



Climate Action Plan

Submitted December 21, 2009

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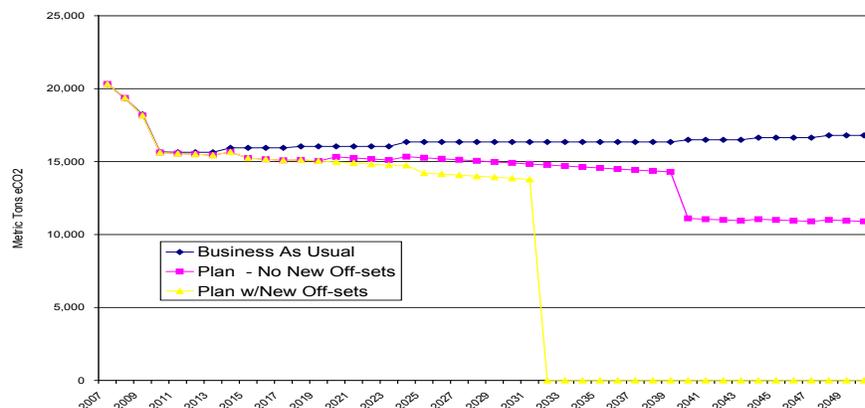
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1. Executive Summary

Global climate change, caused by increasing concentrations of atmospheric greenhouse gases, is one of today’s most pressing issues. Society has already experienced consequences of global climate change, which include food shortages, species habitat loss, drought, increased frequency and intensity of wildfires and storms, unpredictable weather patterns, and rises in sea level (IPCC 2007).

The urgency of global climate change not only necessitates changes in behavior and operations, but also a new perspective. Gettysburg College has taken an active role in doing its part to make our campus aware of the severity of the situation. In the fall of 2007, then President Katherine Haley Will was a charter signatory of the American College and University President’s Climate Commitment (ACUPCC). Today, President Janet Morgan Riggs ’77, continues Gettysburg College’s commitment to avert climate change and to educate future generations and make our students, staff, and faculty aware of the impact we have on our environment and the responsibility we have to change.

- As part of our commitment to climate neutrality and the ACUPCC, Gettysburg College has committed to achieve carbon neutrality by the year 2032. This aggressive goal will heighten the awareness of this global issue and renew our efforts towards neutrality. The year 2032 is the 200th anniversary of the founding of Gettysburg College. Achieving carbon neutrality at such a significant milestone in our institution’s history signifies our commitment to bring awareness to this unprecedented environmental concern.



2. Introduction

Global climate change due to increasing concentrations of atmospheric greenhouse gases is one of today's most pressing issues. Human activities result in emissions of four principal greenhouse gases: carbon dioxide, methane, nitrous oxide, and the halocarbons (Intergovernmental Panel on Climate Change 2007). Carbon dioxide is the most recognized greenhouse gas attributable to human activities. The atmospheric concentration of carbon dioxide increased from a pre-industrial value of approximately 280 parts per million to 386 parts per million in 2007 (IPCC 2007). The Intergovernmental Panel on Climate Change (IPCC) attributed a sharp increase in greenhouse gases to human activities in the industrial era. At the current rate, atmospheric carbon dioxide (CO₂) is predicted to reach 500 parts per million by the middle of this century (EPA 2007).

Society has already experienced consequences of global climate change, including food shortages, species habitat loss, drought, increased frequency and intensity of wildfires and storms, unpredictable weather patterns, and rises in sea level (IPCC 2007). The urgency of global climate change not only necessitates changes in behavior and operations, but also a new perspective. We will have to look to our past to learn about what works and we will have to plan for the long term. A business-as-usual approach to our future, where short-term gain takes precedence over mitigation, may lead to global temperatures reaching a "tipping point" (Eagen et al. 2008).

The American College and University Presidents Climate Commitment (ACUPCC), which began in 2006, is a communal effort by colleges and universities nationwide to reduce greenhouse gas emissions. Former Gettysburg College President Katherine Haley Will was one of the charter signatories of the ACUPCC, committing Gettysburg College to carbon neutrality on September 15, 2007.

Gettysburg College is committed to build upon its strong history of green practices. From recycling to the campus-wide installation of fluorescent light bulbs, being sustainable has reduced emissions and has proven to be cost effective. Student involvement is particularly noteworthy. We were named a "leader by example" in the 2007 Sustainability Report Card. Students have become more environmentally conscious and motivated to take action thanks to GEEO (Gettysburg Environmental Concerns Organization), GRASS (Gettysburg Research and Action by Students for Sustainability), and many other programs.

The Gettysburg College Climate Action Plan begins with an inventory of the College's past emissions. These greenhouse gas inventories have taught us how much our actions directly influence the environment and provide insight into the changes we can make. We then explore the steps necessary to become climate neutral by considering the short-term costs and long-term gains. While we recognize that it will be challenging to reach carbon neutrality, we also know that sustainability must continue to be a priority on campus.

Greenhouse Gas Inventory

Two greenhouse gas inventories have been compiled at Gettysburg College. Senior Seminar student, Marissa Mizeski, completed an inventory for fiscal years 2000 to 2006, and students in an Environmental Studies Senior Seminar calculated net emissions for fiscal years 2007 and 2008. Both inventories used the Clean Air - Cool Planet Campus Carbon Calculator. The

calculator includes all six greenhouse gases specified by the Kyoto Protocol (CO₂, CH₄, N₂O, HFC and PFC, and SF₆). However, in this inventory we report total emissions in standard units of “carbon dioxide equivalents,” or eCO₂, according to their global warming potential relative to carbon dioxide. On occasion, we faced not having an accurate way to calculate some of the carbon information to complete the study. In these cases we used the best information available to estimate our answer. We feel confident that our inventory is a correct representation of the emissions at Gettysburg College.

History of Sustainability at Gettysburg

Environmental awareness at Gettysburg College can be traced back to the 1970’s. At that time our focus was mainly on energy conservation and awareness. A very strong energy curtailment plan was implemented during that time that involved cutting back energy in buildings that were not being used. That strategy has evolved to relocating students during break periods into more energy-efficient buildings.

In addition to energy awareness, Gettysburg College is also very proud of the efforts it has made in water conservation. Beginning in 1996 we renovated and upgraded all bathroom facilities on campus. Low-flow toilets were installed in all bathrooms and most showerheads were replaced with reduced water flow fixtures. These efforts have resulted in a 25% reduction in our water usage compared to our 1996 readings.

Recycling and reuse efforts are other examples of our early sustainability history. College-coordinated recycling officially began in 1998 as a student-lead initiative. Over the last 12 years the College’s recycling rate has improved from 8% to nearly 35% today. Some of our successes have been:

- Providing trash and recycling cans to all students
- Coordinating an extremely successful Give it Up for Good program with the local United Way. Nearly 110 tons of items have been diverted from the waste stream and more than \$80,000 raised for the United Way.
- Implementing single stream recycling program has had a dramatic increase in recyclable materials collected.
- Designating one refuse hauler position as recycling only.

Students are the primary drivers of sustainability efforts at Gettysburg College. In addition to leading our recycling and reuse efforts, students also have taken the lead in our carbon neutrality efforts. They are not only responsible for calculating our carbon footprint; they have also taken the lead in developing our climate action plan. We believe education does not take place solely in the classroom, and our efforts over the last 35 years are a direct reflection of the passion and dedication of our students to spread awareness and further the College’s sustainability efforts.

3. Campus Emissions

Emission sources are divided into three scopes:

Scope I - Direct emissions, including on-campus heating, college fleet vehicles, fertilizers, and refrigerants.

Scope II - Indirect emissions, primarily electricity purchased by the college.

Scope III – Other indirect emissions including emissions from study-abroad travel, carbon offsets, emissions from faculty and staff commuting, directly financed outsourced travel, and solid waste.

Better data availability from 2005 through 2008 has allowed for the capture and inclusion of more comprehensive Scope 3 emission sources. For example, the addition of study-abroad air travel from 2006 to 2008 contributed to a significant increase in total College emissions. The following sections provide a breakdown of emissions by scope and subcategory.

Scope I Summary

On-Campus Heating

Nearly 85% of all on-campus heating is generated at the College’s Central Energy Plant. For FY 2007, only natural gas was used, which accounted for 4,596.2 metric tons (MT) of eCO₂ emissions. Gettysburg operates a dual fuel plant with the ability to heat with either natural gas or #2 oil, depending on cost and availability. If the College were to utilize only #2 oil, our average eCO₂ would increase by approximately 725 metric tons.

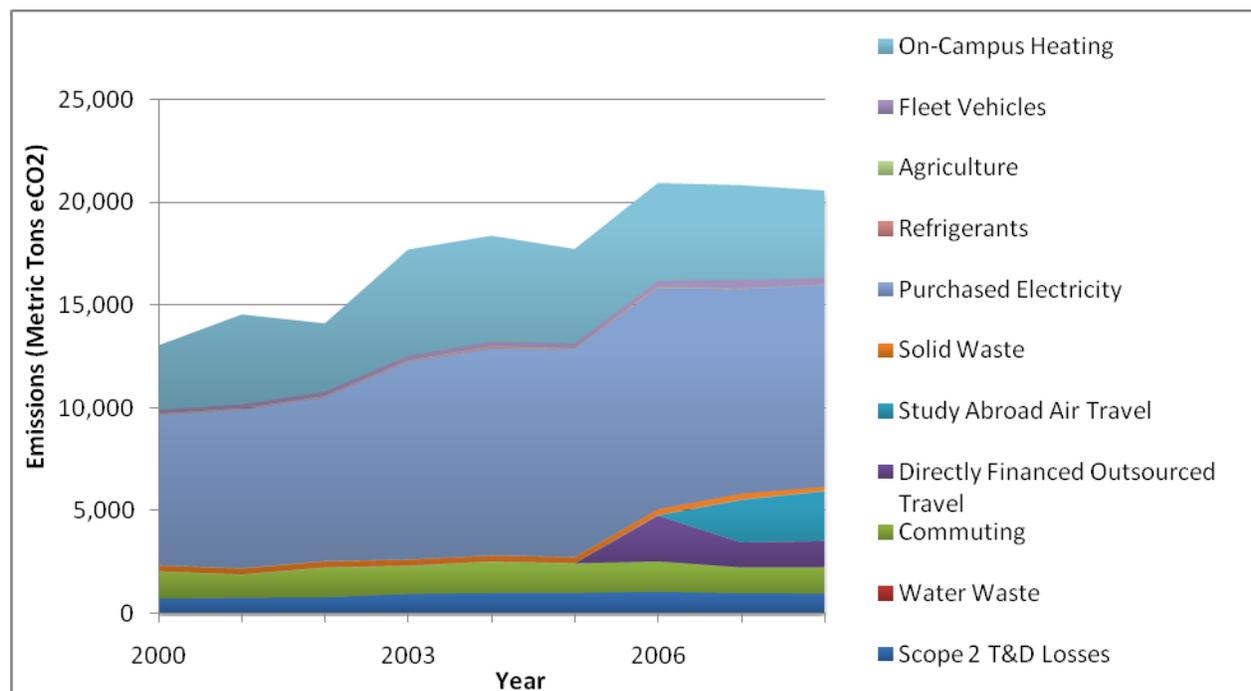


Figure 1. Greenhouse gas emissions of Gettysburg College from 2000 to 2008.

Direct Transportation

Sources of direct transportation emissions are defined by the Clean Air-Cool Planet Calculator as all fuel used in College-owned vehicles (Campus Fleet). The Fleet vehicles emit a total of 434 metric tons of eCO₂ or 2% of all on-campus emissions. Transportation Services provides year-round shuttle service for students and for employees on college business. Since 1996, there has been a steady increase in eCO₂ emissions from direct transportation.

Agriculture

Fertilizer is the sole source of agricultural emissions on the Gettysburg College campus. The use of fertilizer is limited to the sports fields and contributes little to total campus emissions (11.2 metric tons eCO₂). In recent years, several turf-playing surfaces have been installed resulting in a decrease in the use of fertilizer and the emissions that result from fertilizer application.

Refrigerants

Refrigerants and other chemical emissions include the release of perfluorocarbons (PFCs), hydro-fluorocarbons (HFCs), and sulfur hexafluoride (SF₆). This represents less than 1% of the College's total emissions.

Scope II Summary

Purchased Electricity

In 2007, Gettysburg College purchased 19.9 million kWh of electricity, emitting about 10,000 metric tons of eCO₂ (49% of total emissions). All of the electricity purchased by Gettysburg College comes from Met-Ed.

Scope III Summary

Solid Waste

Solid waste produced by Gettysburg College goes to IESI Blue Ridge Landfill. Methane released during decomposition in the landfill is collected and burned. The College produced 1,761 tons of solid waste during FY 2007, emitting 283 metric tons of eCO₂ or 1.4% of the total emissions.

Study-Abroad Emissions

Student study-abroad travel miles have a significant impact on Gettysburg College's total campus eCO₂ emissions. Due to the unavailability of total miles traveled by students in their study-abroad countries, the analysis is limited to air travel miles to and from a country. In 2007 study-abroad air travel contributed 2,061.1 metric tons of eCO₂ or 10.1% of total emissions from Gettysburg College. It should be noted that study-abroad data were not collected prior to 2007,

but 2007 and 2008 totals include this metric and comprise a large percentage of the increase in emissions over prior years.

Directly Financed Outsourced Travel

Outsourced travel includes an estimate of the number of miles per year the College has tallied on air travel, rental cars, taxis, trains, buses, and gas not purchased through the Transportation Office. Total expenditures from each of these sectors were converted to mileage for the calculator. In total, directly outsourced travel resulted in a release of 1,092 metric tons of eCO₂, or 5.4% of total 2007 emissions.

Commuting

To determine the impact of faculty and staff commuters, a voluntary survey was posted via email for faculty and staff to complete. From a 35% participation rate, the survey data show that 26.4% of faculty and 8.9% of staff do not drive to campus, 7.2% of faculty and 8.9% percent of staff carpool, and 66.4% of faculty and 82.1% of staff drive alone. There is an estimated 1,268 metric tons of eCO₂ released due to employee commuting, which is 6.2% of the total FY 2007 emissions.

Scope II Transportation and Distribution Losses

This sector accounts for energy lost while transporting and distributing purchased electricity to campus. Losses contribute 985 metric tons of eCO₂, or 4.8% of total campus emissions.

Carbon Offsets

At Gettysburg College, a commitment was made to purchase energy from wind farms or other renewable energy sources to help offset emissions. In 2007, the College offset about 500.7 metric tons of CO₂. The College began purchasing offsets in 2002, purchasing 1,000,000 kWh, and has steadily increased this commitment to 10,000,000 kWh for fiscal year 2010, or approximately 50% of the College electric usage.

Water Waste and Student Travel

Water waste and student commuting and transport while in Gettysburg were not included in this inventory. However, because information may be included in future inventories, the Climate Action Plan presents ways to reduce emissions from these two sectors.

A distribution of emissions by scope, type, and amount is presented in Figure 2 and Table 1 as shown below:

Breakdown of 2007 Emissions:

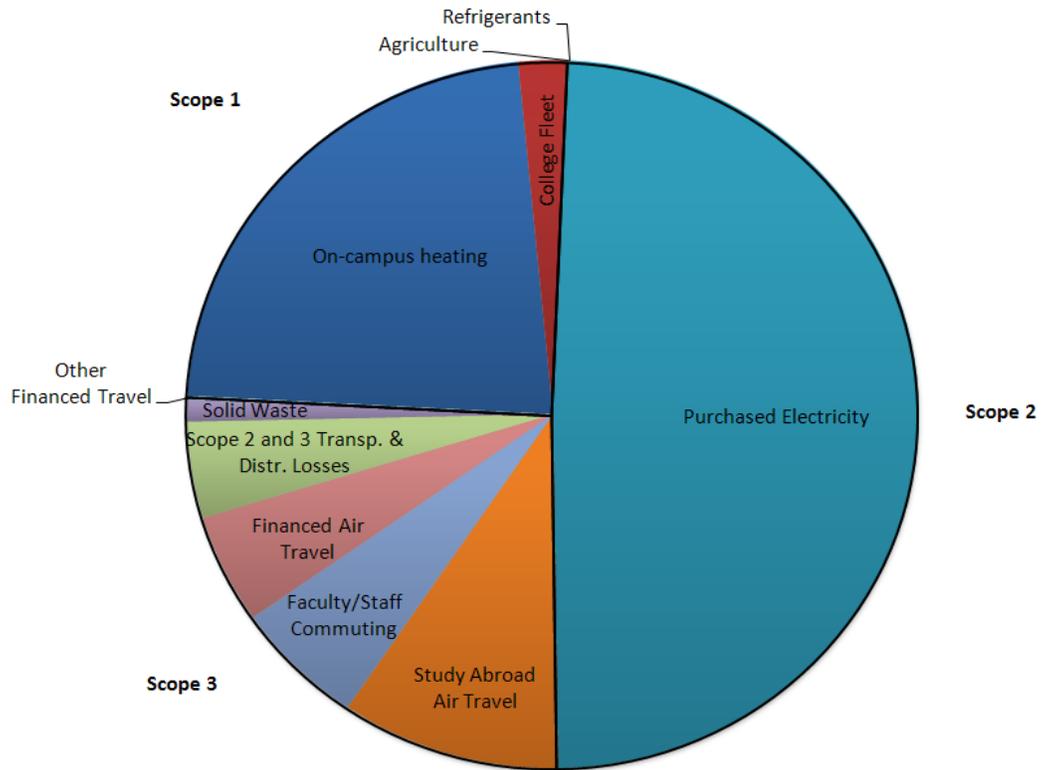


Figure 2. Contribution of each source and scope to Gettysburg College’s FY 2007 emissions.

Table 1. Gettysburg College FY 2007 emissions by source and scope.

	eCO ₂ (Metric Tons)	% Total Emissions
Scope I	5,045.30	24.8%
On-campus Heating	4,596.20	22.6%
Direct Transportation	434.1	2.1%
Agriculture	11.2	0.1%
Refrigerants	3.9	0.0%
Scope II (Purchased Electricity)	9,959.70	49.0%
Scope III	5,313.00	26.2%
Solid Waste	282.9	1.4%
Study Abroad Air Travel	2,061.10	10.1%
Financed Air Travel	1,092.60	5.4%
Other Financed Travel	123.9	0.6%
Commuting	1,268.20	6.2%
Scope 2 and 3 T&D Losses	985	4.8%
Offsets	-500.7	-2.5%
TOTAL	20,318.0	100%

Projected Emissions

Future emissions can be predicted by evaluating the College's enrollment and building plans. At this time the College intends to maintain its current enrollment over the next 25 years. We do not anticipate growth in our carbon footprint from increases in campus size; however, we do see our footprint changing as a result of building renovations and a modest increase in campus square footage. Although our renovations are designed to improve our energy efficiency and will incorporate LEED standards, we do anticipate some negative impact to our carbon footprint since we will air condition spaces that presently do not have these systems. Overall we do show an increase to our "business as usual" calculations.

4. Mitigation Strategies

The College is aware that to be successful in reducing our carbon footprint and achieving carbon neutrality by 2032, we have to be inclusive of all contributing emissions. Nearly 96% of our emissions are a direct result of conditioning our facilities and transportation associated with supporting College operations. Our mitigation plan is strongly focused on energy and travel, but includes all emissions contributors to successfully achieve neutrality. We feel strongly that a successful plan will result from not only implementing a renovation program of our existing facilities, but also focusing on the continued education of our campus community about how their behaviors both negatively and positively impact our footprint.

The following are Gettysburg College's mitigation strategies. We have broken them out by scope and subcategory for ease in presentation and understanding.

Scope I: Mitigation

On-campus Heating

On-campus heating represents the second largest source of emissions (22.6%). Converting from a mix of oil and natural gas to all natural gas for on-campus heating in 2007 reduced emissions by 143 metric tons eCO₂ and cut heating costs. However, switching from natural gas to an even cleaner source, such as biomass, is not a feasible goal today because it would require major infrastructural changes. In the spring of 2009 the College installed a new efficient 750hp boiler, which will become the primary boiler replacing a 750hp boiler installed in 1991. Rather than focus on the source of heating, this section will focus on reducing the demand for heat.

Insulation

Many buildings on campus, particularly the older houses used for student housing, have older heating systems and poor insulation. The simplest and most cost-effective way to reduce heat loss right now would be to install seals on leaky doors and windows and to instruct students to keep windows and doors closed in the winter. During building renovations, retrofitting old buildings with better insulation and replacing windows will be a good investment.

Temperature Settings

Recently, Gettysburg College Facilities Services implemented an Interior Space Temperature Policy to better manage the heating and cooling of College facilities. The targets of 68 degrees for the heating season and 74 degrees for the cooling season will help curb carbon emissions by

more than 50 tons per year. This policy will also help the College identify areas of the campus where it is challenging to support this program without providing supplemental heat. Renovations in these specific areas will then become a priority.

Thermostats

Within dorms, the College will increase the number of thermostats on each floor. In many dorms, there are only two thermostats at the opposite ends of hallways, causing an uneven reading of the temperature throughout the entire building. During building renovations, the College plans to install a system for the even heating and cooling of dorms. During building renovations, air conditioning will be installed in many dorms, which may effectively counterbalance measures, described above, to decrease emissions due to heating and cooling.

Creating LEED Guidelines

By 2011 the college will create guidelines for LEED certification of new buildings and renovations. The guidelines may be dependent on the size and cost of the buildings. We will strive to incorporate measures that will allow all new buildings to be LEED certified, but certification will not necessarily be required.

Behavior/Education

Because many students have the opportunity to control temperatures in their rooms, efforts will be made to educate students, faculty, and staff on sustainable heating and cooling practices. These include dressing to the weather, turning off in-room heaters and air conditioners when the room is not occupied, not opening windows when the buildings are being heated and opening window blinds during winter days and closing them at night.

Break Housing

The College will continue to limit the number of buildings that are kept open for students who stay on campus during breaks. When selecting break housing, heating requirements and energy expenditures will continue to be considered.

Direct Transportation

College Fleet

A fleet procurement policy will be developed to help guide future vehicle purchases to be environmentally responsible and fuel-efficient. When feasible, vehicle class and fleet size will be downsized.

Community Car

The College continues to research the addition of a hybrid community car to the fleet for faculty and staff to use when running errands in town. We are considering partnering with programs like Zipcar or Enterprise Rental Car's new We Car program. We are also researching the feasibility of launching a hybrid program of our own.

On-campus driving

Several steps can be taken to limit the emissions produced by service vehicles on campus. A no-idling policy will be implemented and may also be applied to guest vehicles and buses. Campus-wide distribution services, such as mail, paper, food, and catering deliveries, will continue to be reviewed to find ways to reduce emissions.

Excursions

College fleet vehicles are also used for field trips and transport to athletic events. When classes are going to the same location, such as Washington DC, transportation services will work with faculty and staff to coordinate field trips. Transportation services will also work with faculty and staff to ensure that the correct vehicle size is supplied for these trips. Present mass transit policies and programs are being reviewed to provide similar services at a more streamlined approach.

Scope II: Mitigation

Purchased Electricity

Purchased electricity is by far the largest source of greenhouse gas emissions, contributing 48% of total campus emissions. Most of the electricity consumption results from heating, cooling, and lighting the campus. We have seen a slight increase in our consumption of electricity each year, which can only be attributed to the increase of appliances and other electric devices in student, faculty, and staff rooms. The College continues to review all aspects of daily college life to determine if there are other opportunities to reduce our dependency on electricity, including computer usage, laundry facilities, college-provided refrigerators in every student room, facility scheduling, and 24-hour study facilities.

Energy Star Appliances

New Energy Star appliances have already replaced all prior existing refrigerators, microwaves, washers, and dryers in campus housing. As one of the two tangible actions outlined by the ACUPCC, Gettysburg College will purchase Energy Star certified products when the extra cost is less than or equal to the resulting energy savings.

Creating LEED Guidelines

By 2011 the College will create guidelines for LEED certification of new buildings and renovations. The guidelines may be dependent on the size and cost of the buildings. We will strive to incorporate measures that will allow all new buildings to be LEED certified, but certification will not necessarily be required.

Renewable Energy

During renovations of independently metered houses, the College will consider the installation of sustainable energy solutions like solar panels or geo-thermal systems, so that these houses can be self-sustaining. Just installing solar panels on all independent locations will reduce electricity

use by 2.5 million kWh. This reduction in electricity amounts to cutting emissions by more than 1,200 metric tons eCO₂, about 6% of total emissions.

Lighting Efficiency

In the last several years, Facilities has taken many steps to increase lighting efficiency, including replacement of incandescent light bulbs with compact fluorescent light bulbs and installation of motion detectors in dormitory bathrooms, classrooms, and meeting facilities. Many issues with lighting can be solved with behavioral changes.

Behavioral Changes

Campus community members need to do their part to reduce energy consumption. A campus-wide effort continues to be made to remind students, staff, and faculty to turn off lights and unplug unused appliances. The College will continue to look at ways to change our behavior when it comes to taking personal responsibility for our impact on our carbon footprint. The College will also make efforts to streamline scheduling of facilities to minimize the number of meeting spaces shown as occupied in our scheduling systems.

Outdoor Classrooms

When weather permits, professors are encouraged to bring their classes outside. Presently the College offers several outdoor living areas such as patios, Adirondack chairs, and large building steps where classes can occur. The College will continue to look at opportunities to improve these areas and provide additional outdoor options.

Scope III: Mitigation

Solid Waste

While solid waste is a small contributor to the College's total emissions (1.4%), opportunities to reduce solid waste and increase recycling still need to be explored. Our recent conversion to single stream recycling will continue to lead us in this direction. Efforts are also being made to reduce our combined recycling and solid waste by encouraging changes in purchasing practices. Green purchasing policies are being developed and will be implemented in the near future.

Single Stream Recycling

The single stream recycle program, introduced in 2009, should make recycling easier and more convenient for the campus community. Paper, plastics numbered one through seven, aluminum, iron, and cardboard can now be placed in any recycling bin. In order for the campus to use this new system, the College distributed informational materials about what can be recycled and changed signage.

Increasing Recycling Bins

It is the College's short-term goal to have a one-to-one ratio of recycling bins to garbage bins. As we change the campus culture, this program will change as well. Eventually recycling will outnumber trash receptacles 2 to 1 on our campus.

Dorm Room Garbage Bins

A study in 2006 found that when first-year dorm rooms were supplied with recycling bins *and* garbage bins, recycling increased because students were not using their recycling bin for garbage. Subsequently, this study has led the College to place trash cans in residence hall bedrooms, in addition to the recycling containers. This has resulted in a 25%-40% increase in recycling in our residence halls since that time. This has been a great example of how easily student behavior can be altered.

Reducing Paper Consumption

While recycling paper is important, there are several ways to reduce paper consumption in the first place. In the last two years, the College has made significant strides in publishing information online rather than distributing individual letters or packets. The College will continue to limit the number of paper publications and utilize the Internet whenever possible. The College is considering the possibility of establishing a printing quota for students to reduce paper waste.

Food Waste

Currently, two programs at Gettysburg College divert food waste from landfills. The Campus Kitchen project repackages prepared, un-served food from Dining Services and restaurants from the local community and distributes it to needy members in the Gettysburg community. The Gettysburg College student garden, Painted Turtle farm, composts more than 50 pounds of compostable food scraps from the dining hall every day in warmer months. Both programs continue to be reviewed for opportunities to expand.

Yard Waste

All yard waste is currently and will continue to be composted on College grounds.

Construction/Demolition Waste

The College will recycle the waste produced in all future construction and demolition projects. This recycling policy is currently in place for the LEED-certified athletic center being constructed in 2009. The College will continue to hire contractors that abide by similar waste management standards.

Miscellaneous Recycling

The College is working to recycle other items that cannot be placed in single stream recycling, including ink cartridges and toners, batteries, and florescent lights. Since the College has the facilities to recycle such items, a program to help educate the community is being established.

Recyclemania

The College will continue to participate in the national Recyclemania competition, which encourages colleges to reduce waste and recycle. For our base year, 2007, we collected more than 16 pounds of recyclable material per campus member in a ten-week period. While participating in the Waste Minimization component is not one of our “tangible actions” (as outlined in the implementation guide), it is our goal to improve our performance in the competition every year.

Greek Society Cooperation

In 2008, the College began a fraternity recycling project. Every week, student volunteers sorted through the on-campus fraternity waste stream to collect all recyclable items. With more education and interest from student volunteers, this program has the potential to expand. In addition, fraternities and sororities will be encouraged to continue programs that they have run in the past, such as Chi Omega’s “Tons of Wishes” program, in which sorority sisters collect aluminum cans to raise money for the Make a Wish foundation.

Reuse

Gettysburg College currently has several programs in place that focus on redistributing used furniture, office equipment, technology, and numerous other items that can be reused rather than thrown out or recycled. Gettysburg College will continue to support and fund these efforts.

In 2004 Gettysburg College joined forces with the United Way of Adams County to resell useable items that students would otherwise throw out. Students bring donations to collection sites in dorm common areas. In six years, over 130 tons of items have been diverted from the waste stream and sold at the annual Give It Up for Good Sale in May. We expect that the program will continue to grow, as it has every year.

Used furniture owned by the College will be stored in the warehouse and donated to non-profit organizations in the community.

The Center for Public Service (CPS) sponsors trips to Washington, D.C. to hand out student-donated clothing to those experiencing homelessness, a program known as D.C. Outfitters. CPS also works in conjunction with the school’s Information Technology department to repair and distribute retired computers to the Adams County community.

Study-abroad Air Travel

With about a fifty percent student participation rate, study abroad is a significant part of the academic experience at Gettysburg College. Not surprisingly, study-abroad air travel is a significant contributor to total emissions (10.1%).

Green Passport

To encourage a more sustainable study-abroad experience, Off-Campus Studies plans to give students the opportunity to participate in a “Green Passport” Program. Students who choose to participate in the program pledge to explore and take into account the social and environmental consequences of studying, living, working, traveling, or volunteering abroad. Off-Campus Studies plans to roll out this program in the fall of 2010.

Offsets

An easily measurable solution for institutions to address air travel emissions is through purchasing offsets. A conservative offset estimate of \$0.005/mile traveled would cost Gettysburg College about \$13,000 if study-abroad travel remains constant. Some institutions have given their students the option of buying an offset for their travel. Even if study-abroad students choose to offset a quarter or half of the emissions, this can still lower total campus emissions by 2.5 to 5%. This is a program the College will continue to research.

Financed Air Travel

Offsetting financed air travel would cost the College about \$1,000 if travel remains constant. To reduce financed air travel, the College is investigating using more videoconferencing as well as enrolling in online conferences. The College will also encourage travel by train or bus when possible. Future inventories for study abroad and financed air travel will also benefit improvements in fuel efficiency. The IPCC projects that aircraft fuel efficiency will improve 1-2% each year.

Other Financed Travel

Shuttles

Currently, the College provides shuttles to and from the airport for students and staff. This program will be made more sustainable by coordinating times and rides so that more people can use the shuttle at once. The College is working on reducing the number of shuttle trips to increase the average ridership per shuttle.

Video Conferencing

The use of videoconferencing technology will also increase. In December 2007, life-size, high definition videoconferencing suites were installed in Pennsylvania Hall and the Eisenhower Institute. This system replaces travel to and from weekly and monthly meetings, which would otherwise require more than 5,000 highway miles a year. The service is open to the campus community and is expected to increase. Doubling the use of this system has the potential to decrease emissions by 2 metric tons of eCO₂ by 2050.

Faculty and Staff Commuting

Carpooling

Commuting contributes about 6% of the total emissions. Carpooling incentives, such as preferred parking, will be considered similar to the system that was installed at the new athletic center. To facilitate carpooling, the creation of an easily accessible online ride board is being researched.

Doubling the percentage of staff and faculty from an estimated 8% to 16% by 2030 will decrease emissions by 44 metric tons of eCO₂.

Increasing Fuel Efficiency

The College's emissions will also decrease when faculty and staff purchase cars with higher fuel efficiencies. A doubling of fuel efficiency by 2050, from an estimated 22.1 mpg in 2007 to 44.2 mpg in 2050, would decrease commuting emissions by 524 MT eCO₂. It should be noted that the national average fuel economy (22.1 mpg) was used to calculate baseline 2007 emissions. Before the next inventory in 2015, faculty and staff could be surveyed to learn if the average fuel efficiency of their cars is greater than the national average.

Student Travel

While greenhouse gas emissions from student-owned vehicles are not included in the inventory, the College plans to continue to encourage the use of public transportation. In 2008, the College implemented a policy that restricts first-year students from bringing cars to campus and began to charge a parking fee that has also reduced vehicles on campus. Students were given the opportunity to use the College's free shuttle service to popular stores. In 2009, the College signed a contract with Freedom Transit, the local trolley system, to provide public transportation to students. The College will continue to look at ways to reduce local vehicle travel by encouraging the use of bikes, supporting the construction of bike/jogging paths, developing more group travel opportunities, and considering resurrection of our defunct bike program.

Water Waste

Past Accomplishments

Reducing water waste has been an active College initiative since 1996. Accomplishments include installing a process liquid cooling in the Science Center; replacing all toilets and urinals with low-flush systems; upgrading to front load, high efficiency washers; installing a pulper in the dining hall kitchen; and using water from Quarry Pond to irrigate sports fields. From 1996 to 2008, these measures have reduced consumption by 36.4%.

Landscaping

In 2008, a new parking lot was built that stores 15,000 gallons of rainwater collected from campus roofs. The water will be used for landscaping, which currently uses water processed by the borough. The design also allows for the slow release of water into the ground to prevent flooding the nearby stream. The reduction in water use and carbon emissions should become evident in the next year and certainly by the 2020 checkpoint.

Behavior

While more ways to save water may present themselves as technology advances, the College still needs to educate the campus on water conservation. Increasing education on this topic, whether through environmental studies classes or First-year Experience programs, is an attainable goal for 2020.

Water treatment

It is important to remember that water waste is a scope three (external) source of emissions. While we take responsibility for emissions related to the treatment of the water we use, we will benefit from advances in the water treatment facility, which may reduce methane generation in the future.

Offsets

The College will certainly need to invest in offsets to reach carbon neutrality, as it would be nearly impossible to become carbon neutral without interrupting campus activity.

Alternative Energy

The College has entered a two-year green power contract to purchase 10 million kWh of electricity generated from renewable sources. This purchase of green power represents about 50% of the institution's electricity consumption and is one of Gettysburg's two "tangible actions" as outlined by the AUCPCC. This purchase will reduce College emissions by about 5,000 metric tons of eCO₂, about 24.6% of total campus emissions.

Carbon Sequestration via Compost

The small composting system set up in the student garden aids in carbon sequestration. In 2007, the three tons of compost offset one metric ton of eCO₂.

Education and Outreach

The College recognizes that educating the campus about sustainability and the environment is an integral part of reducing emissions. By raising environmental awareness and promoting changes in behavior, we expect to reduce energy consumption and waste generation while helping our students and community members think locally and globally.

Curriculum

The Gettysburg College curriculum requires that all students take a course in natural science. To meet this requirement, many students take popular environmental studies courses, such as Environmental Science and Society, The Chesapeake Bay Ecosystem, and the Biodiversity Crisis. Assuming that students only take one of these introductory classes, we estimate that about 50% of the student body takes an environmental studies course.

It should be emphasized that sustainability is not just a science. Sustainability transcends the disciplines of economics, policy, history, mathematics, anthropology, health science, social justice, etc. It is therefore very appropriate to make sustainability a common theme throughout the liberal arts curriculum. In this way, students can connect the social and environmental realms and heighten their awareness of environmental issues and solutions.

Extracurricular

There is strong student involvement in activities that raise environmental awareness and promote changes in behavior. The College will continue to support the student-run organizations centered on the environment.

GECO (Gettysburg Environmental Concerns Organization) brings environmental speakers to campus, campaigns for the use of environmentally friendly products on campus, organizes stream and road clean-up days, hosts sustainable potlucks, and runs educational stations during campus events, and in the College Union Building.

GRASS (Gettysburg Research and Action by Students for Sustainability) assists the Sustainability Committee in carrying out its project goals, provides educational events to the campus community, and conducts research relevant to the Sustainability Committee. GRASS will be an integral part of monitoring the Farm House (described below) and evaluating the implementation of the Climate Action Plan.

Painted Turtle Farm, the student-run organic garden, serves to educate students and the community about locally and organically produced food, the sustainable loop, and nutrition. Currently the garden crew consists of students who volunteer on a weekly or one-time basis and several work-study students. Students work with children from the College's Growing Place Daycare and El Centro. Furthermore, food is grown organically (not certified) and donated to the local food bank, SCCAP.

Center for Public Service (CPS)

CPS will continue to fund outreach activities that educate students and the community about the environment and support people in need. While not comprehensive, this list includes the Campus Kitchens project (discussed above), funding a sustainability intern, supplying mini-grants to environmental causes, and organizing immersion projects where students learn about social and environmental challenges in the United States and abroad.

On-Campus Housing

Farmhouse: In the fall of 2009, students have the option to live in Farmhouse, an environmental theme house. Residents of Farmhouse will be involved in diverse projects addressing sustainability on campus, such as improving the College's recycling program, reducing energy and resource consumption, growing a small vegetable garden, and educating their peers about the importance of supporting a more sustainable food system. Farmhouse will be a key component in strengthening the College's commitment to sustainability by becoming a focal point for sustainability-based action and education.

Recycling interns should investigate expanding the Sustainability Representatives program. Students representing their dorms or theme houses help distribute educational materials in their dorms and suggest ways that their peers can conserve energy or water. They also act as liaisons between the student body and recycling interns. As an alternative to the Sustainability Representatives program, residence aid staff can be trained to educate and motivate their residents to live in an environmentally conscious manner.

Sustainability Coordinator

The College is considering adding a full-time sustainability coordinator. This person will coordinate campus events that center on the environment, research grants to implement new plans, keep a record of green happenings on campus, oversee all environmental student interns, monitor student organizations, and evaluate the progress made on the Climate Action Plan.

First-Year Education

Students entering Gettysburg College should be made aware of the Climate Action Plan and the College's commitment to sustainability. A program that introduces all students to campus goals and teaches them how to help work towards those goals will be a required part of the First-Year Experience program. It may also be necessary to create a similar program for upper class students, in order to review the Climate Action Plan and address changes in living conditions.

5. Financing

Gettysburg College has four main funding sources to support our climate initiative:

1. Annual facilities operating budget
2. Annual capital/plant fund budget
3. Annual institutional budget/contingency funds
4. Major capital project gifts and debt service

Annual Facilities Operating Budget

For fiscal year 2010 Gettysburg College purchased REC's to offset approximately 50% of the campus electrical usage. Since beginning to purchase these offsets in June 2002 the College has increased its use of offsets from just over 5% of the electric consumption to 50%. These offsets have been funded within the Facilities annual operating budget allocation for utilities. In FY 2010 the offsets cost slightly more than \$23,000. We anticipate that this will continue and over time with the annual facilities utility budget increase of 3%, combined with the continued decrease in the cost of these offsets, the College will be able to offset all of the electric consumption on campus not produced by renewal resources.

Annual Capital/Plant Fund Budget

Gettysburg College has an annual capital budget of approximately \$4,000,000. Currently almost 50% of this fund is allocated for deferred maintenance and modernization projects that will help reduce the levels of scope one and scope two emissions. Over the next 50 years we expect this fund will, at a minimum, keep up with inflation and potentially increase at a rate slightly above annual inflation, making it possible to allocate additional funds to reduce carbon emissions.

Annual Institutional Contingency Funds

Gettysburg College has been fortunate over the last few years to end each fiscal year with institutional operating budget surpluses. A portion of these surpluses has been allocated to major building renovations that have improved building efficiencies and reduced our carbon footprint. While we do not anticipate that contingency dollars will be allocated to major building system upgrades each year, we believe over the next 40 years that five to ten of our smaller buildings will be renovated using this funding resource, reducing the carbon footprint in each of these buildings.

Major Capital Project Gifts and Debt Service

Gettysburg College completed a new 30-year Campus Master Plan in 2008. This plan, which has an estimated cost of between \$150,000,000 and \$250,000,000, is a significant investment, consistent with the level of investment for the last two Campus Master Plans. From 1980 to 1995 the College invested approximately \$100,000,000 in capital projects and from 1996 to 2008 the College invested another \$150,000,000 in capital projects. Much of the master plan will be funded through fundraising and new debt service. This new master plan will make the campus more carbon efficient but will increase the College's overall carbon footprint because of the

anticipated growth in space that will need to be heated and cooled. The funds to renovate the Central Energy Plant, which is expected to be carbon neutral in 40 years, will be funded from this source.

6. Tracking Changes

Gettysburg College signed the American College and University Presidents Climate Commitment in 2007, which will act as the baseline for our study. The College plans to be carbon neutral by 2032, giving us 22 years to implement the plan. The Climate Action Plan is a dynamic document: changes can be made in any year and interim years 2015 and 2025 will serve as checkpoints when progress will be evaluated.

Timeline:

Baseline year 2007	20,318 metric tons (MT) of eCO ₂
Checkpoint 2015	25% reduction (5,080 MT eCO ₂)
Checkpoint 2025	30% reduction (an additional 1,015 MT eCO ₂)
Target date 2032	100% reduction (an additional 14,223 MT eCO ₂)

In addition, Gettysburg's Greenhouse Gas Emissions inventory will be an opportunity for us to evaluate our progress on a semi-annual basis. This permits us to ability to make any necessary adjustments to our program as we strive for neutrality by 2032.

While much of the plan focuses on changes in technology, policy, and infrastructure, we also emphasize behavioral changes. Increasing environmental awareness *and* translating that awareness into action is a vital part of reducing campus emissions.

7. Conclusions

Gettysburg College is committed to Being a signatory member of the

8. Acknowledgements

Although the Facilities Services Department gave direction for Gettysburg College's Climate Action Plan, the information collected to support our recommendations was solely the result of the hard work and dedication of our students and the oversight of the Environmental Studies Department. Over the last two years students have taken the time to gather all information associated with the determining our carbon footprint. They also compiled their list of recommendations on how Gettysburg College can become carbon neutral by 2032. Their efforts and guidance is truly reflected in our action plan.

Facilities Services and Finance & Administration were instrumental in taking the ground work given to us by the students to complete the recommendations of our mitigation strategies. The technical expertise of our facilities staff, combined with the budget expertise of our finance staff, helped produce and all encompassing approach towards neutrality that the institution is comfortable with.

We also want to extend our gratitude to President Janet Morgan Riggs '77 for continuing the College's commitment to carbon neutrality, as a signatory member of ACUPCC. Her strong leadership on the issue of climate change will lead us towards our goal of neutrality by 2032.

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