rail system, and the TRAX system in Salt Lake City. University personnel with the Ed Pass card can ride on all of these systems at no charge.
- Installed several new bicycle parking racks on campus each year since 2006, and more are being prepared for installation. A revised policy promoting bicycle use has been approved and is now being implemented across the University.
- The University converted its shuttle bus fleet to natural gas powered vehicles and reduced the length of shuttle bus routes to save fuel.
- Weber State University subscribes to and promotes the “Fresh Air Fridays” campaign.

Offsetting University-Related Travel

- In spring of 2011, WSU made the decision to offset its travel-related emissions through a fee that is charged to each WSU office or department in an amount that is proportionate to each office/department's travel for the year. The carbon offset money generated by this fee will be used to fund energy efficiency and renewable energy projects on campus.

Biodiversity Protection

- 550 new trees were planted on campus over the last four years.
- The Weber State Landscape department tries to protect our trees and natural habitats as much as possible.
- Part of LEED is minimizing impact on local habitat from new construction projects.

New Construction

- The Hurst Center for Lifelong Learning received LEED silver certification and meets state high performance building energy efficiency standards.
- Elizabeth Hall, the new humanities building, was built to LEED silver certification standards and Utah's high performance building energy standards.
- A new residential housing complex has been designed and is under construction that will ultimately result in the demolition of four 1960's vintage residence halls and the construction of three new, LEED silver certified residence halls with greater capacity. The new residence halls have been designed to be much more energy efficient and sustainable, including the use of water source heat pumps, solar hot water heating, and state of the art control and energy management systems.

Sustainable Purchasing

Weber State University follows State of Utah procurement code. Weber State has yet to initiate any procurement policies above and beyond the state procurement code in regards to sustainable purchasing. The only sustainable practice defined in the state procurement code is the required purchase of 5% recycled paper. University departments are encouraged to purchase products with less environmental impact (i.e. EnergyStar, increased recycled content, no/few hazardous chemicals, certified wood); however, no policy requires such purchases as yet.

FOR COMMENTS, SUGGESTIONS, OR QUESTIONS ABOUT THIS CLIMATE ACTION PLAN PROGRESS REPORT, contact Jacob Cain – jacobcain@weber.edu – 801-626-6311 or Jennifer Bodine – jenniferbodine@weber.edu – 801-626-6421.

Appendix A: WSU Commuter Survey Results