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# Gettysburg College Sustainability Proposal

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# Gettysburg College Sustainability Proposal

## **Abstract**

In the fall of 2011, the Environmental Studies capstone class led by Professor Rutherford Platt was asked to write Gettysburg College's first Sustainability Plan. The goal of the plan was to develop specific sustainable practices for the campus that were related to the three pillars of sustainability: economic, social, and environmental, and how integrating diligent sustainable practices into each of these respected pillars will result in a more conscious campus, community, and future. In 2010, Gettysburg College turned to the Sustainability Tracking Assessment and Rating System (STARS) to quantify the institution's sustainability efforts, providing a self-check mechanism to encourage sustainability applications to all aspects of the College. The American College and University Presidents' Climate Commitment was signed in 2007 by former Gettysburg College President Katherine Haley Will, declaring that Gettysburg College would become carbon neutral by 2032. Gettysburg College has made large strides in the search for sustainability, and aims to continue its dedication to furthering sustainable practice. The following plan outlines the six priority areas identified by the Capstone class: progress of the American College and University Presidents' Climate Commitment, Dining Services, campus green space, community outreach, integration of sustainability into the Gettysburg College Curriculum, and the Sustainability Advisory Committee.

The first priority area identified was monitoring and upholding the American College and University Presidents' Climate Commitment (ACUPCC). Though creating new sustainability initiatives on campus is the driving force towards an increasingly sustainable college and community, it is imperative that these goals be carried out in full to maximize beneficial returns. In order to reach carbon neutrality, Gettysburg College hopes to increase energy efficiency in buildings, incorporate renewable energy sources on campus, and mitigate remaining emissions through the purchase of carbon offsets. To further the College's progress, it is proposed that Gettysburg College continue its energy-efficient appliance purchasing policy, as well as create a policy to offset all greenhouse gas emissions generated by air travel for students study abroad. As stated by the ACUPCC, a Sustainability Committee should take responsibility for the updates and progress reports required to meet the goal of carbon neutrality.

The second priority area identified was sustainability in Dining Services. Gettysburg College is home to 2,600 students, all of whom require three full meals a day. Dining Services accounts for a large fraction of Gettysburg College's sustainability efforts, already implementing sustainability through composting, buying local produce, and using biodegradable products. The proposed on-campus sales cuts of non-reusable to-go items, a change in campus mentality on food waste, and improved composting practices will translate to an increasingly sustainable campus, as well as a well-fed campus body.

The third priority was maintaining green space on campus. Ranked as the 23<sup>rd</sup> most beautiful campus in the United States by The Best Colleges, Gettysburg College utilizes campus green space to create an atmosphere that is conducive to activity as well as tranquility. The plan proposes that Gettysburg College and its grounds facilities continue their exceptional efforts, focusing on increasing the use of the student garden, creating a new rain garden or social area on campus, and converting unnecessary parking lots into green space. As these additions are completed, they must be introduced to the student body and faculty alike to assure these areas are known and utilized.

The fourth priority was utilizing community outreach to spread awareness of sustainability initiatives on and off campus. To connect the sustainability-gear changes proposed in this plan, community outreach at Gettysburg College is assessed to estimate how well these initiatives are communicated and promoted to both

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potential and enrolled students, faculty, and other concerned parties. To evaluate the efficiency of communication at Gettysburg College, a quantitative assessment is presented to measure the ease of finding the sustainability webpage, the quality of sustainability-related topics available on the webpage, and quality of webpage design. The webpage is in need of improved text to image ratios, locations of sustainability topics, and data displays. Despite not having a link to the sustainability webpage on the Gettysburg College homepage, sustainability events should be covered and presented on the rotational news feed found on the homepage to maximize outreach to interested parties or simply to add to the definition of Gettysburg College.

The fifth priority was integrating sustainability into the Curriculum to build a culture on campus that values academic rigor, supports students as they cultivate intellectual and civic passions, and promotes the development of healthy social relationships and behaviors. The proposed Sustainability Committee on Sustainability in the Curriculum (SCC) will hold sustainability workshops for faculty with the aim to instill sustainability into all academic disciplines, providing all Gettysburg graduates with a means to approach their professional careers in a fashion that is conscious of sustainability.

The sixth and last priority was the Sustainability Advisory Committee. Established in 2007, the Sustainability Advisory Committee is currently under review, but it is recommended that the committee restructure itself in accordance with the new Sustainability Committee Bylaws. These bylaws aim to define the purposes, membership, governance, and involvement with the college. With a clearly defined set of goals and methodology, the Sustainability Advisory Committee will be able to improve the solidarity of the sustainability movement on campus as a whole.

By following the propositions laid out in the Gettysburg College Sustainability Plan, the student body, faculty, and community alike will become a part of a multi-faceted progression toward a more sustainable future.

**Keywords**

sustainability, gettysburg, gettysburg college, proposal, senior seminar, environmental studies

**Disciplines**

Environmental Monitoring | Natural Resources and Conservation | Natural Resources Management and Policy | Sustainability

**Comments**

This is a joint project created by the 13 members of the Fall 2011 Environmental Studies Senior Seminar Class at Gettysburg College. It was presented at Celebration 2012.

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# GETTYSBURG COLLEGE SUSTAINABILITY PROPOSAL



Fall 2011

Environmental Studies Senior Seminar

**Authors:** Joseph William Boone, Andrea Carson, Sarah Hecklau, Erik Hughes, Catherine Leech, Taylor McGrath, Nicole Moody, Christian Neumann, Mary Kate Ranii, John David Ryder, Megan Sherman, Sara Tower, and Sarah Weinstein

# Gettysburg College Sustainability Proposal

## ENVIRONMENTAL STUDIES SENIOR SEMINAR

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## Table Of Contents

List of Tables and Figures.....	2
Executive Summary.....	4
Introduction.....	6
History of Sustainability.....	9
Sustainability Ranking Systems.....	11
Summary of Priorities.....	13
1. GHG Emissions and ACUPCC Climate Commitment.....	16
2. Excess Waste in the Dining Sector.....	25
Excess Waste in the Dining Sector Appendix .....	36
3. Campus Green Space.....	37
4. Community Outreach.....	51
Community Outreach Appendix .....	69
5. Sustainability in the Curriculum.....	76
Sustainability in the Curriculum Appendix: .....	91
6. Sustainability Committee.....	104
Sustainability Committee Appendix .....	114
References.....	122

## List of Figures:

**Figure 1:** Gettysburg College's Pyramid of Priorities

**Figure 2:** Pillars of Sustainability

**Figure 1.1:** Emissions, Current and Projected, for Gettysburg College from 2007 to 2032

**Figure 1.2:** Sources of Greenhouse Gas Emissions at Gettysburg College in 2010

**Figure 2.1:** Components of Municipal Solid Waste

**Figure 2.2:** Pizza Box Study Results

**Figure 2.3:** Sign Used in Pizza Box Study

**Figure 2.4:** Sign Used in Water Bottle Study

**Figure 3.1:** Campus Green Space, Adapted from the Gettysburg College 2008 Master Plan

**Figure 3.2:** Land Use and Land Cover on Gettysburg College's Campus in 2011

**Figure 3.3:** Under-utilized Areas on Gettysburg College's Campus

**Figure 3.4:** Acres of Green Space on Gettysburg College's Campus

**Figure 3.5:** Percent Land Use and Land Cover in 1994 at Gettysburg College.

**Figure 3.6:** Percent of Change in Land Use and Land Cover for Each Change Class from 1994 to 2011 at Gettysburg College

**Figure 3.7:** Designated Conservation Area as of 2011 at Gettysburg College

**Figure 3.8:** Automobile-Pedestrian Conflicts, Adapted from the Gettysburg College 2008 Master Plan

**Figure 3.9:** Proposed Campus Expansion, Adapted from the Gettysburg College 2008 Master Plan

**Figure 3.10:** Sam Van Aken's Trees of 40 Fruits

**Figure 4.1:** Scores for the "Ease of Finding" the Sustainability Webpage Criterion

**Figure 4.2:** Scores for the "Content" Criterion of the Sustainability Webpage

**Figure 4.3:** Example of Poor Website Placement and Content

**Figure 4.4:** Example of Insufficient and Irrelevant Content on a Website

**Figure 4.5:** Scores for the "Design" Criterion of the Sustainability Webpage

**Figure 4.6:** Example of an Exemplary Webpage for Gettysburg College

**Figure 4.7:** Example of Easily Accessible Sustainability Website.

**Figure 4.8:** Example of Webpage with Comprehensive Representation of Sustainability Topics

**Figure 4.9:** Example of Navigable Website Page.

**Figure 4.10:** Example of Comprehensive Display of Sustainability Initiatives on a Website.

**Figure 4.11:** Example of Visually Appealing Graphics on a Website

**Figure 4.12:** Example of Exemplary Navigation Bar for a Sustainability Website

**Figure 4.13:** Example of Exemplary Coverage of Sustainability Initiatives on a Website.

**Figure 4.14:** Example of Poor Webpage Design on Gettysburg College's Website

**Figure 4.15:** Example of Rotating Picture Gallery

**Figure 4.16:** Example of Visual Representation of Progress in ACUPCC

**Figure 4.17:** Example of an Organized Calendar of Sustainability Related Events

**Figure 4.18:** Example of Gettysburg College Website Template .

**Figure A4.1:** Combined Total Scores Received for Website Scorecards

**Figure A4.2:** Number of Sustainability-related Topics Found on Webpage

**Figure A4.3:** Quality of Sustainability-related Topics ) on the Sustainability Homepage

**Figure 5.1:** Distribution of Sustainability-focused and Sustainability-related Courses Across the Curriculum

**Figure 5.2:** Distribution of Sustainability-focused and Sustainability-related Courses Across the disciplines at Gettysburg College

**Figure 5.3:** Pyramid of Disciplinary-based Sustainability Literacy

**Figure 5.4:** Breakdown of Sustainability-focused and Sustainability-related Courses that Fulfill Gettysburg College Curricular Requirements

**Figure 5.5:** Sustainability-focused and Sustainability-related Courses that Fulfill the Gettysburg College Curriculum Requirements

**Figure 6.1:** Sustainability Coordination As Reported by 53 Similar Sized (2,000-4,999 FTE) Institutions by STARS.

**Figure 6.2:** Placement of the Sustainability Committee Within the College Structure of 8 Peer Institutions

## List of Tables:

**Table 1.1:** Gettysburg College's Emissions Distribution for 2007 and 2010

**Table 2.1:** Gettysburg College STARS- Dining Services 2011

**Table 2.2:** Pizza Box Study Results

**Table 2.3:** Number of Water Bottles Sold in October 2011 at Gettysburg College

**Table A4.1:** Summary of Data Collected from Website Scorecards

**Table A4.2:** Accessibility Data Gathered for the Website Scorecards

**Table A4.3:** Sustainability Related Topics Data Gathered for the Website Scorecards

**Table A4.4:** Web Design Data Gathered for the Website Scorecards

**Table 5.1:** Comparison of Gettysburg and Similar Institutions Coverage of Sustainability by Course and Department



## EXECUTIVE SUMMARY

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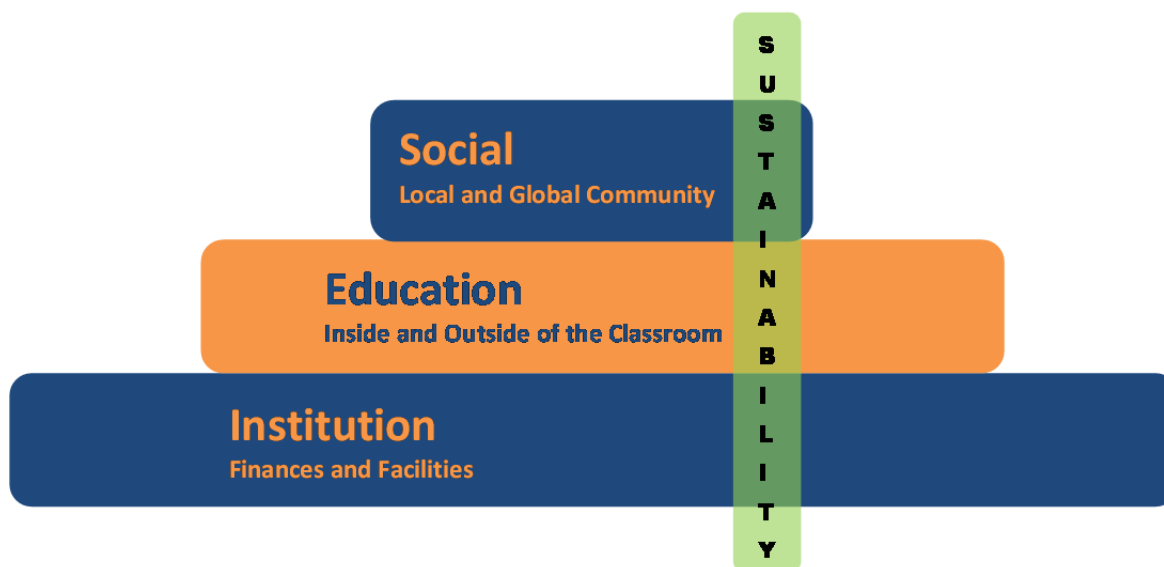
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By following the propositions laid out in the Gettysburg College Sustainability Plan, the student body, faculty, and community alike will become a part of a multi-faceted progression toward a more sustainable future.

## INTRODUCTION

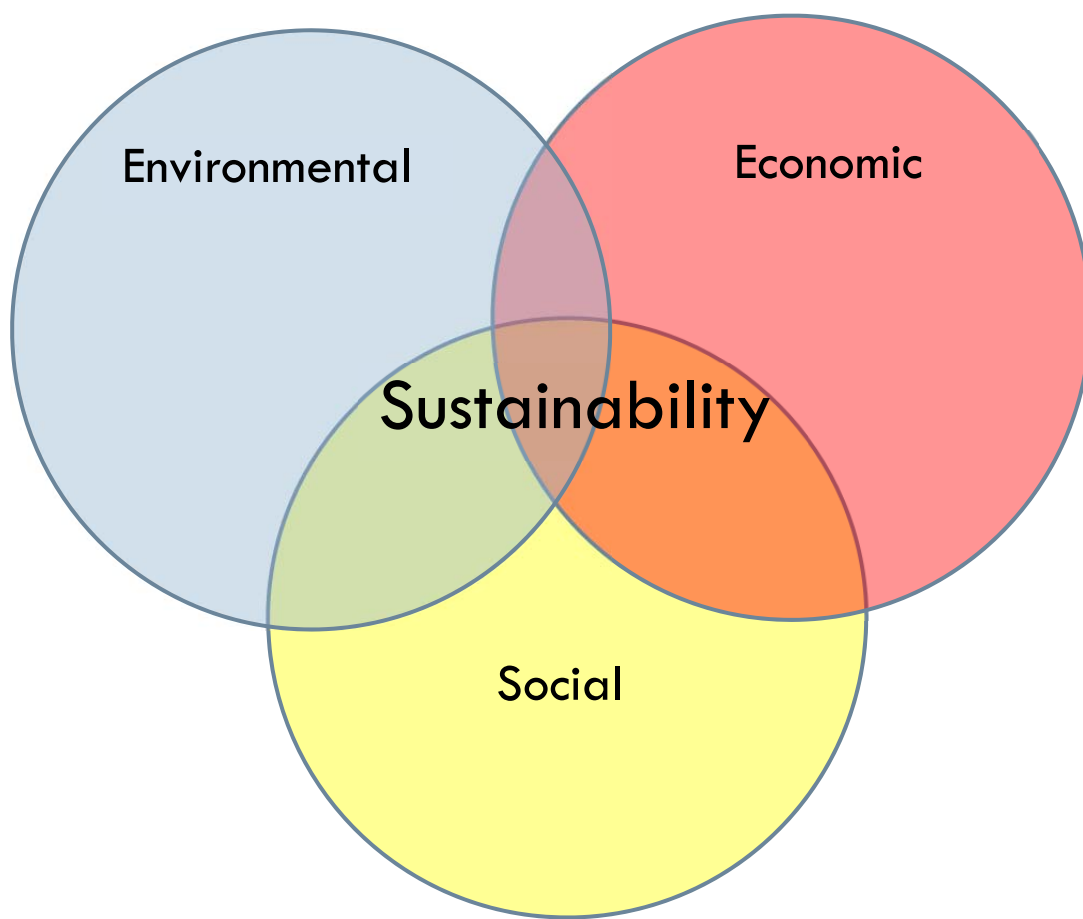
Since its founding in 1832, Gettysburg College has committed itself to maintaining a strong academic reputation and building a vibrant intellectual community. Therefore, the college encourages learning not only inside the classroom but also in the dining hall, dorm rooms, and the college green. Through this learning framework, students engage with and explore the most pertinent issues of their local and the global communities. As students engage with these issues, they bring awareness and passion to these topics. One issue that the Gettysburg College community has identified as “one of society’s most pressing challenges” is sustainability (Gettysburg College, 2007b). We, at Gettysburg College, recognize the impact we can have on our environment and have decided that it is imperative to integrate sustainability into our practices.

Sustainability is a concept that promotes thoughtful action in regards to the environment, the economy, and society. This concept can pervade the essence of Gettysburg College whether through institutional, educational, or social channels (Fig. 1). In order for sustainability to truly become part of Gettysburg College’s culture, it must be considered when addressing all priorities of the college.



**Figure 1:** Gettysburg College’s Pyramid of Priorities.

The vision of Gettysburg College is to incorporate and demonstrate sustainability in the operations, curriculum, and everyday life for all of the Gettysburg community. We believe a sustainable campus is a place where the community takes steps to reduce its impacts and increase the quality of the overall campus experience while doing so within the means of the college. A sustainable campus must address the three pillars of sustainability: the environmental, the economic, and the social pillar (Figure 2). Environmentally, Gettysburg College seeks to reduce our ecological footprint; economically, we must make purchases and investments within the budget constraints of the college; and socially, we challenge our all members of the college to increase their awareness regarding others’ educational, emotional, and physical needs.



**Figure 2:** Pillars of Sustainability.

Sustainability is not only important to Gettysburg College, but it is also a priority of higher education. In 2007, Gettysburg College joined other higher education institutions in this cause by signing the American College and University President Climate Commitment (ACUPCC). During that same year, Gettysburg College included its mission for a sustainable future directly into the Strategic Directions for Gettysburg. The College also completed a 2010 STARS assessment which has rejuvenated sustainability efforts on campus. With this new STARS assessment, the College now understands the steps needed to achieve even greater accomplishments.

The Gettysburg College Sustainability Plan was created as a blueprint for future sustainability efforts in coordination with the goals set before Gettysburg in the 2010 STARS report as well as with the commitments made in the ACUPCC and Gettysburg College Climate Action Plan. The plan was developed by Gettysburg College's Fall 2011 Environmental Studies senior capstone class. The priorities incorporated in the Sustainability Plan were thought to be goals that would be attainable and important to addressing sustainability at Gettysburg College.

This document outlines this plan for the college and focuses on:

- Greenhouse gas emissions and ACUPCC climate commitment
- Food waste in the Dining Sector

- Campus green space
- Community outreach and involvement
- Curriculum
- Sustainability Committee

The purpose of this proposal is to elaborate on each of the above categories and explain what steps Gettysburg College could take to improve itself. The metrics and goals within this plan have been identified from researching other exemplary institutions and published practices, and assessing the steps that Gettysburg College has already taken towards becoming sustainable.

Each priority area has sections describing Background, Current State of the Issue at Gettysburg College, Exemplary Institutions, Proposed Actions, and Challenges, which provide an overview of the topic, description of recent undertakings of the college, goals and plans of other colleges, proposed actions for Gettysburg College and challenges that will need to be faced during the adoption of the proposed actions, respectively. The recommended potential actions, both long and short-term, quantitative and qualitative, provide a timeframe from which the college can measure its progress.

This plan should be used to move Gettysburg toward a sustainable future. The Sustainability Plan for Gettysburg College is considered a living document—not a static plan. It is intended to act as a guide as Gettysburg College engages in conversations with constituents of the College, community members, and the global community. As the plan evolves, as challenges arise, and as the needs of the college change, the vision and principles of the College stated in this document will continue to guide the sustainable efforts of the college. Since sustainability is a dynamic concept that can always be improved upon, Gettysburg College will be able to continue making contributions that benefit the college environmentally, economically, and socially. We hope this plan will help Gettysburg College take action to grow as a leader in sustainability efforts among other academic institutions.

## HISTORY OF SUSTAINABILITY AT GETTYSBURG COLLEGE

Over the past three decades, Gettysburg College has demonstrated a commitment to the environment, both through institutional decision-making and student-driven initiatives. The College implemented its first recycling program in the early 1980s and has worked continuously to improve energy efficiency in facilities across the campus, replacing old systems and infrastructure and implementing new technologies as they became available. The Gettysburg Environmental Concerns Organization (GECO), a student run club, was established in 1990 to raise awareness about environmental issues in the Gettysburg community. GECO's presence has long supported environmental programming and extracurricular opportunities for students who are passionate about the environment, including organizing the College's first Springfest, originally an Earth Day celebration.

Over the last decade, the discourse has shifted from environmentalism, a broad ideology concerned with the quality of the natural environment, to the more progressive and complex framework of sustainable development. Prior to 2005, most of Gettysburg's efforts were sustained through influencing individual choices and behaviors instead of a more systemic and holistic institutional approach. But as student interest swelled, a number of new programs and partnerships began to form, including the Painted Turtle Farm the campus' student-run organic garden, the creation of official Recycling Interns charged with improving campus sustainability, the Annual Give It Up For Good Program in 2006 which reduces the College's waste stream and donates to the United Way of Adams County, and the Campus Kitchens Project in 2007 which reduced food waste and donate to local food banks. During this period, a group of student representatives from multiple campus organizations formed the Gettysburg Research and Action by Students for Sustainability (GRASS) and developed a proposal for Gettysburg College to become a signatory of the American College and University President's Climate Commitment. In 2007, President Wills signed the document, committing the institution to becoming carbon neutral by 2032 and setting the ground for the pursuit of a more sustainable Gettysburg College.

The increased awareness around the importance of integrating sustainability also led to the College addressing sustainability in its Strategic Directions, a plan developed between 2005-2007 to define and guide future growth of the College. The plan includes a goal to establish an environmental sustainability program for the campus that would more fully engage students, faculty, and staff. Implementation strategies include expanding educational programming on topics related to environmental awareness and developing green-campus protocols that integrate environmentally sustainable practices into college operations. The need to formally address and coordinate sustainability efforts at the College also led to the creation of the Sustainability Advisory Committee in 2008, consisting of faculty, staff, and students and charged with advancing the strategic objectives of the college surrounding sustainability.

The trend in advancing sustainability at the institution continued to formalize through increased faculty and administrative interest. In the spring of 2009, Environmental Studies majors in the senior capstone class completed the College's first Greenhouse Gas Inventory for 2006-2008 (Gettysburg College, 2009). The Inventory provided crucial data for the College to assess its current impact on the environment and proposed mitigation strategies that would help the College reach carbon neutrality in 2032. Concurrently, GRASS submitted a long-term proposal for advancing sustainability at the College. In the process of creating this proposal, this group was able to reach out to a number of different areas and departments at the college, including Dining Services, Residence Life, the Center for Public Service, Transportation, the Library, and IT. GRASS also worked to propose the College's first sustainable living theme house, Farmhouse, which became a reality in the fall of 2009.

In keeping with the regulations of the ACUPCC, the College opened the Center for Athletics, Recreation and Fitness, Gettysburg's first LEED Gold Certified Building in the spring of 2010. According to President Riggs:

**"The Center's LEED certification reflects Gettysburg College's continuing emphasis on sustainability...We are committed to raising our community's awareness of the impact we have on our environment and the responsibility we have to be good stewards of it."**

Also in 2010, the College began working on the Association for the Advancement of Sustainability in Higher Education's Sustainability Tracking Assessment and Rating System (STARS). STARS is a self-reporting rating system for colleges and universities to measure their progress on social, economic and environmental indicators across the curriculum and campus. Gettysburg earned a silver rating on the assessment, indicating much of the progress that has been made on campus in recent years while also highlighting additional opportunities for the College to advance its commitment to sustainability. The following section of this document provides further information on the details of Gettysburg's STARS rating.

In order to take the next step, Gettysburg will need to devise a plan to formalize the institution's commitment to sustainability and prioritize the integration of sustainability in all aspects of the College. At present, Gettysburg College has not yet reflected a deep commitment to the full integration of sustainability into its curriculum, operations, and administration. We intend for this document to serve as a valuable tool to guide the College in establishing future goals and planning for a more sustainable future.

## SUSTAINABILITY RANKING SYSTEMS

In 2009, the Sustainability Advisory Committee initiated the use of the Sustainability Tracking Assessment and Rating System (STARS) to better understand the sustainability successes and shortcomings at Gettysburg College. The Committee continued and completed the report in 2011. STARS is a transparent, self-reporting assessment system that allows colleges and universities to measure and track their sustainability efforts. The purpose of the STARS report is to offer insight regarding both exceptional and lacking portions of the College regarding sustainability; departments are not required to improve every weakness, though the college community should use the report as a catalyst for future sustainability projects. Already, the assessment has served as an impetus for current and future positive change to Gettysburg College's campus through the creation of this sustainability plan.

Institutions choosing to participate in the STARS report are provided with a systematized framework that offers credits in a number of different areas all relating to one of the following categories: Education & Research, Operations, and Planning, Administration & Engagement. Each category has a number of subcategories for which institutions receive credits. These scores are out of 300 points and are converted to STARS rating levels: Reporter (no scores are made public), Bronze (minimum score of 25), Silver (minimum score of 45), Gold (minimum score of 65), and Platinum (minimum score of 85). Gettysburg College currently holds a STARS Silver rating with a numerical score of 55.35 ( "STARS Report-Gettysburg College," 2011). The subsequent STARS assessment must be completed by the College before the end of 2014; ratings become invalid after three years in an attempt to maintain current and accurate information (AASHE, 2010). The STARS program is an extension of the Association for the Advancement of the Sustainability in Higher Education (AASHE), a 501(C)(3) group that aims to bring colleges and universities in the United States and Canada together to advance sustainability programs on a multitude of levels, including national conferences, discussion boards, and newsletters (AASHE, 2011).

The STARS report enables Gettysburg College to better understand how to improve campus sustainability by highlighting campus focus points and leaving every department to reassess its efforts. In the Education and Research portion of the STARS report, Gettysburg College ranked notably well regarding co-curricular education. This sub-category includes a large amount of student opportunities to engage in sustainability efforts at Gettysburg College, such as internships and jobs offered solely regarding sustainability, sustainability-themed housing, and the Painted Turtle Farm. On the other hand, the Gettysburg College Curriculum, while strong, offers very few courses that deal with sustainability. Out of the 814 courses offered at Gettysburg College, a mere 88 are focused on or related to sustainability. Additionally, very few faculty research projects focus on sustainable concepts and practices; of the 190 faculty members involved in research projects, only 21 of their projects relate to sustainability. Furthermore, only 9 out of Gettysburg College's 35 academic departments currently have research projects with a sustainability focus ( "STARS Report-Gettysburg College," 2011).

Gettysburg College did not perform exceptionally well in the Operations category, which includes subcategories such as water, waste, transportation, and purchasing. The College earned few points due to a slow reduction of campus greenhouse gas emissions, though it is important to note that the College reduced its emissions by 9% over the course of three years. In its procurement practices, Gettysburg College does not always require the purchasing of efficient products, chiefly regarding computers. Moreover, the College's automotive fleet is largely powered by gasoline, with few exceptions. The majority of faculty and staff commute in cars without making use of carpools. In recent years, Gettysburg College has increased its total level of recycling; however, this increase in recycling was accompanied by



an increase in total waste generation, reducing the College's waste diversion rate ("STARS Report-Gettysburg College", 2011).

Gettysburg College earned the most points in the Planning, Administration, and Engagement category, though more improvements can still be made. These points were procured through the possession of quality sustainability plans, as embodied by the Strategic Directions, as well as the presence of the Sustainability Advisory Committee. The College received very high marks regarding diversity and affordability, highlighting the campus's Commission on Diversity as well as the availability of support for both faculty and students. However, Gettysburg College invests only 0.33% of its total investments in sustainable industries and businesses ("STARS Report-Gettysburg College," 2011). The STARS report has highlighted the areas that are in need of major sustainability-focused changes, leaving individual departments and the College as a whole to decide which areas are in most need of development to improve the campus's overall sustainability score.

In addition to STARS, many other sustainability ranking systems exist, however due to many constraints, STARS has been deemed to be the most legitimate. Many other sustainability reporting systems rely on external reviews made on unclear or incomplete crediting information, reducing their respectability. In 2010, the Roberts Environmental Center at Claremont McKenna College's Sustainability Reporting of the Top 50 Liberal Arts Colleges awarded Gettysburg College a B+ in sustainability reporting. The report is "an analysis of the voluntary environmental and social reporting of colleges," though the data was collected externally through institution's official websites (Morhardt et al., 2010). This type of data collection is potentially deceptive, allowing for out-of-date information to be reported as fact. The Green Report Card, a ranking system created by the Sustainable Endowments Institute, also determined Gettysburg College's sustainability efforts to earn a B+ in 2011. The Green Report Card is an external system that does not have a transparent crediting and weighting system that would allow users to understand exactly what these grades signify. This nebulous nature allows for data to be misrepresented. For instance, the Green Report Card awards Gettysburg College an 'A' in Investment Priorities, while the STARS report shows investing as one of the College's largest weaknesses (The College Sustainability Report Card, 2011). However, even STARS tends to allot credit for quantitative factors, rather than their quality. For example, Gettysburg College is awarded full credit in the STARS report for having a sustainability committee, despite its ineffectual state ("STARS Report-Gettysburg College," 2011). While all systems have flaws, STARS can be seen as one of the more reliable ranking systems due to its transparency and its dependency on internal review. As Gettysburg College prides itself on honesty and integrity, it can be assumed that the STARS report is an accurate and respectable representation of the College's sustainability efforts.

The following report offers potential solutions to the shortcomings exhibited by the STARS report, while allowing the College to further improve upon its strengths. The STARS report, completed regularly, will allow the College to assess its improvements and continue to identify potential advancement areas. This growth continually pushes Gettysburg College to become a more sustainably-minded and exceptional campus and community.

# SUMMARY OF PRIORITIES

## I. GHG Emissions Reduction and the ACUPCC Climate Commitment

Reduction of Greenhouse Gas emissions is an essential part of any sustainability plan. The greenhouse gas reduction strategies outline in this plan focus on measuring Gettysburg's progress toward fulfilling their commitments in the ACUPCC Climate commitment and also include goals set by the College and this report that are also recommended. The proposed actions are:

- Implement a plan that requires students to offset all or part of their emissions from air travel. This includes waiving the fee for students who are financially unable to offset their own emissions and offsetting those students' emissions.
- Erecting a poster in the Off-Campus Studies office that explains the nature of offsets, the process of offsetting emissions, and how students can participate.
- Clarify the job description for the recycling intern and improve communication between recycling interns and the Facilities office. As outlined in the ACUPCC, a sustainability committee should be responsible for necessary updates and progress reports.
- By September of 2012, a concrete yearly meeting schedule between President Janet Morgan Riggs and the Sustainability Committee should be established. The meeting should highlight the current state of GHG emissions at the College, energy consumption, and our progress toward fulfillment of the ACUPCC commitment.
- To actually reduce greenhouse gas emissions rather than rely on the purchase of offsets. Proposed methods include viable renewable energy alternatives, such as the current plan for solar panels on the roof of the Center.

## II. Dining Services

Because all students need to eat, Dining Services has the ability to make decisions that affect the entire campus and even the surrounding community. This report proposes several actions to improve efficiency of food usage, decrease waste, and further sustainable agendas.

- Improve and expand upon the Dining Center study from May 2011 entitled "Why We've Lost Our Appetite For Peanut Butter: A Campus Food Waste Assessment at Gettysburg College" by including other secondary dining facilities including The Bullet Hole, The Dive, and Ike's.
- Implement a change in the questions asked by servers at The Bullet Hole, as well as an increase in signage and awareness about more sustainable "to-go" practices, and decrease the use of pizza boxes by at least 50% by the end of the 2013 school year.
- Decrease the purchase of Gettysburg brand water bottles by the beginning of the next academic year. The sustainability intern be responsible for creating a brief program for incoming students to increase awareness about waste generated by non-reusable water bottles.
- The College should supply reusable water bottles to students and increase signage in eateries relating to waste produced by non-reusable water bottles.
- Gettysburg should improve its STARS rating in the dining area by purchasing the Rocket composting system, working the cost into the budget over several years.

### III. Green Space

A campus master plan should always account for the addition of green space for tranquility and activity, and green space has been known to have positive psychological benefits for students. For these reasons, this report recommends that Gettysburg College:

- Work to incorporate green space as a part of its master plan and increase the use of underutilized spaces identified in the 2007 Master Plan, continuing to use green landscaping whenever possible.
- Native perennial planting should increase, and the number of annuals planted each year should be limited.
- Expand the use of the student garden so as to take advantage of an area conducive to course integration and student involvement.
- Convert Masters Lot to a green, which would be a long-term project with many potential social benefits for students.
- Modify the green space behind the Science Center to include a garden, benches, and artwork that can be used for both formal and informal student gatherings. A Tree of 40 Fruits could be purchased for this area from Sam Van Aken.
- Install a sculpture on the concrete pad behind the Science Center.
- Planting of a rain garden with low-maintenance vegetation.

### IV. Communications

The success of any sustainability movement or plan hinges largely on the success of communication of related events and topics to the public and to a target audience. The communications goals outlined in this report have the purpose of uniting the student body and the local community and include:

- Cost-effective actions and minor changes to the website to increase overall appeal to readers.
- Contacting the Sustainability Liaison of Communications about making some minor visual changes to the website, including changing the image to textratio and including figures instead of text to explain metrics. The Liaison should also be contacted in order to ensure that submitted news articles and new developments in Gettysburg College sustainability efforts be placed on the home page.
- Place pressure on Gettysburg's web designers to reformat to the Sustainability Webpage to that of the Gettysburg College's Athletics Webpage template.

### V. Sustainability in the Curriculum

There are many different opportunities for integrating sustainability into the Gettysburg Curriculum. This report has come up with a timeline of recommendations for the years 2012-2014. This report believes the most important of these recommendations are that:

- Gettysburg support faculty development initiatives that allow the faculty to successfully implement sustainability education across the entire college curriculum.
- The Johnson Center for Creative Teaching and Learning (JCCTL) hold a two-day teaching workshop in May of 2013 to introduce concepts of sustainability education to the Gettysburg

College faculty. This workshop should include sessions on sustainability literacy, place-based education, and innovative teaching techniques, and include individuals from other institutions who have expertise and enthusiasm in this area and offer workshop sections for specific disciplines as they relate to sustainability. The workshop aims to help faculty re-work their syllabi and courses to include dimensions of sustainability.

- Ensuring that at least one core course in each academic major include some aspect of sustainability by the fall of 2014. Our report lays down several systemic steps to achieving this ultimate goal of integrating sustainability into the Gettysburg College Curriculum.

## VI. Sustainability Committee

This report lays down several long-term and short-term proposed actions that the Committee ought to perform on Gettysburg's way to achieving sustainability:

- The Committee should begin holding monthly meetings.
- The Committee bylaws should be adopted by February 2012. These bylaws contain new information about purposes, membership, governance, and involvement with the College.
- The Committee should circulate membership applications to the entire campus and select new members from those applications.
- They should extensively review the STARS report to determine new goals for the academic year.
- Offer the opportunity for members of the College to have a partnership with the Committee through the distribution of Request for Assistance forms. These forms allow any campus community member to request physical, monetary, or informational assistance.
- The Committee should clearly define the proper uses of their budget.
- The Committee should maintain meeting minutes through the position of the Secretary, posted on the Sustainability website.
- The Committee should complete the STARS report for 2013 and biannually from then on.
- The Committee should also produce an annual report including an executive summary of the year's accomplishments as well as ongoing projects and future goals. This should be presented to the president before the budget proposal each year.
- By 2020, the Committee should hire a sustainability coordinator to chair the Committee among other duties.

## VII. Priorities We Were Unable to Address

Due to time constraints and a lack of resources, we were not able to address the College's endowment or building and renovation policy. There were not enough participants in the report to adequately cover these sections and do them justice.

# Greenhouse Gas Emissions and the American College and University Presidents' Climate Commitment

Erik Hughes, Taylor McGrath, David Ryder

## BACKGROUND

The American College and University Presidents' Climate Commitment (ACUPCC) is a highly visible commitment for colleges and universities to reach carbon neutrality; these developments provide a guideline and an example for other types of institutions to do the same. (Dautremont-Smith et al., 2007). The commitment is modeled after the US Mayors' Climate Protection Agreement which aims to encourage energy efficiency in cities across the United States (Hamin and Gurran, 2008). The ACUPCC believes that the challenges presented by climate change require the "vision and leadership" of higher education (Dautremont-Smith et al., 2007).

Higher education is a \$320 billion industry that employs millions of people (Deutsch, 2007). According to the US Department of Energy and the Green Building Council (2006), if every American campus was run completely using renewable energy, renewable electricity demand would quadruple. The ACUPCC claims that, "there is no other institution in society that has the influence, the critical mass and the diversity of skills needed to successfully make this transformation" (Dautremont-Smith et al., 2007). Therefore it is crucial for institutions of higher education to make strides towards total renewable energy usage to instigate further societal changes regarding energy and climate change.

Within two years of signing the ACUPCC, participating institutions are to have analyzed their own carbon footprint and have created a plan as to how carbon neutrality will be achieved. Institution-specific strategies and time frames are to be included. A student, faculty, and staff committee should be created to ensure progress and should meet regularly to exchange ideas and to guide the implementation of the institution's plan (Deutsch, 2007; Dautremont-Smith, 2009). Furthermore, plans are to be made publicly available through the Association for the Advancement of Sustainability in Higher Education (AASHE) and on the ACUPCC website. In addition to the mandatory requirements set forth in the ACUPCC, Gettysburg College has also pledged to complete two out of the seven proposed tangible actions within the commitment. As one of the tangible actions, Gettysburg College has committed to purchasing ENERGY STAR certified products for all appliances for which ratings exist and has also committed to purchasing or producing at least 15% of its energy from renewable sources within 1 year of the signing of the document (Gettysburg College, 2009b).

Gettysburg College began purchasing energy from wind farms and other renewable energy sources in 2002 (U.S. Department of Energy, 2002). Also in 2002, Gettysburg College began offsetting emissions by purchasing one million kilowatt hours of electricity from renewable energy sources via these

credits/offsets. That number grew to ten million kilowatt hours in 2010, which accounts for approximately of the College's electrical needs. This purchasing strategy is the other portion of Gettysburg College's two "tangible actions" as defined in the ACUPCC. Purchasing this electricity will reduce Gettysburg College's emissions by about a quarter of total campus emissions, or 5,000 metric tons of eCO<sub>2</sub> (Gettysburg College Climate Action, 2009). While the College emits several different types of pollutants, for ease of comparison, each pollutant is measured by its "equivalent" global warming potential in carbon dioxide, or eCO<sub>2</sub> (Climate Protection Campaign, 2012).

Gettysburg College's Facilities Services has been monitoring the institution's total energy consumption figures since 1995. Since then, Facilities Services has converted its lighting fixtures to reduce electricity consumption, purchased Energy Star rated appliances as well as more fuel efficient vehicles for the college fleet, and has developed a system to better manage energy usage during school breaks ("Facilities", 2010).

Overall, energy consumption has grown 33.8% since fiscal year 1996. However, from fiscal year 1996 to fiscal year 2002, total energy consumption had actually decreased 9.6%. This discrepancy is caused by the construction of the brand new Science Center in 2003, increasing consumption 31.65% from 2002 levels. While fossil fuel consumption increased only 16.1% between fiscal year 1996 and fiscal year 2006, electric energy consumption increased by 61.4% (Gettysburg College, 2007a). Additionally, with the construction of the LEED Gold Certified Center for Athletics, Recreation, and Fitness, the total amount of energy usage is sure to have increased even more. New construction necessitates the purchase of even more carbon offsets or energy-reducing practices to obtain Gettysburg College's 2032 goal of carbon neutrality.

## STATE OF THE ISSUE AT GETTYSBURG COLLEGE

In 2007, former Gettysburg College President Katherine Haley Will signed the American College and University Presidents' Climate Commitment (Dautremont-Smith et al., 2007). This document recognizes the need for action to reduce global climate change and its consequences - "We are deeply concerned about the unprecedented scale and speed of global warming and its potential for large-scale adverse health, social, economic, and ecological effects" (Dautremont-Smith et al., 2007). Essentially, this signature commits Gettysburg College to become carbon neutral by a predetermined goal. Gettysburg College decided to reach campus carbon neutrality by its 200<sup>th</sup> anniversary, 2032. . The ACUPCC suggests meeting checkpoints, or certain timeframes to reach specific carbon emission levels, to encourage gradual progress. These carbon emission checkpoint levels are measured in carbon dioxide equivalents, or eCO<sub>2</sub>. At the baseline year 2007, Gettysburg College's total emissions were 20,318 metric tons of eCO<sub>2</sub> (ACUPCC, 2009a). The first checkpoint, 2015, requires a 25% reduction. For Gettysburg, this means a 5,080 metric ton decrease of eCO<sub>2</sub>. By checkpoint two in 2025, an additional 1,015 metric tons should be removed from emissions, a 30% total reduction. By 2032, an additional 14,223 metric tons of eCO<sub>2</sub> should be reduced to meet the carbon neutrality commitment (Gettysburg College, 2009b).

Students play an important role in the sustainability efforts at Gettysburg College, working to calculate the College's carbon footprint and developing the College's Climate Action Plan. As expressed in the 2009 Gettysburg College Climate Action Plan, "...much of the plan focuses on change 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" (Gettysburg College, 2009b). Incorporating all members of the campus community in the planning process will increase the effectiveness and feasibility of the Climate Action Plan.

The first step in identifying areas of improvement that should be included in the Climate Action Plan was to calculate current emissions. According to the Clean Air-Cool Planet Campus Carbon Calculator for fiscal year 2010 figures, campus emissions come from many areas that are divided into three main sources, known as scopes (Table 1.1) (*Clean Air - Cool Planet*, 2008). Scope I represents direct emissions, including on-campus heating, college fleet vehicles, fertilizers and refrigerants. 2010 Scope I emissions totaled in at 5,225 metric tons of eCO<sub>2</sub>, a 180 metric ton increase from 2007. Scope II represents indirect emissions. These emissions consist mainly of the electricity purchased by the College and were calculated at 9,963 metric tons of eCO<sub>2</sub> in 2010, a small increase of (4 metric tons) from 2007 levels. Scope III examines other indirect emissions such as emissions from study abroad travel, carbon offsets, commuting of students and faculty, directly financed outsourced travel, and solid waste. This last group of emissions totaled in at 4,882 metric tons of eCO<sub>2</sub> in 2010, 931 metric tons less than 2007 levels (*Clean Air - Cool Planet*, 2011).

**Table 1.1:** Gettysburg College's Emissions Distribution for 2007 and 2010. This table shows the 2007-2010 emissions, measured in metric tons of eCO<sub>2</sub>, and the percent total of scopes and offsets as compared to the year's total emissions. Net emissions are the difference between the emissions from the three scopes and the purchased offsets. Total emissions are the sum of the three scopes.

	2007	% Total	2010	% Total
Scope I	5045	24 %	5225	26 %
Scope II	9959	48 %	9963	50 %
Scope III	5813	28 %	4882	24 %
Offsets	500	2 %	5195	26 %
Net Emissions	20315		14875	
Total Emissions	20815		20070	

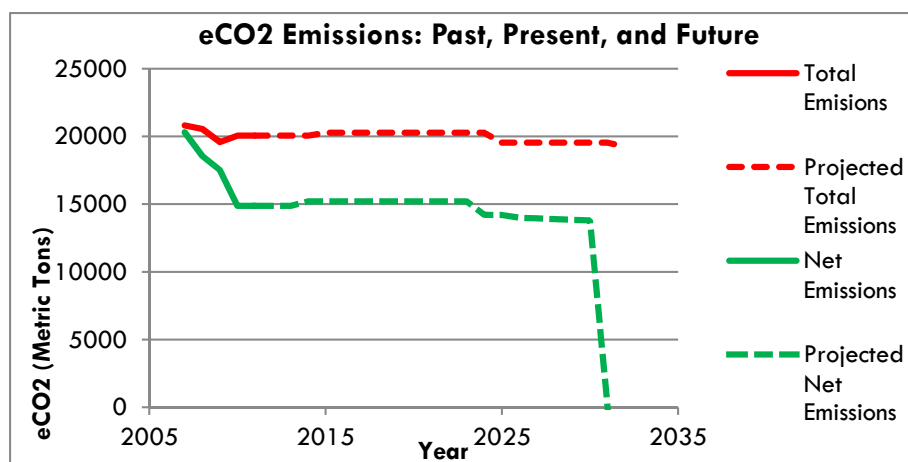
In accordance with the American College and University Presidents' Climate Commitment, the College is making steady progress toward the goals set for emissions reductions, curriculum, research, and outreach. The Greenhouse Gas Inventory is conducted every year by the Recycling Interns to determine how Gettysburg College is progressing. This inventory measures emission sources and breaks these sources down into the three scopes mentioned above (Gettysburg College, 2009a, "STARS" Report – Gettysburg College, 2011).

Since the completion of construction of the The Center for Athletics, Recreation, and Fitness in 2009, Facilities Services had been researching the placement of a solar array on the roof. The College began installation in Spring 2013. This addition should further reduce the emissions of the college by decreasing the amount of energy purchased from fossil fuels.

## Emissions Reductions:



Gettysburg College is ahead of schedule with regard to its reduction goals. The progress that Gettysburg College has made toward the goal of a 25% reduction by 2015 is substantial. As of 2010, the College had a net emissions value of 14,800 metric tons of eCO<sub>2</sub> compared to the goal set for 2015 of 15,200 metric tons. With its current strategies, Gettysburg College is well on its way to meeting its 2015 reduction goal. Figure 1.1 displays the emissions data collected from 2007 through 2010 as well as the projected emissions up to 2032 (Gettysburg College, 2009b). Gettysburg College plans to reduce its emissions by 25% by 2015, 30% by 2025, and 100% by 2032 (Gettysburg College, 2009b).

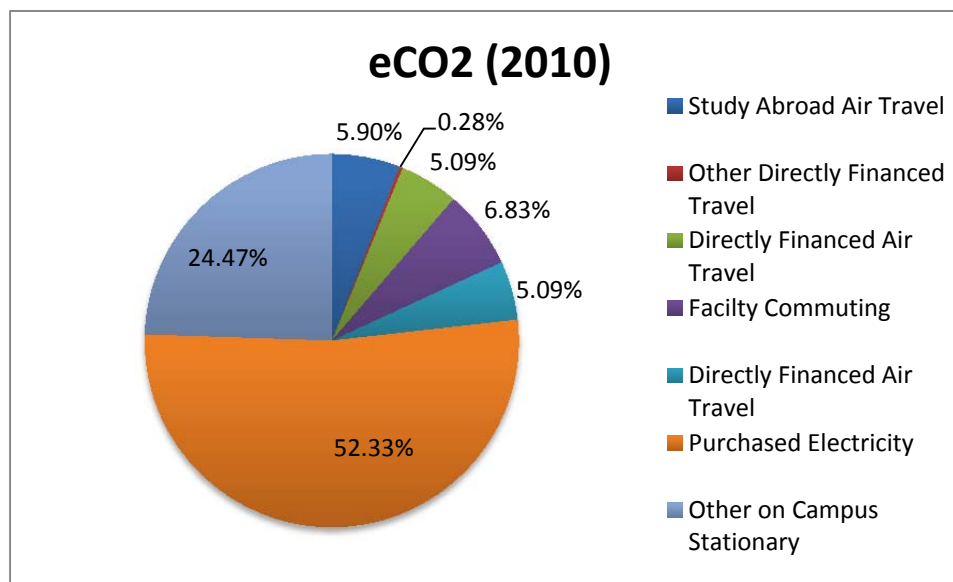


**Figure 1.1:** Emissions, Current and Projected, for Gettysburg College from 2007 to 2032. These emissions were measured using an eCO<sub>2</sub> equivalent. Solid lines represent collected data. Dashed lines represent projections based upon the Gettysburg College Climate Action Plan. The total emissions line is the sum of all of emissions from the three scopes. The net emissions line is the total emissions minus the purchased carbon offsets.

Figure 1.1 also displays the current plan for the mitigation of greenhouse gas emissions. The College plans to use efficiency upgrades and renovations to slowly reduce total emissions and then purchase offsets to reduce its net emissions to the required levels as seen in Figure 1.1. . The College expects no growth in the current enrollment and thus only expects small increases in total emissions should new construction occur or campus area increase (Gettysburg College Climate Action, 2009). Thus, the total emissions and projected total emissions should stay relatively constant around 20,000 metric tons. The College currently purchases carbon offsets from the Carbon Solutions Group in Chicago (J. Biesecker, personal communication, November 28, 2011). This company works with many different Renewable Energy Certificate (REC) generators throughout the country and then markets the RECs for the generators (S. Maloney, personal communication, February 20, 2012). Gettysburg College has purchased two different types of RECs from the Carbon Solutions Group. The first type of REC is a Biomass REC which means that the certificates are generated by a pulp and paper mill in Georgia. The second type of REC is a Wind Rec which is generated in Oklahoma and Texas. In order to ensure that Gettysburg College has responsibly purchased RECs that are actually additional to any other energy they may have been purchased, all of the RECs that Gettysburg College has purchased are Green-e certified. Green-e certified “is the industry standard third party auditor of the renewable energy markets” (S. Maloney, personal communication, February 20, 2012; Green-e Energy, 2012). The Green-e certificates guarantees that only Gettysburg College can claim the benefits of the renewable energy RECs they purchase through the Carbon Solutions Group (Green-e Energy, 2012).



Each of the three scopes mentioned previously have multiple components which contribute emissions to varying degrees. The biggest contributions to emissions come from Purchased Electricity and Other On-Campus Stationary (i.e. direct emissions and on-campus heating). The rest of emissions represented, roughly 22%, originate from transportation (Figure 1.2).



**Figure 1.2:** Sources of Greenhouse Gas Emissions at Gettysburg College in 2010. Traveling, heating, and powering campus facilities account for 96% of Gettysburg's total emissions. Currently, the College is taking steps to address and reduce the emissions of the main three different scopes; however, certain are still in need of attention. The College currently is trying to maximize the energy efficiency of its buildings (J. Biesecker, personal communication, November 28, 2011). Energy-efficient residential appliances are bought when the old appliances require replacement. For instance, all campus micro-fridges on campus hold the Energy Star label. Though no official policy exists, Facilities Services will purchase the most energy efficient model available if an appliance needs replaced (R. Butch, personal communication, March 28, 2012).

Currently, study abroad air travel amounts to 5% of the total emissions of Gettysburg College, and the College does not have a policy to offset the emissions from students traveling abroad. Instead, students are encouraged to take individual responsibility and purchase offsets on their own. Students planning to study abroad are given pre-departure information and are directed to the Study Abroad website. The website contains links that explain carbon offsets, the importance of offsets, and how students can choose to offset their emissions at a personal expense. The Off-Campus Studies website links students to the Green Passport Program and Carbonfund.org. These programs offer plans for students to offset their emissions by investing in renewable energy, carbon credits, or reforestation projects. Both the Green Passport Program and Carbonfund.org have calculators easily available that can determine the amount of carbon dioxide emitted from air travel. There are also options to purchase carbon offsets from these companies. These companies are third party verified and any projects they invest in are accredited or certified projects Gettysburg College, 2010d). An official policy to pay for offsets was never adopted because many students attend programs not affiliated with Gettysburg College and some of these programs use a portion of the tuition money to offset emissions (S. Brandauer, personal communication,

November 21, 2011). Certain programs such as the Lancaster, England program, require all students to travel on the same flight, reducing students' overall omissions (S. Brandauer, personal communication, February 20, 2012).

### Curriculum Goals:

According to the Gettysburg College Climate Action Plan and the information submitted to the ACUPCC, there are no measurable curriculum goals for Gettysburg College. Curriculum goals are defined as an institution's plans to include the topics of carbon neutrality and sustainability a part of its educational offerings whether curricular or extra-curricular (ACUPCC, 2009b).

### Outreach Goals:

According to the Gettysburg College Climate Action Plan and the information submitted to the ACUPCC, there are no measurable outreach goals for Gettysburg College. Outreach goals are defined as an institution's plans to expand its efforts to include climate neutrality and sustainability into its community outreach efforts and other relevant activities not covered elsewhere in the plan. The outreach goals should also include proposed steps in alerting the surrounding community to the institutions commitment and progress to becoming carbon neutral (ACUPCC, 2009b).

## EXEMPLARY INSTITUTIONS

There are several institutions that have made great strides toward achieving carbon neutrality and sustainability, and Gettysburg College should use these institutions as examples to further its own goal of carbon neutrality. Pomona College, Green Mountain College, Middlebury College, and Dickinson College represent four institutions with similar full-time enrollment to Gettysburg College (2,000 – 4,999 students) that have achieved an overall STARS rating of Gold from their efforts. These four institutions, considered by this report , to be exemplary institutions because of their policies dedicated to reducing emissions, combine stringent energy management policies, renewable energy sources located on campus and purchase of carbon offsets, while including the concept of sustainability at high levels of overarching institutional plans as well as applying innovative techniques that connect students and faculty with professionals in their fields. Through these methods of implementation, these exemplary institutions provide a model for the types of projects Gettysburg College should pursue.

Particular attention has been paid to both energy management and metering at these institutions, leading to their excellence in sustainability on campus. In terms of overall energy management, both Middlebury College and Dickinson College use what is known as a Siemens EMS (Energy Management System) in order to monitor and control temperature, heating, electrical systems, and lighting systems from one central location ( AASHEE, 2010; Dickinson College, 2011b). In this way, important functions of the College, such as peak electrical usage, can be remotely monitored. Green Mountain College uses an automated control system that feeds data into a central location monitored by its facilities director, through which energy usage in most of their buildings is tracked (Green Mountain College, 2010). Pomona College also uses a centralized energy management system that tracks 90% of their campus's square-footage; additionally Pomona College has lighting, heating, ventilation, air conditioning (HVAC), and infrastructural schedules and timers that affect and monitor overall building performances. Both Green Mountain College and Pomona College's electrical data monitored by these systems can be viewed publically online. Green Mountain College's data is even available in real-time both online and on a touch screen in one of their academic buildings (AASHE, 2010). These metering systems allow

institutions to better understand where change needs to occur in regards to energy usage. Therefore, Gettysburg College should integrate a centralized energy monitoring system into their operations and management systems in order to accurately track trends, spikes, and dips in energy uses to more effectively monitor our progress toward sustainability. With increased understanding of energy usage, the campus may be able to reduce the energy intensity of various campus areas.

Energy metering refers to the exact method of tracking of individual buildings as well as campus-wide electricity and fossil fuel usage. As Gettysburg College's Central Energy Plant currently makes use of natural gas, natural gas usage shall be tracked until a change in fuels take place (R. Butch, personal communication, December 2, 2011). Electricity and natural gas are metered in kWh and MCF in 40 of Dickinson College's buildings. Their meters are provided and maintained by the utility distributor, with readings taken monthly and included in billing statements. The information from these readings is recorded in a database for use in reporting and monitoring (AASHE, 2010). Green Mountain College has recently implemented a web-based management system to add meters each year that track individual and overall building energy usage (AASHE, 2010). They track electricity usage in all residence halls, along with steam, heat, and hot water in many buildings. Middlebury College monitors all energy consumption for its Franklin Environmental Center at Hillcrest and displays it via a building dashboard online as well as on a screen in the building. Pomona College has had all of its campus buildings monitored for electricity and natural gas since the summer of 2012. All of Pomona College's meters are installed with real-time Internet portals for information sharing and tracking (AASHE, 2010). Currently, Gettysburg College does not have a policy for tracking energy uses in each of its campus buildings. Although off-campus houses could be monitored, monitoring for academic buildings and buildings supplied by the central energy plant is not feasible, costing between \$10-20,000 per building (R. Butch, personal communication, March 29, 2012).

Most of our exemplary institutions use what are known as PV (photovoltaic) arrays, or linked solar panels that convert sunlight to energy as their main renewable energy source. Dickinson College has solar panels installed on three campus buildings in addition to producing most of the energy needed for its farm operations through grid-tie PV panels (Dickinson College, 2011a; AASHE, 2010). Green Mountain College has recently installed a 150kW steam turbine that operates in conjunction with a wood-chip gasification heating plant, converting high-pressure steam to low-pressure steam that is distributed around campus. Several different PV arrays and a 1.5kW wind turbine were also installed (AASHE, 2010). Middlebury College's on-site renewable energy sources include a wind turbine, solar panel arrays on several buildings, and electricity co-generated from a biomass gasification facility (Middlebury College, 2008). Pomona College currently has five different PV arrays totaling over 228kW, three of which are monitored by their central energy system (AASHE, 2010). Excluding the potential solar project, Gettysburg College does not currently have any plans to build renewable energy source plants due to land restrictions, and the elimination of additional grant funding for solar projects. The 2012 solar panel project atop the Center for Athletics, Recreation, and Fitness emerged from a for-profit company due to the presence of a combination of state and federal grants and tax credits (R. Butch, personal communication, March 28, 2012).

Along with energy metering and monitoring through efficient management systems and renewable energy sources, innovative techniques also allow institutions to implement sustainability practices effectively. Dickinson College connects current students as well as professionals, community members,

faculty, and project staff to sustainability projects. Middlebury College provides innovation in the field of renewable energy, as it performs a complete inventory of the surrounding town. Middlebury College is currently structuring a hypothetical plan to power aforementioned town utilizing mini biomass digesters as a power source.. This project connects college staff with the town and the director of the county economic agency, implementing the social prong of sustainability (AASHE, 2010).

One of the largest obstacles to successful implementation of sustainability initiatives is their inclusion at the higher levels of an institution. However, as sustainability becomes ingrained in the mission and administration of the institution, progressive action becomes more feasible (M. Whitney, personal communication, October 24, 2011). Middlebury College, Pomona College, Green Mountain College, and Dickinson College are all institutions that highly value sustainability when considering all aspects of operation (AASHE, 2010). Equally important is the purchase of carbon offsets, which all four of the aforementioned institutions are also involved in extensively (AASHE, 2010). Gettysburg College only purchases carbon offsets, while these exemplary institutions combine carbon offset purchases with other substantial on-campus renewable technologies. Lastly, reduction of emissions from air travel is also very important at institutions where off-campus or study abroad programs are a large part of the Gettysburg College Curriculum. Pomona College has concrete plans to offset these emissions (AASHE, 2010).

Pomona College currently offsets emissions by engaging in a program that tracks mileage for traveling students (off-campus studies, research travel, field trips, etc.) (Pomona College, 2009).. Pomona College has also partnered with travel offset organizations such as TerraPass to increase and develop outreach for voluntary travel offsets, as well as to encourage students to offset their own emissions from off-campus travel (TerraPass, 2011). Once Gettysburg College has legitimate estimates for the miles traveled, it too can gauge the environmental impact of those activities and arrange for offsets to be purchased

Dickinson College, Pomona College, Middlebury College, and Green Mountain College can all be considered exemplary institutions because of their new and innovative techniques they employ in order to achieve the goals set out by their own sustainability plans. These institutions monitor energy and natural gas regularly through metering and online dashboards and combine renewable energy sources with the purchase of carbon offsets and innovative technologies/strategies. Most of all, these institutions include sustainability goals at high levels of their overarching plans and visions, often the largest obstacle to achieving true carbon neutrality and sustainable operation on a college campus.

## PROPOSED ACTIONS

As study abroad air travel contributes to a large portion of the College's greenhouse gas emissions, the Off-Campus Studies Office should take actions to decrease the negative effects of global student learning. The Gettysburg College Off-Campus Studies Office should implement a plan requiring students to offset all or part of their emissions from air travel. The College already provides a stipend to help students pay for travel expenses, and the college cannot reasonably afford to offset all study abroad emissions. The cost of offsetting a student's travel emissions could range from \$35 to \$100 (J. Biesecker, personal communication, November 28, 2011). With an average of about 350 students choosing to study abroad each year (S. Brandauer, personal communication, December 7, 2011), emission reduction compensation would end up costing the College between \$12,250 and \$35,000 annually. Therefore, in order to study abroad, students should pay to offset their travel emissions. This policy should be implemented by September 2013 and would allow the fee to be waived in cases where a student's financial situation would limit their ability to study abroad. In these special cases, Gettysburg College

would pay for the emissions to be offset. Alternatively, the College could cover half the cost of a student's travel emissions, requiring students to pay for the remainder of their offsets. This compromise would lessen the burden on the students themselves and would make the fee less of a deterrent to traveling abroad, while still helping the College offset a sizable portion of emissions that cannot be eliminated.

The Off-Campus Studies Office was receptive to the idea of increased publicity about the current offset program. By September 2012, a poster should be erected in the Off-Campus Studies Office explaining the nature of offsets, the process of offsetting, and how students can participate. These action steps are expected to increase awareness of the issue, as well as potentially motivate a greater portion of those who study abroad to offset their emissions on their own.

Another goal for Gettysburg College is to clarify the job description of the Recycling Intern and to increase communication between these interns and Facilities Services. Although some projects have specifically been delegated to the Recycling Interns, their exact roles are not always clearly defined which can cause miscommunications, hindering campus sustainability efforts. For instance, the Recycling Interns are responsible for the GHG inventory and also with compiling updates for the ACUPCC report. However, as outlined in the ACUPCC, a sustainability committee should be responsible for these updates and progress reports. Therefore the Sustainability Committee should work closely with the Recycling Interns to compile said reports. This increased communication will help coordinate efforts to assess our progress toward fulfillment of the ACUPCC commitment.

By September of 2012, a concrete yearly meeting between Janet Morgan Riggs and the Sustainability Committee should be established to increase communication regarding Gettysburg College's commitment to the ACUPCC and the overall goal of sustainability. This meeting should highlight the current state of GHG emissions, energy consumption, and our progress toward our climate commitment goals.

The College should also ensure that the project to place solar panels on the roof of the Center is underway by the Spring of 2013 or sooner, as is planned. Solar panel arrays would provide the College with a renewable energy source that physically reduces emissions. This renewable energy source should also reduce the College's dependence on carbon offset purchases to meet its goal of carbon neutrality.

Gettysburg College should install metering for electrical and natural gas usage and a building dashboard application. The dashboard program made available by the company Lucid Design Group (Lucid Design Group, 2011) allows students and faculty to view the energy consumption of individual buildings. However, buildings supplied by the Central Energy Plant would not be included in this metering (R. Butch, personal communication, December 2nd, 2011); therefore, the metering would be limited to off campus housing.

## CHALLENGES

With such industrious proposals for a more sustainable future at Gettysburg College, challenges are unavoidable. Keeping up with updates, like those required by the ACUPCC, will require attention from a designated individual. If the required reports and updates are not completed, Gettysburg College may be dropped from the ACUPCC; the ACUPCC has already removed at least 15 institutions that did not achieving carbon neutrality by their goal year (Carlson, 2010). Furthermore, the lack of a

functioning sustainability committee here at Gettysburg College is a challenge to all sustainability initiatives. Creating a legitimate and functioning committee could fix both of these issues; as is outlined in Part 6 of this sustainability plan.

Another major challenge is presented by carbon offsets. If carbon offset prices were to increase, Gettysburg College's strategy for reaching carbon neutrality would require more funding. The supplier of Gettysburg College's RECs has predicted a slight increase in prices for the summer months of 2012. The prices of the RECs depend on the type and location of the RECs (S. Maloney, personal communication, February 20, 2012). Moreover, the validity of carbon offsets should be considered, as there is no legal obligation to create the promised reductions, leaving Gettysburg College to constantly research the quality of its offsets ("Carbon Offsets", 2007). However, the Carbon Solutions Group provides Gettysburg College with only Green-e Certified RECs; Green-e Certification signifies the quality of the offsets themselves (S. Maloney, personal communication, February 20, 2012). Finally, creating renewable energy on campus has obstacles that require both time and money to overcome. Finding a renewable energy provider, applying for appropriate state and federal subsidies, and obtaining funding are all necessary parts of the process. Gettysburg College's history of innovative thinking, and its commitment to lower its greenhouse gas emissions, will allow it to overcome obstacles in order to achieve carbon neutrality.

# Excess Waste in the Dining Sector

Sarah Hecklau and Sarah Weinstein

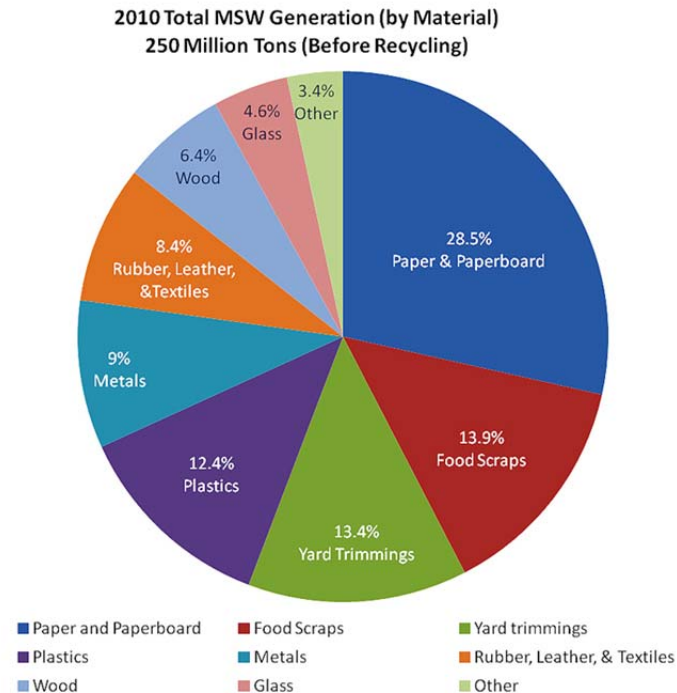
## BACKGROUND

Food, a basic human need, has always been an important part of our culture. As sustainability has become a highly charged issue on college campuses, food and dining services emerges as a sector that can be improved with sustainable practices. Unlike other sectors of campus, such as academic departments, dining services has greater potential for sustainable success because the decisions made by dining directly impact the whole campus and even the surrounding community. Dining services is an area with facilities, like dining halls, that are often visited more frequently per day than classrooms (Creighton, 1998). Due to issues, such as poor management policies, distribution, and consumption, the food service sector struggles with the issue of waste. Studies show that food waste has exponentially increased in recent years. One study found that US per capita food waste has increased roughly 50% since 1974, with 1500 kcal in food waste per US resident per day (Hall et al., 2009). This food waste amounts to 150 trillion kcal per year. Food waste also increases our freshwater consumption and causes the United States to use nearly 300 million barrels of oil each year, during food production, excluding transportation and processing (Hall et al., 2009). From production to consumption, Americans waste 40% of the food being produced, a shockingly high amount that could daily fill all 90,000 seats at the Rose Bowl stadium (Bloom, 2010).

Holistically, food waste is not solely food, but also the packaging that food is shipped in and the tools we use to carry and consume it. The EPA reports that paper and paperboard products represent the largest portion, 71 million tons (or 29%) of our municipal solid waste stream (Figure 2.1) (Environmental Protection Agency, 2011). Additionally, in 2010, 31 million tons of plastic waste was generated, which represents 12.4% of the waste stream (Figure 2.1) (Environmental Protection Agency, 2011). The largest contributor to this percentage is plastic drink bottles. The amount of plastic in the waste stream has increased by significantly since 1960 when plastics represented less than 1% of the waste stream in the United States. (Environmental Protection Agency, 2011). The amount of food, water, paper products, and even energy and fuels that the food service sector contributes to the waste stream has serious environmental impacts (Davies and Konisky, 2000).

College institutions may be the ideal place to establish new practices that reduce this waste. At colleges, dining halls and other food distribution locations are confined to a campus making it easier to establish, follow, and change the waste stream. For institutions, making their food service practices more sustainable should be a concerted effort for both economic and environmental reasons.





**Figure 2.1:** Components of Municipal Solid Waste.. Image courtesy of the EPA Resource Conservation Department.

## STATE OF THE ISSUE AT GETTYSBURG COLLEGE

As part of AASHE's STARS report, Dining Services is placed in the Operations category. Dining Services emerges as an ideal operations division to decrease waste and improve sustainability because the waste is coming from a point source. Gettysburg College has already implemented many sustainable practices including: Buying a portion of foods locally, using recycled materials, and taking measures to reduce water and food waste (Gettysburg College, 2011b). However there are still many opportunities to improve our level of sustainability in the dining sector. The STARS report for Gettysburg College ranks our Dining Services with a 3.49 out of a possible 8.25 points ("STARS Report-Gettysburg College," 2011). This section is further broken down into sub-categories in which the College often receives little or no credit (Table 2.1). It is important to note that 6.00 out of the possible 8.25 points is devoted to food purchasing which does not relate to food waste. Out of the STARS Dining Services category only 0.75 points is devoted to food waste, both directly and indirectly. These categories include amounts of pre- and post-consumer food waste production, as well as food donations programs. In order to evaluate which areas will need attention, general waste reduction practices at Gettysburg College are broken down into more specific categories (Table 2.1).

The Dining Services staff at Gettysburg College collectively acknowledges that waste is produced within their department and in the past several years have been taking steps to save energy, decrease waste, and decrease the negative environmental impact within their sector, as mentioned above (Barresi et al., 2011). For instance, Dining Services states that their sector decreases waste from transportation by using herbs and produce from the on-campus Painted Turtle Farm as well as purchasing almost \$400,000 in locally grown and produced foods each year (Kramer, 2010; Gettysburg College, 2010c). Although Gettysburg College has not decided upon any specific definition of local food, Dining Services attempts to acquire 'local' food from within 100 miles of the campus or from the closest produce



supplier depending on which produce is in season (G. Brautigam, personal communication, February 28, 2012). According to STARS, food is considered local if it is grown and processed within 250 miles of the institution (AASHE, 2012b). Best Colleges Online recently recognized Gettysburg College's Dining Services as one of the "20 Most Conscientious College Dining Halls" (2010). In order to achieve this award, colleges had to create ways in which the dining experience was positive for both students and the environment. "Gettysburg College was featured for turning its fryer oil into biofuel, serving locally grown and processed food, increasing recycling efforts, and reducing the volume of post-consumer waste on campus" (Rhoads, 2011). Even with these positive steps toward becoming more environmentally conscious, it is clear that Gettysburg College Dining Services still has many areas in which it can improve (Table 2.1).

**Table 2.1:** Gettysburg College STARS- Dining Services 2011. Categories associated with food waste are shown in bold.

Credit	Points
Food Purchasing	1.99/6.00
<b>Trayless Dining</b>	<b>0.00/0.25</b>
Vegan Dining	0.25/0.25
Trans-Fats	0.25/0.25
Guidelines for Franchises	Not Applicable
<b>Pre-Consumer Food Waste Composting</b>	<b>0.25/0.25</b>
<b>Post-Consumer Food Waste Composting</b>	<b>0.00/0.25</b>
<b>Food Donation</b>	<b>0.25/0.25</b>
<b>Recycled Content Napkins</b>	<b>0.25/0.25</b>
<b>Reusable Mug Discount</b>	<b>0.25/0.25</b>
<b>Reusable To-Go Containers</b>	<b>0.00/0.25</b>
TOTAL	3.49/8.25

## BEHAVIOR MODIFICATION

Many waste reducing practices in the food service sector involve behavior modification. Behavior modification implies a need for staff and students to actively promote changes and to decrease waste through asking questions differently, monitoring behaviors, and promoting a more sustainable mindset in students. The Dining Center uses trays, so Gettysburg College is given no credit for Trayless Dining, a practice that significantly lowers food and water waste (Aramark, 2008). Leaders in Gettysburg College Dining Services estimate that implementing a "trayless" program could cost upwards of \$75,000 and feel as though the money saving results are not guaranteed (G. Brautigam, personal communication, October 6, 2011). However, Dining Services has implemented some initiatives to decrease food waste in the primary Dining Hall, Servo, such as: Training serving staff to allot set portions to students during meal times monitoring the allowance of one entrée at a time, and cooking food on demand allowing uncooked food can be saved. In fact, student reactions to meals are even monitored to judge popularity

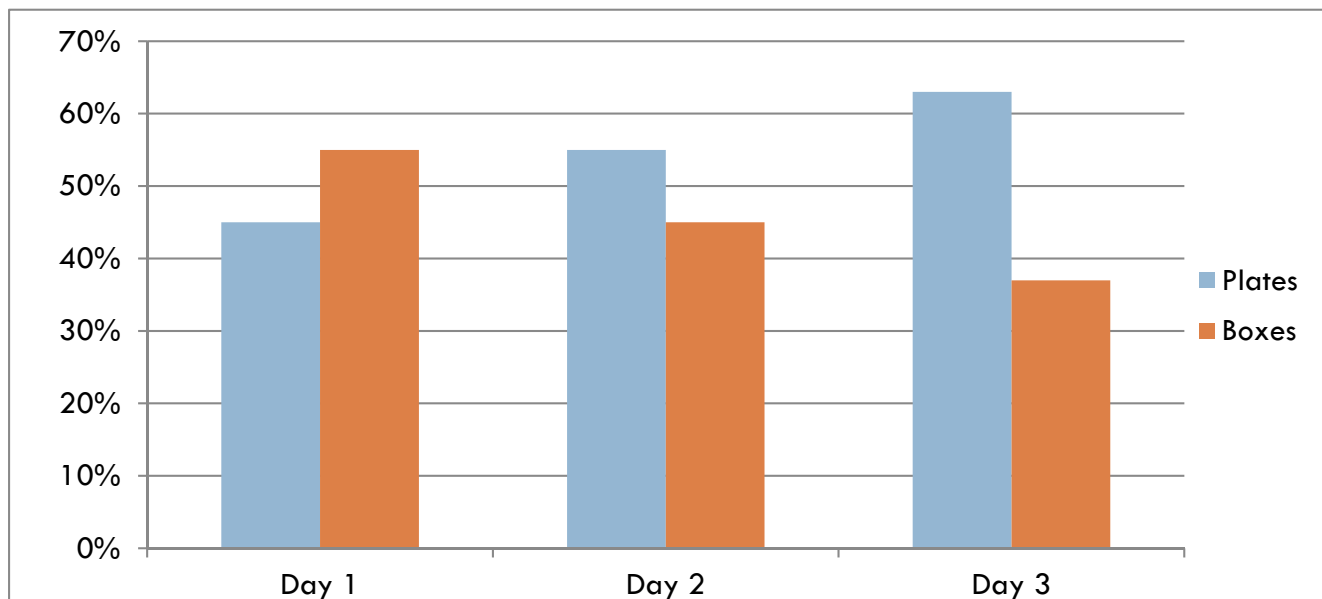
of meals (G. Brautigam, personal communication, October 26, 2011). Less popular meals are chosen to be served less or even eliminated from the repertoire of the kitchen.

### To-Go Waste at the Bullet Hole

A Gettysburg College Student study from May 2011 entitled, “Why We’ve Lost Our Appetite for Peanut Butter: A Campus Food Waste Assessment at Gettysburg College”, gives a detailed description of food waste from the Gettysburg College Dining Center in hopes to inspire change in student and staff mentality. The study evaluates the Gettysburg College Dining Service’s food waste practices by measuring actual food waste and by surveying student’s attitudes regarding food waste and food waste initiatives (Barresi et al., 2011). The report suggests that a future study should include the subsidiary Dining Services facilities including The Bullet Hole, The Dive, and Ike’s. A study at the Bullet Hole was conducted in order to assess cardboard and plastic waste, in regards to the use of “to go” items in this facility. In particular, the use of cardboard boxes and plates for pizza purchases, as well as the sale of Gettysburg College water bottles were assessed. The Bullet Hole serves personalized, made-to-order food items including pizza, sandwiches and sushi. This pilot study was inspired by the theory of behavior modification in an attempt to observe the change in student behavior simply from framing the question in a different manner. When a student answers “to go” when asked the original question “For here or to go?” they receive a standard cardboard pizza box. When they answer that they want pizza “for here”, they receive their slice on a sugarcane bagasse plate. It was determined that cardboard boxes are the less sustainable choice, requiring trees for production and producing more waste. The sugarcane bagasse plates are made using agricultural waste and are also compostable, biodegradable, and non-polluting were deemed to be the more sustainable option (Greenwave International, Inc., 2010). One of the primary purposes of the study was to identify what factors determined students’ packaging options, including the phrasing of questions and the packaging options themselves.”

To assess how waste due to pizza boxes in The Bullet Hole could be reduced, a three day pilot study was conducted. The first day of the study, the servers were asked to serve the pizza as usual by asking “for here or to go?” The second day the servers changed the question from “for here or to go?” to “plate or box?”. On the last day a sign which stated that plates create less waste was posted at the pizza serving area and the servers again asked, “plate or box?” During each day the number of plates and boxes used were recorded using information from the Bullet Hole staff (Figure 2.2, Table 2.2, Figure 2.3).

A chi-square test was performed in order to determine whether the results were statistically significant. There was no statistical significance between Day 1 and Day 2 of the study but there was statistical significance between Day 1 and Day 3 (Excess Waste in the Dining Sector Appendix). Since the completion of the study, Mike Bishop the College Union Food Service Manager, confirmed that the College is already purchasing fewer pizza boxes (M. Bishop, personal communication, December 1, 2011). Some student support has been cultivated, with one student claiming that the new signage has inspired her to no longer use boxes for pizza (R. Rubenstein, personal communication, November 30, 2011).



**Figure 2.2:** Pizza Box Study Results. Graphical display of pizza box study results. Day 1: No changes (no sign, original “For here or to go?” question. Day 2: Change question to “Plate or box?” Day 3: Use “plate or box?” question and post sign (Figure 2.5).

**Table 2.2:** Pizza Box Study Results. Statistical display of pizza box results. Day 1: No changes (no sign, original “For here or to go?” question. Day 2: Change question to “Plate or box?” Day 3: Use “plate or box?” question and post sign (Figure 2.5).

	Plates ( % (number) )	Boxes ( % (number) )
Day 1	45% (17)	55% (21)
Day 2	55% (20)	45% (16)
Day 3	63% (24)	37% (14)



**Figure 2.3:** Sign Used in Pizza Box Study.

In conjunction with paper waste from The Bullet Hole, the amount of plastic waste associated with the sale of Gettysburg College water bottles was also studied. This study aimed to determine if a sign in the Bullet Hole informing students that they could fill up a reusable water bottle for free as opposed to paying for a single use water bottle would decrease the number of water bottles sold. This tactic was similar to the pizza box study. However, it was not possible to change any questions to reduce students' water bottle purchases as students serve themselves water bottles. While performing the water bottle study the total number of water bottles sold across campus in the month of October was obtained. A shocking 10,641 water bottles were sold solely in the month of October (Table 2.3, Figure 2.4) (Excess Waste in the Dining Sector Appendix).

When comparing 14 business days between October and November, The Bullet Hole sold 3,293 Gettysburg water bottles without our sign and 2,964 with our sign. The ratio of bottles sold with and without the sign to number of transactions per day were compared. An ANOVA test was performed on these numbers and showed that there was no significant difference. This lack of significant difference could be attributed to the fact that more effort is required from students to bring a reusable water bottle. (Excess Waste in the Dining Sector Appendix).

**Table 2.3:** Number of Water Bottles Sold in October 2011 at Gettysburg College.

Dining Location	Water Bottles Sold in October
Bullet Hole	6649
Commons	542
The Dive	2626
Ike's	824
<b>TOTAL</b>	<b>10641</b>



**Figure 2.4:** Sign Used in Water Bottle Study.

## Composting and Donation

Dining Services also eliminates waste by composting plant-based matter for the campus garden. However, as this program is dependent on student volunteers, it is less than ideal. In 2010, the program only composted approximately one ton of pre-consumer food waste (M. Ranii, personal communication, February 20, 2012). Gettysburg College receives full credit from STARS for *Pre-Consumer Food Waste Composting* due to this practice (STARS, 2011; G. Brautigam, personal communication, November 6, 2011). Waste is also eliminated through donating uneaten, cooked food to local organizations like Campus Kitchen. Due to these donations the College is given full credit for *Food Donation*, though this only amounts to 0.25 points. The volume of the waste that is left over after these waste decreasing practices is further diminished through the use of a *Pro Pulper System*, which extracts water from kitchen waste and compacts it. This practice has led Servo to eliminate an entire dumpster-full of waste during garbage collection. Specific waste volumes are unavailable, but since the elimination of one dumpster, Dining Services waste, sent to local landfills, has decreased by 60% (“Dining Services,” 2010; G. Brautigam, personal communication, October 6, 2011). Gettysburg College receives no credit for *Post-Consumer Food Waste Composting* due to the College’s lack of composting appliances that can cook non-plant food scraps into usable compost.

## Recycling

All food service locations on the Gettysburg College campus use disposable napkins made from post-consumer recycled material from SCA Tissue North America (2011), which Gettysburg College Dining Services recognizes as one of the most environmentally friendly companies in the world. For instance, SCA partners with multiple third party certifications to assure customers that their environmental claims are sincere (SCA Tissue North America, 2011). This purchasing choice earns the College 0.25 points in the STARS report (G. Brautigam, personal communication, October 6, 2011). In addition to recycled napkins, a portion of the containers used at other eateries on campus, outside of Servo, like *The Dive*, *Bullet Hole*, and *Ike’s*, are made from recycled materials. For example, the plates are made from sugarcane bagasse and select cutlery is produced from potato starch so that they can biodegrade more easily (Barresi et al., 2011; M. Bishop, personal communication, February 20, 2011). These to-go eateries on campus also receive points from STARS for implementing a reusable mug discount, which encourages students to bring their own mugs for coffee and water. However these establishments lose points by not implementing a reusable take out container program.

## EXEMPLARY INSTITUTIONS

While Gettysburg College is making strides towards sustainability in the food and dining sector, there are other institutions that are much farther ahead when it comes to decreasing waste and increasing sustainability. As seen above, Gettysburg College’s Dining Services ranks rather low in the STARS report. Exemplary institutions in this field are usually those that have perfect or nearly perfect scores. Some of the institutions with high STARS Dining Services rankings are: University of Arkansas (8.25), University of British Columbia (7.81), Pomona College (7.50), Dickinson College (6.56), and American University (6.32) (“STARS Report-Gettysburg College,” 2011). Another institution that has not submitted its STARS Report but which has been determined as exemplary due to their innovative waste reduction programs is Eckerd College. Many institutions, which are specifically known for their sustainability, no longer have trays in their dining halls, decreasing water and food waste (ARAMARK Higher Education, 2008).

At Pomona College, the dining halls have been trayless since August 2009. A food waste audit done in the spring of 2009 found that diners leave an average of 0.27 lbs of food on their plates at the



end of each meal. When the same audit was conducted again that fall, there was a 10% drop in food waste, a reduction solely attributable to trayless dining (Pomona College, 2010). Pomona College also implemented a reusable to-go container program in September of 2009. While their original to-go containers were biodegradable, they still began charging students an extra \$0.50 per container and began offering the reusable container option (Pomona College, 2010). Students are given a free container, which can be exchanged for a clean container once dirtied. A discount for using the reusable style containers is also implemented to give even greater incentive to the program (Pomona College, 2010). Furthermore, the College implements many other waste reducing practices mentioned in the STARS framework, like donating excess food, pre-consumer composting, and post-consumer composting of vegan scraps and biodegradable napkins. Pomona College goes above and beyond STARS ranking by also offering custom sized kits of reusable table settings for campus events that can be checked out by students, staff, and faculty. Pomona College is also the first liberal arts college to earn sustainable seafood certification (Wu, 2011). Their website includes a Sustainability Action Plan, which includes specific goals and objectives for the year 2020 and is open for the public to view ("Objectives for 2020," 2009; Pomona College, 2010).

Similarly to Pomona College, an environmental studies class at American University conducted a dining hall waste study in 2009, which showed that by removing cafeteria trays, food waste per person dropped by 32% (Barnowski et al., 2009). The university estimates that 3,200 meals are served per day; therefore eliminating trays was estimated to save approximately 27,000 lbs, 13.5 tons of food waste per semester. Due to these findings American University eliminated trays in one of their dining halls (Barnowski et al., 2009). The trayless initiative at Dickinson College eliminated trays while keeping all serving stations the same. To minimize congestion during peak hours the school added drink stations throughout the dining area ("STARS Report - Dickinson College," 2011). Lisa Foderaro's New York Times article "Without Cafeteria Trays, Colleges Find Savings," names Skidmore College, a school without STARS rating, as a school that has gone tray-less at all dining halls (Foderaro, 2009). The trayless initiative was introduced when their dining hall underwent a huge renovation in 2006 (Skidmore College Dining Services, 2011). Faculty and students were more open to the concept than before the renovation and easily adapted to the drastic change of eliminating trays due to the number of changes in the new facility. It is often easier to implement changes in dining halls when the entire area is redone or the change is promoted heavily with a new incoming class. Skidmore claims that their program decreases the amount of wasted food and the use of hot water for tray washing (Skidmore Dining Service, 2011).

Eckerd College in Florida, has yet to officially submit a STARS report. Despite this shortcoming, in 2007 Eckerd College was given a grant to introduce their reusable to-go container system. The project idea came from an audit done by an Environmental Studies class in 2004. The grant came from the Environmental Research and Education Foundation (Sustainability at Eckerd College, 2009). The system at Eckerd College uses "EcoClamshells" that replace the standard Styrofoam; Instead, students checkout a clamshell and return it to be cleaned and re-used after they are finished using it. This system decreases the amount of waste that Eckerd College places in landfills (Sustainability at Eckerd College, 2009). They also provide a guide on their website on how to implement a reusable program. These exemplary institutions are making strides in eliminating all forms of waste associated with the food and dining sector through calculated studies and innovative ideas that change behaviors.

## PROPOSED ACTIONS FOR GETTYSBURG COLLEGE

As stated above, exemplary institutions in this area have established reusable “to-go” programs and have converted to being trayless institutions. A reusable to-go program is a closed loop system in that the product can be recycled at the end of its lifespan and cuts down the amount of plastic material being sent to a landfill. In addition these containers are manufactured and shipped less frequently than disposable containers. Therefore, in order to bring Gettysburg College closer to a to-go program, we advise a change in the questions asked by the servers in *The Bullet Hole* and *The Dive*. Our pilot study showed that an effective questions is “Plate or box?” instead of “For here or to go?” A further audit or study by an environmental studies student could be performed to see the effectiveness of other questions. In addition we suggest an increase in signage and awareness about waste and more sustainable “to-go” practices. As we saw an 18% decrease in the use of pizza boxes with our new question and sign, we suggest that the College continues these practices in order to decrease the use of boxes by 20%. As more information is gained and the campus mentality changes, this percentage should increase.

We propose that the College decrease the purchase of Gettysburg-Brand Water Bottles (non-reusable) by the beginning of the 2012-2013 school year. The Recycling Interns for Summer 2012 would be responsible for creating a brief program for the incoming First Year class to increase awareness about waste generated by non-reusable water bottles, as it fits with their job description to increase campus sustainability. In addition, the College should continue to provide reusable water bottles for each student in the incoming class and reiterate the option of using these bottles at on-campus eating establishments. As our water bottle study did not provide conclusive results, we cannot definitively provide the possible percentage of water bottles that would no longer be purchased. We can suggest increased signage in *The Bullet Hole*, *Ikes*, and *The Dive* about the use of reusable water bottles with meal plans as this tactic proved to be helpful in decreasing pizza box waste. Another possible solution to decreasing the amount of water bottles purchased on campus would be to transition from the use of water bottles to the use of large water coolers at campus events instead of single use Gettysburg Water Bottles. During many Gettysburg College events, such as Commencement, water bottles are placed underneath every student and faculty chair. However, most students only take a few sips from their water bottle and discard the rest. Therefore, if the College were to rely on large water tanks and cups rather than individual water bottles, the college could significantly decrease the amount of wasted water bottles at their events (A. Carson, personal communication, March 6, 2012).

Gettysburg College Dining Services is already on their way to improving their STARS rating in the Dining Sector in regards to purchasing local foods and controlling portion size. Other than following the initial suggestions set forth in this plan, purchasing of The Rocket® composting system for Servo, the Gettysburg College Dining Center, could significantly improve the level of sustainability in regards to food waste.. The Rocket® composting system would significantly reduce the College’s food waste as well as reducing the amount of waste sent to local landfills. The Rocket® would be able to convert all of the food waste from the Dining Hall’s pulper, approximately 64 gallons per day (G. Brautigam, personal communication, February 24, 2012). The Rocket® requires additional inputs of yard waste to produce 100% natural compost, which would then be used on campus or sold for profit. Removing food waste means that the College would save on waste disposal costs including transportation off site (Tidy Planet,



2011). The primary dining hall at Gettysburg College, Servo produces approximately 0.24 tons of food waste suitable for the Rocket® (G. Brautigam, personal communication, February 24, 2012). Given current costs to landfill waste, it can be estimated that Servo produces \$20.40 daily to remove its food waste, equating into \$142.80 per month (J. Beauchamp, personal communication, February 24, 2012). However, this number does not include the waste produced by other on campus dining options, the potential cost of yard waste, or the additional savings from reducing campus fertilizer needs, and the potential profits from selling this quality compost. Other institutions, which already make use of the Rocket®, provide excellent examples of its success. A mid-sized model has a 5,000 - 10,000 pound capacity per day, which is regarded as an appropriate model for small institutions concerned with monetary costs and available space (Bonhotal et al., 2011). A study at the University of Arkansas suggests that this model of the rocket can take the 2,800 gallons of food waste each week and convert it into 3.5 cubic yards of compost. Over the lifespan of the appliance 1.1 million gallons of waste are diverted from landfills and avoids 80 metric tons of CO2 emissions (Bhattacharya et al., 2009). This mid-sized model costs roughly \$46,000 not including installation and training (G. Soto, personal communication, November 21, 2011). To improve campus sustainability, Dining Services should obtain the budget to purchase the Rocket® within the next 5 years; payments could be set aside each year to account for the vast cost.

As the exemplary institutions mentioned above have shown, going trayless can have monumental savings for colleges. These savings include decreased food waste, decreased use of water for dishes, and ultimately monetary savings as less food will need to be purchased. Trayless dining, an estimated \$75,000 endeavor at Gettysburg College, and implementing a reusable to-go program would involve completely restructuring the dish return area of the dining hall and adding a washing station in The Bullet Hole for container washing. We suggest that if these new systems are not currently possible that they are implemented when future renovations or reconstructions occur. As the Skidmore College example shows, these initiatives also require members of the Gettysburg College community to wrap their minds around a drastically new idea, which will be easier amidst an entirely new renovation.

To achieve these goals, an increased level of communication between Dining Services and the Gettysburg College Environmental Studies department is necessary. In doing so students can likely provide free and valid studies on the proposed changes within the dining sector. These studies could range from tracking the sustainability of small changes to conducting a yearly waste assessment of an entire eatery. In doing this, Dining Services would have intrinsically valuable data on their practices and decisions. As members of Dining Services confirm that they value studies that are based on statistics, this change could help make important decisions based on real data.

### Summary of Proposed Actions

- Decrease sales of non-reusable to-go items at Gettysburg College
- Purchase The Rocket® by 2016
- Implement trayless dining and reusable to-go containers during the next large dining renovation or reconstruction
- Increase communication between the Dining Services and the Environmental Studies Department

## CHALLENGES

When compared to other sectors and departments at Gettysburg College, Dining Services is an area where many sustainable practices are already substantially underway. With the implementation of the suggested goals, this sector can continue to improve its level of sustainability; however, some challenges need to be overcome during this process. The main challenges to reducing waste and changing practices with the dining centers are: increasing communication efforts between students interested in research and Dining Services, generating acceptance and cooperation of the Gettysburg College community, working within budget constraints to afford projects, and creating innovative ways in which to work within spatial constraints that limit the possibilities of change without renovation.

The first challenge is making sure that sustainability decisions are data-driven. Students can help here. Dining Services and students have not taken full advantage of the mutual benefits that could emerge from a relationship in which both parties work together that could create valuable research experience for students as well as substantive data for Dining Services. Although changes in actions relating to sustainability are often obvious and noticed, many of the changes within the Dining Service sector have not been quantified. If Gettysburg College is to move toward a more sustainable dining sector, assumptions of positive change will not be enough but rather Gettysburg College needs to track and measure changes and impact. Fortunately for Gettysburg College, students are available to collect data, analyze data, and then produce reports that could substantiate the efforts Dining Services is making. Although it stands to reason that the majority of these students may come from the Environmental Studies Department, students of any department might be willing to conduct this research. Therefore, the current challenge is in communicating to these students that these projects exist and for the students to communicate with Dining Services that they are willing to do the work.

The second challenge to eliminating excess waste in the dining sector is trying to change the behavior of those using the dining locations around campus while still keeping all other factors constant. Many sustainability initiatives in the food service industry require a decrease in ease for consumers and therefore are often opposed. As stated in the Exemplary Institutions section, students more readily accept the transition to trayless dining once the surrounding infrastructure also changes significantly. However, Gettysburg College cannot afford to change the infrastructure and therefore must attempt to change behavior without the help of the other physical changes. Although positioning educational signs and posing alternative questions may be the answer to changing some behaviors on campus as was evident through the experiment at the Bullet Hole, further steps need to be taken to change attitudes towards other change in dining practices. Raising awareness about food related waste on campus, via programs for incoming classes, is one way that Gettysburg College can try to create a more sustainable mentality on campus.

Another barrier to decreasing waste within the dining centers is the limited spatial capacity within the Servo and Bullet Hole. This limited space means that small changes may put an even larger stress on the space than already exists. The solution to this challenge is not easy since changing the function of a space costs both time and money that Gettysburg College cannot afford.

Finally, the challenge that impedes many of the goals in this section is the limited financing opportunities available for these projects. Without a concrete promise for a return on a purchase, Gettysburg College may not be able to justify making a purchase that would decrease food waste and, ultimately, the campus' environmental footprint. These projects are also often very costly and must be worked into the budget over a number of years. Therefore, this challenge may be overcome if funds are allocated to cover the cost of these projects.

# Excess Waste in the Dining Sector

## Appendix

### PIZZA BOX STUDY

Difference between Day 1 and Day 2 =  $\chi^2(1, N = 74) = 1.704, p = .192$

Difference between Day 1 and Day 3 =  $\chi^2(1, N = 76) = 5.216, p = .022$

Difference between Day 2 and Day 3 =  $\chi^2(1, N = 74) = .889, p = .346$

### WATER BOTTLE STUDY

There was not a significant effect of signage on number of bottles purchased per transaction for the 2 conditions [ $F(1, 26) = .262, p=.613$ ].

# Campus Green Space

Catherine Leech and Christian Neumann

## BACKGROUND

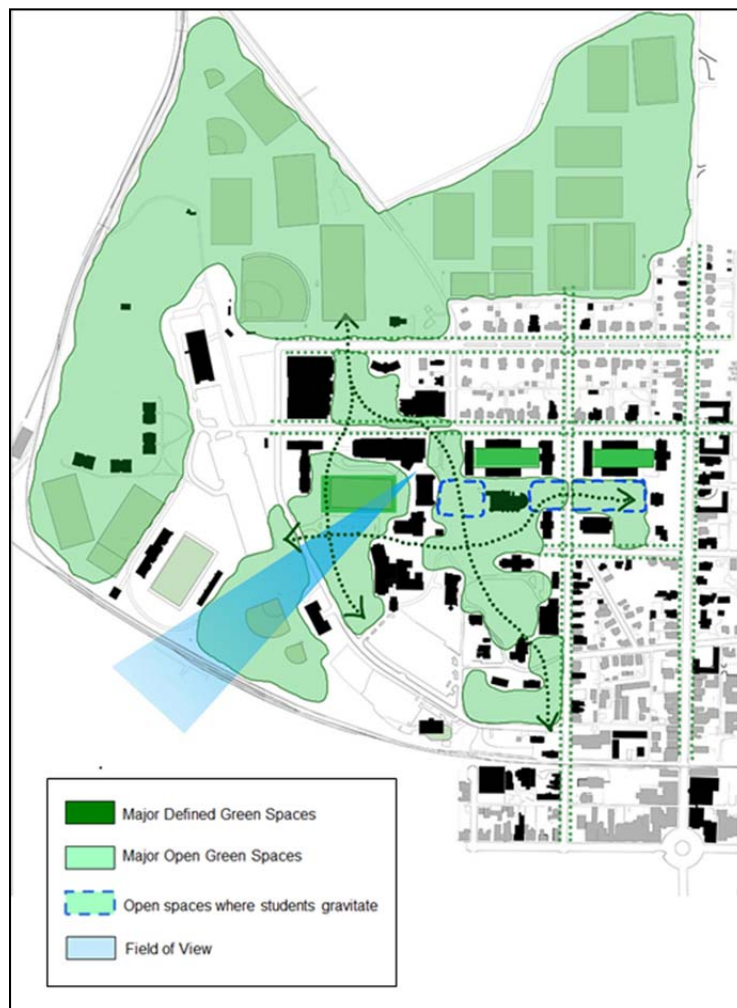
A college campus should promote an environment that facilitates campus functions and outdoor interactions; and large green spaces inherently allow such engagements to occur (Griffith, 1994). Open space provides students with the absence of development, which increases the campus's value (Irwin, 2002). This increase in value is seen both aesthetically and from a quality of life standpoint. Since World War II, enrollment at colleges and universities has increased, and attention has shifted from aesthetic to technological innovation (Griffith, 1994). With the practical additions of extensive parking lots and roadways, open space has become a limited and often overlooked resource. Even with these changes, it is important to keep large green spaces connected to one another in order to maintain a cohesive campus that is conducive to recreation and relaxation (Rubinstein, 1997). The campus master plan should account for the presence of connected green space to demonstrate the administration's commitment to such an important issue.

Studies have shown that as population density increases, as is often the case with institutions of higher education, the benefits of green space increase dramatically (Fuller et al., 2007). Exposure to green space has been shown to have restorative effects, which reduce stress while enhancing satisfaction, attachment and responsibility (Groenewegen et al., 2006). In urban areas, biological diversity within green spaces has been shown to have a direct relationship with positive psychological benefits (Barbosa et al., 2007). As such, users of these areas are happier when green space is managed to maximize biodiversity (Fuller et al., 2007). The intangible psychological benefits reaped by students and faculty alike must often be weighed against the more tangible benefits of converting open areas to infrastructure, such as increased parking and teaching space.

Campus green space can have an important impact on a student's quality of life. A study conducted by McFarland et al. (2008) showed a statistically significant relationship between green space use and undergraduate happiness. Those students that are "high users" of green space have a higher quality of life than "low users," regardless of other factors, namely ethnicity or gender. The results of this study suggest that the quality and availability of campus green spaces could be instrumental in a high student retention rate, especially amongst first years (McFarland et al., 2008). The proportion of green space has even been linked to greater health in the UK (Mitchell and Popham, 2003). Simply viewing green space from within a building can decrease stress and promote restoration of mental fatigue (Ulrich, 1984). Therefore green space becomes an almost tangible benefit, attracting and retaining students, in addition to the psychological benefits.

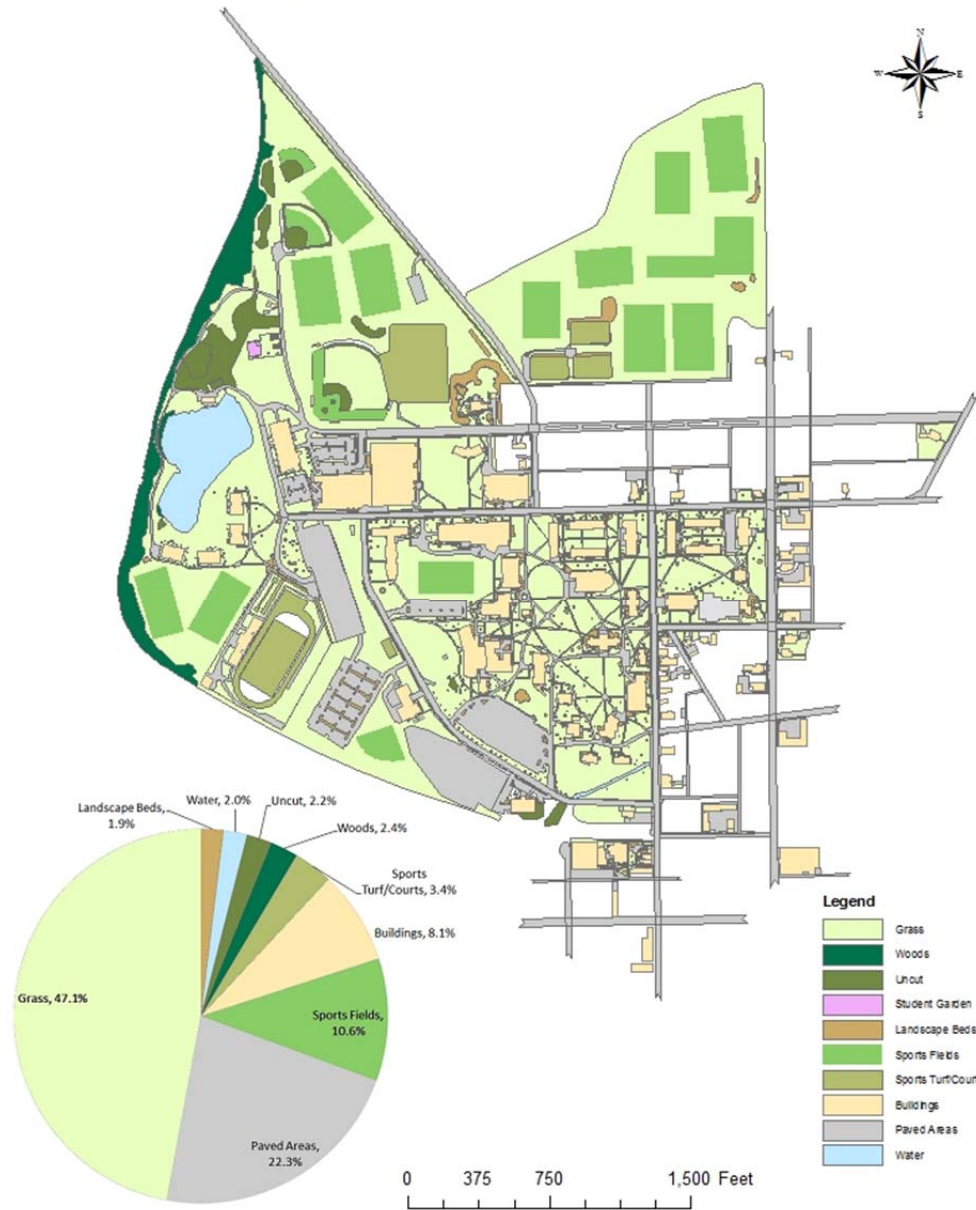
## STATE OF THE ISSUE AT GETTYSBURG COLLEGE

In 2011, Gettysburg College was ranked the 23rd most beautiful campus in the United States by The Best Colleges, which cites campus beauty as one of the most important factors in how students perceive their college experience (“The 50 Most Amazing College Campuses”, 2011). While Gettysburg has many beautiful buildings, the campus green space strongly contributes to the beauty of the Gettysburg College campus (Figure 3.1). With a 220-acre campus just blocks away from downtown Gettysburg, the College boasts wide open greens in the center of campus (Figure 3.2).



**Figure 3.1:** Campus Green Space, adapted from the Gettysburg College 2008 Master Plan.

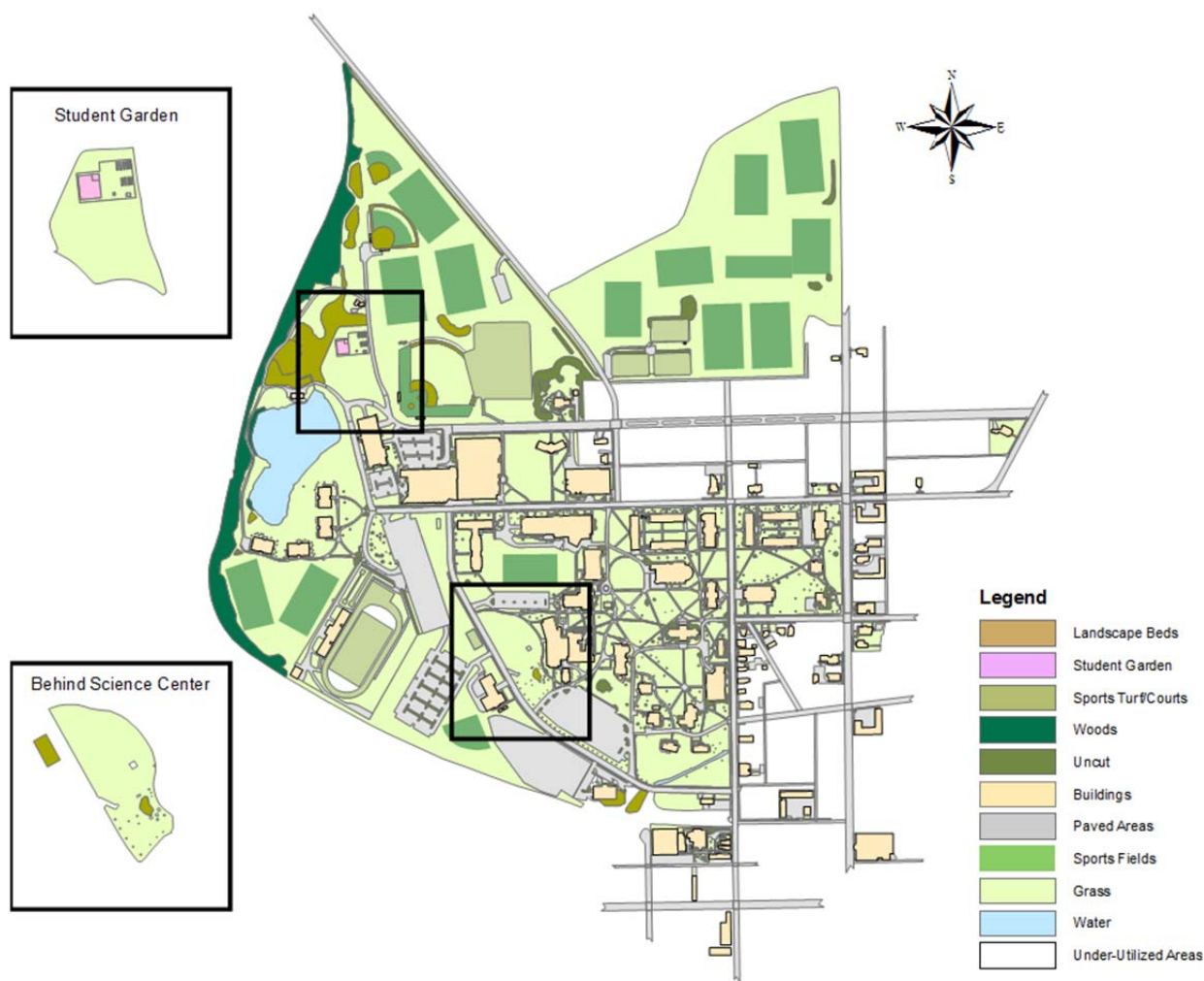
## Campus Land Use and Land Cover



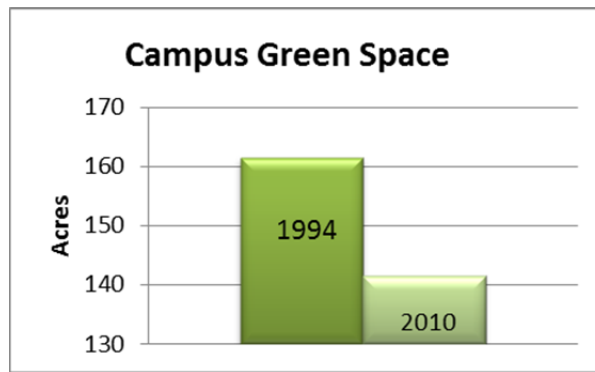
**Figure 3.2:** Land Use and Land Cover on Gettysburg College's campus in 2011.



These large open green spaces, or quadrangles get a great deal of use by students, especially on sunny days (Gettysburg College Master Plan, 2008) (Figure 3.1). However, many areas exist outside of the most popular quadrangles, leading to the assumption that these regions are not utilized to their fullest potential (Figure 3.3). As the College has constructed buildings over the past sixteen years, more of these green spaces have come into use such as the areas around Quarry and the Science Center, but the overall green space on campus has decreased by 12.4% (Figure 3.4).

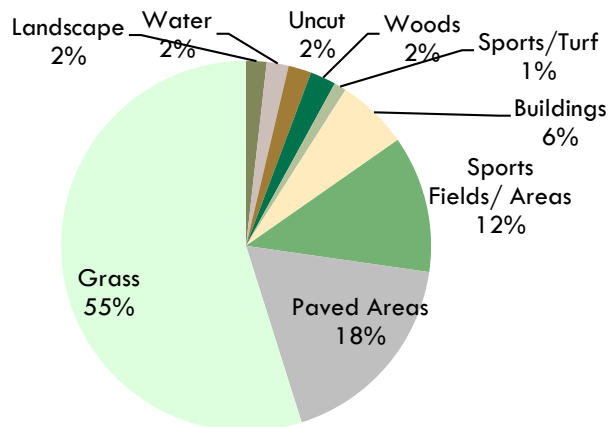


**Figure 3.3:** Under-utilized Areas on Gettysburg College's Campus.



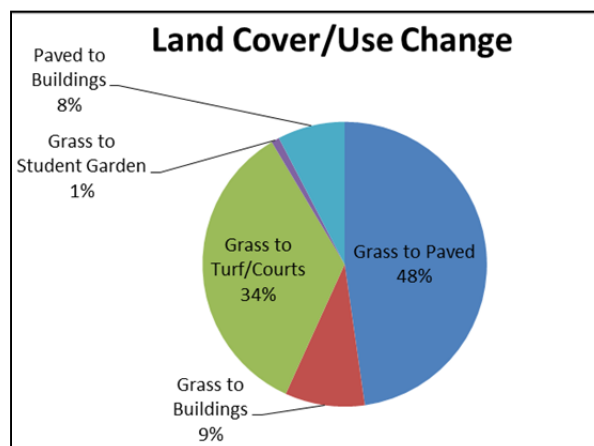
**Figure 3.4:** Acres of Green Space on Gettysburg College's Campus.

In 1994, the majority of campus was classified as grass, followed by paved areas and sports fields (Figure 3.5). All of these areas underwent significant changes (Figure 3.6). This change in green space observed between 1994 and 2011 was largely due to addition of parking lots and other paved areas, followed closely by the renovation of Clark Field and Shirk Field from grass to turf (Figure 3.2, Figure 3.6).



**Figure 3.5:** Percent Land Use and Land Cover in 1994 at Gettysburg College.

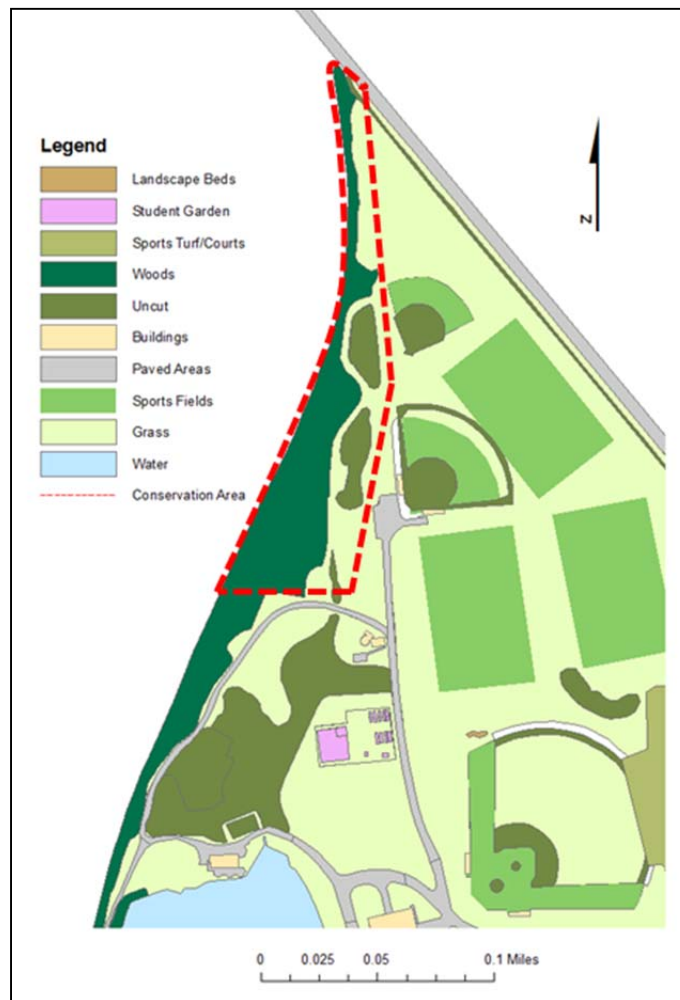




**Figure 3.6:** Percent of Change in Land Use and Land Cover for Each Change Class from 1994 to 2011 at Gettysburg College. .

Although the campus green space has decreased, the College attempts to adhere to the requirements for sustainable grounds keeping laid out by AASHE in the STARS report, which includes the utilization of integrated pest management through a super-colony of Purple Martins by Quarry Lake, providing diversified land cover types to create habitat for wildlife, and setting aside approximately four acres for conservation purposes (Figure 3.7) (Gettysburg STARS, 2011; J. Beauchamp, personal communication, December 7, 2011). This conservation area is located northwest of the observatory (Figure 3.7). The acres were set aside, in large part, to achieve gold LEED certification for the Center for Athletics, Recreation, and Fitness (J. Beauchamp, personal communication, December 7, 2011).

Additionally, there has been a 65% reduction in annual planting since the term of President Wills, the College's previous president (J. Beauchamp, personal communication, November 21, 2011). Fall annual plantings have been cut altogether, and fewer annual plants are placed in beds during the spring. Perennial plants are preferred because they require less attention from the grounds crew and do not need to be replanted every year (Hubbell and Welsh, 1997). The College will continue to plant some annual plants each year for aesthetic purposes as perennial plants do not give enough color all year long; however, much of the new landscaping on campus, such as the mulch beds outside of the Center for Athletics, Fitness, and Recreation, use solely local perennial plants. The majority of tree species used in landscaping are native, though some foreign ornamental species are used (J. Beauchamp, personal communication, November 21, 2011).

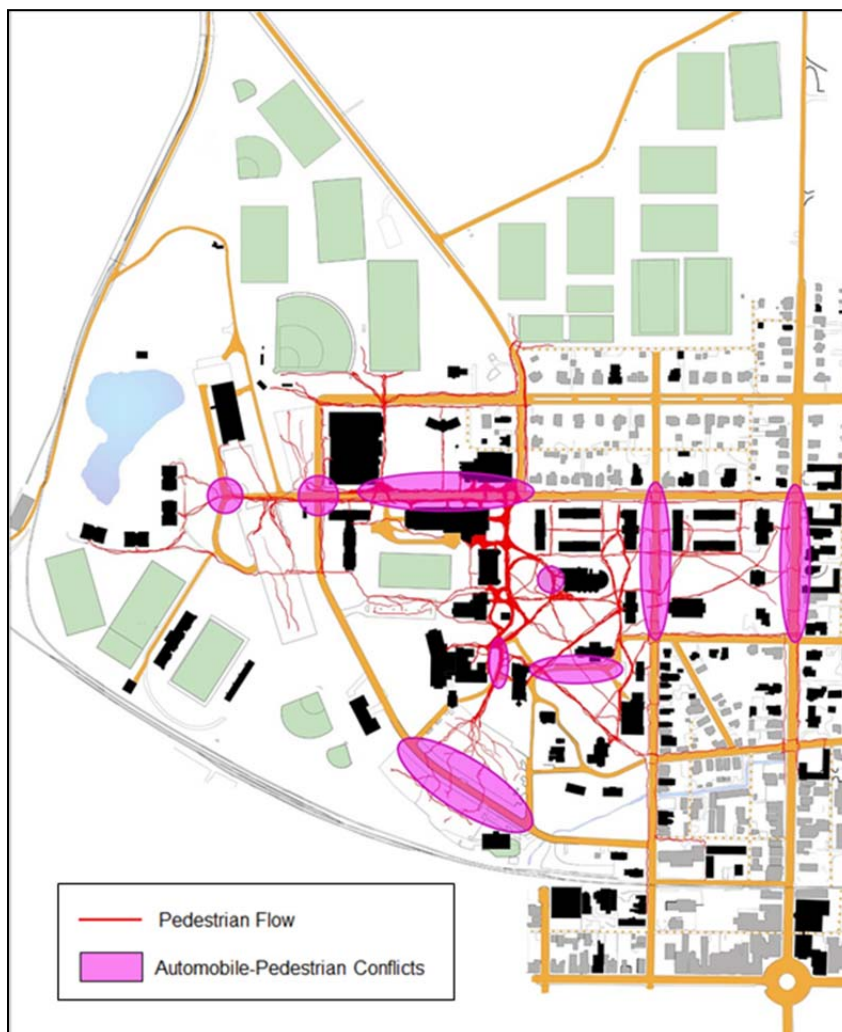


**Figure 3.7:** Designated conservation area as of 2011 at Gettysburg College.

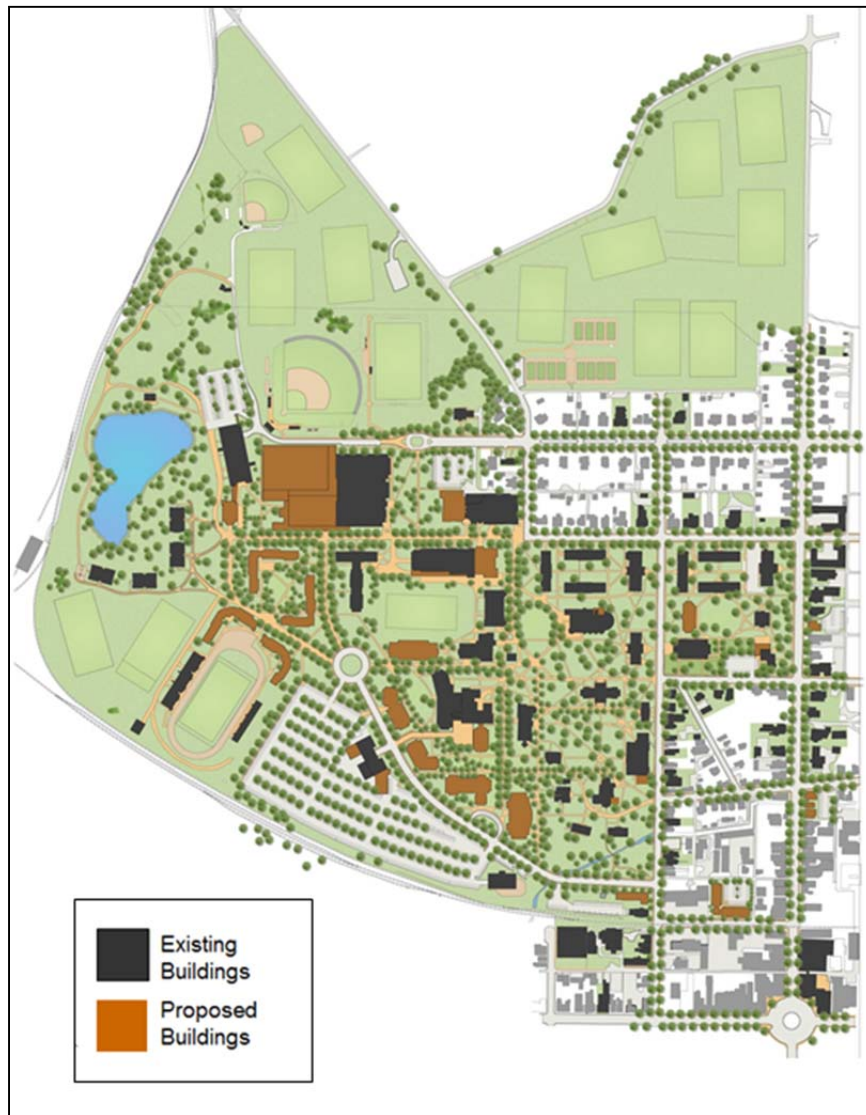
Another innovative feature of Gettysburg College is the student-run organic garden. In Fall 2005, Freya Gibbon started the Painted Turtle Farm as part of her senior project in the Environmental Studies Department (Painted Turtle Farm, 2010). The garden is maintained by Professors R. Wilson and J. Zeman as well as student interns and volunteers. It used for a variety of reasons such as: Providing organic herbs and produce grown for the Dining Center and local food banks, fostering educational programs for elementary school students during the summer months, acting as, providing experiential learning to members of the Environmental Studies Department, and offering a location for campus volunteer events such as GIV Day and Emily Silverstein's Day of Service. The Painted Turtle Farm is part of a composting program with Dining Services; students transport organic waste from the Dining Hall to the garden site as free composting material (Painted Turtle Farm, 2010). Though associated loosely with the Environmental Studies Department, no undergraduate educational programs tied to the garden exist at this time (S. Tower, personal communication, December 1, 2011).

In 2008 the Gettysburg College Master Plan identified both the strengths and weakness of the campus layout. One key concern revolves around the conflict between automobiles and pedestrians (Ayers Saint Gross, 2008). Automobile-pedestrian conflicts were studied in an attempt to minimize the risk of accidents on campus (Figure 3.8). One of the proposed solutions involved the introduction of a traffic circle near Stadium Lot, making Lincoln Avenue a pedestrian-only area (Figure 3.9). The plan also

proposes a new building be constructed in place of Master's Lot, reducing some of the aforementioned automobile-pedestrian conflicts (Figure 3.8). However, due to the current economic climate, Gettysburg College has no immediate plans for building construction (R. Platt, personal communication, April 3, 2012). This proposal would not only help to minimize automobile-pedestrian conflicts by eliminating vehicles from a central part of campus but would also help mitigate the fragmentation of green space.



**Figure 3.8:** Automobile-Pedestrian Conflicts, Adapted from the Gettysburg College 2008 Master Plan.



**Figure 3.9:** Proposed Campus Expansion, Adapted from the Gettysburg College 2008 Master Plan.

Also identified in the Master Plan, were areas of green space that saw a great deal of use by students (Figure 3.1). The updated 2010 plan, however, does not mention green space and leaves out these provisions (Gettysburg College Board of Trustees, 2010). In the 2010 plan, green space would be reduced by the proposed addition of residence halls and academic buildings (Figure 3.9). Portions of the new plan that directly relate to campus green space, include creating a new, larger parking lot on the west end of campus, converting Stadium Lot to green space, and constructing a new residence hall. Gettysburg College has placed a significant level of importance on the topic of green space in previous years and must continue to do so to truly make meaningful and positive changes to the campus. One way in which Gettysburg College can continue to make these positive changes is to continually research innovative ways in which to create green space.

## EXEMPLARY INSTITUTIONS

Many institutions, including Gettysburg College, do not have an explicit green space action plan in their campus master plans. Researching the actions taken by peer institutions and determining what aspects could be adopted is in Gettysburg College's best interest, regardless of the peer institutions' size

or location, to better the College's current plan for green space. By investigating the successes of other institutions, a good baseline for action can be developed with a higher degree of confidence. The institutions mentioned below represent a wide range of campus sizes, enrollments, endowments, and geographic locations. These institutions were chosen by first examining two comprehensive ranking systems: the AASHE STARS report and Claremont McKenna's Sustainability Reporting of the Top 50 Liberal Arts Colleges. Institutions with a high overall ranking that also scored well in areas concerning green space (such as landscaping, open spaces, etc.) were investigated. Within this group of highly ranked colleges and universities, institutions often were singled out as leaders in the field and their peer-identified leaders were investigated. These institutions stood out because of their accomplishments with regard to Landscape, Infrastructure, and Environmental Art.

## Landscape

In 2007, Harvey Mudd College decided to rethink its landscaping process which resulted in a significant increase in overall water efficiency. Specifically, the irrigation system was identified as a major contributor to water inefficiency, which was estimated at less than 50% of the total possible efficiency (Morhardt et al., 2010). Subsequent changes to drip irrigation have led to water savings equivalent to 8 million gallons annually. This change enabled Harvey Mudd College to maintain its grounds to the expected standard, but in a much more efficient manner (Morhardt et al., 2010). This irrigation project would not have originated without an internal review of landscape policy. The investigation and subsequent actions of this college are an excellent example of how self-initiated landscape policy review can result in significant changes.

Florida State University employs extensive use of xeriscape landscaping which involves the selection of native drought tolerant plants and canopy cover trees to reduce the amount of irrigation needed on campus (Florida State University, 2008). In addition to this xeriscape landscaping, a specific policy involving the use of long release fertilizers for more efficient root uptake was implemented. Lastly, FSU has worked with the Florida Department of Environmental Protection to eliminate any species listed as Noxious Weeds/Invasive Vegetation (Florida State University, 2008). While Gettysburg College does not employ extensive irrigation, the idea of xeriscape landscaping is applicable because of the use of native plants as well as collecting rainwater discharge from the top of the Center to an underground cistern, and overflows into a basin recharging the local aquifer. The water from the cistern is then used for irrigation, especially during times of drought, reducing the use of campus potable water for irrigation purposes ("STARS Report-Gettysburg College", 2011). Over the past decade, FSU has created a campus which thrives in an arid environment reducing the upkeep for groundskeepers. As demonstrated by many of these exemplary institutions, ecologically responsible choices often go hand-in-hand with fiscally responsible choices.

Seattle University uses landscaping as a means of flood deterrence ("Rain garden", 2008). Due to the large amount of impermeable surfaces and frequent rainfall in Seattle, Washington, the school experiences a great deal of flooding. In order to mitigate this inundation, the facilities department installed a rain garden on camp rather than the stormwater retention tanks typically used during flooding. Rain gardens are easier to install than stormwater retention tanks, because it is more difficult to dig up a region that is wide enough for a drainage system as opposed to the deeper, narrower pit needed for rain gardens. Drainage systems are also more difficult to install on college campuses due to the mature trees and existing infrastructure which are likely to restrict digging a larger area. Seattle



University's rain garden is large enough to retain 25 years' worth of rainfall water, reducing flooding as well as runoff ("Rain garden", 2008). What are the ecological benefits to rain gardens? Also, why would Gettysburg want to use one? Reduce flooding? Reduce the need for watering? P.S. Are rain gardens landscape or infrastructure?

One of the most intensive landscaping plans is that of Georgia Institute of Technology. The focus on this type of project is not on water efficiency or irrigation but rather on the emotional and physical benefits of conscientious landscaping. The campus has set a goal for itself of creating 55% tree canopy and 22% woodlands coverage around the campus (GIT, 2006). The trees are to be planted around paved areas and along the perimeter of campus. Although this goal requires extensive plantings, the administration feels that it is important for the student body to experience having the emotional and physical benefits of green space. In addition, the increase in tree plantings will require less maintenance by the grounds crew than would planting beds or grasses, thus providing a two-fold benefit. Dickinson College has taken another approach to increasing the emotional and physical benefits of green space. Dickinson College has a 180 acre off-campus farm (Dickinson College Sustainability, 2011). The farm is used as an outdoor classroom for research as well as a resource for community education in sustainable agriculture, renewable energy, and other sustainable fields. In 2007, Dickinson College was awarded a \$93,000 Composting Infrastructure Grant by the Department of Environmental Protection, which enabled them to increase the amount of composted waste by approximately 91,000 pounds per year (Dickinson College, 2007). Additionally, all students are taught about composting in the dining center and residence halls (Dickinson College Sustainability, 2011; Thompson, 2011).

The educational, financial, and ecological benefits of choosing environmentally focused landscape designs can not only be appreciated by the institution, but also the students, staff, and visitors. By using other institutions as inspiration for progressive landscaping techniques, Gettysburg College could eventually become an exemplary institution itself.

## Infrastructure

The University of Pennsylvania has decisively tied green space to infrastructure by implementing a green-roofing policy (University of Pennsylvania [UPENN], 2011). This commitment enables UPENN to accomplish multiple goals: Cool the buildings by reducing the absorption of solar energy and thereby reducing energy costs, prolong the roof's lifespan, and add 20% more green space to the campus. While green roofs may not be as beneficial as an open field or as attractive as a well maintained campus green, they provide a unique opportunity to mitigate some of the problems associated with necessary campus infrastructure. Another benefit to these roofs is the large decrease in runoff going into the sewer system. A large portion of this rainwater will be stored on the roof itself, reducing the runoff footprint of the college.

Florida State University is in the process of relocating parking lots to the perimeter of campus (Florida State University, 2008). This will enable the university to reduce the amount of traffic in the interior of campus to accomplish their goal of largely eliminating automobile-pedestrian conflict. They acknowledge that future development should preserve and highlight the natural resources surrounding campus. In order to accomplish this, sufficient funds must be given to facilities and their landscape management budget increased (Florida State University, 2008).

## Environmental Art

Environmental art is another way in which colleges have begun to make connections between positive psychological benefits and campus aesthetics. Middlebury College in Vermont hosted well-known artist Patrick Dougherty in September 2011 (Middlebury College, 2011). Mr. Dougherty planned and completed a sculpture made entirely from locally available materials, namely saplings harvested from the surrounding area. These sculptures are meant to resemble both abstract art and natural systems such as birds' nests and underbrush. Critical to the process is Dougherty's ability to gain public support and generate enthusiasm. To accomplish this, Dougherty used volunteers from the college's Studio Art department, Facilities Services, Office of Public Safety, general student population and students from a local secondary school. Together these people worked to fuse a part of their campus to an artistic goal. The process was successful in making at least a small portion of their campus green space interdisciplinary (Middlebury College, 2011).

Another leader in environmental art is Stanford University. Gail Wight and Terry Berlier, both art professors at Stanford, were the directors for the conference Rising Tide: The Arts of Ecological Ethics that explored "the intersection of art, ethics and the environment" (Stanford School of Humanities and Sciences, 2009). The conference lasted three days and helped to show the link between the green movement and aesthetics through panels, film screenings, and exhibitions. Art provides an effective bridge between community and the surrounding environment as it can accentuate the beauty that is already shown in a surrounding area. By having a conference of this magnitude, with well-known speakers and a variety of artists, significant awareness can be generated. These conferences can be held outside with environmental sculptures in any area to bring people together and appreciate the beauty of surrounding landscape.

## PROPOSED ACTIONS

Gettysburg College should work to improve green space as part of its master plan and increase the use of low-use spaces identified in the 2008 plan (Ayers Saint Gross, 2008). Particular attention should be given to green landscape management, the student garden, the conversion of Master's Lot into green space, and the addition of a social space behind the Science Center to improve the campus' green space and thus the mindset of each of its students, faculty, staff, and visitors.

While overall annual planting has been reduced by 65%, it would be beneficial to stop planting annuals entirely and instead incorporate more native perennials into the landscape. Halting the planting of annuals would be more sustainable and would also reduce landscaping costs associated with planting flowers in the early spring and again in the early summer (Hubbell and Welsh, 1997; J. Beauchamp, personal communication, 22 November 2011). It is not likely that the College will completely stop planting annuals, but doing so would be more cost-effective and more sustainable.

The area around the Painted Turtle Farm is rarely used by students outside of the Environmental Studies Department but has the potential to be used as both a functional and educational environment. . . Other institutions such as Dickinson College use their gardens as a living laboratory, and while the Painted Turtle Farm is small, it could still function as a space for student research or a course unit on composting or farming. These courses would attract more students to this low-use area and would also provide an educational component to the green space on campus.

As Gettysburg College has no current plans for Master's Lot should be converted into building space, the lot should instead be converted into green space until funds are acquired for development.

The new open space would connect Memorial Field to the green space behind the Science Center. This project would be long-term, but it would give students a more open and connected green space on which they could play pick-up sports games and socialize between classes. It would also reduce potential automobile-pedestrian conflicts as many students cut through Master's Lot on their way to and from buildings on the southern end of campus. Additionally, without the parking spots in Master's Lot, Stadium West Lot would no longer be underutilized.

An outdoor social space with a garden, benches, and artwork should be added in the green area behind the Science Center. This space could be used for both formal and informal student gatherings, and if large enough, could serve as an outdoor classroom in fair weather. Environmental art could serve to unify the area, and bring in an interdisciplinary aspect. One of Sam Van Aken's Trees of 40 Fruits, single trees composed of carefully grafted fruit tree branches, could be purchased using money procured through grants (J. Ryan, personal communication, 7 December 2011) (Figure . This tree, along with a sculpture by Dr. Mark Warwick, Chairperson and Associate Professor of Gettysburg College's Art and Art History Department, will attract students and faculty alike to an area that is largely unused. This landscaping project could be a potential senior capstone for a student interested in environmental studies and art. The project likely would be sub-contracted as to not overwhelm Facilities Services with extra work.



**Figure 3.10:** Sam Van Aken's Trees of 40 Fruits. This photo was taken by Bill Orcutt and was retrieved from: <http://artasiapacific.com/Magazine/73/TheUnEdenicStateOfCopyright>.

In addition to an art tree, a rain garden could be planted with low-maintenance vegetation. As defined by the Pennsylvania Department of Environmental Protection's Stormwater Best Management Practices (2005), Gettysburg's campus is in Zone 5, which is characterized by infrequent inundation and temporarily saturated soils. Plants used in this rain garden should be able to withstand brief inundation during storms and also survive in drought conditions. Pennsylvania DEP recommends a wide variety of plants for this zone, including black-eyed Susan, purple coneflower, and butterflyweed (Pennsylvania Department of Environmental Protection, 2005).



Rain gardens are often used to mitigate flooding, and long-term projects should include the installation in areas prone to flooding such as low-lying areas around Musselman Library. Although a new drainage system was recently completed, a rain garden would increase the aesthetic value of the area in addition to reducing the strain on the drainage system. In the near future, a small rain garden should be installed in the area behind the Science Center as a pilot program. Primarily, it would have aesthetic value, but it would also test the feasibility of installing larger systems in more prominent areas around campus. The rain garden would be functional and could help mitigate runoff from the Science Center into Steven's Run. It also would require little maintenance. Similar to the student garden, a rain garden would also provide an opportunity for professors to use the small system to study the local ecology.

#### Timeline

- May 2012: Catherine Leech and Christian Neumann apply for grant money to purchase a tree from Sam Van Aken. A possible source would be Steve Gimbel's National Science Foundation Grant.
- Summer 2012: Intended deadline from Mark Warwick to display his sculpture behind the Science Center.
- August 2012: Placement of at least 2 benches behind science center by Facilities Services.
- Fall 2012: Environmental Studies Department adds a trip to the garden into courses such as Environmental Issues.
- Fall 2012: An Environmental Studies Capstone student or the Sustainability Committee researches funding opportunities for a rain garden or outdoor social area.
- Spring 2013: An Environmental Studies Capstone student creates a detailed plan for a rain garden or social area.
- Spring 2013: Facilities Services plants a Tree of 40 Fruit behind the Science Center.
- 2025: Convert Master's Lot to green space.

## CHALLENGES

The primary challenge for completing these projects is obtaining funding. The budget for Gettysburg College is limited when it comes to landscaping projects, and recent additions have largely been funded by donations from outside sources (J. Beauchamp, personal communication, 2011). If the small rain garden is to be completed, a donation would likely have to be procured. Because the College is entering a capital campaign, the acquirement of money could be feasible.

Additionally, the scope and projected budget would have to be accurately planned well in advance of any college action. The planning of the budget likely would have to be done by a student as a senior project. While this project provides a great opportunity to incorporate students into campus planning, it also raises the challenge of finding an individual who is interested in combining the ecological feasibility of plant selection with the aesthetic component of combining a sculpture and garden in an accessible and desirable way.

# Community Outreach

Will Boone and Megan Sherman

## BACKGROUND

The Internet has quickly grown to become an important part of everyday life, and consequently, the usability and accessibility of websites are becoming increasingly integral to providing information to the general public (Horton, 2004). Through the World Wide Web, individuals and groups alike are instantaneously connected to countless like-minded parties, encouraging mass communication and organization (Kutner, 2000). Institutions of higher education are utilizing this communication outlet to relay relative information concerning academic, administrative, and student services like sustainability (Thompson et al., 2003). Higher education has taken an integral role in promoting sustainable initiatives and ensuring people have a thorough understanding of the connections between environmental, social, and economic forces which comprise the sustainability movement. This understanding leads to the development of skills that allow people to meet the challenges of sustainability (AASHE, 2011).

As the use of Internet continues to grow so does the use of social media sites, in the past five years alone, the amount of registered users on Facebook, a popular social networking website, has jumped from under 100 million registered users to well above 600 million registered users—and institutions of higher education are taking notice (“The Growth of Social Media”, 2011). For example, Gettysburg College itself has Facebook pages for several facets of the campus community, including both the Environmental Studies Department as well as campus sustainability.

A college’s sustainability website is a statement to potential students, comparable institutions, and other concerned parties that conveys how the institution values sustainability. For these reasons, the following project seeks to explore the effectiveness of the Gettysburg College Sustainability Website in communicating sustainability-related events, news, groups, and initiatives both on and off campus. The effectiveness of websites to communicate ideas depends on their website design, usability, and accessibility (Scott and Jackson, 2002).

Online information can be accessed anytime and anyplace. By introducing hyperlinks with related topics on webpages, one website can potentially provide numerous links to related topics. Furthermore, with the ability to instantly update websites, data will always be up to date and relevant to current events, provided the website is properly managed (Scott and Jackson, 2002). As websites become more dynamic and technologically advanced, website design and purpose has shifted from websites that solely provide factual information to interactive websites that encourage the viewer to explore the full extent of the website while remaining engaged and entertained (Scott and Jackson, 2002).

Institutions of higher education have begun to realize the advantage of displaying their sustainability initiatives through a designated sustainability website. To assist up-and-coming institutions organize their unrecognized but meaningful sustainability efforts in a presentable and accessible fashion, AASHE has posted a document to provide guidance in creating or redesigning an institution’s sustainability website. AASHE recognizes “the key to a successful, user-friendly website is a clear, well-organized, hierarchical navigation system” in which links to information are appropriately organized under relevant sub-headings, with the links to the most pertinent information being featured first (2011).

In addition, headings, sub-headings, and navigational link titles should be as clear as possible, allowing the web browser to navigate the website easily. By encouraging users to explore the institution's sustainability website, institutions will eliminate the attention loss due to navigation frustration and will ensure that interested users interested will be able to freely learn the institution's views and values on sustainability without navigational hindrance. Once navigation has been logically planned out, the institution must ensure that all information presented within the website is easily understood and clearly laid out (AASHE, 2011).

## THE STATE OF THE ISSUE AT GETTYSBURG COLLEGE

Gettysburg College's Sustainability Website was first constructed in 2006 with the help of Katherine Lemanczyk and Paul Fairbanks, the Assistant Director and Associate Director of Web Communication and Electronic Media, respectively. In June 2011, the Recycling Interns of the College, Mary Kate Ranii and Julie Ivers, re-designed and updated the website (M. Ranii, personal communication, October 20, 2011). "Originally, it was just a jumbled mess of information," Mary Kate explained. The primary reason for updating the website was to make the information digestible for individuals despite whether or not they have a thorough background in sustainability. After consulting the AASHE "Best Practices for Designing an Institution's Sustainability Website," Mary Kate and Julie also aimed to create a simple, navigable website in order to avoid people "getting lost" in the website "because once you get lost, you get frustrated, and you leave the website" (M. Ranii, personal communication, October 20, 2011; AASHE, 2012a).

For this project the Gettysburg College Sustainability Website was compared with sustainability websites of 19 other comparable institutions that, after categorization, were separated into three categories: Watch, Like, and Reach schools. A website scorecard was created by the authors to compare the institutions in a quantitative manner. The scorecard assessed the following criteria: (1) ease of finding the sustainability web-page from the college homepage, (2) the content of the website in terms of quality of sustainability-related topics on the website, and (3) the quality of website design. Within each of these criteria, content was rated on how effectively the material was communicated, whether the information presented was extensive and logically located within the website, the presentation of the information (evaluated based on image to text ratio), and if the information was up-to-date. The scores from the three criteria were added to create an institution's final score.

Within the "ease of finding" the webpage criterion, two different tests were used to quantify "ease". The first test quantified "ease" based on the number of clicks it took to access the sustainability website from the institution's homepage (5 points for 1 click, 4 points for 2 clicks, etc.). The second test was based on what position within the search results the sustainability website showed up when "sustainability" was typed into the homepage search engine (5 points if the link was the first result, 4 points if the link was the second result, etc.). For the purposes of scoring the first test, each institution began with 5 total points and one point was subtracted from the total for each click (after the first) needed to find the sustainability website from the college homepage. The scores from these topics were then added to determine the total score of the criterion. The same scoring method was used regarding the homepage's sustainability search engine test. . For example, if the website appeared first when "sustainability" was typed into the homepage search engine, the institution received 5 points for its test score. If it showed up second, the institution received 4 points, etc.

The next criterion measured was “Content” where the quality of sustainability-related topics on the website was scored. Within the “Content” criterion each website was evaluated on the presence or absence of the following topics:

- Does the website have a blog?
- Does the website feature a mission statement?
- Does the website have a definition of sustainability?
- Does the website have a calendar/list of events?
- Does the website have a news page?

The “Content” criterion was also evaluated on the basis whether the website featured:

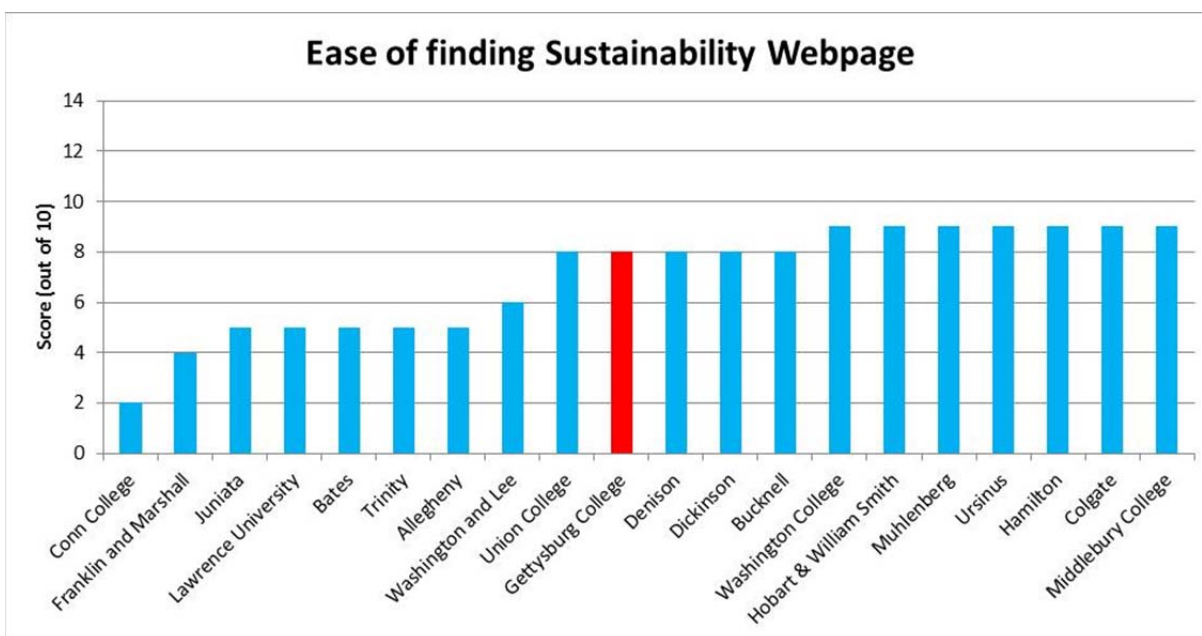
- Sustainability plans/projects for the college?
- Sustainability-related Groups?
- On campus student sustainability initiatives?
- Dining/grounds involvement?
- Faculty resources?
- Student profiles of students active in sustainability efforts?
- Courses and departments that involve sustainability?
- History or background of sustainability/effort/events?
- Carbon neutrality commitment?

Those features found absent were given a score of 0, and those features that were present were given a score between 1 and 5, one being the lowest score and five being the highest score based on was the information effectively communicated, was the provided information extensive and relevant, was the topic in a logical location, was the information up-to-date, and was the visual presentation of the topic appealing (i.e. large image to text ratio).

The list of colleges used in this study was split between the authors of this chapter. Each author rated the institutions assigned to them independently from the other. Scores were then shared between both evaluators to create the data set.

The criterion, “Design,” was evaluated by the following components: if exploration on the website was easy, if the website encouraged exploration, if the website featured videos, and if the website was visually appealing and educational. All topics in the “quality of sustainability-related topics on the website” and “quality of webpage design” criteria were rated from 1-5, with 5 being exemplary and 1 being unsatisfactory.

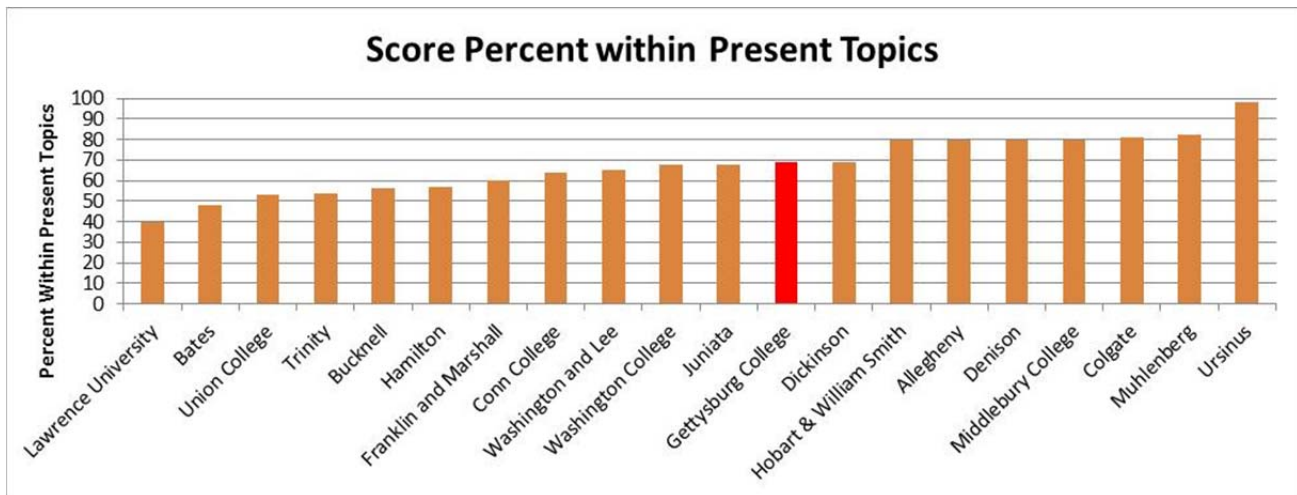
Using the above criteria and scoring systems, twenty institutions including Gettysburg College were evaluated (Community Outreach Appendix: Table A4.1 and Figure A4.1). For the “Ease of Finding” criterion the Gettysburg College Sustainability Website scored slightly below the average of the comparative institutions (Figure 4.1).



**Figure 4.1:** Scores for the “Ease of Finding” the Sustainability Webpage Criterion. These results are for Gettysburg College (red) and 20 other comparable institutions in the Fall of 2011.

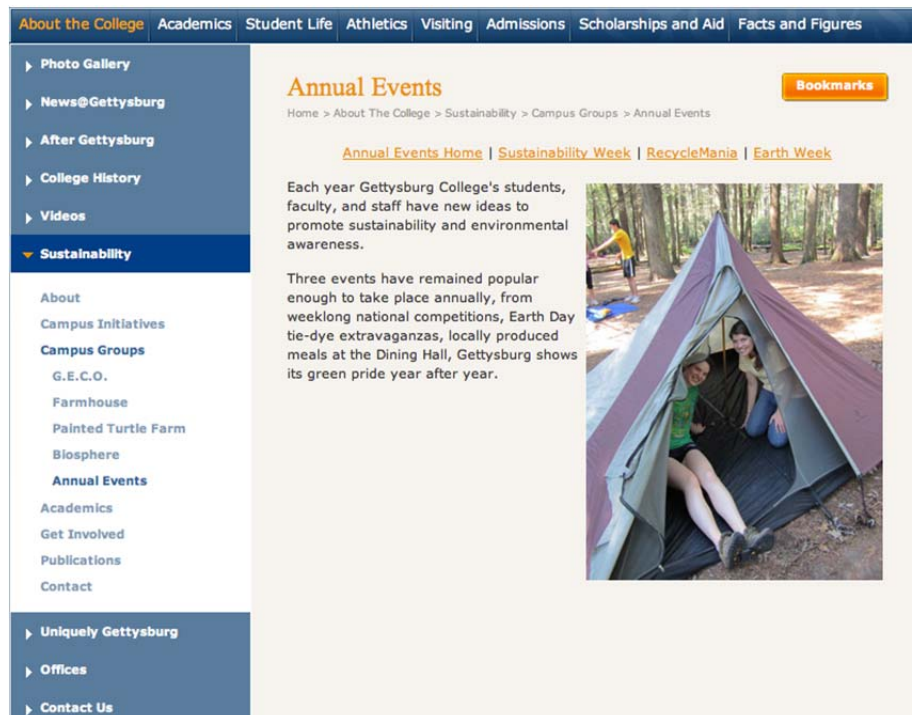
The sustainability page can be accessed after two clicks from the home page (1. About the College → 2. Sustainability), and is the third link found under the search results for “sustainability” on the Gettysburg College search engine. The first link that appears is a link to an Eisenhower Institute article covering a sustainability conference in New Zealand, the second link is a Gettysburg College “stories by tag” page that features a few articles covering sustainability efforts carried out by the college as well as other achievements of the college (Community Outreach Appendix: Table A4.2).

In terms of “Content”, the Gettysburg College webpage included 9 out of the possible 14 sustainability-related topics, including a blog (updated two months ago) (3/5), a calendar/list of events (1/5), sustainability plans/projects for the college (2/5), sustainability-related groups (5/5), on-campus student sustainability initiatives (4/5), dining/grounds involvement (4/5), courses and departments that integrate sustainability (5/5), history or background of sustainability effort and events (2/5), and the American College and University Presidents’ Climate Commitment (5/5) (Community Outreach Appendix: Tables A4.3 and A4.4 and Figure A4.2). Within the topics covered on the webpage, Gettysburg College received a 69% in the quality of sustainability-related topics category (Figure 4.2).



**Figure 4.2:** Scores for the “Content” Criterion of the Sustainability Webpage. These results are for Gettysburg College (red) and 20 other comparable institutions in the Fall of 2011.

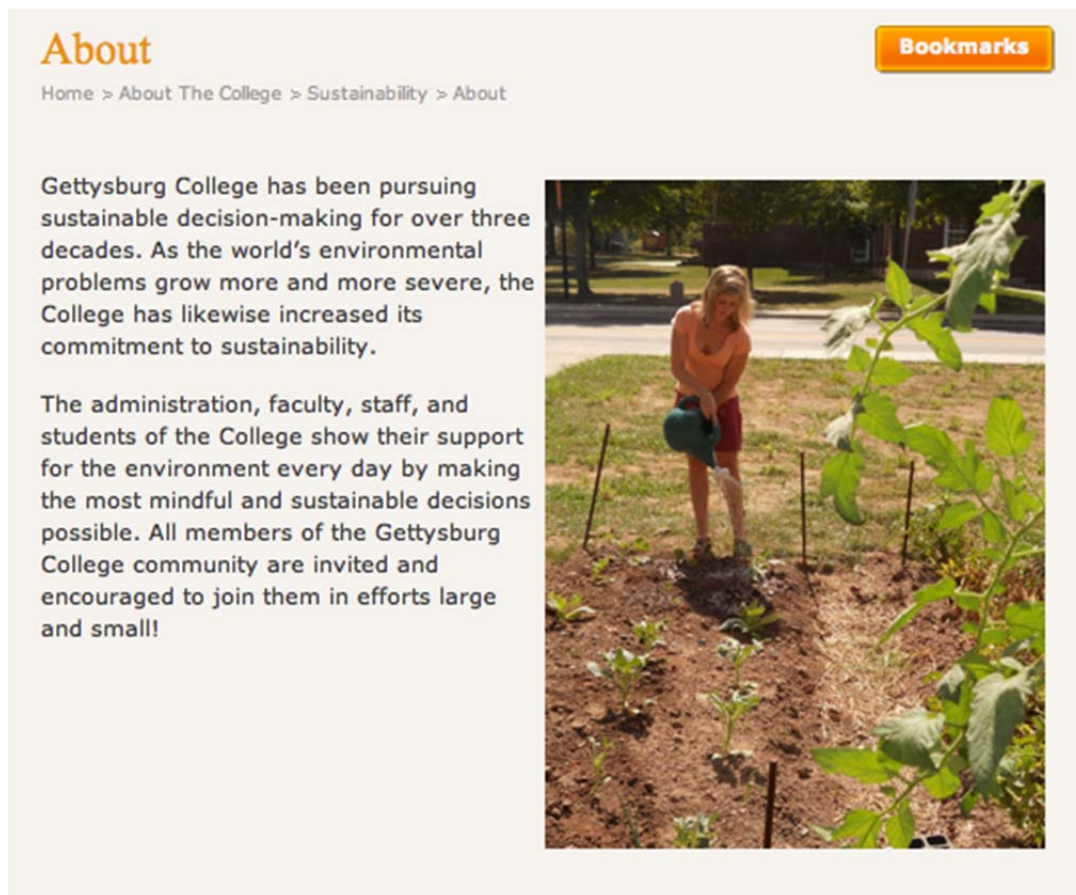
Lack of logical navigation and poor presentation were the two primary problems within the “Content” criteria for Gettysburg College. For example, the annual events page is under the link “campus groups,” there is no information, including dates, on any of the listed events, , and the text is crowded into two paragraphs as opposed to a table or outline format that would more directly inform users about when and what the events are (Figure 4.3).



**Figure 4.3:** Example of Poor Website Placement and Content. The “Annual Events” page serves as an example of illogical location of information and poor image to text ratio on the Gettysburg College Sustainability Website in the Fall of 2011).



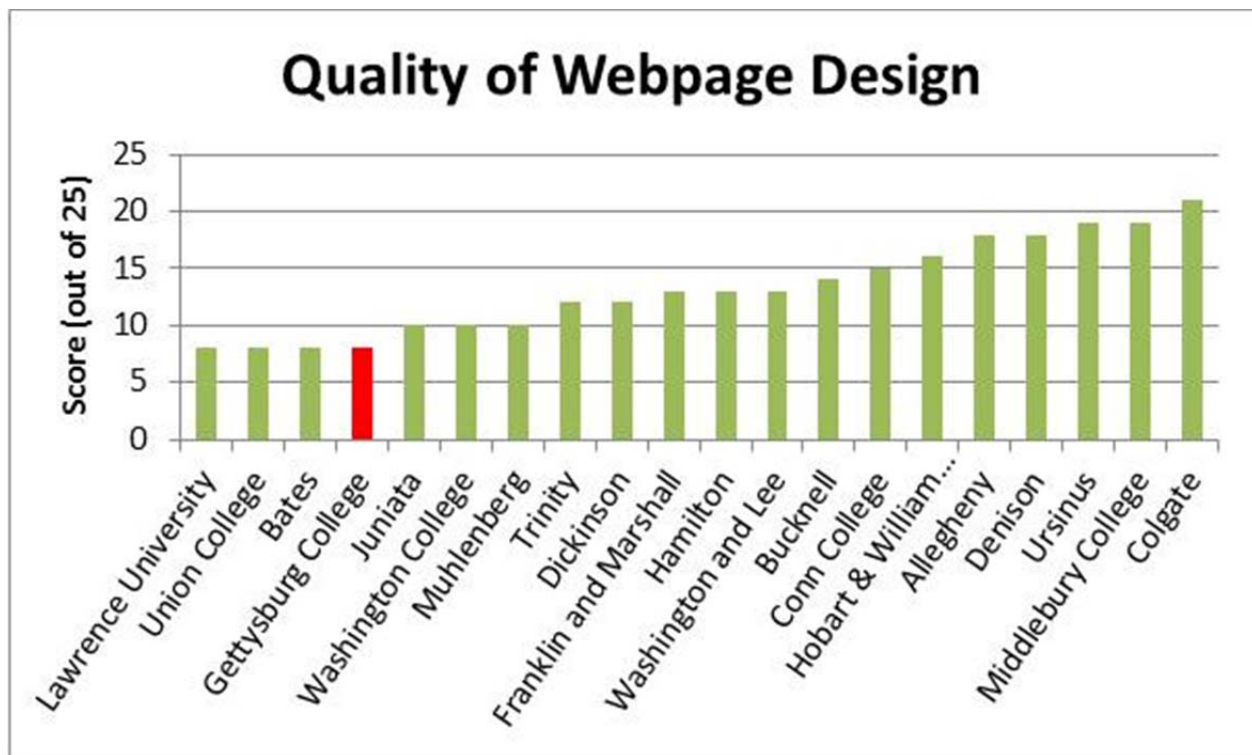
The sustainability plans and projects for the college are spread throughout the sustainability page, making them difficult to find, and the information provided gives no dates or reports of progress. The history and background page for sustainability at Gettysburg College is extremely brief, uninformative, and poorly presented (Figure 4.4).



**Figure 4.4:** Example of Insufficient and Irrelevant Content on a Website. The “About” page serves as an example of insufficient information and irrelevant photographs on the Gettysburg College Sustainability Website in the Fall of 2011.

There was no reference to specific accomplishments of the College, no mention of contributors to the movement on campus or significant dates within the movement, and the photograph had no relevance to the history or background of sustainability efforts at the College but dominated the visual hierarchy of the page, distracting users from the text.

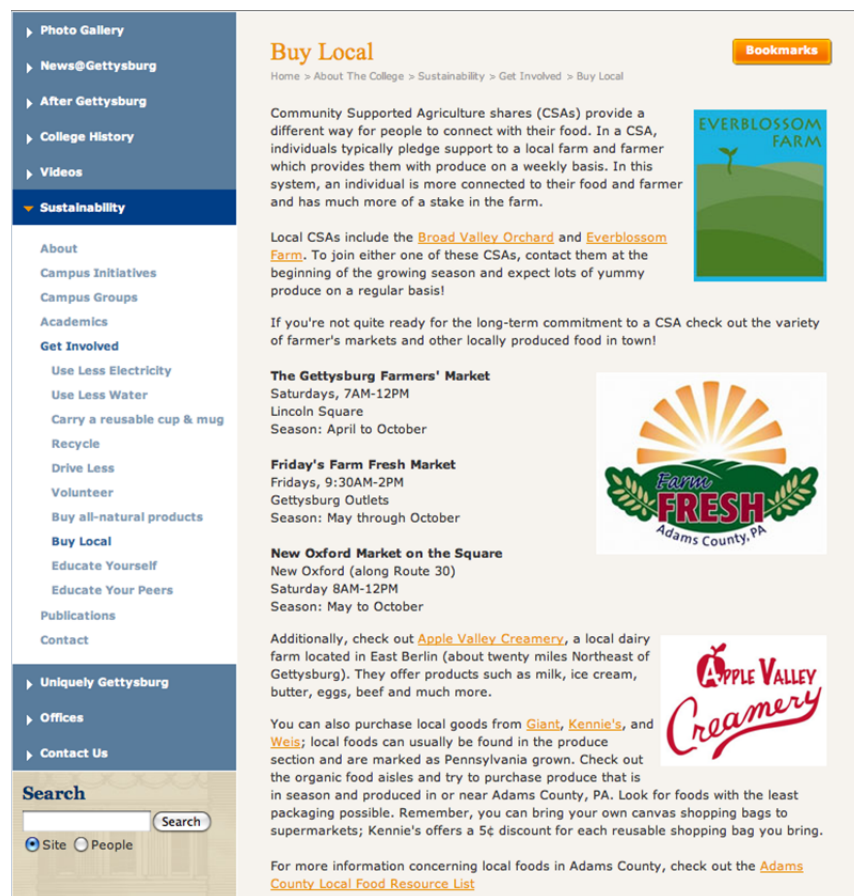
When compared to the website design of other comparable institutions mentioned in this study, Gettysburg College scored a 8 out of 25 in the “Quality of Webpage Design” category, tying for the lowest score of all the comparative institutions: Easy to explore? (2/5), Encourages exploring? (1/5), Sustainability-related videos (0/5), Visually appealing? (2/5), and Educational and Interesting? (3/5) (Figure 4.5 and Community Outreach Appendix: Table A4.4 and FigureA4.3).



**Figure 4.5:** Scores for the “Design” Criterion of the Sustainability Webpage. These results are for Gettysburg College (red) and 20 other comparable institutions in the Fall of 2011.

Despite the low score, there were several links that effectively communicate their subject information in a visually appealing fashion, such as the “Buy Local” page (Figure 4.6). However, the majority of the links were filled with vague information (Figure 4.3), poor image to text ratios, and in some cases (Annual Events), were allocated improperly to the subject side links, creating difficulties in navigation and exploration.





**Figure 4.6:** Example of an Exemplary Webpage for Gettysburg College. Gettysburg College’s “Buy Local” page shows a balanced image-to-text ratio, well-organized information, and links to other pages in the Fall of 2011.

The “Buy Local” page served as an example of an exemplary page on the Gettysburg College Sustainability Website. The images did not distract from the text, the links dispersed throughout the page encouraged further exploration, and important information, such as the dates and times of Gettysburg Farmer’s Markets, were separated and easily pronounced.

Gettysburg College Sustainability Website shows very little traffic as it was viewed only 11,200 times in the past year (Analytics Sustainability, Gettysburg College). This number is low especially when compared to the 17,524 views of Middlebury College, a similar sized institution.

## EXEMPLARY INSTITUTIONS

### Ease of Finding the Sustainability Page

Dickinson College was one of the institutions with the highest, receiving 10/10 points in this category. Their sustainability website was directly accessible from the Dickinson College homepage, taking one click from the homepage to reach the website (Figure 4.7). When “sustainability” was typed

into the Dickinson College search engine, their sustainability page was the first link to appear in the “results” listing for the search.



**Figure 4.7:** Example of Easily Accessible Sustainability Website. This image was taken from Dickinson College’s general homepage in the Fall of 2011.

## Quality of Sustainability-related Topics on Homepage

Middlebury College scored the highest in this category with a total score of 52/70. They received 4 or 5 points for each topic that was present as their website is interactive and visually appealing (Figure 4.8). The extensiveness of information and its representation of the college cause the viewer to leave the site with not only a better understanding of sustainability at Middlebury College, but with a better general understanding of sustainability.



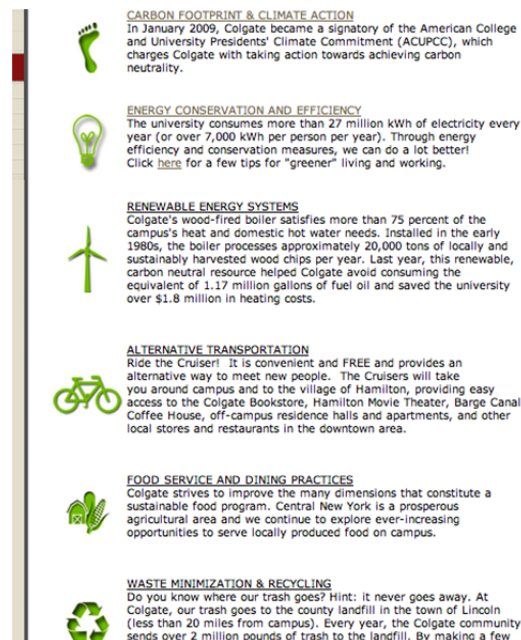
**Figure 4.8:** Example of Webpage with Comprehensive Selection of Sustainability Topics. This image was taken from Middlebury College’s Sustainability Website Homepage in the Fall 2011

## Quality of Website Design:

Colgate University scored the highest in this category scoring 21/25 points. First, the website received 5/5 points for the “easy to explore” topic within this category. Everything is listed under logical links and the site is easy to click through (Figure 4.9). The ease of exploration of the Colgate Sustainability Website made it simple to find all the information about sustainability at Colgate University. Colgate University also scored 5/5 points for the topic category labeled “educational and interesting.” A web-viewer would easily be able to get a comprehensive overview of sustainability initiatives at Colgate University (Figure 4.10). The site was also “visually appealing” and received 4/5 points within the topic. The image to text ratio was decent, the images were colorful and big, and the color scheme made the website bright, fun, and easy to read (Figure 4.11).



**Figure 4.9:** Example of Navigable Website Page. This image was taken from Colgate University's Sustainability Homepage in the Fall of 2011.



**Figure 4.10:** Example of Comprehensive Display of Sustainability Initiatives on a Website. This image was taken from Colgate University's Sustainability Website in the Fall of 2011.

## Get Involved

Here's a quick overview of the various sustainability groups on campus. Contact Colgate's sustainability coordinator John Pumilio ([jpumilio@colgate.edu](mailto:jpumilio@colgate.edu)) for more information.

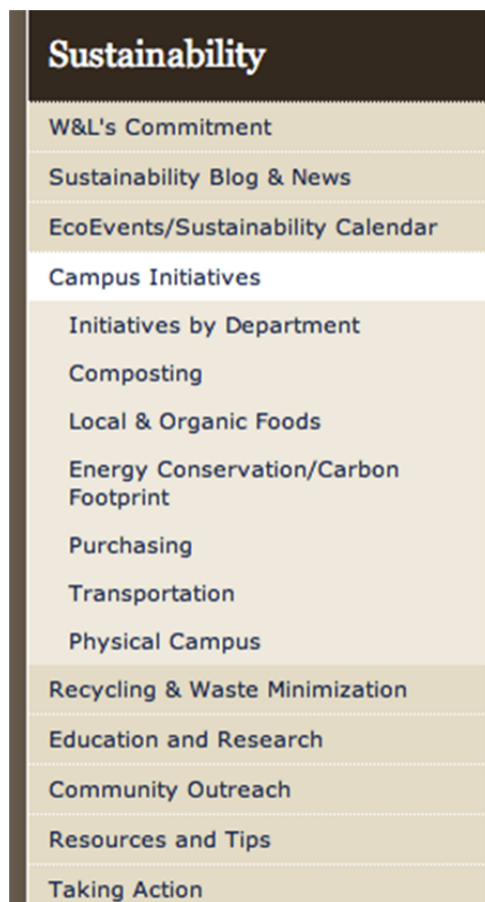


**Figure 4.11:** Example of Visually Appealing Graphics on a Website. This image was taken from Colgate University's Sustainability Website in the Fall of 2011.

## Quantity of Topics on Homepage

Washington and Lee University received the highest rating in this category possessing all 14 criteria that are listed on the scorecard under "Quantity of Sustainability-related Topics on Homepage,"

on their website. Each link on the navigation page had extensive sub-links which provided web browsers to all the information presented (Figure 4.12). All these sustainability-related topics, although not always covered extensively, were all featured on the Washington and Lee Sustainability Website.

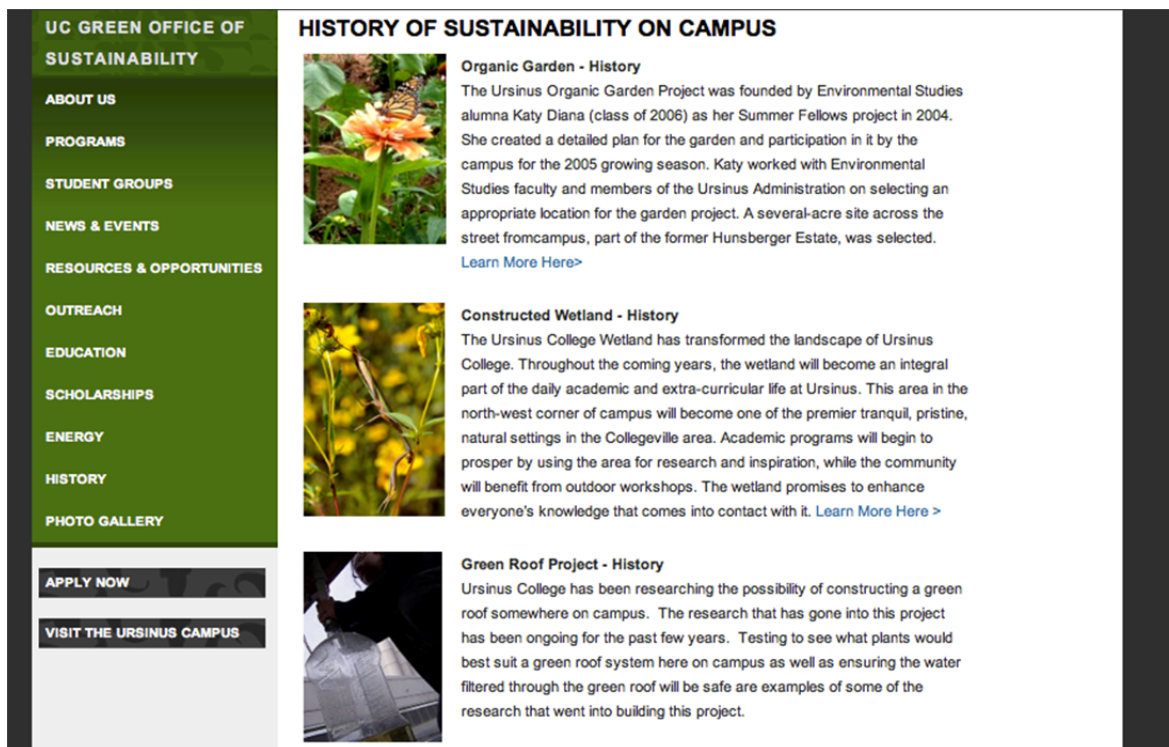


**Figure 4.12:** Example of Exemplary Navigation Bar for a Sustainability Website. This image was taken from Washington and Lee's Sustainability Website in the Fall of 2011.

### Quality of the Topics Presented

Ursinus College scored a 98% for this category. Even though the website possessed 9/14 topics that were evaluated present on their website, each of these 9 topics were done exceptionally well. Of the 9 topics Ursinus College did feature on their sustainability website, each topic scored either 4 or 5 points. The topics which were present and covered extensively were: carbon neutrality, history or background of sustainability efforts (Figure 4.13) courses and departments that involve sustainability, on campus student sustainability initiatives, sustainability-related groups, presence of sustainability projects/plans for the college, presence of a news page, presence of a calendar/list of events, and presence of a sustainability mission statement for the college.





**Figure 4.13:** Example of Exemplary Coverage of Sustainability Initiatives on a Website. This image was taken from Ursinus College's Sustainability Website, History of Sustainability Webpage, in the Fall of 2011.

## PROPOSED ACTIONS

It is important to note that the Gettysburg College website template, though monochromatic and angular, cannot be reformatted anytime in the near future (Katherine Lemanczyk, personal communication) emphasizing the need for immediate visual improvements to the individual links. With the addition of appropriate and relevant pictures, informative videos, and concise, relevant text, the Gettysburg College Sustainability Website can expect a significant increase in usability and communication efficiency with close to no cost.

Gettysburg College has no upcoming plans to redesign the Sustainability Website in the near future (K. Lemanczyk, personal communication, November 17, 2011). The Sustainability Website is not a top priority for the PR and communications department at Gettysburg College, and no web consultants are being brought in to change the font and color scheme of the webpage at this time (Katherine Lemanczyk, personal communication, November 17, 2011). However, this spring a one-time sustainability profile will be featured on the Gettysburg College homepage for a week. The profile and corresponding news-story has recently been approved by the PR and communications department at Gettysburg. The contents of what the profile will entail are currently unknown, as it has yet to be written (K. Lemanczyk, personal communication, November 17, 2011).

Simple changes in the near future are proposed to improve the visual appeal of the site as the default Gettysburg College website format will not be able to be changed within the short term.. As of now, the image to text ratio for most sections are not proportional, degrading the visual appeal by clustering mass amounts of text without a proportional visual reference. To improve these sections, the height of the image should be level with the height of the text, as done in the "History of Sustainability on

Campus” section of the Ursinus College (Figure 4.13). When improving image to text ratios, specific attention should be allocated to: the “About” page, the “Sustainability Advisory Committee” page (Figure 4.14), sub-links found on the “Policies” page, all “Campus Groups” sub links (with the exception of the Farmhouse link), and under the “Get Involved” page, “Carry a reusable cup & mug,” “Recycle,” and “Educate Your Peers.”



**Figure 4.14:** Example of Poor Webpage Design on Gettysburg College’s Website. This image was taken from Gettysburg College’s Sustainability Advisory Committee webpage on the Gettysburg College Sustainability Website in the Fall of 2011.

While images must be proportional to the amount of text, they must also be relevant to the text. The “About” page should represent a summary of sustainability initiatives of Gettysburg College, therefore, it will require multiple pictures to visually embody sustainability at Gettysburg College. Pictures could possibly include students working at the Painted Turtle Farm, students in a sustainability-related course, and students attending a sustainability-related event on campus. The “Sustainability Advisory Committee” page should include a group picture of the Committee, preferably involved in a meeting or event. The “Dining Services” page should include pictures of the pulper and other sustainable appliances (sustainable napkin dispensers, energy-efficient toaster oven, disposable wooden ice cream spoons, etc.) used in the cafeteria, as well as pictures of a happy, involved dining staff. Within the “Campus Groups” pages, the “G.E.C.O.,” “Painted Turtle Farm,” and “Biosphere” pages should include a rotating picture slide to show the depth of each group and give visual representations of the written text on each respected page. These images should be chosen by the club presidents, submitted to the Recycle Interns who will upload the images onto the website (M. Ranii and J. Ivers, personal communication, October 20, 2011) (Figure 4.15). Pictures should be added to the “Carry a reusable cup & mug” and “Recycle” pages under the “Get Involved” link. These pictures should be relevant to each respected topic.



### UC GREEN PHOTO GALLERY

Do you want to be included in this gallery? Be among the first student, faculty & staff member, or alumnus to send us your "green" photos to be included in this gallery. Simply email us your photos to [ehovey@ursinus.edu](mailto:ehovey@ursinus.edu) and include your class year and caption. Photos can be from any recent "Green" events / projects or programs!

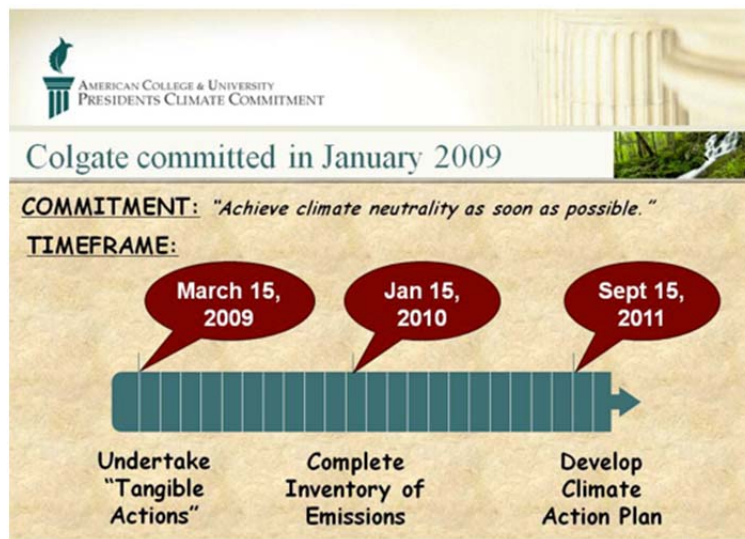


Bullfrog Creek with Erony



**Figure 4.15:** Example of Rotating Picture Gallery. This image shows Ursinus College's Sustainability Photo Gallery Slideshow from the Ursinus College Sustainability Website in the Fall of 2011.

The Gettysburg College Sustainability Website should focus on presenting dense information in the most straight-forward manner, such as outlines, tables, figures, etc to clustering text and increase visual representations. Colgate University maps out their progress within the ACUPCC (Figure 4.16); therefore Gettysburg College's "ACUPCC" page needs a visual representation of progress to show both students and the community alike where Gettysburg College stands on the President's Climate Commitment.



**Figure 4.16:** Example of Visual Representation of Progress in ACUPCC. This image shows Colgate University's timeline for achieving climate neutrality which was featured on the Colgate Sustainability Website in the Fall of 2011.

The "Annual Events" page is in dire need of an improved format to more efficiently communicate dates and times of events on campus to magnify student and faculty awareness, resulting in a more active, involved campus body. Dickinson College presents their calendar in a simple, digestible fashion,

outlining specific dates and times of sustainability-related events (Figure 4.17). The Gettysburg College Sustainability Website should adopt these methods of organization to more effectively communicate the present information.

## Sustainability Events

Print Page

The Sustainability Events Calendar shows student organization, department, all-college, and community events.



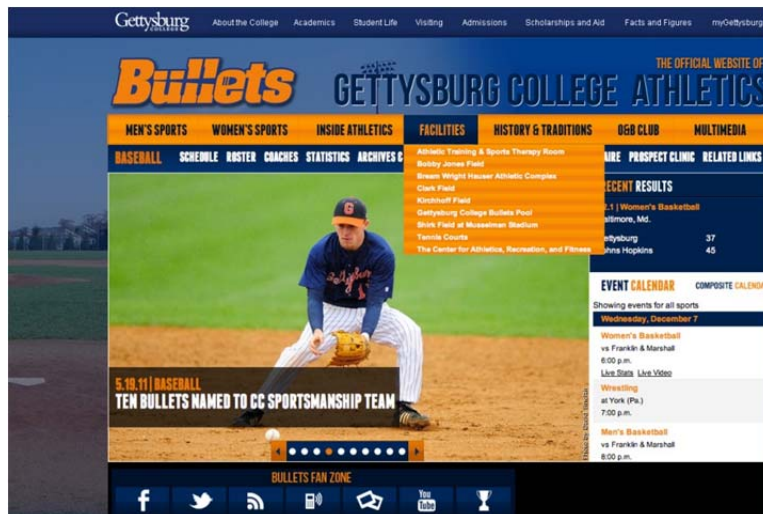
**Figure 4.17:** Example of an Organized Calendar of Sustainability Related Events. This image was taken from Dickinson College’s Sustainability Website in the Fall of 2011.

## Timeline

To improve effective communication throughout the Gettysburg College Sustainability Website, all pages in need of image to text ratio rearranging should be corrected by Summer 2012. These corrections will be carried out by the Recycling Interns (M. Ranii and J. Ivers, personal communication, October 20, 2011). Visual representations including tables, figures, and calendars should be placed within the “Annual Events” and “ACUPCC” pages by December 2012. Irrelevant and missing pictures referenced in proposed actions should be set in place by September 2012. These corrections will be carried out by the Recycling Interns (M. Ranii and J. Ivers, personal communication, October 20, 2011).

The presidents of sustainability-related groups on campus (G.E.C.O, Farmhouse, and Biosphere) should submit recent pictures for their campus group pages to the Recycling Interns by Summer 2012, and those pictures should be inserted into to their respected pages by September 2012. Presidents of sustainability-related groups, professors of sustainability-related courses, and any other student organizing a sustainability-related event should contact the associate director of web communications and electronic media for further information and request that the sustainability-related events, field trips, and projects held by the respective party be covered in a news article on the Gettysburg College homepage (K. Lemanczyck, personal communication, November 17, 2011). The sustainability community at Gettysburg College should aim to have at least one sustainability-related news article on the homepage following the spring 2012 sustainability news article.

Gettysburg College should completely reformat their Sustainability Website by Fall 2015. This would primarily include reformatting the website template. It is recommended that the Sustainability Website adopt the same template as the Gettysburg College Athletics page (Figure 4.18).



**Figure 4.18:** Example of Gettysburg College Website Template. This image was taken from the Gettysburg College Athletics Page in the Fall of 2011

## Summary of Goals

- Reformat image to text ratios for pages in need by Summer 2012
- Add an event calendar to the “Annual Events” page and visual tables and figures to the “ACUPCC” page to map out progress by Summer 2012
- The presidents of sustainability-related groups on campus (G.E.C.O, Farmhouse, and Biosphere) should submit recent pictures for their campus group pages to the Recycling Interns by Summer 2012
  - Those pictures should be inserted into to their respected pages by September 2012 by the Recycling Interns
- Sustainability-related events, field trips, and independent sustainability-related projects should be presented to the Associate Director of Web Communications and Media to be covered and presented on the Gettysburg College homepage as a news feature, aiming to have at least one sustainability-related article per semester starting in the Fall 2012
- Reformat the Sustainability Webpage to that of the Athletics format by Fall 2015

## CHALLENGES

The major challenge associated with these long and short term goals include sustainability’s exclusion from the brand or the culture at Gettysburg College; currently, the promotion of sustainability initiatives at Gettysburg College is not a top priority. Reformatting the website template requires redesigning each branch of the home-site, costing a substantial amount of money. Furthermore, no matter how much the Sustainability Website is re-designed, no one can be forced to visit it. The success of the website ultimately depends on the prevalence of sustainability culture when the website is reconfigured.

# Community Outreach Appendix

**Table A4.1:** Summary of data collected from website scorecards. These data are for Gettysburg College (red) and 20 other comparable institutions in the Fall of 2011.

College	Ease of finding Sustainability Webpage (out of 10)	Quality of Sustainability related topics on homepage (out of 70)	Quality of Webpage Design (out of 25)	Total (out of 105)	Quantity (out of 14)	% within Quantity
Conn College	2	32	15	55	10	64
Franklin and Marshall	4	29	13	46	8	60
Juniata	5	17	10	32	5	68
Lawrence University	5	12	8	25	6	40
Bates	5	24	8	37	10	48
Trinity	5	27	12	44	10	54
Allegheny	5	40	18	63	10	80
Washington and Lee	6	46	13	67	14	65
Union College	8	16	8	32	6	53
Gettysburg College	8	31	8	47	9	69
Denison	8	44	18	73	11	80
Dickinson	8	38	12	60	11	69
Bucknell	8	34	14	57	12	56
Washington College	9	27	10	46	8	67.5
Hobart & William Smith	9	36	16	61	9	80
Muhlenberg	9	37	10	56	9	82
Ursinus	9	44	19	72	9	98
Hamilton	9	26	13	49	9	57
Colgate	9	49	21	80	12	81
Middlebury College	9	52	19	81	13	80

**Table A4.2:** Accessibility Data Gathered for the Website Scorecards. These data are for Gettysburg College (red) and 20 other comparable institutions in the Fall of 2011. (n/a infers the sustainability website could not be found from the college homepage)

College	Number of clicks from the College Homepage to reach the Sustainability Page	Position in Search results of Sustainability on College Search Engine	Ease of finding Sustainability Webpage (out of 10)
Conn College	4	4	2
Franklin and Marshall	2	10	4
Juniata	n/a	1	5
Lawrence University	n/a	1	5
Bates	10	1	5
Trinity	8	1	5
Allegheny	n/a	1	5
Washington and Lee	3	3	6
Union College	3	1	8
Gettysburg College	2	2	8
Denison	3	1	8
Dickinson	3	1	8
Bucknell	3	1	8
Washington College	2	1	9
Hobart & William Smith	2	1	9
Muhlenberg	2	1	9
Ursinus	2	1	9
Hamilton	2	1	9
Colgate	2	1	9
Middlebury College	2	1	9

**Table A4.3:** Sustainability-Related Topics Data Gathered for the Website Scorecards. These data are for Gettysburg College (red) and 20 other comparable institutions in the Fall of 2011.

College	Faculty Resources	Student Profiles	Courses and Departments	History/ Background	News Page	Groups
Conn College	3	0	2	5	4	4
Franklin and Marshall	0	0	5	0	2	4
Juniata	0	0	0	2	4	0
Lawrence University	0	0	0	2	1	0
Bates	0	0	0	3	2	3
Trinity	2	0	2	0	2	3
Allegheny	4	5	0	5	2	0
Washington and Lee	1	4	4	2	3	4
Union College	0	0	1	0	0	0
Gettysburg College	2	1	0	2	0	5
Denison	4	4	2	4	4	4
Dickinson	4	0	3	1	3	4
Bucknell	1	2	2	4	3	3
Washington College	0	0	3	2	3	0
Hobart & William Smith	0	0	3	2	3	0
Muhlenberg	0	0	5	0	3	4
Ursinus	0	0	5	5	5	5
Hamilton	0	0	3	0	4	2
Colgate	5	5	3	0	0	4
Middlebury College	0	0	4	3	5	5

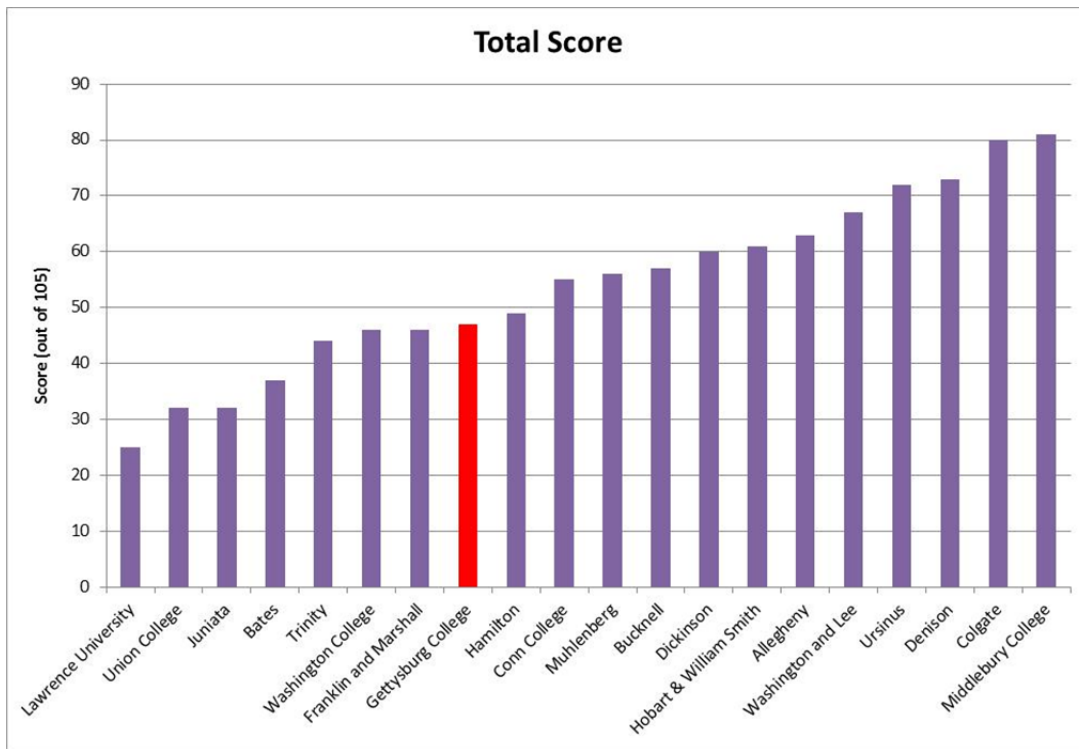
**Table A4.3 Continued:** Sustainability-Related Topics Data Gathered for the Website Scorecards. These data are for Gettysburg College (red) and 20 other comparable institutions in the Fall of 2011.

College	Initiatives	Dining/ Grounds	Plans/ Projects	Blog	Mission Statement	Definition of Sustainability	Calendar/List of Events
Conn College	3	2	3	0	3	3	0
Franklin and Marshall	3	2	3	0	5	0	5
Juniata	3	0	0	0	3	0	0
Lawrence University	2	0	0	1	0	5	1
Bates	2	2	2	0	3	2	2
Trinity	3	3	2	0	4	4	2
Allegheny	2	3	3	5	5	0	0
Washington and Lee	3	3	4	3	4	3	5
Union College	2	3	3	0	2	0	0
Gettysburg College	4	4	2	3	0	0	1
Denison	4	3	4	0	4	3	3
Dickinson	3	3	3	0	3	4	4
Bucknell	4	4	2	0	4	0	4
Washington College	3	4	3	0	4	0	0
Hobart & William Smith	3	4	3	0	4	0	0
Muhlenberg	3	3	4	0	5	5	5
Ursinus	5	0	4	0	5	0	5
Hamilton	3	2	3	0	3	3	0
Colgate	4	4	4	5	4	4	3
Middlebury College	5	4	5	4	4	4	5

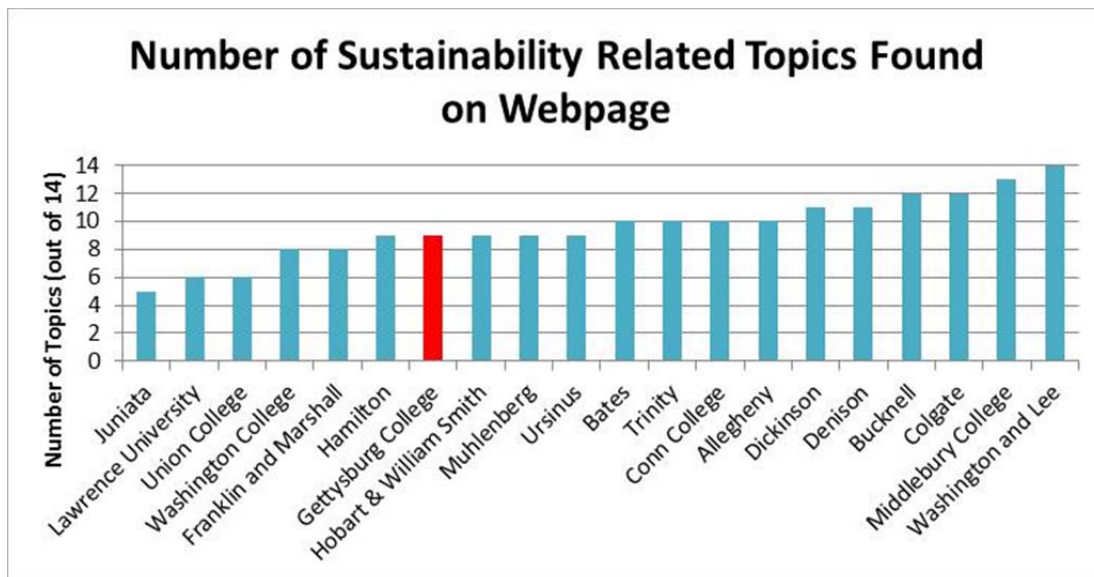


**Table A4.4:** Web Design Data Gathered for the Website Scorecards. These data are for Gettysburg College (red) and 20 other comparable institutions in the Fall of 2011.

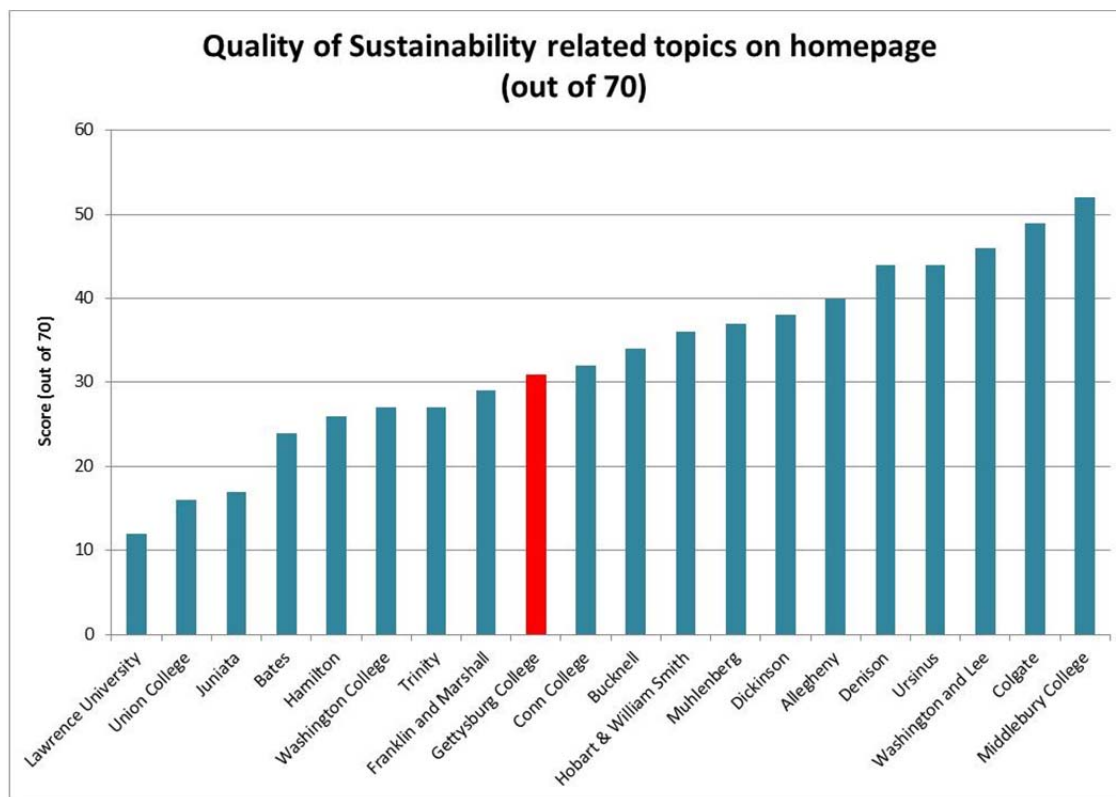
College	Ease to Explore (5)	Encourages Exploring (5)	Sustainability related videos (5)	Visually Appealing (5)	Educational & Interesting (5)
Conn College	4	4	0	3	4
Franklin and Marshall	3	2	0	4	3
Juniata	5	1	0	3	1
Lawrence University	2	2	0	2	2
Bates	2	2	0	1	3
Trinity	3	2	3	2	2
Allegheny	4	5	0	5	4
Washington and Lee	4	0	3	1	2
Union College	5	0	0	2	1
Gettysburg College	2	1	0	2	3
Denison	4	4	2	4	4
Dickinson	3	3	0	3	3
Bucknell	4	3	0	3	4
Washington College	4	3	0	3	3
Hobart & William Smith	4	5	0	3	4
Muhlenberg	3	2	0	2	3
Ursinus	5	5	0	4	5
Hamilton	4	3	0	3	3
Colgate	5	4	3	4	5
Middlebury College	5	5	4	5	5



**Figure A4.1:** Combined total Scores Received for the Website Scorecards. These results are for Gettysburg College (red) and 20 other comparable institutions in the Fall of 2011.



**Figure A4.2:** Number of Sustainability Related Topics Found on Webpage. These results are for Gettysburg College (red) and 20 other comparable institutions in the Fall of 2011.



**Figure A4.3:** Quality of Sustainability Related Topics (omissions included) on the Sustainability Homepage. These results are for Gettysburg College (red) and 20 other comparable schools in the Fall of 2011.

# Sustainability in the Curriculum

Nicole Moody and Sara Tower

## BACKGROUND

### Global Context for Sustainability Education

In 2004, the United Nations General Assembly recognized education as being a vital component of creating a more sustainable future when it declared 2005-2014 as the UN Decade of Education for Sustainable Development (ESD). The goal of the decade is to develop a comprehensive transitional framework to redefine and promote the vision of sustainable development through all forms of education and mobilize collaborative action at the international, regional, national, and local levels (Wong, 2009). The U.S. Partnership for Education for Sustainable Development (USPESD) has taken on the challenge of integrating ESD into education and learning in the United States, to foster sustainable development and create opportunities for collaboration within and across all sectors of society. A primary focus of the USPESD has been to develop strategies and resources for institutions of higher education to strengthen their commitment to sustainability both in their physical operations and their educational missions. This goal is achieved primarily through partnerships with the Association for the Advancement of Sustainability in Higher Education (AASHE), the American College and University Presidents' Climate Commitment (ACUPCC), the Higher Education Associations Sustainability Consortium (HEASC) and the Disciplinary Associations Network for Sustainability (DANS). There has also been progress recently on engaging the federal government in recognizing the importance of Education for Sustainability (EfS) curricula. In the process of reauthorizing the 2008 Higher Education Opportunity Act (HEOA), overwhelming support for the Higher Education Sustainability Act (HESA) made sustainability education a national priority.

### Sustainability Literacy: A New Paradigm

As an institution of higher education, Gettysburg College is actively engaged in shaping the future of human society. Education is the most powerful tool we have for developing more sustainable communities that can meet the challenges of today's world and create a more sustainable future. However, simply knowing about challenges of climate change and the need for sustainable development is not sufficient. The number of students who currently graduate from institutions of higher education without even a basic understanding of the relationship between human well-being and natural systems is a cause for considerable alarm (Orr, 1994). Yet, the purpose of sustainability education is not to produce a generation of students who "specialize" in sustainability; rather, it is to impart a new paradigm of education based in sustainability literacy, a new set of skills, attitudes, competencies, dispositions, and values that will be necessary for the gradual shifting of society. This kind of literacy "requires a form of learning which goes beyond memorizing and repeating facts. It requires active learning, a broad term used to refer to self-reflection, self-directed enquiry, learning by doing, engagement with real life issues, and learning within communities of practice" (Stibbe, 2009). Yet, it also rests on a foundation of understanding that encompasses a broad body of knowledge about the relationship between human well-being and the health of natural systems. In a collection of essays on ecological literacy and education, David Orr outlines six foundations for rethinking both the substance and the process of

ecological education (See Sustainability in the Curriculum Appendix B). They include the recognition that all education is environmental education insofar as it determines whether students learn that they are a part of or apart from the natural world. While the topic of a course may not seem relevant to sustainability, the way in which the course is taught occurs is at least as important as its content. According to Orr, “environmental education ought to change the way people live, not just how they talk” ([1994).

This model of education already fits well within the framework of a liberal arts education; there is a natural fit between the pedagogy of sustainability literacy and the instructional practices that have been identified through research as part of a high quality education. Project-based learning, the first-year experience, service learning, and interdisciplinary connections are all as much a part of sustainability education as they are highly effective instructional practices (AASHE, 2010). Yet it has been a consistent challenge for educators to develop pedagogy and design educational experiences that reflect the values of sustainability literacy. Common obstacles include the balkanization of academic knowledge, organization structures of the institution, and the need for additional investment in human and financial resources (Bacon et Al., 2011). As a result, while many great strides have been made on college campuses in recent years around the country in campus operations, energy conservation and carbon emissions, interdisciplinary teaching and learning about sustainability has been in decline (Carlson, 2008). According to a survey by the National Wildlife Federation, fewer students had taken courses in sustainability in 2008 than in 2001, and fewer institutions reported having programs that supported faculty members’ professional development on sustainability topics (2008).

One of the greatest challenges to promoting Education for Sustainability (EfS) curricula identified at the AASHE Summit on Sustainability in the Curriculum in San Diego, California, in February 2010 was the recognition that sustainability is inherently interdisciplinary and that the organization of institutions around departments and disciplines does not always support the kind of curriculum innovation that is needed (AASHE, 2010). While many institutions and individuals are interested in developing and integrating EfS into their curricula, strengthening the commitment to interdisciplinary studies and research is a necessary first step, which includes reforming departmental hiring, reviewing the current curriculum, and modifying qualifications for tenure positions as well as increasing funding for research, improving interdisciplinary student advising, and promoting interdepartmental collegial collaboration with the goal of sustainability literacy in mind (Pfirman et al., 2005). In addition to breaking down disciplinary boundaries, effective implementation of EfS will require a wide dissemination of resources to help faculty understand how their disciplines relate to sustainability, and how their students can benefit from making the broader connections and applying course concepts to understand the greater relevance of their academic work to the building of more a sustainable society.

Ultimately, according to the faculty and administrators who participated in the AASHE Summit on Sustainability in the Curriculum in February 2010, the fundamental problem we face in meeting the goal of education for a healthy and sustainable society is that existing curriculum in higher education has not been developed to examine how we shape a sustainable world. In their view, “what is needed is a curriculum that prepares learners for living sustainably, both professionally and personally, and that explicitly helps the learner deeply understand the interactions, inter-connections, and the consequences of actions and decisions. Regardless of the subject of the curriculum, students must learn and practice holistic systems thinking and be able to apply such thinking to real world situations” (AASHE 2010).

# SUSTAINABILITY EDUCATION AT GETTYSBURG COLLEGE

## Strategic Directions for Gettysburg College

Gettysburg College is committed to a liberal arts education that prepares students to be active leaders and participants in a changing world. Its mission is to provide an education grounded in “helping students develop critical thinking skills, broad vision, effective communications, a sense of the inter-relatedness of all knowledge, sensitivity to the human condition, and a global perspective, all necessary to enable students to realize their full potential for responsible citizenship”(2003). This mission encompasses all of the goals inherent in sustainability education and provides a fertile ground for the full integration of sustainability literacy into the Gettysburg College Curriculum. Indeed, in the Strategic Directions document adopted by the College in 2007, Goal Six under the category of Engagement emphasizes the need to “establish an environmental sustainability program for the campus, to more fully engage students, faculty, and staff with one of society’s most pressing challenges” (Gettysburg College, 2007b). Although it does not stipulate what such a program should entail, it is important to recognize that sustainability education already has a place in defining the strength of a Gettysburg College education. President Janet Morgan Riggs has emphasized the need to build a culture that values academic rigor, supports students as they cultivate their intellectual and civic passions, and promotes the development of healthy social relationships and behaviors. All of these aspirations can be realized through the development of a curriculum that incorporates sustainability through place-based education and emphasizes the intrinsic connections between personal efficacy, social well-being, and ecological systems.

## The Gettysburg College Curriculum

Currently, the Gettysburg College Curriculum is designed to challenge students to be self-reflective, to write and think in ways that express a growing self-awareness about the progress and impact of their education, and to make connections in what they are learning and see relevant implications across their courses. The Curriculum is structured around four key elements that students are expected to engage with during their undergraduate career: Multiple Inquiries, Integrative Thinking, Communication Skills, and Informed Citizenship (Gettysburg College, 2011a).. Each element includes multiple directives and learning outcomes, and each is woven throughout the Curriculum through specific courses that are required for successful completion of the Gettysburg College degree. The Curriculum aims to expose students to a wide range of disciplines and frameworks of analysis, help students understand connections and integrate multiple methodologies and perspectives on common issues, improve proficiency in writing, reading, and electronic media, and develop the skills, understandings, appreciations, and moral dispositions enabling students to become committed members of and meaningful contributors to their local , national, and global communities. Given this broad framework of education, it is hardly difficult to envision the numerous ways in which sustainability can be infused both into existing courses and through the creation of new courses that satisfy existing requirements.

### Sustainability Coverage in the Gettysburg Curriculum

The course offerings that make up the Gettysburg Curriculum are dynamic and constantly adapted with new and exciting topics that reflect a changing world. It is hardly surprising therefore that sustainability has already found a home in many departments across the Curriculum, from Anthropology to Philosophy to Visual Arts (Figure 5.1). The Environmental Studies Department currently offers the greatest number of courses incorporating sustainability, with over 22 courses that either directly or indirectly deal with the issues and concepts of sustainability, from environmental film and environmental policy to marine ecology and glaciology. In order to gather data for the STARS Assessment and better quantify the coverage of sustainability in other departments, the Sustainability Committee conducted a survey of sustainability coverage across the Curriculum in the spring of 2011. The voluntary online survey received 82 responses and revealed a surge of interest amongst the faculty in teaching and integrating sustainability into their courses and departmental offerings. According to the results, coverage of sustainability is highest in the natural sciences. However, several sustainability courses are also taught the social sciences and humanities (Figure 5.22). In total, over 40 professors from 20 different academic departments self-identified the courses they taught as either sustainability-focused or sustainability-related.

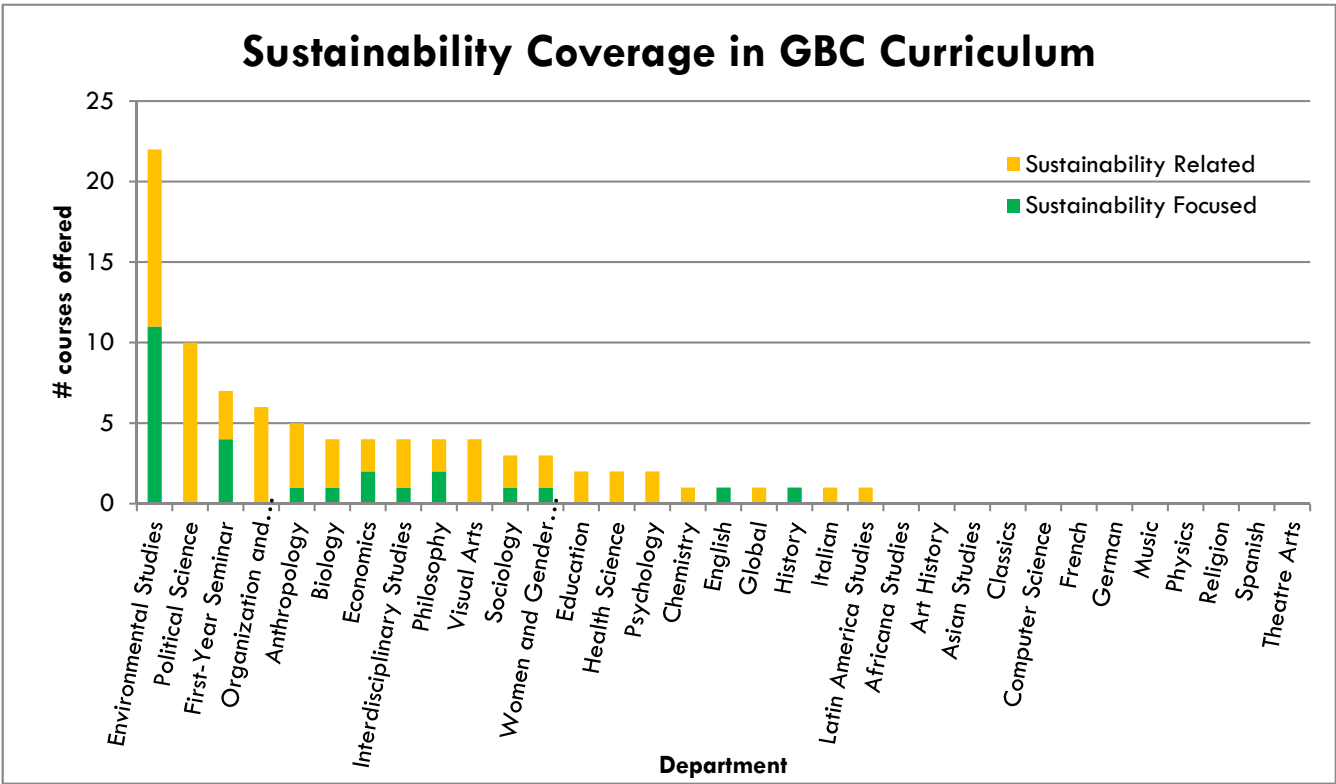
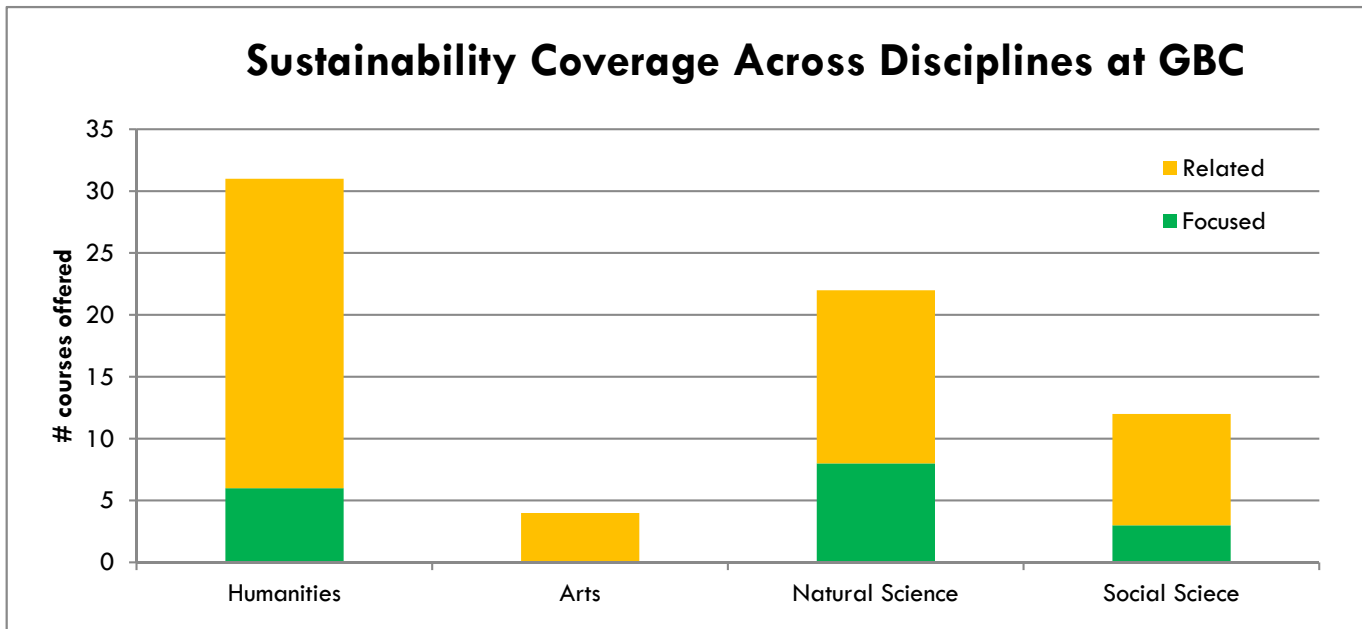


Figure 5.1: Distribution of Sustainability-focused and Sustainability-related Courses Across the Curriculum.





**Figure 5.2:** Distribution of Sustainability-focused and Sustainability-related Courses Across the Disciplines at Gettysburg College. (Note: Interdisciplinary departments course offerings sorted into traditional divisions)

While compiling this data is an important first step, according to the results of Gettysburg College's STARS Assessment, the Curriculum only scored 22.8 out of 51 possible points. Sustainability-related courses only accounted for 7.6% of total courses offered, while sustainability-focused courses accounted for 3.2%. These statistics indicate that there is much room for growth in increasing the number of courses that address sustainability in the Gettysburg College Curriculum. However, the survey results offer only a preliminary glance at the state of sustainability coverage in the Gettysburg College Curriculum; it is probable that many courses with elements of sustainability (both topical and pedagogical) were not included in the survey due to the conceptual newness of holistic, interdisciplinary sustainability education. Those unfamiliar with the "three pillars" framework of sustainability are likely to assume that sustainability only pertains to traditional environmental fields such as land-use, conservation, or resource management. However, the Washington Center for Improving the Quality of Undergraduate Education's Curriculum for the Bioregion Initiative (WCCBI) states that, "sustainability involves learning to make decisions that provide for the needs of the world's current population without damaging the ability of future generations to provide for themselves. Sustainability encompasses the intertwined ideals of viable economies, equity and justice, and ecological integrity" (WCCBI, 2006). In other words, sustainability pertains to a broad spectrum of courses that deal with the long term viability of economic and social systems; any field that works either directly or indirectly at the intersection of human society and the environment will necessarily communicate some attitude about the relationship between human well-being and the limits of natural systems.

## Sustainability Coverage in Peer Institutions

The information gathered for the STARS Assessment has also provided an important opportunity to look at how other institutions are addressing the integration of sustainability into their academic curriculum. Across the nation, sustainability education has become an increasingly prevalent concept, and many of Gettysburg College's peer institutions have similarly used the STARS Assessment to identify how well their current curriculum prepares students to address the challenges of sustainability, and develop creative methods and pedagogy to better integrate sustainability literacy into new and existing courses. In general, Gettysburg College, similar to the majority of educational institutions, has taken some informal steps towards sustainability education, and are ripe for the development of a more assertive effort to integrate sustainability more deeply into their curriculum (Table 5.1).

**Table 5.1:** Comparison of Gettysburg and Similar Institutions Coverage of Sustainability by Course and Department.

	Departments offering at least one sustainability course (%)	Sustainability-focused courses in curriculum (%)	Sustainability-related courses in curriculum (%)
Vassar	17.5	1.5	2.1
Williams	36.1	3.6	1.6
Gettysburg	57.6	3.2	7.6
Dickinson	58.5	4.7	8.0
Middlebury	68.6	4.2	20.1
Pomona	69.4	5.4	12.7

## EXEMPLARY INSTITUTIONS

Many exemplary institutions have already embarked on the task of integrating sustainability into their curricula with bold and innovative initiatives and have provided through experience a number of resources to help other institutions discover how best to move forward given their own unique resources and context. While Gettysburg College may not feel the need to overtly make sustainability education a distinguishing component of the Gettysburg Experience, there are a number of exciting ideas and opportunities to adapt the successes of other institutions to improve the quality of a Gettysburg College education and more fully engage with the issue of promoting sustainability literacy. If nothing else, Gettysburg College must recognize not only the urgency with which these strategies should be adopted, but also the incredible opportunities that such an increased support for applied interdisciplinary teaching and learning will provide for the community.

### Emory University: The Piedmont Project

Emory University's Piedmont Project has become a national model for faculty development and curricular innovation around sustainability. Each summer, 20 faculty applicants from all units and departments of Emory University are accepted for a four-part program that offers multi-disciplinary brainstorming around sustainability issues, experiential learning about place, and pedagogical exercises designed to help faculty develop new courses or new course modules for existing courses (Emory University, 2008). Learning for Piedmont Project participants comes in several forms. Faculty immerse themselves in basic knowledge through online readings prior to the workshop and formal presentations during the workshop. Topics covered in the past include the local Piedmont forest ecosystem, Atlanta's environmental justice and equity issues, public health consequences of sprawl, and current campus sustainability efforts.

A 2008 survey of 1,100 faculty in all units except Medicine revealed that 34 out of 43 Emory departments had at least one course related to sustainability (79%). Prior to that the survey, a 2006 study of the first five years of the Piedmont Project found that most new or renovated courses were still being taught, and 40% of faculty reported changing not one course, but two, three, or four. Intellectual excitement from a modest change in one course often led to much larger innovations. In teaching methods, faculty reported not only adding new readings, but adding new labs, homework, or research projects (44%), developing a new unit or module (64%), or reorienting the course with a new paradigm (34%). The vast majority reported that their teaching methods changed to add more experiential learning, new outdoors exercises, or new ways of engaging students. Though it is not the formal goal of the workshop, the Piedmont Project approach stimulates pedagogical exploration and change. The project is an integral part of Emory's commitment to transforming culture toward sustainability.

### University of Maryland: The Chesapeake Project

The Chesapeake Project is a similar initiative to integrate sustainability across the curriculum of the University of Maryland (UMD) (University of Maryland, 2010). Central to the project is a two-day workshop where faculty participants learn about core concepts of environmental, economic, and social sustainability and explore unique ways of integrating sustainability into their existing courses across all academic disciplines. Through these revised courses, students have the opportunity to explore

sustainability through artistic, cultural, historical, mathematical, philosophical, and scientific lenses to gain a more comprehensive understanding of the subject. For instance, an art professor might lead a class discussion about recyclable art materials and a math professor might frame math problems as they relate to the declining oyster population of the Chesapeake Bay. This integration across the disciplines helps students think critically about their local environment, fosters interdisciplinary learning and problem solving, and prepares students to find solutions to complex 21st century problems. Since the inaugural workshop in 2009, 71 University of Maryland faculty members have participated and 81 courses have been revised to include sustainability.

### **Dickinson College: The Valley and Ridge Project**

The Valley and Ridge Project is an interdisciplinary study group for nine faculty and teaching staff to enhance sustainability content in the curriculum, by supporting the development of new courses and revision of existing courses (Dickinson College, 2012). The Valley and Ridge workshop allows these faculty members to connect their teaching with a sense of place in the local environment and community (social, political, spatial, economic, and historical communities), and extend pedagogical and research interests across disciplines and create new networks with fellow colleagues. Faculty and teaching staff are invited to explore methodologies by which the Dickinson community can meaningfully integrate sustainability through a variety of approaches, including place-based study, experiential learning, and multi-disciplinary team teaching. Participants spend two days in May discussing ideas and developing plans for the content and pedagogy for their courses, exploring local and campus resources available for living laboratory projects, sustainability topics, new research, and have the opportunity to network with one another. Although this workshop is geared towards Dickinson College faculty, as a close peer institution there may be possibilities for exchanging resources and allowing for the partial participation of a faculty member from Gettysburg College in May 2012 to learn more about the Project.

### **James Madison University: The Arboretum Collaborative**

The Arboretum Collaborative is a Presidential Initiative designed to bring together competitively selected James Madison University faculty to increase awareness and knowledge of environmental stewardship with the goal of stimulating curriculum innovation (James Madison University, 2012). Participants attend weekly sessions, attend the annual Arboretum Collaborative Summer Institute, and prepare a course portfolio that demonstrates the development of stewardship learning objects, course components, pedagogies, and assessment strategies. A \$750 stipend is offered for participation in the weekly spring meetings and summer institute. A \$3000 stipend is rewarded upon successful review of a course portfolio that outlines extensive modifications an existing course to be taught during the academic year.

### **Oberlin College: The Oberlin Project**

The Oberlin Project is a joint effort between the city, college, and community partners aimed to improve the resilience, prosperity, and sustainability of the local community. It is an innovative project that seeks to create the first carbon neutral city in America by using renewable energy sources, improving the development of energy efficiency resources, focusing on the collaboration between the college and community, and spreading these ideas into other communities. This effort was initiated by Oberlin

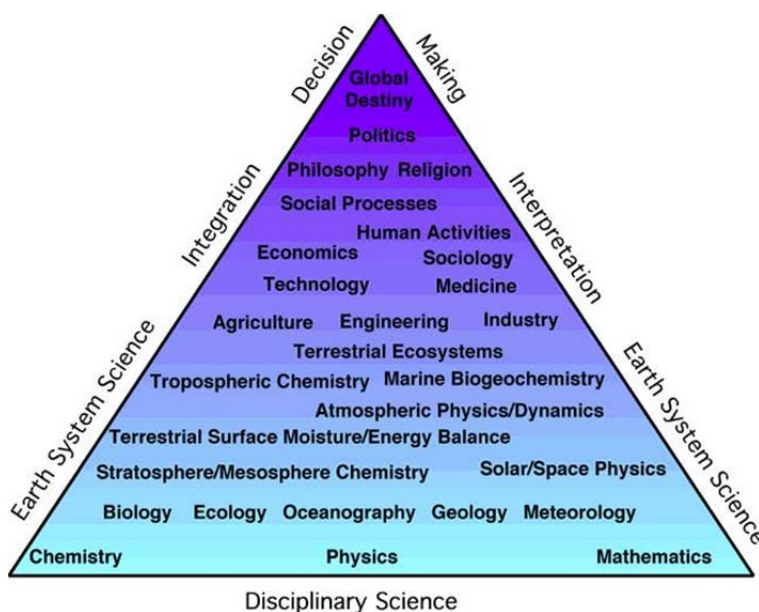
professor David Orr and the Adam Joseph Lewis Center for Environmental Studies (Carlson, 2011). The Oberlin Project is innovative by promoting ‘smart growth,’ where higher education institutions are essential for the successful transition to a more sustainable society (Oberlin College, n.d.).

## PROPOSED ACTION FOR GETTYSBURG COLLEGE

### Making Connections

As each of these exemplary institutions have demonstrated, there are broad possibilities for integrating sustainability throughout the curriculum. Once the traditional boundaries surrounding the perceived focus of sustainability on bounded environmentalism are broken, the relationships and linkages between all academic disciplines and sustainability are undeniably clear. Although overcoming these boundaries is more easily accomplished in departments that are already highly interdisciplinary, such as Environmental Studies and Globalization Studies, it is equally important to understand where “traditional” disciplines fit in the paradigm of sustainability education (Figure 5.3). Supported by a base of technical knowledge in earth systems science, the pyramid builds to incorporate integration and interpretation into the culminating task of decision making, which will ultimately determine our common future.

**Figure 5.3:** Pyramid of Disciplinary-based Sustainability Literacy.



Credit: Tim Killeen, NSF AD for Geoscience,  
CEDD Winter Meeting, 2008

### Timeline of Action Steps

In order to fully integrate sustainability into the Gettysburg College Curriculum, a series of ambitious recommendations to be carried out between Fall 2012 and Fall 2014 has been developed. Our strongest recommendation is that Gettysburg College commit to supporting faculty development initiatives that will empower the faculty to meet the challenge of implementing sustainability education across the curriculum. More specifically, we are proposing that the Johnson Center for Creative Teaching and Learning (JCCTL) host a two-day Teaching Workshop in May 2013 to introduce the concepts of sustainability education to the faculty community. This workshop can utilize the resources already developed at peer institutions and include sessions on sustainability literacy, place-based education, and innovative pedagogical techniques. There are numerous individuals on the Gettysburg College campus who have been involved in these initiatives at other institutions who could bring their expertise and enthusiasm to help lead this workshop and offer discipline-specific sessions on integrating sustainability. The goal of this workshop will be to help faculty assess their current syllabi and identify ways to integrate sustainability into their existing courses. Through this workshop and other similar initiatives, we are challenging the institution to ensure that at least one core course in every academic major pertain to some aspect of sustainability by the Fall of 2014, a bold but highly attainable goal that we believe is fully possible at a progressive Liberal Arts institution such as Gettysburg College. We envision the following steps to achieve this goal:

#### Fall 2012

- Form a sub-committee of the Sustainability Committee on Sustainability in the Curriculum (SCC). This faculty committee will be the primary body in charge of planning the May 2013 Teaching Workshop on Sustainability Education. In addition, this body will be charged with the year-long task of developing specific learning goals to define the ways that sustainability education can be expressed in various courses. They will also work with the Office of Institutional Analysis (OIA) to design a way to assess student learning and the acquisition of sustainability literacy at Gettysburg College.

#### Spring 2013

- Every January, AASHE partners with Emory University to offer Sustainability Across the Curriculum Workshops to train faculty leaders on how to develop curriculum change programs around sustainability on their campuses (Emory University, 2008). We strongly recommend that a sub-committee member of the (SCC) apply in November 2012 to attend this workshop in January 2013.
- Also in January 2013, the SCC and JCCTL should host a one-day Summit for a small group of faculty (8-10 individuals from diverse academic backgrounds) interested in championing the effort to integrate sustainability into the Gettysburg College Curriculum. The Summit may feature a speaker from outside or may serve as an opportunity to gather interested faculty and discuss ideas and best practices.

- During the Spring 2013 semester, the JCCTL shall continue to support this group of faculty by sponsoring a lunchtime/reading group. The group would meet bi-monthly to read and discuss literature on sustainability education (EfS) and educate themselves on pedagogy for sustainability literacy.
- Publish the Sustainability Learning Outcomes developed by the SCC by May 2013
- Carry out the assessment on student sustainability literacy designed by the SCC and OIA

#### May 2013

- Hold a two-day JCCTL Teaching Workshop on Sustainability in the Curriculum. See Sustainability in the Curriculum Appendix C for additional resources on developing the agenda of the Workshop.
- Pose the challenge to the institution for each department to integrate sustainability into at least one core course of every major by Fall 2014.

#### Summer 2013

- In order to carry forward the momentum of the May Teaching Workshop, the JCCTL should also provide a dedicated group of faculty with financial support during the summer of 2013 to redesign existing courses or develop new courses to reflect new ideas about sustainability education. These faculty members could either work collaboratively through an extended series of gatherings/mini-workshops or independently (See James Madison University Arboretum Collaborative for model). Courses that subsequently become eligible for designation as Science, Technology and Society (STS) courses may also be able to draw financial support from the National Science Foundation Grant awarded to the college in 2009.

#### Fall 2013-Spring 2014

- Continue to promote interest and support faculty efforts to integrate sustainability with initiatives such as additional faculty lunchtime/reading groups, the regular JCCTL Luncheon Series, and the “In the Classroom” Discussion Series.
- Continue to offer a one or two-day intensive workshop in January for a small group of faculty to revise a course to incorporate sustainability. This workshop could become a regular offering at Gettysburg College similar to the UMD Chesapeake Project or the Dickinson College Valley and Ridge Project. Or, given the proximity of Dickinson College, Gettysburg College could also reach out to Dickinson’s Center for Sustainability Education to develop an inter-campus initiative that brings Gettysburg and Dickinson faculty together in alternating winter and summer sessions, similar to the current partnership between Emory University and San Diego University.

#### Fall 2014

- Assess the new coverage of sustainability in the Curriculum with an extensive survey to update sustainability course listings on the College Website.



- Determine if the goal of integrating sustainability into at least one core course in each major has been accomplished and develop a new set of goals and recommendations for the next phase.

## Summary of Goals and Initiatives

Establish a sub-committee of faculty and students under the Sustainability Committee on Sustainability in the Curriculum in Fall 2012. This sub-committee will:

1. Develop Sustainability Learning Goals and Outcomes by Spring 2013
2. Design an assessment of student sustainability literacy for First Years and Seniors to be administered in Spring 2013
3. Plan a Summit in January 2013 to launch a formal series of initiatives to promote sustainability education
4. Support a small group of faculty interested in learning about sustainability education through a series of lunchtime/reading groups in Spring 2013
5. Plan a two-day Teaching Workshop on Sustainability in the Curriculum in May 2013
6. Provide on-going support for faculty to revise course syllabi and develop new courses that incorporate sustainability.
7. Strive to incorporate sustainability into at least one core course in every department by Fall 2014.

## Additional Opportunities:

In addition to tracking and increasing the coverage of sustainability in each department across the curriculum through faculty development workshops and initiatives, increased coverage of sustainability may also be realized by expanding existing programs and better appropriating underutilized assets of the Curriculum.

### *First Year Experience*

Sustainability education extends far beyond the boundaries of the classroom, therefore, current partnerships between the First Year Seminar (FYS) Program, Academic Advising, and College Life offer plentiful opportunities for exploring additional ways to integrate sustainability into the core of the Gettysburg College experience. As the College considers new ways to improve the First Year Experience through a more intentional integration of academics and residence life, there may be an opportunity to develop a robust Sustainable Living Program in the First Year Dormitories that places up to six FYS classes that focus on sustainability together in a single dorm. Currently, seven recent FYS courses have been identified as sustainability-focused or related (See Sustainability in the Curriculum Appendix A); ensuring that at least six of these courses are taught each year would ensure that approximately one-sixth of the First Year Class has the opportunity to engage deeply with issues of sustainability on campus, in the community, and at large. As First Years, these students would no doubt go on contribute positively to the college's overall sustainability efforts throughout the four years of their Gettysburg College career.

### *Science, Technology, and Society (STS)*

In addition to the challenge of developing a cross-disciplinary approach to sustainability education that integrates sustainability into every department across campus, there may be particular opportunities to expand the coverage of sustainability in the courses fulfilling STS requirements. An innovative and often under-utilized component of the Gettysburg College Curriculum, STS courses strive to teach students to consider how science impacts social issues, how ethical or public policy issues relate to science or technology, and how historical, philosophical, and social contexts shape and influence scientific research and technological advancements. Many of these interdisciplinary courses are ripe for the development of a sustainability module, yet currently just 17 of the 73 total courses have been identified by their instructors as sustainability-focused or related (Sustainability in the Curriculum Appendix A). Through the workshops and other faculty development initiatives, this number could easily be doubled to reach 50% of the total STS courses in the Curriculum.

### *Course Clusters*

Another under-utilized component of the Gettysburg College Curriculum, the Course Cluster option allows students to connect two courses from different subject areas or disciplines with an integrative experience in order to fulfill the Integrative Thinking Goal in the Curriculum. Integrative experiences can range from special presentations, an extra assignment, or a regular class assignment that is altered to incorporate the connection to another course. The opportunity to use sustainability as a connecting theme between different courses could be better communicated to encourage students to think about how sustainability transcends traditional academic boundaries to affect social, political, and economic responses to environmental challenges.

### *Fulfilling Curricular Goals*

A fourth approach to integrating sustainability into the Gettysburg College Curriculum could also be undertaken by integrating sustainability into courses commonly used to fulfill curricular goals. Currently, 23(17.3%) of the total sustainability courses offered fulfill the Multiple Inquiries social science requirement, followed by 22 (16.4%) in the Integrative Thinking interdisciplinary course cluster requirement and 17 (12.7%) in both the Multiple Inquiries natural science and Informed Citizenship science, technology, and society requirements (Figures 5.4 and 5.5) (Gettysburg College, 2010c). Increasing the number of courses at the “core” of the Gettysburg College Curriculum that deal with sustainability would ensure that an increasing number of students from all different majors and departments are exposed to many different aspects of sustainability throughout their Gettysburg College career.

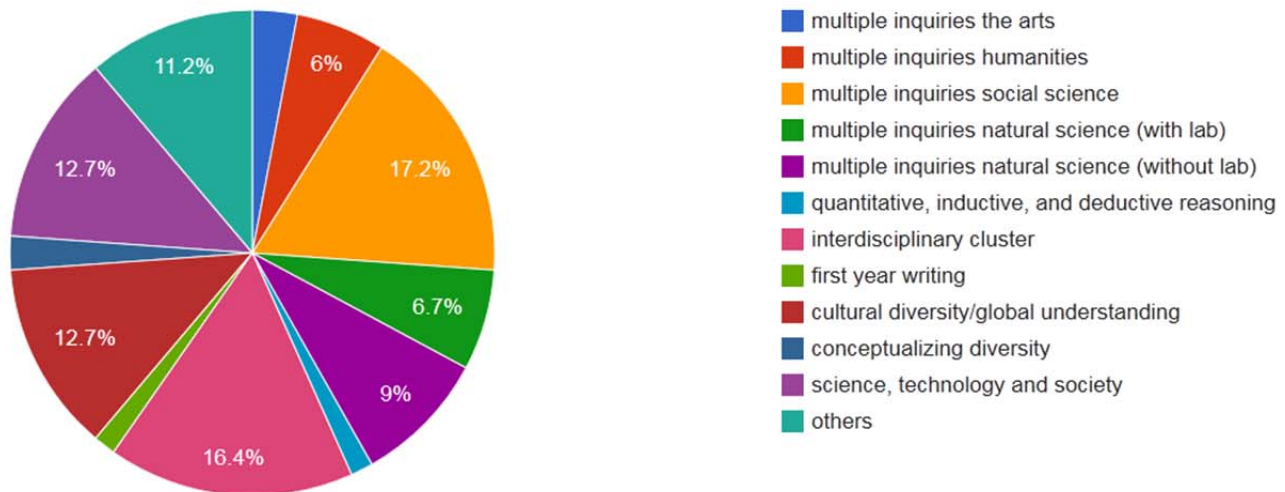


Figure 5.4: Breakdown of Sustainability-focused and Sustainability-related Courses that Fulfill Gettysburg College Curricular Requirements

MI: Arts	MI: Humanities	MI: Social Science	MI: Natural Science w/Lab	MI: Natural Science	QIDR	Interdisciplinary	First Year Writing	Diversity/Global Understanding	Conceptualizing Diversity	STS	Other
Vah 261	ES 225	Anth 103	Bio 111	ES 121	ES 230	Bio 316	FYS 156	Anth 103	Ids 206	Bio 316	Econ 403
Vah 261-2	ES 241	Anth 225	Bio 307	ES 127	Psych 205	Econ 341	FYS 157	Anth 225	WGS 226	Econ 341	Bus 363
Vah 318	ES 319	Anth 225-2	Bio 224	ES 130		ES 121		Anth 225-2	WGS 214	Educ 350	Bus 400
Vas 265	His 371	Anth 239	Chem 108	ES 240		ES 130		Anth239		ES 121	Educ 306
	Phil 105	Anth 240	ES 223	ES 251		ES 162		Anth240		ES 127	Eng 202
	Phil 107	Econ 216	ES 306	ES 252		ES 196		ES 162		ES 130	ES 201
	Phil 108	Econ 222	ES 312	ES 263		ES 211		ES 334		ES 196	ES 400
	Phil 318	Econ 341	ES 196	ES 333		ES 225		FYS 102		ES 211	ES 400-2
		ES 162	ES 211	ES 334		ES 251		His 371		ES 223	Ital 350
		ES 333		FYS 124		ES 252		HS 322		ES 230	OMS 303
		Pol 101		HS 320		ES 312		Ids 206		ES 252	OMS 395
		Pol 103		HS 322		ES 333		Pol 267		ES 263	OMS 397
		Pol 252				ES 334		Pol 270		ES 306	OMS 415
		Pol 267				FYS 157		Pol 271		ES 333	Psych 214
		Pol 270				HS 320		Pol 363		FYS 105	WGS 320
		Pol 271				Ids 121		WGS 214		FYS 124	
		Pol 301				Ids 206		WGS 226		FYS 141	
		Pol 304				Ids 224					
		Pol 315				Ids 322					
		Pol 363				LAS 147					
		Soc 101				Phil 318					
		Soc 233				WGS 226					
		Soc 250									

STS: Science, Technology and Society

MI: Multiple Inquiries

QIDR: Quantitative, Inductive, and Deductive Reasoning

	sustainability related
	sustainability focused

**Figure 5.5:** Sustainability-focused and Sustainability-related Courses that Fulfill the Gettysburg College Curriculum Requirements



## CHALLENGES

As always, the College must grapple with the reality that there are many areas of the college that require ongoing financial support, and the operating budget of the College can only support so much. The College has already had to make difficult decisions in the past regarding which distinctive programs should be financially sustained on a limited budget, given the priorities outlined by the college's Strategic Directions. And yet, there is no reason to believe that sustainability cannot be integrated into the Curriculum without large human and financial investments. By orienting these goals towards the ongoing initiatives in faculty development and curricular excellence, sustainability education need not be seen as an initiative that will detract from any of the other excellent programs already offered by Gettysburg College. Rather, through existing resources through the Provost's Office and JCCTL, as well as the National Science Foundation Grant for STS courses, ample funding for these initiatives can be provided. Additional grant monies and support from Alumni donors can also be requested if necessary.

Indeed, the greatest challenge to implementing sustainability education at Gettysburg College will not be due to financial constraints. Rather, the challenge will most likely come internally from faculty members who are unconvinced about the broad applications of sustainability to their field, and who misunderstand the purpose of the initiative. It will be vital for the College to properly frame the initiative so that sustainability is not seen as another "add-on" to an already over-packed curriculum, but rather an exciting new opportunity for improving the quality of Gettysburg College's academic offerings to better prepare students for the challenges that lie ahead in this rapidly changing world. Indeed, if students who graduate from Gettysburg College are to become leaders in society, they must be well equipped with the skills, attitudes, competencies, dispositions, and values necessary to shift society to the new paradigm of sustainable development. The urgency of this endeavor is founded upon the knowledge that our current way of life is not sustainable, and there is no reason to assume that we will continue to be able to live highly consumptive and ecologically disconnected lives long into the future.

In order to encourage and inspire faculty members to embrace the challenges we propose, a brief glance at some of the extensive resources developed by AASHE and Disciplinary Associations Network for Sustainability (DANS) should be enough to quell the skepticism. Additionally, materials prepared by faculty participants in Emory University's Piedmont Project highlight some of the true innovation that has occurred in identifying the linkages between sustainability and all academic disciplines. The workshops have resulted in a French class on Caribbean literature and the environment, a Psychology course on the psychology of environmental problems, and a Music course on nature and ritual in Asian music (For a full list, see Sustainability in the Curriculum Appendix C). In short, the only true limitations to the full integration of sustainability education are in the creative abilities of the faculty members of Gettysburg College. By focusing on faculty development initiatives to educate faculty and support incentives for creating new courses and modules on sustainability and better adapting under-utilized assets of the Gettysburg College Curriculum, we can fully and robustly reach our goals.



## SUSTAINABILITY IN THE CURRICULUM APPENDIX A

### List of Sustainability-Focused Courses at Gettysburg College

Anthropology	ANTH-225	Indigenous Peoples, the Environment, and the Global Economy
Biology	BIO-316	Conservation Biology
Economics	ECON-222	Issues in Environmental and Resource Economics
	ECON-403	Advanced Topics in Microeconomics: Natural Resources
English	ENG-202	Writing Science for Citizen Activists
Environmental	ES-130	The Chesapeake Bay Ecosystem
	ES-121	Environmental Issues
	ES-196	Environmental Science and Society
	ES-251	The Rocky Mountain West: Physical Geography
	ES-252	The Rocky Mountain West: Cultural Geography
	ES-225	Environmental Humanities
	ES-240	Energy: Production and Use
	ES-319	Environmental Film
	ES-333	Environmental Policy
	ES-400	Food and Environmental Sustainability
	ES-334	Global Environment and Development
History	HIS-371	Modern African Environments: History, Ecology, and People
Interdisciplinary	IDS-121	Introduction to Peace and Justice Studies
Philosophy	PHIL-107	Environmental Ethics
	PHIL-108	Philosophy and Food
Sociology	SOC-250	Energy, Environment, and Society
Women, Gen & Sex	WGS-226	Feminism in Global Perspective

## List of Sustainability-Related Courses at Gettysburg College

Anthropology	ANTH-103	Introduction to Cultural Anthropology
	ANTH-225	Food, Culture, Globalization
	ANTH-239	African Modernities
	ANTH-240	Modernity and Change in Asia-Pacific
Biology	BIO-111	Intro to Ecology and Evolution
	BIO-224	Vertebrate Zoology
	BIO-307	Freshwater Biology
Chemistry	CHEM-108	Fundamental Chemistry: Down on the Farm
Economics	ECON-216	Political Economy of Oil
	ECON-341	Environmental and Resource Economics
Education	EDUC-306	Teaching Social Studies
	EDUC-350	School Science and Mathematics
Environmental	ES-127	Plants, People and the Environment
	ES-162	World Regional Geography
	ES-211	Principles of Ecology
	ES-223	Earth Systems Science
	ES-230	Geographic Information Systems
	ES-241	Environmental Writing
	ES-263	Remote Sensing
	ES-306	Marine Ecology
	ES-312	Environmental Applications of GIS
	ES-400	Impact of the Automobile on US Culture & Environment
	ES-201	Writing the Public Essay
Globalization Studies	GS-400	Globalization Studies Seminar
Health Sciences	HS-320	Public Health
	HS-322	Global Health
Interdisciplinary	IDS-206	Foundations of Native American Studies
	IDS-224	Justice and the Contested Corporation
	IDS-322	Public Policy Seminar

Italian Studies	ITAL-350	Italy Since Fascism: A Topical Approach
Latin American	LAS-147	Introduction to Latin American Studies: Cultural Studies
Org & Management	BUS-363	Business Law
	BUS-400	Policy and Strategy
	OMS-395	Organizational Ethics
	OMS-303	Systems Thinking
	OMS-397	Ethics and the Playing Fields of Competition
	OMS-415	Corporate Social Responsibility
Political Science	POL-101	American Government
	POL-103	Intro to International Relations
	POL-315	Europe and the EU
	POL-252	North South Dialogue
	POL-267	Settler States and Indigenous People
	POL-270	Politics in China
	POL-271	Politics in Japan
	POL-301	Political Economy of Disaster
	POL-304	Models and Policy Analysis
	POL-363	Politics of Developing Areas
Philosophy	PHIL-105	Contemporary Moral Issues
	PHIL-318	Ethics and Economic Life
Psychology	PSYCH-205	Introduction to Statistics
	PSYCH-214	Social Psychology
Sociology	SOC-101	Introductory Sociology
	SOC-233	Science, Knowledge, and the New Age
Visual Arts	VAH-261	Introduction to Sculpture
	VAH-318	Art after 1945
	VAH-261	Art and Public Policy
	VAS-265	Introduction to Photography
Women, Gen & Sex	WGS-214	Native American Women
	WGS-320	Practicum in Feminist Theory & Collective Action

### **First Year Seminars on Sustainability**

FYS-105	Sustainability or Collapse
FYS-156	Green Eggs and Government Cheese: Food for Environmental Sustainability
FYS-157	Food Water Shelter Song: Staying Human on a Planet in Transition
FYS-124	A Dying Ocean: Increasing Environmental Challenges to the Marine Ecosystem
FYS-102	The World's Children
FYS-141	But Is It Crazy Enough
FYS-148	Gender and the Global Environment

## SUSTAINABILITY IN THE CURRICULUM APPENDIX B

### UNDERSTANDING SUSTAINABILITY LITERACY

Six Foundations of Ecological Education (Adapted from David Orr, *Ecological Literacy*, 1992)

1. All education is environmental education. By what is included or excluded, emphasized or ignored, students learn that they are a part of or apart from the natural world. Conventional education, by and large, has been a celebration of all that is human to the exclusion of our dependence on nature.
2. Environmental issues are complex and cannot be understood through a single discipline or department. Earth-centered education is the study of interactions across the boundaries of conventional knowledge and experience.
3. Education occurs in part as a dialogue with a place that is more than inanimate matter, energy flows, and biogeochemical cycles. It has the characteristics of good conversation: unhurried, generative, and humble. In conversation, we define ourselves, but in relation to another.
4. The way education occurs is as important as its content. Students taught environmental awareness in a setting that does not alter their relationship to basic life-support systems learn that it is sufficient to intellectualize, emote, or posture about such things without having to live differently. Environmental education ought to change the way people live, not just how they talk. Real learning is participatory and experiential, not just didactic.
5. Experience in the natural world is both an essential part of understanding the environment, and conducive to good thinking. Understanding nature demands a disciplined and observant intellect. And if natural diversity is the source of much of human creativity and intelligence, the simplification and homogenization of ecosystems can only result in a lowering of human intelligence.
6. Education relevant to the challenge of building a sustainable society will enhance the learner's competence with natural systems. Practical competence is an indispensable source of good thinking, and good thinking proceeds from the friction between reflective thought and real problems.

## Sample Sustainability Education Framework (AASHE Curriculum Working Group)

The following chart outlines a framework to assist in integrating sustainability across the curriculum in higher education. It attempts to articulate a clear vision for sustainability education that is specific enough to help newcomers to the field while being open enough to include multiple perspectives and approaches. One foundational principle of this work is that faculty own the curriculum – collectively within an institution and individually for particular courses – and it is not intended to dictate specific content or propose a new curriculum. Rather, it seeks to provide guidance for individuals, institutions, and organizations seeking to encourage the inclusion of sustainability at appropriate places within higher education curricula. This chart provides three levels of increasing specificity: from general principles for sustainability education intended as entry points through more specific educational goals to representative student learning outcomes that might be appropriate for assessment within a course or assignment. None of these levels are exhaustive; rather they are suggestive of the wide range of knowledge, skills, and values encompassed by a focus on sustainability. Hopefully, this chart helps to provide connection points where faculty can see linkages to their courses and their discipline, as well as leverage points for the transformation of higher education in service of a sustainable society.

Prepared by the AASHE Curriculum Working Group, May 2009: John Farnsworth (Santa Clara University), Jon Jensen (Luther College), Laura Lengnick (Warren Wilson College), Jean MacGregor (Evergreen State University), Dan Sherman (University of Puget Sound), and Jim Zaffiro (Central College).

### Sample Sustainability Education Framework (AASHE Curriculum Working Group)

Principles	Educational Goals	Representative Student Learning Outcomes
1. Sustainability education emphasizes systems	An understanding of social and ecological systems including systemic limits and interdependence	<ol style="list-style-type: none"> <li>1. Recognize the interdependence of species and the dynamic interrelationships within social and ecological systems.</li> <li>2. Comprehend systemic limits such as carrying capacity and the ways in which human systems can and do threaten ecological systems.</li> <li>3. Synthesize the complexity of proposed solutions to environmental issues such as climate change.</li> <li>4. Predict how human activities affect environmental health.</li> </ol>
2. Sustainability education operates locally	A connection to place and the ability to apply problem-solving skills to real world sustainability challenges	<ol style="list-style-type: none"> <li>1. Develop an appreciation of local biomes, watersheds and natural history.</li> <li>2. Apply working definitions of sustainability to local environments.</li> <li>3. Assess the effects of new technologies and the relationship between technological and other types of solutions.</li> <li>4. Frame problems and apply problem-solving techniques to questions of development and conservation.</li> <li>5. Evaluate proposals for creating a more sustainable future.</li> </ol>
3. Sustainability education extends globally	An intercultural and intergenerational perspective that nurtures empathy, awareness, and respect	<ol style="list-style-type: none"> <li>1. Empathize with cross-cultural perspectives relating to sustainability.</li> <li>2. Examine how cultural assumptions correspond to environmental and social problems.</li> <li>3. Articulate the relationship between poverty, social justice, and environmental degradation.</li> <li>4. Recognize issues of intergenerational responsibility and be able to articulate a positive vision for a just and sustainable society.</li> </ol>
4. Sustainability education focuses on community	A critical appreciation of the centrality of community and the complexities of environmental relationships at every level	<ol style="list-style-type: none"> <li>1. Understand how globalization often intensifies ecological challenges.</li> <li>2. Correlate biodiversity with ecosystem health.</li> <li>3. Apply concepts of ecosystem services to environmental communities.</li> <li>4. Appraise how human consumption affects non-human species.</li> <li>5. Reflect upon and enunciate the nature and value of</li> </ol>



		sustainable community.
5. Sustainability education highlights connections	A collaborative perspective on sustainability challenges that bridges academic disciplines	<ol style="list-style-type: none"> <li>1. Realize why sustainability demands participation from all academic disciplines.</li> <li>2. Express knowledge, values, and commitment through a variety of media, including literary and artistic expression.</li> <li>3. Synthesize multiple approaches to sustainability challenges informed by an historical perspective.</li> <li>4. Distinguish how human systems of economy, politics, and culture become enmeshed with ecological concerns.</li> </ol>
6. Sustainability education nurtures personal and social responsibility	An informed, ethical, and scholarly sense of citizenship	<ol style="list-style-type: none"> <li>1. Identify normative assumptions and ethical frameworks for sustainability including equity, justice, human rights, and extending the moral community.</li> <li>2. Formulate personal values within the context of a larger society and grasp how these values are manifested in daily habits.</li> <li>3. Understand humans' place in ecological systems.</li> <li>4. Evaluate how principles of environmental ethics apply to diverse issues such as population, habitat quality, affluence, and energy use.</li> </ol>
7. Sustainability education fosters transformation	A commitment to action where skills, attitudes and knowledge are applied to issues of sustainability	<ol style="list-style-type: none"> <li>1. Develop skills and strategies to enter into political discourse relating to environmental issues.</li> <li>2. Analyze environmental rhetoric and create persuasive arguments that address sustainability issues.</li> <li>3. Advocate for change through collaboration and consensus-building strategies.</li> <li>4. Integrate virtues such as empathy, inquisitiveness, respect, and humility into personal responses to environmental problems.</li> <li>5. Commit to social change based upon collective visions of a sustainable future.</li> </ol>

## SUSTAINABILITY IN THE CURRICULUM APPENDIX C

### Additional Resources for Developing and Implementing Sustainability Education

Association for the Advancement of Sustainability in Higher Education:

Curriculum Resources: <http://www.aashe.org/resources/curriculum-resources>

Sustainability Oriented Syllabi across multiple disciplines:

<http://www.aashe.org/resources/sustainability-oriented-syllabi>

Climate Literacy and Energy Awareness Network: <http://cleanet.org/clean/literacy/index.html>

Disciplinary Associations Network for Sustainability: <http://dans.aashe.org/content/resources>

Emory Piedmont Project Listing of Revised Syllabi: <http://anthropology.emory.edu/piedmontproject/>

The Higher Education Academy (UK):

<http://www.heacademy.ac.uk/education-for-sustainable-development>

The SEED Center: Sustainability Education and Economic Development:

<http://www.theseedcenter.org/default.aspx>

Washington Center for Improving the Quality of Undergraduate Education: “Curriculum for the Bioregion” Initiative.

Extensive resources for curricula development available online:

<http://www.evergreen.edu/washcenter/project.asp?pid=62>

UNESCO Education for Sustainability Education (ESD):

<http://www.unesco.org/new/en/education/themes/leading-the-international-agenda/education-for-sustainable-development/>

US Partnership for Education for Sustainable Development:

[http://www.uspartnership.org/main/show\\_passage/32](http://www.uspartnership.org/main/show_passage/32)

## Recommended Books for Faculty Reading Group

Blewitt, John, and Cedric Cullingford, eds. *The Sustainability Curriculum: the Challenge for Higher Education*. London: Earthscan, 2004.

Collett, Jonathan, and Stephen Karakashian, eds. *Greening the College Curriculum: a Guide to Environmental Teaching in the Liberal Arts : a Project of the Rainforest Alliance*. Washington, D.C.: Island, 1996.

Corcoran, Peter B., and Arjen E. J. Wals, eds. *Higher Education and the Challenge of Sustainability: Problematics, Promise, and Practice*. Dordrecht: Kluwer Academic, 2004.

Edwards, Andres R. *The Sustainability Revolution: Portrait of a Paradigm Shift*. Gabriola, BC: New Society Publ., 2005.

Edwards, Andres R. *Thriving beyond Sustainability: Pathways to a Resilient Society*. Gabriola, BC: New Society, 2010.

Jones, Paula, David Selby, and Stephen R. Sterling, eds. *Sustainability Education: Perspectives and Practice across Higher Education*. London: Earthscan, 2010.

McGinnis, Michael Vincent. *Bioregionalism*. New York: Routledge, 1998.

Meadows, Donella H. *Thinking in Systems: a Primer*. White River Junction, VT: Chelsea Green Pub., 2008.

Orr, David W. *Earth in Mind: on Education, Environment, and the Human Prospect*. Washington, DC: Island, 2004.

Parr, Adrian. *Hijacking Sustainability*. Cambridge, MA: MIT, 2009.

Stibbe, Arran, ed. *The Handbook of Sustainability Literacy: Skills for a Changing World*. Totnes, UK: Green, 2009.

Timpson, William M. *147 Practical Tips for Teaching Sustainability: Connecting the Environment, the Economy, and Society*. Madison, WI: Atwood Pub., 2006. Print.

\*strongly recommended

## List of Institutions with Faculty Development Workshops on Sustainability Across the Curriculum

Auburn University	<a href="#"><u>Fall Line Project: Sustainability in the Curriculum</u></a>
British Columbia	Institute of Technology <a href="#"><u>Pacific Spirit Project Workshop</u></a>
Central College	<a href="#"><u>Prairie Project: Global Sustainability Education</u></a>
Carleton College	<a href="#"><u>Cows, Colleges and Curriculum: Sustainability Issues in the Classroom</u></a>
Dickinson College	<a href="#"><u>Valley &amp; Ridge Faculty Development Workshop</u></a>
Elon University	<a href="#"><u>Sustainability Faculty Scholars project</u></a>
Emory University	<a href="#"><u>The Piedmont Project</u></a>
Ithaca College	<a href="#"><u>Finger Lakes Project</u></a>
Northern Arizona University	<a href="#"><u>The Ponderosa Project</u></a>
Ohio University	<a href="#"><u>Kanawha Project</u></a>
Santa Clara University	<a href="#"><u>Penstemon Project</u></a>
St. Olaf College	<a href="#"><u>Cows, Colleges and Curriculum: Sustainability Issues in the Classroom</u></a>
Tufts University	<a href="#"><u>Tufts Environmental Literacy Institute (TELI)</u></a>
University of Idaho	<a href="#"><u>Palouse Project</u></a>
University of Maryland	<a href="#"><u>The Chesapeake Project</u></a>
University of Massachusetts: Boston	<a href="#"><u>Sustainability Curriculum Development</u></a>
University of Southern Maine	<a href="#"><u>The Maine Watersheds Project</u></a>
University of Wisconsin	<a href="#"><u>The Winnebago Project</u></a>
University of Vermont	<a href="#"><u>Sustainability Faculty Fellows Program</u></a>
Western Illinois University	<a href="#"><u>The Coneflower Project: Infusing Sustainability Across the Curriculum</u></a>

## People to Contact/Invite to campus for Summit and/or Workshops

Debra Rowe, Oakland CC and President of the USPESD  
Jean MacGregor, Washington Center “Curriculum for the Bioregion” Initiative  
Judy Walton, AASHE  
Peggy Barlett, Emory University  
Geoff Chase, San Diego University  
Carol Hurney, Executive Director of JMU Center for Faculty Innovation  
Laura Lengnick, Warren Wilson College  
Jim Farrell, St. Olaf College  
John Farnsworth, Santa Clara University  
Jon Jenson, Luther College  
Dan Sherman, University of Puget Sound  
Jim Zaffiro, Central College  
Victor Nolet, Western Washington University  
Mike Gillespie, University of Washington Bothell  
Cynthia Updegrave, University of Washington  
Karen Harding, Pierce College  
LorindaRowledge, Bainbridge Graduate Institute  
Stephanie Pfirman, Barnard College

Speakers at 2011 Tufts Environmental Literacy Institute: <http://sites.tufts.edu/teli/speaker-bios/>

## Sample List of Revised Courses from the Emory Piedmont Project

Anthropology	Global and Transnational Culture The Past, Present, and Future of Food and Population Sustainable Development: Anthropological Perspectives Environmental issues for Media & Culture
Art History	Exploring Architecture: Emory, Atlanta and Beyond Shamanism and the Indigenous Art of the Americas
Biology	The Biology of Sustainability
Chemistry	Experimental Methods and Design in Chemistry Bring Environmental Consciousness to General Chemistry
Classics	Ideas of the Natural from Antiquity to the Early Modern Period
Economics	Econometrics Public Choice
English	Geography in History: Politics of Development in Postcolonial Literature American Literature and the Transformation of the Environment Utopian Literature in Environmental Perspective
French	Caribbean Literature and the Environment
German	Nature and the Jewish Imagination

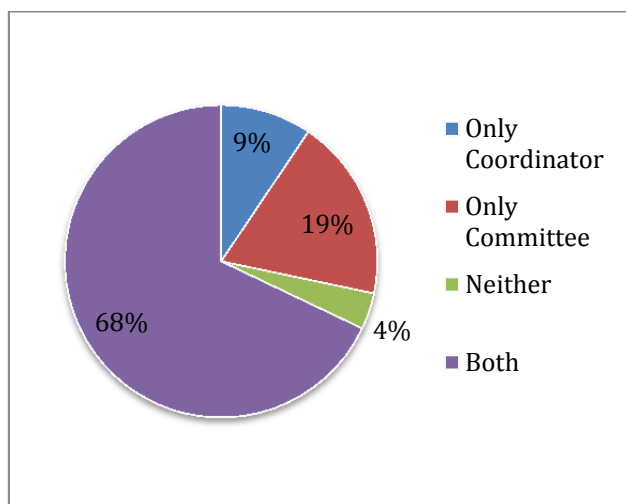
Health Science	The History of Public Health and the Environment
Italian	Italian Food in Literature, Film, and Culture
IDS	History, Memory, Place
Middle East	Environmental Protection in Islamic Culture
	Daily Life in Ancient Israel in Relation to the Environment
Mathematics	Mathematical Models for Local Environmental Issues
Music	Ethnomusicology and the Cultural Soundscapes in Atlanta
	Nature and Ritual in Asian Music"
Neuroscience	Ethnopharmacology and the Search for New Medicines in a Changing Environment
OMS	Beyond Environmental Compliance
	Environmental Concerns and the Business World
Philosophy	On Nature: Ideas of the Natural from Antiquity to the Renaissance
Physics	Introduction to Polymers
Political Science	Urban Public Policy
Public Policy	Public Lands and Natural Resources
	Health Impacts of Urban Sprawl
Psychology	Animal Behavior
	Conservation Psychology
Religion	Social Movements and Religious Change
Sociology	World Inequality and Underdevelopment
	Climate Change: Social Consequences and Responses
Spanish	Ecological Imperialism: Nature and Power in Latin America
	Brazilian Rain Forest: An Amazonia Universe in Literature, Film & Press
Theater	Interaction of Dramatic Literature with Ecological Concerns
Visual Arts	Ecologically Based Sculpture and Contemporary Environmental Art
WGS	Global Environmental Justice Movements

# The Sustainability Committee

Andrea Carson and Mary Kate Ranii

## BACKGROUND

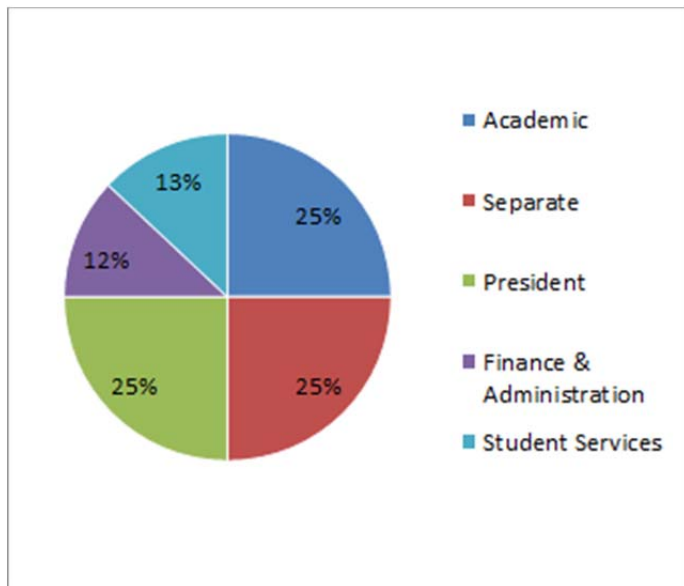
The Association of the Advancement of Sustainability in Higher Education (AASHE) qualifies an institution as having sustainability coordination if the institution has at least one of the following: “a sustainability committee, office, and/or coordinator that are tasked by the administration or board of trustees to advise on and implement policies and programs related to sustainability on campus” (AASHE, 2011). Of the 53 similar sized institutions of Gettysburg College (2000-4,999 students) listed on AASHE, 68% made use of both a sustainability v and a sustainability coordinator (Figure 6.1).



**Figure 6.1:** Sustainability Coordination As Reported by 53 Similar Sized (2,000-4,999 FTE) Institutions by STARS.

These committees and coordinators may fall under various divisions of the College, from Academics to Facilities (Figure 6.2). Therefore, sustainability committees typically include members from many aspects of the campus, including students. According to AASHE, sustainability committees, offices, and coordinators should address sustainability on a large scale, encompassing all departments (2011). The exact role of these committees and coordinators can vary depending on the needs of the institution; some act out physical and practical roles in the operations departments, while the majority of others act more as a counsel to the campus community (NWF Campus Ecology Program, 2000).





**Figure 6.2:** Placement of the Sustainability Committee Within the College Structure of 8 Peer Institutions

Although both the sustainability committee and coordinator are involved in sustainability coordination, they each have separate and necessary roles to play. Inherent differences exist between these two parties as sustainability committee members must combine sustainability with their other full time responsibilities, while coordinators' full attention and obligation is to sustainability. The sustainability committee holds a role involving the integration of the campus community with the concept of sustainability; coordinators on the other hand typically implement or delegate tangible sustainability efforts (Sustainable Endowments Institute, 2011). A sustainability coordinator may also act as the ambassador of the sustainability movement. Overall both parties aim to improve sustainability while inspiring other community members to take pride and responsibility in these efforts (NWF Campus Ecology Program, 2000).

At Gettysburg College the sustainability coordination efforts have been largely pursued by the Sustainability Advisory Committee. The Sustainability Advisory Committee began in 2007, the same year that President Katharine Haley Will signed the American College and University Presidents' Climate Commitment (J. Ramsey, personal communication, October 28, 2011; J. Biesecker, personal communication, November 14, 2011). The Sustainability Advisory Committee, at the time called the Sustainability Committee, was formed from the efforts put forth by Dean of Students Julie Ramsey and Dr. Randall Wilson of the Environmental Studies Department. The Sustainability Advisory Committee was created largely in response to Gettysburg College's poor Green Report Card rating as well as the ACUPCC's requirement to create "institutional structures to guide the development and implementation of the plan" (ACUPCC, 2007). The Sustainability Advisory Committee's original mission statement, established on

February 19, 2008, states: “We recognize that achieving environmental sustainability is an evolving practice and requires our ongoing diligence. To this end, we are committed to practices and programs that are in keeping with the College’s larger strategic objectives. The Gettysburg College Sustainability Committee pledges to guide the campus process for engaging this mission” (Sustainability Advisory Committee, 2008).

The Sustainability Committee was envisioned to focus on the promotion, support, and cohesion of campus sustainability efforts rather than instigating campus efforts (R. Platt, personal communication, October 24, 2011; J. Ramsey, personal communication, October 28, 2011; G. Natter, personal communication, November 8, 2011; J. Biesecker, personal communication, November 14, 2011;). In May 2009, the Sustainability Committee changed its name to Sustainability Advisory Committee in order to more accurately reflect the purpose of the Committee (J. Ramsey, personal communication, October 28, 2011; Sustainability Advisory Committee, 2009). The Committee considered assuming the following responsibilities: acquiring and distributing a budget, assessing project proposals, reaching out to the college community, and hiring a sustainability coordinator (Sustainability Advisory Committee, 2008-2010; R. Platt, personal communication, October 24, 2011). The final purposes of the Sustainability Advisory Committee were determined to be: to address campus sustainability issues, to coordinate sustainability efforts, and to maintain the sustainability conversation at Gettysburg College (G. Natter, personal communication, November 8, 2011). In response to the needs of the College, the Committee decided to coordinate sustainability efforts on these three areas: carbon neutrality, resource conservation, and research, education, and civic engagement (Gettysburg College, 2010b).

The Sustainability Advisory Committee’s most recent accomplishment was the initiation of conversations regarding campus-wide assessments of the College’s sustainability efforts (Sustainability Advisory Committee, 2010a). The Committee called for such an assessment in order to quantify the strengths and weaknesses of the College’s sustainability efforts and be more able to progress campus sustainability. Through coordination with a student-led initiative, STARS (Sustainability Tracking & Assessment Rating System) was chosen due to its quality and holistic nature. This assessment was completed by the Committee with assistance from relevant departments (Sustainability Advisory Committee, 2010a).

Members of the Sustainability Advisory Committee alongside relevant divisions of the college have also brought about campus-wide changes such as the execution of the paperless printing system, the standardization of double-sided printing around campus, creating and maintaining a website with information on sustainability, as well as holding events of campus to raise awareness about sustainable efforts, especially at Get Acquainted Day (Sustainability Advisory Committee, 2008; Sustainability Advisory Committee, 2009). These past successes of the Sustainability Advisory Committee demonstrate the Committee’s potential to achieve tangible and influential results.

## CURRENT STATE AT GETTYSBURG COLLEGE

The current state of the Sustainability Advisory Committee at Gettysburg College is largely one of rebuilding and restructure. The Sustainability Committee includes representation from administration,

faculty, and students. Due to its nature, the Committee does not fall under any specific college division but rather is its own entity that reports directly to the President (J. Ramsey, personal communication, October 28, 2011). Some committee members do not necessarily have sustainability roles in their job description but have personal interests in sustainability efforts on campus. Other members with direct ties to sustainability efforts on campus are drafted to increase the functionality and scope of the Committee as a whole.

The chairs of the Committee as of Fall 2011, are Dr. Rutherford Platt of the Environmental Studies Department and James Biesecker, Director of Facilities. The members as of Fall 2011 are from every corner of the Gettysburg College community and include the Assistant Director of Advancement Systems, the Associate Director of Web Communications and Electronic Media, the Associate Provost for Planning, Facilities, and Technology, the Director of The Center for Public Service, the Director of Auxiliary Services and Life Safety Manager, the Assistant Director of Procurement Services, the Assistant Dean of College Life and the Director of Residence Life, the President of G.E.C.O. (Gettysburg Environmental Concerns Organization), the Center for Public Service's Sustainability Development Program Coordinator, and the Recycling Interns (Sustainability Advisory Committee, 2010b). With such a widespread membership the Sustainability Advisory Committee is able to produce the interdisciplinary conversations and solutions that are prized by the liberal arts education provided at Gettysburg College.

The Committee-At-Large last officially convened in August 2011 to discuss and complete the STARS report for the 2010-2011 academic year. However, the last official meeting with published recorded minutes was for February 12, 2010. In the Fall 2011 semester the Sustainability Advisory Committee did not meet due to the existence of significant fundamental challenges, such as: determining how to fulfill its purpose, quantifying the exact economic costs and benefits of sustainability endeavors, acquiring and designating funding, lacking centralized coordination, and sustaining student involvement (J. Ramsey, personal communication, October 28, 2011; R. Platt, personal communication, October 24, 2011). Rather than attending meetings in the Fall of 2011, each active member's primary function was to assist in the restructuring of a new goal-oriented sustainability committee that will address these existing challenges (R. Platt, personal communication, October 24, 2011).

The fundamental challenge of the Sustainability Advisory Committee is determining how to realize its purpose in the context of the college's needs. The fulfillment of the Committee's purpose can be completed in two ways: either the Committee can make recommendations to both the President of the College and to specific departments already working on sustainability projects or the Committee can implement projects directly. If the Committee decides to implement projects rather than recommend them, the format of the implementation role is also unclear. Should the Committee decide to assume an implementary role it must decide whether it should implement committee-driven projects or provide opportunities for members of the Gettysburg College community to apply for resources, both financial and informational, for their own projects. However, with the monetary constraints of the College, the Committee must ensure that its sustainability efforts not only produce environmental benefits but also economic savings for the College. The Committee does not currently possess the information to decide whether a project would be a smart financial investment for the College. Calculating cost reductions for the college requires outside expertise that the Committee in the past has not been able to utilize.

Obtaining funding for any implementation of sustainability efforts has also created barriers. Gettysburg College provides a small appropriation of money to the Committee but should the members desire to implement large-scale projects, more monetary resources would be required. Members of the Committee do not have the time or energy to apply for grants or other outside sources of funding. The lack of a single leader has limited the Committee's effectiveness. Since no one person at the College is directly responsible for coordinating the sustainability efforts or working to obtain funding for sustainability projects, the Committee is only able to work within its provided framework. Should a position be created with the sole purpose of promoting, supporting, and implementing sustainability efforts on campus, the Committee may be able to accomplish larger more noticeable outcomes.

The revolving nature of student membership has previously inhibited a concentrated student effort on the Committee. In the past, students would inconsistently join and depart the committee because of their constant schedule conflicts due to classes or co-curricular responsibilities as well as their decision to study off-campus. Students would leave the Committee to study abroad without returning to the Sustainability Advisory Committee as they returned to campus. Therefore, the students' efforts have been sporadic. If the sustainability efforts from all aspects of the college are meant to be coordinated, then creating a more permanent connection to the student body must be established.

Overall, the Committee contains many crucial aspects of functioning sustainability committees; overcoming aforementioned challenges will allow for improved functionality and success. For more concrete accomplishments to become a reality, the role of the Committee must be identified, benefits to the College must be quantifiable, the designation and availability for funding must be made clear, the value of a sustainability coordinator must be considered, and sustained student participation must take place.

## EXEMPLARY INSTITUTIONS

To provide models for improving the structure of the sustainability committee, exemplary institutions were identified. Exemplary institutions were identified through the Sustainability Tracking & Assessment Rating System (STARS) program. These institutions were identified as exemplary institutions if they had a comparable student body to Gettysburg College (between 2,000-4,999 enrolled full-time students), a sustainability (or equivalent) committee, and the existence of recent and extensive documentation regarding a sustainability committee available online. Eight institutions were identified using this criteria and were contacted; sustainability coordinators or representatives that responded to the initial inquiry participated in a phone interview and responded to a standardized questionnaire. Based on the questionnaire, the following institutions were identified as exemplary: Dickinson College, Middlebury College, and Luther College. Chatham University and the University of Alaska - Fairbanks were identified as an exemplary institution through personal networking at the AASHE Conference in Pittsburgh, Pennsylvania in 2011 (A. Carson and M. Ranii, personal communication, October 9, 2011).

Many of these institutions utilize similar strategies to Gettysburg College's Sustainability Advisory Committee. For example, these committees make use of representatives from many different campus

departments and take a multi-disciplinary and holistic approach to sustainability projects. Working groups typically act as the primary drivers of projects and research, while the committee as a whole provides sustainability-oriented recommendations to the campus. However, these institutions are more functional due to their possession of other model characteristics. They are well equipped to address sustainability issues on campus due to their high level of support from their president, funding systems, and centralized coordination efforts (D. Bellrichard, personal communication, October 28, 2011; C. Crosby and N. Jenks-Jey, personal communication, October, 28 2011; Dr. N. Leary, personal communication, November 10, 2011; M. Whitney, personal communication, October 24, 2011).

The direct support of the college presidents or board of directors allows for sustainability committees to possess more clout on campus. Both Dickinson College and Chatham University's committees were charged by the president to undertake sustainability efforts. Members on the committee were therefore invited expressly by the president and were therefore given heightened responsibility to this cause. This charge also required the committees to report back to the president, increasing communication between the two groups. Dickinson College also reports to the Board of Directors, further increasing sustainability's placement as a campus priority, while Luther College's committee reports to the Director of Marketing and Finance, an active member of the President's Cabinet. With the backing of the president or Board of Directors monetary needs of the committees are considered a higher priority, and thus may be more adequately fulfilled than if the president personally did not prioritize sustainability (D. Bellrichard, personal communication, October 28, 2011; Dr. N. Leary, personal communication, November 10, 2011; M. Whitney, personal communication, October 24, 2011).

Many exemplary institutions have stable funding systems to support sustainability efforts. The University of Alaska Fairbanks hosts the Review of Infrastructure, Sustainability, and Energy (RISE) Board whose primary function is to allocate the money of the Student Initiative for Renewable Energy Now (SIREN) fund as well as to act as a consultant to the University regarding sustainability efforts. The SIREN Fund was created from both a student initiated Green Fee and funds allocated to this cause by the Chancellor of the University and exists to promote campus sustainability projects. This collective fund supports the position of Sustainability Director, partially pays for the university's Office on Sustainability, and even enables student and faculty's environmentally-minded projects. The RISE Board analyzes and reviews these project applications and allocates monetary resources as it sees fit. The Board is primarily made up of students but also includes faculty, staff, and one community member. It makes use of subcommittees to bring in outside expertise regarding specific projects (M. Hebert, personal communication, October 28, 2011). Chatham University and Luther College also apply for grants in order to obtain funding. These grants are typically applied for by employees of the Office of Sustainability. The grant money is then used either specifically by the sustainability committees or is used for sustainability projects proposed by college members.

The final feature of these distinguished institutions is their centralized coordination efforts. Every exemplary institution, with the exception of the University of Alaska - Fairbanks, has a sustainability coordinator that boosts sustainability efforts on campus. Additionally, some of these institutions also have offices and centers revolving around sustainability. Their sustainability efforts come out of a centralized location, and thus the colleges are more able to coordinate with current projects, sustainability-related and otherwise. Additionally, these offices, much like other college departments, receive a budget. Therefore a base budget already exists solely for sustainability-related endeavors. At Middlebury

College, the Franklin Environmental Center exists as a location for sustainability-minded lectures and events as well as the Environmental Studies Department and the Dean of Environmental Affairs (C. Crosby and N. Jenks-Jey, personal communication, October, 28 2011). Chatham University, Dickinson College, and Luther College each have their own Office of Sustainability, offering the campus multiple experts on sustainability and coordination and providing opportunities for student involvement. With the expertise and efforts of these offices, the committees are able to at time combine with this valuable resource, becoming even more effective (D. Bellrichard, personal communication, October 28, 2011; Dr. N. Leary, personal communication, November 10, 2011; M. Whitney, personal communication, October 24, 2011).

These specific characteristics may not be applicable to all college institutions. Therefore, finding the correct compilation of characteristics that would fit into the existing structures at a particular institution is paramount to the success of the college's sustainability efforts. After viewing the successes of sustainability committees at similar institutions, concrete goals have been formed and adapted to meet the needs and structures of Gettysburg College.

## PROPOSED ACTIONS

The following goals were created for the Sustainability Advisory Committee to address past challenges and to help Gettysburg College itself become an exemplary institution regarding sustainability coordination. The current Sustainability Advisory Committee possesses many attributes of a successful committee which will be used as a solid foundation to create an even more effectual presence on campus. However, for the Gettysburg College Sustainability Advisory Committee to become more efficient and streamlined, these proposals should be acted upon in a timely manner.

### Spring 2012 Starting Goals:

- Available members of the Committee should restructure the Committee as set forth by the Sustainability Committee Bylaws (Sustainability Committee Appendix).
  - Restructuring includes efforts that will improve the effectiveness of the committee include:
    - Establishing a clear set of roles for the Committee
    - Editing and ratifying the Bylaws of the Committee
    - Increasing representation from the different college divisions
    - Strengthening the Committee's interaction with the college community

### February Goals:

- Beginning in February 2012, the current members of the Committee shall hold monthly meetings.
- By February 29, 2012, the Committee should review, make necessary modifications, and adopt the Bylaws (Sustainability Committee Appendix).
  - These bylaws outline the new purpose of the Committee which specifically includes identifying key goals for each academic year as well as responding to sustainability-related requests from the campus community. Additionally, the Bylaws greatly shift the power of the Committee to specialized working groups, created by the needs of the Committee and of the College. The Bylaws also identify new and existing key members of

the Gettysburg College faculty, staff, administration, and students to play a role in the Committee.

- By February 29, 2012, the Committee should clearly define the proper uses of the budget.
  - Should this money be determined to be utilized only for promotional and conference use, the Committee should look for ways to acquire a different source of funding that better agrees with the purpose of the Committee as outlined in the Bylaws.

### April Goals:

- By April 31, 2012, the 2010 STARS report, Sustainability Plan, and Strategic Directives should be extensively reviewed by all members of the Committee to identify areas in need of improvement.

### May Goals:

- By May 1, 2012, membership applications should be circulated to the college administration, faculty, professional staff, and students by the Committee co-chairs.
- By May 31, 2012, membership applications should be submitted by interested parties within the College administration, faculty, professional staff, and students. These applications should be reviewed by current committee members, as outlined in the Bylaws, to select new members.
- By May 31, 2012, the Committee will have created and circulated a Request for Assistance form as explained in the Bylaws.
  - This form will allow various individuals and departments to request financial, physical, or informational support from the Committee.



### September Goals:

- By September 2012, the Committee will employ both Request for Assistance and Committee Driven Working Groups and function as stated in the Bylaws.

### Long Term Goals:

- To ensure that the college is continuously striving to achieve higher levels of sustainability, Gettysburg College should use the following goals as metrics for improvement. Not all of these goals will be achievable in the Spring 2011 semester due to the nature of the restructure.

### Continual Goals:

- The Sustainability Advisory Committee should follow the meeting schedule as stated in the Bylaws. Working groups should also be meeting as determined by the Chair of the Working Group and should be reporting back to the Committee during the committee meetings.
- The Committee Secretary will maintain the meeting minutes on the Sustainability Website, allowing the Gettysburg College community to access campus sustainability efforts. Minutes should include working group reports, major decisions, updates, and discussion points. Minutes should be added to the website within a week of the meeting.

### Annual Goals:

- Every March applications should be submitted by the College community and reviewed by the current Committee to obtain new members.
- By March 2013, the Sustainability Advisory Committee should produce an annual report which includes an executive summary of the year's important accomplishments and projects of both the Committee as a whole as well as the working groups. This report should also contain the Committee's future goals. The annual report should be presented by the Chair of the Committee to the President of the College before the year's budget is proposed. This report should include Gettysburg's improvements, as measured by the STARS report, the College's Sustainability Plan, and the Sustainability Committee itself.

### Biannual Goals:

- In August 2013, the STARS Report should be completed and submitted; this assessment should continue to be completed by the Sustainability Advisory Committee biannually. The Chair of the Sustainability Advisory Committee will ensure that this assessment is completed.

### Future Goals:

- By September 2020, Gettysburg College should hire a Sustainability Coordinator to chair the Sustainability Advisory Committee, among other duties.

## CHALLENGES:

Since its creation the Sustainability Committee has encountered many hurdles as it has attempted to become an authority on campus. Past challenges have emerged from questions regarding the Committee's purpose, the exact economic costs and benefits of sustainability endeavors, funding, centralized coordination, and student involvement (J. Ramsey, personal communication, October 28, 2011; R. Platt, personal communication, October 24, 2011).

The Committee's new structure, as outlined by the Bylaws, addresses the majority of these issues. However, as the Committee continues to improve its efficacy and fulfills the goals proposed in this plan, more challenges will arise. These challenges include managing the response to requests for assistance, the inability of the current budget to cover the Committee's new purpose, the high costs associated with sustainability coordinators, and the current member's lack of time to take on their new, more time-intensive roles.

The new role of the Sustainability Committee, to fulfill campus "Requests for Assistance," allows individuals and departments to influence the direction of the Committee. As stated in the Sustainability Committee Bylaws, the Committee will offer informational, financial, or physical assistance for sustainability-related endeavors (Sustainability Committee Appendix). At any given time, the campus community may not produce a large amount of requests to this new opportunity. On the other hand, these individuals and departments may also overwhelm the Committee with requests for resources, especially with the opportunity to use financial resources from the new budget. However, with the current structure as outlined in the Bylaws, the Sustainability Advisory Committee has the power to choose which projects to accept, or to simply focus on their own goals for sustainability efforts should the demand not exist or not suit the needs of the College.

As the Sustainability Advisory Committee fulfills certain requests of the campus, the need for an accessible and flexible budget is necessary. Previous committee documentation has noted the existence of a budget for sustainability efforts (Sustainability Advisory Committee, 2010a). However, this budget may only be utilized for promotional use, guest lecturers, conferences and other similar uses (J. Biesecker, personal communication, November 30, 2011). Therefore the budget may not be available for all types of requests. Consequently, the Committee is charged with better understanding the exact limitations to its budget; if necessary, the Committee must either circumvent these issues or locate alternative funding. The current economic decline has left Gettysburg College with fewer financial resources than in previous years. With this shortage of funds, the College is not looking to offer new job positions or hire new faculty or staff (R. Platt, personal communication, October 24, 2011, C. Zappe, personal communication, October, 31, 2011). The priority of the college is more focused on student learning and scholarships, therefore funding is more likely to be directed to these endeavors (J. Riggs, personal communication, October 28, 2011). Allocating funding for the position of sustainability coordinator is therefore not a part of the current or foreseeable budget. The future assistance and research of the Sustainability Advisory Committee as well as an improved national financial climate may assist with the acquisition of a sustainability coordinator.

As members of the Sustainability Advisory Committee, it is expected that members will participate regularly in meetings and working groups. However, as previously stated, the Committee members have

full-time roles on campus that do not directly address sustainability. Members of the Committee do not receive credit or extra pay for their participation on the Committee. These issues will present the challenge of effectively addressing sustainability issues on campus while considering the time constraints of the committee members. The new bylaws were created with these time constraints in mind. Meetings and working groups will be formed around the availability and the interests of the committee members, and committee and working group responsibilities will be distributed evenly. Through the distribution of work as outlined in the Bylaws, members of the Sustainability Advisory Committee should be more able to balance their primary roles as well as their roles on the Committee.

Overall, the Committee is well-equipped to make the necessary changes to not only overcome its challenges but also use these improvements to become a laudable institution. As the exemplary sustainability measures become the standard, the Sustainability Advisory Committee must constantly move forward in its efforts to improve sustainability at Gettysburg College.

# Sustainability Committee Appendix

## Sustainability Committee Bylaws

Created: December 8, 2011

### Article 1: Title

In this report and in all further documentation this body shall be referred to as the Sustainability Committee.

### Article 2: Mission Statement

Gettysburg College is committed to environmental stewardship in all of its activities. In practice, this commitment means we work to enhance and protect the environment through our teaching, research, service, operations, decision-making, and all aspects of our daily lives. As a learning institution, we believe Gettysburg College community members are collectively and individually responsible for the way our actions and choices impact the local and global environment.

We recognize that achieving environmental sustainability is an evolving practice and requires our ongoing diligence. To this end, we are committed to practices and programs that are in keeping with the College's larger strategic objectives and the campus Sustainability Proposal. The Gettysburg College Sustainability Committee pledges to guide individuals, departments, and the campus as a whole towards a more sustainable future.

### Article 3: Responsibilities

#### Section 1- Purpose

A. The purpose of the Committee is:

- a. To assist members of the college in researching, planning, implementing, or promoting sustainability-related projects.
- b. To provide the President and project-specific departments with suggestions and recommendations to improve sustainability.
- c. To complete a biannual college-wide assessment process to track campus sustainability progress.
- d. To ensure that Gettysburg College is still following all sustainability-related commitments, including the Strategic Directives and the American College and University Presidents' Climate Commitment.
- e. To maintain and further sustainability efforts in all campus sectors with special regard to following the Gettysburg College Sustainability Proposal.
- f. To provide a hub for all sustainability-related discussion on campus.

## **Section 2- Request for Assistance Implementation**

- A. The purpose of the Request for Assistance is to allow any member, department, division, or office of the College to ask for assistance in researching, planning, implementing, or promoting sustainability-related projects.
- a. The primary focus should be on consultation, research, and feasibility of potential projects rather than direct funding.
  - b. The Committee may provide funding for projects that require less than \$500 for implementation.
- B. The purpose of the Request for Assistance proposals is NOT to allocate sums larger than \$500. Rather, the Committee may help the given party obtain outside monetary resources necessary for implementation.
- C. All Request for Assistance proposals must include the following:
- a. A description of the potential project and how it would further campus sustainability.
  - b. The estimated budget required to complete such a project.
  - c. In what context would the Sustainability Committee be able to provide assistance.
  - d. All parties that will be involved in the process.
  - e. At the Sustainability Committee's discretion, more information may be requested from the applicant.
- D. A representative of the requesting body must be actively involved with all aspects of the process.
- E. An invitation to submit a Request for Assistance will be distributed to all administrative assistants to be dispersed to all parties of the college. It will also be made available on the Sustainability Committee's website.
- F. Any parties wishing for their Request for Assistance forms which call for financial support to be considered for the upcoming academic semester must be submitted by the first day of Fall or Spring classes. If not submitted by this date, they will be reviewed at the discretion of the Committee.
- a. All other Requests for Assistance may be accepted on a continual basis.
- G. All monetary Request for Assistance forms submitted by the first day of Fall or Spring classes will be reviewed by voting committee members by the first meeting of the semester.
- H. The Committee-At-Large discusses and commits to as many as three projects.
- a. Projects should be chosen based upon the priorities set by the most recent STARS report.
  - b. If no proposals are compatible with the STARS report, it is at the discretion of the Committee-At-Large to decide whether to fulfill Requests for Assistance.
  - I. Working groups will be formed around the selected projects outlined in the Requests for Assistance or committee priorities.
- J. After the completion of the Request for Assistance project, the Working Group will dissolve.
- K. After the dissolution of a working group, the Committee-At-Large will then vote and decide if another Request for Assistance proposal should proceed further.
- a. Should none of the Request for Assistance proposals meet the satisfaction of the Committee, a working group may be formed from the priorities established by the Committee.

## **Section 3 - Working Groups**

- A. The working groups (formerly referred to as “subcommittees”) will focus on meeting the majority of the Committee-At-Large’s priorities and act as the primary drivers of all Committee functions.
- a. There are two types of working groups.
    - i. Requested Assistance Working Groups
    - ii. Committee Driven Working Groups
  - b. The Sustainability Committee shall have four working groups at any given time.
    - i. At any given time, both types of working groups should be represented.
  - c. The purpose of a Requested Assistance Working Group is to:
    - i. To assist in researching, planning, implementing, or promoting sustainability-related projects that have been brought before the Committee via the Request for Assistance proposal process and voted upon by the Committee-At-Large.
    - ii. To work closely with persons directly related to the project, including a representative of the department which requested assistance.
  - d. The purpose of a Committee Driven Working Group is to:
    - i. Carry out specific goals and projects identified by the Committee-At-Large.
      - 1. Some examples include:
        - Promotional Event Management:  
Assist sustainability-oriented groups by promoting events through college web pages, social media, posters, other outlets, and department connections.
        - Curricular Integration:  
Extend environmental education throughout the College and the broader community through guest lectures, posters, and other means, and assist faculty in making use of environmentally-related curricular materials.
        - Other ideas may be: water-use reduction, student engagement, policy, and sustainable-infrastructure.
- B. At the first working group meeting, working group members will create feasible and quantifiable goal(s) and deadline(s) for the group.
- a. Working groups will be responsible for requesting money from the annual budget should the need arise.
    - i. All requests must be less than \$500.
    - ii. If more money is needed, the working groups are responsible for finding alternate monetary resources. (i.e.: annual budget request from college; apply for grant; other College divisions)
- C. The term of each working group shall be:
- a. Varied, for Requested Assistance Working Groups
    - i. The Working Group shall function until the need for the group no longer exists.
    - ii. Should the need arise, the working group can apply for renewal at the beginning of each academic year.
  - b. One year, for if the Committee Driven Working Groups
- D. Working groups may recruit non-members of the Sustainability Committee as needed.
- a. These members will have equal participation and voting privileges in the context of the Working Group.

- E. At each Committee-At-Large meeting, the working groups will report back to the Committee-At-Large and their report will be included in the minutes of the meeting.
- F. Each working group shall have a majority-elected chair, responsible for communication between members, other working groups, and the Committee-At-Large, as well as maintaining productivity.
  - a. The quorum for working groups shall be 51%.
- G. Working groups are advised to meet a minimum of once per month, though more meetings are encouraged.

#### **Section 4 - College-Wide Sustainability Assessment**

- A. The Committee-At-Large is responsible for performing a biannual college-wide sustainability assessment.
  - a. The Chair of the Sustainability Committee shall ensure the completion by appropriate members by August of the submission year.

#### **Article 4 : Membership**

##### **Section 1: Member Expectations**

- A. Before the first meeting of the semester all voting members are expected to have read and reviewed the most recent STARS report as well as all current Request for Assistance proposals.

##### **Section 2- Council Composition**

- A. The definitive members of the Sustainability Committee are as follows:
  - a. One member of the Department of Facilities must be an active member of the Sustainability Committee at all times. This position may be filled by the Director, the Project Coordinator, or the Associate/Assistant Director
  - b. One member of Dining Services must be an active member of the Sustainability Committee at all times. This position may be filled by the Director, Assistant Director, or the Purchasing Manager
  - c. One member of the Center for Public Service must be an active member of the Sustainability Committee at all times. This position may be filled by the Director or the Associate Director.
  - d. One member of the Office of College Life must be an active member of the Sustainability Committee at all times. This position may be filled by the Vice President of College Life, the Associate Dean of College Life for Technology, Assessment and Planning, the Associate Dean, the Assistant Dean of College Life.
  - e. One member of the Office of Finance and Administration must be an active member of the Sustainability Committee at all times. This position may be filled by any member of the Budget and Planning Branch or any member of Procurement Services.
  - f. One faculty member of the Environmental Studies Department must be an active member of the Sustainability Committee at all times.
  - g. One member of the Provost's Office must be an active member of the Sustainability Committee at all times. This position may be filled by the Associate Provost for Planning, Facilities, & Technology or the Assistant to the Provost for Budget & Academic Support.
  - h. One member of the Office of Communications and Marketing must be an active member of the Sustainability Committee at all times. This position may be filled by the Director or Assistant

Director of Web Communications or the Executive or Assistant Director of Communications and Marketing.

- i. Both currently employed Recycling Interns must be active members of the Sustainability Committee.
- j. The Center for Public Service's Sustainability Development Program Coordinator must be an active member of the Sustainability Committee.
- k. In addition to the aforementioned members, one administrator, two students, and three faculty or professional staff shall be applying for short-term membership on the Sustainability Committee, as designated in Section 5.
- l. Any member of the Gettysburg College community is welcome to attend Sustainability Committee's meeting's as well as offer input, though these members do not have the power to participate in voting processes.

### **Section 3 - Officer Positions**

- A. The Chair of the Sustainability Committee shall be nominated and elected by the voting members of the Committee-At-Large.
  - a. Those nominated must accept their nomination before a vote takes place during the final meeting of the academic year.
  - b. The Chair must be elected by a majority vote.
  - c. The duties of the Chair include: Oversee the writing of the Executive Summary to the President of Gettysburg College, presenting the Executive Summary to the President of Gettysburg College, counting the votes during all voting processes, ensuring the completion of the biannual STARS report, and providing the tie-breaking vote should the need arise.
  - d. The Chair of the Sustainability Committee shall serve a term of one year.
- B. The Vice Chair of the Sustainability Committee shall be nominated and elected by the voting members of the Committee-At-Large.
  - a. Those nominated must accept their nomination before a vote takes place at the final meeting of the academic year.
  - b. The Vice Chair must be elected by a majority vote.
  - c. The duties of the Vice Chair shall be: To assist the Chair in all necessary matters, to take the place of the Chair should the need arise, and updating the Bylaws.
  - d. The Vice Chair of the Sustainability Committee shall serve a term of one year.
- C. The Treasurer of the Sustainability Committee shall be nominated and elected by the voting members of the Committee-At-Large.
  - a. Those nominated must accept their nomination before a vote takes place at the final meeting of the academic year.
  - b. The Treasurer must be elected by a majority vote.
  - c. The duties of the Treasurer shall be to manage the budget of the Committee and allocate funds as requested by the working groups.
- D. The Secretary of the Sustainability Committee shall be filled by the Recycling Interns.
  - a. The duties of the Secretary include maintaining meeting minutes, publication of said minutes on the Sustainability web page as well as overall maintenance of said web page.

### **Section 4 - Sustainability Coordinator**



- A. Should Gettysburg College allow for the acquisition of a sustainability coordinator, he or she shall automatically assume the role and responsibilities as Chair of the Sustainability Committee.
- B. The purpose of the Sustainability Coordinator is to ensure the functionality and success of each working groups.
- a. The Sustainability Coordinator should sit on a minimum of two working groups, while meeting with the others as needed.
  - b. The Sustainability Coordinator shall act as the intermediary between working groups, allowing for synergy rather than conflict or redundancy.

### **Section 5 - New Member Acquisition**

- A. A brief application for membership will be made available to the entire campus including faculty, professional staff, students, and administration every March through an electronic medium.
- a. The Committee-At-Large aims to obtain:
    - i. Three members of the Faculty or Professional Staff for a term of two years.
    - ii. One administrator for a term of two years.
    - iii. Two students for a term of one year.
      1. Students must be on campus for both semesters.
- B. The application for membership includes an opportunity for all to express their interests in sustainability and the desire to join the Committee by allowing applicants to answer the following questions:
- What is your vision for sustainability on campus? (Specifically, what you would like to see happen?)
  - What assets can you offer to the Sustainability Committee?
  - Why is sustainability important to you?
  - Students are also required to provide their resume.
- C. Only those applications received by a predetermined deadline will be reviewed by the voting members of the Committee-At-Large. These applications will be distributed to the voting members immediately following the deadline.
- D. After personal review, the Committee-At-Large will discuss the applicants and vote at the final meeting of semester.
- E. Those reapplying may not participate in the review and election process for the position they are vying for.
- F. The voting process shall be as follows:
- a. Each voting member votes for his or her first choice. The top parties for each category of membership shall be accepted onto the Sustainability Committee.
    - i. In the event of a tie, the individual with the fewest votes shall be dropped from the ballot, and the votes shall be recast.
    - ii. In the event of all votes cast towards a single individual, that individual shall be accepted onto the Sustainability Committee, and votes shall be recast between the remaining applicants.

H. In the event that the Sustainability Committee receives fewer than the recommended number or no applicants, the Sustainability Committee will continue to function without filling aforementioned membership positions.

## **Section 5 - Dissolution of Membership**

A. Should any voting member of the Sustainability Committee deign any other voting member's performance as inadequate, the following procedure should be followed.

- a. Said dissenting member must notify the current Chair of the Committee-At-Large, who will privately address the issue with the member under question.
- b. Should the member under question not improve his or her performance by the next Committee-At-Large meeting, the issue will be brought up before the entire Sustainability Committee and discussed by all members. Should this member's performance be found wanting, the Committee-At-Large will take a vote to determine if the member must find a proxy or improve his or her performance.
  - i. Proxy: A member of similar status from the same department that will replace the declining member.

## **Article 5: Governance**

### **Section 1 - Meeting Discussion Topics**

A. In the first month of the academic year the Committee-At-Large must meet every two weeks.

- a. Should the need arise, the Chair may also call for meetings during the summer months with all available members.

B. At the first meeting of the academic year the Committee-At-Large must:

- a. Come to a decision regarding the year's meeting dates.
  - i. Should this date fall on a holiday or other date which inhibits a productive meeting, the Chair shall propose another date for a meeting which agrees with a majority of the voting member's schedules
- b. Discuss summer events and happenings.
- c. Vote on and discuss the top priorities that the Committee wants to focus on for the academic year.
  - i. The priorities identified should be in alignment with the Sustainability Plan, the STARS Assessment, and the Strategic Directions.

C. At the second meeting the Committee-At-Large must:

- a. Choose up to three Request for Assistance proposals though a majority vote.
- b. If three Requests for Assistance proposals are not chosen, the Committee-At-Large will determine the remaining Committee Driven Working Group projects to fulfill the priorities of the Committee-At-Large as decided by the first meeting.
  - i. Any voting member can propose specific topics for potential Committee Driven Working Groups.
  - ii. Identify and choose by majority vote the Committee Driven Working Groups.
- c. Each voting member must become an active member of at least one working group.
  - i. The members shall distribute themselves as necessary based on the needs of the working groups while still adhering to individual interests.

D. Subsequent meetings should occur on a monthly basis.

- a. The Chair may call for more meetings as needed.

## **Section 2 - Meeting Structure**

### **A. Each meeting shall follow the following procedure.**

- a. The meeting structure and procedures should fall in concordance with Robert's Rules of Order.
- b. Each meeting must include a brief review and discussion of the previous meeting's minutes by the Secretary.
- c. The Chair shall continue with opening remarks and potential discussion points.
- d. Each working group Chair shall report to the Committee-At-Large regarding relevant events, successes, and updates.
- e. The Committee-At-Large will then conduct Old and New Business regarding any matters requiring voting.
  - i. A quorum of 51% is necessary for any votes to take place.
- f. General announcements may then be made by any member in attendance.
- g. Should any information or discussion points need to take place outside of the above structure, any member may discuss this matter with the Chair. The Chair may bring the matter to the Committee-At-Large should he or she deem appropriate.

## **Article 6: Bylaws Modification**

### **Section 1 - Approval**

- A. Should any voting member of the Sustainability Committee identify a need for a change to the Bylaws, it must be brought to the Committee-At-Large during New Business.
  - a. Discussion of the change must take place before a vote.
  - b. A quorum of 51% is necessary to make any changes to the Bylaws.
    - i. Voting may take place either at the same meeting in New Business or tabled until the following Committee-At-Large meeting to be further discussed in Old Business.

## **Section 2 - Modification**

- A. The Vice Chair is responsible for maintaining and updating the Bylaws.

## References:

- American College and University Presidents' Climate Commitment (2007). *Text of the American College and University Presidents' Climate Commitment*. From <http://www.presidentsclimatecommitment.org/about/commitment>
- American College and University Presidents' Climate Commitment. (2009a). Climate Action Plan for Gettysburg College. From <http://rs.acupcc.org/cap/370/>
- American College and University Presidents' Climate Commitment. (2009b). Implementation Guide. From [http://www2.presidentsclimatecommitment.org/pdf/ACUPCC\\_IG\\_Final.pdf](http://www2.presidentsclimatecommitment.org/pdf/ACUPCC_IG_Final.pdf)
- ARAMARK Higher Education. (2008). *Trayless Dining*. From [http://www.aramarkhighered.com/assets/docs/whitepapers/ARAMARK%20Trayless %20Dining %20July%202008%20FINAL.PDF](http://www.aramarkhighered.com/assets/docs/whitepapers/ARAMARK%20Trayless%20Dining%20July%202008%20FINAL.PDF)
- Association for the Advancement of Sustainability in Higher Education (AASHE). (2010). *STARS Report Content Display by Institution*. From <https://stars.aashe.org/institutions/data-displays/content/>
- Association for the Advancement of Sustainability in Higher Education (AASHE). (2011). *AASHE Mission, Vision and Goals*. From <http://www.aashe.org/about/aashe-mission-vision-goals>
- Association for the Advancement of Sustainability in Higher Education (AASHE). (2012a). "Best Practices for Designing an Institution's Sustainability Website," From <http://www.aashe.org/resources/best-practices-designing-institutions-sustainability-website> Association for the Advancement of Sustainability in Higher Education (AASHE). (2012b). *STARS: Version 1.2 Technical Manual*. From [http://www.aashe.org/files/documents/STARS/stars\\_1.2\\_technical\\_manual.pdf](http://www.aashe.org/files/documents/STARS/stars_1.2_technical_manual.pdf)
- Ayers Saint Gross. (2008). *Gettysburg College Master Plan*
- Bacon, C., Ball, B., Mulvaney, D., T., DuPuis, M., Gliessman, S., Lipschutz, R., and Shakouri, A. (2011). The creation of an integrated sustainability curriculum and student praxis projects. *International Journal of Sustainability in Higher Education*, 12(2) 193-208.
- Barbosa, O., Tratalos, J., Armsworth, P., Davies, R., Fuller, R., Johnson, P., and

- Gaston, K. (2007). Who benefits from access to green space? A case study from Sheffield, UK. *Landscape and Urban Planning*, 83(2-3), 187-195.
- Barnowski, C., Barno, K., Beard, V., Bly, J., Cortez, V., Devries, K., . . . Trout-Haney, K. (2009). Dude! Where is My Tray?: Measuring the Impact of going Trayless in the Terrace Dining Room. *American University Department of Environmental Science*.
- Barresi, M., Echols, C., Tagala, P. (2011). *Why We've Lost our Appetite for Peanut Butter: A Campus Food Waste Assessment at Gettysburg College*. Gettysburg College Environmental Studies Department Senior Research Project.
- Best Colleges Online. (2010). 20 Most Conscientious College Dining Halls. From <http://www.bestcollegesonline.com/>
- Bhattacharya, R., Lewis, S., Vance, L., & Winston, B. (2009). Sustainability Project Proposal for the University of Arkansas – Fayetteville. *Students First Sustainability Conference*.
- Bloom, J. (2010). Waste Not, Want Not: Hunger and Food Waste in America. *Spotlight on Poverty and Opportunity: The Source for News, Ideas and Action*.
- Bonhotal, J., Schwarz, M., & Feinland, G. (2011). In-Vessel Composting Options For Medium-Scale Food Waste Generators. *BioCycle Global 2011: Conference Preview*.
- Carlson, S. (2008) "College Get Greener in Operations, but Teaching Sustainability Declines." *The Chronicle of Higher Education* 55:2:A24. From <http://chronicle.com/article/Colleges-Get-Greener-in/7174/>
- Carlson, S. (2010). "15 colleges dropped from climate-commitment list." *The Chronicle of Higher Education*. From <http://chronicle.com/blogs/buildings/15-colleges-dropped-from-climate-commitment-list/25272>
- Carlson, S. (2011) "Oberlin, Ohio: Laboratory for a New Way of Life." *The Chronicle of Higher Education* 58:12. From <http://chronicle.com/article/A-College-Town-Imagines-a-New/129650/>

*Clean Air - Cool Planet: Climate Change Solutions for the Northeast.* (2008). Campus Carbon Calculator.

Clean Air-Cool Planet. From <http://www.cleanair-coolplanet.org/toolkit/inv-calculator.php>

Climate Protection Campaign. (2012). Glossary. Retrieved from

<http://climateprotection.org/resources/glossary>

Creighton, S.H. (1998). *Greening the Ivory Tower: improving the environmental track record of universities, colleges and other institutions.* MIT Press.

Davies, T. & Konisky, D.M. (2000). Environmental Implications of the Foodservice and Food Retail

Industries. *Resources for the Future*. Retrieved from <http://www.rff.org/documents/RFF-DP-00-11.pdf>

Dautremont-Smith, J., Gamble, N., Perkowitz, R., & Rosenfeld, D. (2007). *A Call for Climate Leadership.*

American College and University Presidents' Climate Commitment. Retrieved from

[http://www2.presidentsclimatecommitment.org/pdf/climate\\_leadership.pdf](http://www2.presidentsclimatecommitment.org/pdf/climate_leadership.pdf)

Deutsch, C. (2007). *College Leaders Push for Carbon Neutrality.* The New York Times.

From [http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCAQFjAA&url=http%3A%2F%2Fwww.nytimes.com%2F2007%2F06%2F13%2Feducation%2F13green.html%3Fpagewanted%3Dprint&ei=Om3gTuDzJonu0gHZm\\_HBBw&usg=AFQjCNHlaKYknoV6DhBDXUG0R5Bqd9aJlw](http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCAQFjAA&url=http%3A%2F%2Fwww.nytimes.com%2F2007%2F06%2F13%2Feducation%2F13green.html%3Fpagewanted%3Dprint&ei=Om3gTuDzJonu0gHZm_HBBw&usg=AFQjCNHlaKYknoV6DhBDXUG0R5Bqd9aJlw)

Dickinson College. (2007). College Receives \$93,000 State Grant to Expand Farm Composting.

Retrieved from [http://www.dickinson.edu/news-and-events/news/2007-08/College-Receives-\\$93,000-State-Grant-to-Expand-Farm-Composting/](http://www.dickinson.edu/news-and-events/news/2007-08/College-Receives-$93,000-State-Grant-to-Expand-Farm-Composting/)

Dickinson College. (2011a). *Sustainability at Dickinson College.* From

<http://www.dickinson.edu/about/sustainability/>

Dickinson College. (2011b). *Sustainability at Dickinson College, Research and Education.* From

<http://www.dickinson.edu/about/sustainability/Research-and-Education/>

Dickinson College. (2012). Valley and Ridge Faculty Study Group in Sustainability. From

Dickinson College Web site: <http://www.dickinson.edu/academics/distinctive-opportunities/sustainability-education/content/Valley-and-Ridge/>

*Digest of Education Statistics*. (2003). National Center for Education Statistics. From <http://nces.ed.gov/programs/digest/d03>

Environmental Protection Agency. (2011). Resource Conservation: Common Wastes & Materials – Basic Information. From [http://www.epa.gov/osw/consERVE/materials/paper/basic\\_info.htm](http://www.epa.gov/osw/consERVE/materials/paper/basic_info.htm)

Emory University. (2008). Piedmont project. From <http://sustainability.emory.edu/page/1021/Piedmont-Project>.

Florida State University. (2008). Future Land Use Element. In *Florida State University Master Plan*.

Foderaro, L. (2009). Without Cafeteria Trays, Colleges Find Savings. *The New York Times*. From <http://www.nytimes.com/2009/04/29/nyregion/29tray.html>

Fuller, R., Irvine, K., Devine-Wright, P., Warren, P., and Gaston, K. (2007). Psychological benefits of greenspace increases with biodiversity [Electronic version]. *Biology Letters Community Ecology*, 3, 390-394.

Gettysburg College. (2003). Mission Statement. *Gettysburg College*. From [http://www.gettysburg.edu/about/college\\_history/mission\\_statement.dot](http://www.gettysburg.edu/about/college_history/mission_statement.dot).

Gettysburg College. (2007a). Facilities Services: History of Sustainability. *Gettysburg College*. From <http://www.gettysburg.edu/dotAsset/1613322.PDF>.

Gettysburg College. (2007b). Strategic Directions for Gettysburg College: Engagement, Goal Six. *Gettysburg College*. From <http://www.gettysburg.edu/plan/engagement/goals/six.dot>.

Gettysburg College. (2009a). A Greenhouse Gas Inventory of Gettysburg College. *Gettysburg College*.

From <http://www.gettysburg.edu/dotAsset/2615267.pdf>.

Gettysburg College. (2009b). Gettysburg College Climate Action Plan. *Gettysburg College*. From

[http://rs.acupcc.org/site\\_media/uploads/cap/370-cap.pdf](http://rs.acupcc.org/site_media/uploads/cap/370-cap.pdf).

Gettysburg College. (2010a). Gettysburg College Sustainability. *Gettysburg College*. From—

<http://www.gettysburg.edu/academics/es/sustainability/>.

Gettysburg College. (2010b). Strategic Directions. *Gettysburg College*. From

<http://www.gettysburg.edu/plan/engagement/goals/six.dot>.

Gettysburg College. (2010c). Gettysburg College Sustainability Initiatives. *Gettysburg College Dining*

Services. From <http://www.gettysburg.edu/about/sustainability/initiatives/dining/>.

Gettysburg College. (2010d). Pre-departure. *Gettysburg College*. From

[http://www.gettysburg.edu/about/offices/provost/off\\_campus/students/pre-departure/](http://www.gettysburg.edu/about/offices/provost/off_campus/students/pre-departure/).

Gettysburg College. (2011a). Gettysburg College Degree Requirements. *Gettysburg College*. From

<http://www.gettysburg.edu/academics/catalog/degree/>.

Gettysburg College. (2011b). Dining Services recognized for sustainability efforts; community service.

*Gettysburg College*. From

[http://www.gettysburg.edu/news\\_events/press\\_release\\_detail.dot?id=2922631](http://www.gettysburg.edu/news_events/press_release_detail.dot?id=2922631).

Gettysburg College. (2011c). Strategic Directions Update. *Gettysburg College*. From

<http://www.gettysburg.edu/dotAsset/2928275.pdf>.

Gettysburg College. (2011d). Gettysburg College Sustainability Website. *Gettysburg College*.

[www.gettysburg.edu/sustainability](http://www.gettysburg.edu/sustainability).



Gettysburg College Board of Trustees. (2010). Gettysburg College Campus Master Plan Overview and Update.

Gettysburg College Sustainability Website. From [www.gettysburg.edu/sustainability](http://www.gettysburg.edu/sustainability)

Green Mountain College. (2010). Sustainability at Green Mountain College. *Green Mountain College*.  
From [http://sustainability.greenmtn.edu/operations/buildings\\_energy.aspx](http://sustainability.greenmtn.edu/operations/buildings_energy.aspx)

Greenwave International, Inc. (2010.) Products. Greenwave. From <http://www.greenwave.us.com/index-2.html>

Green-e Energy. (2012). Energy. Green-e. Retrieved on February 20, 2012, from [http://www.green-e.org/getcert\\_re.shtml](http://www.green-e.org/getcert_re.shtml)

Griffith, J. (1994). Open Space Preservation: An Imperative for Quality Campus Environments [Electronic version]. *The Journal of Higher Education*, 65(6), 645-669.

Groenewegen, P., van den Berg, A., de Vries, S., & Verheij, R. (2006). Vitamin G: effects of green space on health, well-being, and social safety. *Bio Med Central Public Health*, 6(149).

Hall, K., Guo, J., Dore, M., & Chow, C. (2009). The Progressive Increase of Food Waste in American and Its Environmental Impact. *Plos One: Laboratory of Biological Modeling, National Institute of Diabetes and Digestive and Kidney Disease*, 6:11.

Hamin, E., and Gurran, N. (2008). Urban form and climate change: balancing adaptation and mitigation in the U.S. and Australia. *Habitat International*. 10. 1-8

Horton, D. (2004) Local Environmentalism and the Internet. *Environmental Politics*.13(4)734-753. (o)

Hubbell, B.andWelsh, R. (1997). Transgenic crops: Engineering a more sustainable agriculture? *Agriculture and Human Values*, 15, 43-56.

Irwin, E. (2002). The Effects of Open Space on Residential Property Values. *Land Economics*, 78(4), 465-480.

- James Madison University.. (2012). James Madison University Arboretum Collaborative. *James Madison University*. From James Madison University Web site:  
<http://www.jmu.edu/cfi/programs/arboretumcollaborative/index.html> (c)
- Kollmuss, A. (2011). *Carbon offsets 101: a primer on the hottest--and trickiest--topic in climate change*. Worldwatch Institute. Worldwatch Magazine.
- Kramer, C. (2010). Dining Services Go Green. *The Gettysburgian*. From  
[http://www.gettysburg.edu/news\\_events/press\\_release\\_detail.dot?id=2855647](http://www.gettysburg.edu/news_events/press_release_detail.dot?id=2855647)
- Kutner, L. 2000. Environmental Activism and the Internet. *Electronic Green Journal*. Issue #12. Retrieved from <http://egj.lib.uidaho.edu/egj12/kutner1.html>
- Lucid Design Group. (2011). Data Integration Methods. *Lucid Design Group*. From  
<http://www.luciddesigngroup.com/buy.php>
- McFarland, A., Waliczek, T., and Zajicek, J. (2008). The Relationship Between Student Use of Campus Green Spaces and Perceptions of Quality of Life [Electronic version]. *HortTechnology*, 18(2), 232-238.
- Middlebury College. (2008). *Climate Action Implementation Plan: Middlebury College*. From  
[http://www.middlebury.edu/media/view/243071/original/Middlebury\\_CAP.pdf](http://www.middlebury.edu/media/view/243071/original/Middlebury_CAP.pdf)
- Middlebury College. (2011). Patrick Dougherty at Middlebury A Three-Week Environmental Sculptural Project. In Committee on Art in Public Places. *Middlebury College Sustainability*. From <http://www.middlebury.edu/sustainability/>
- Mitchell, R. and Popham, F. (2003). Greenspace, urbanity and health: relationships in England. *Epidemiology and Community Health*, 61, 681-683.
- Morhardt, J., Adidjaja, E., Anderson, R., Anton, V., Archer, A., ... Williams, S.. (2010). *Sustainability reporting of the Top 50 Liberal Arts Colleges 2010*. Roberts Environmental Center at Claremont McKenna College.

- National Wildlife Federation. (2008). Campus Environment 2008: A National Report Card on Sustainability in Higher Education. *National Wildlife Federation*. From <http://www.nwf.org/campusEcology/docs/CampusReportFinal.pdf>.
- Nesbit, R. (2009). Landscape Master Plan Directs Green Space, Water Conservation Projects. In *The Whistle*.
- New York University Office of Web Communications. (2011). *New York University Green Grants*.
- NWF Campus Ecology Program (2000). Creating and Environmental Coordinator Position Part I: A Portfolio of Case Studies. NWF. From <http://www.nwf.org/campusecology/docs/coordinator.pdf> (sc)
- Oberlin College. The Oberlin Project. Retrieved from: <http://www.oberlinproject.org/>
- “Objectives for 2020.” (2009). Pomona College – Sustainability. *Pomona College*. From <http://www.pomona.edu/administration/sustainability/action-plan/2020objectives.aspx>
- Orr, David W. (1994). *Earth in Mind: on Education, Environment, and the Human Prospect*. Washington, DC: Island.
- Painted Turtle Farm. (2010). Gettysburg College Sustainability. *Gettysburg College*. <http://www.gettysburg.edu/about/sustainability/groups/ptf/index.dot>
- Pennsylvania Department of Environmental Protection. (2005). *Pennsylvania Stormwater Best Management Practices: Appendix B*.
- Pfirman, S., Collins, S., and Michaels, A. (2005). Collaborative Efforts: Promoting Interdisciplinary Scholars. *The Chronicle of Higher Education* 51:23:B15. From <http://chronicle.com/article/Collaborative-Efforts-/35536>.
- Pomona College. (2009). Pomona College Climate Action Plan, September, 2009. *Pomona College*. From <http://www.pomona.edu/administration/sustainability/resources/publications/CAPv3.pdf>

- Pomona College. (2010). Pomona College - Waste Efforts. *Pomona College*. From <http://www.pomona.edu/administration/sustainability/initiatives/waste/efforts.aspx>
- Rain Garden. (2008). In *Seattle University Sustainability*.
- Rubinstein, N. (1997). The Psychological Value of Open Space. In L. W. Hamilton (Ed.), *The Benefits of Open Space*. New Vernon, NJ: The Great Swamp Watershed Association.
- Scott, P. and Jackson, R. (2002). Environmental, Social, and Sustainability Reporting on the Web: Best Practices. *Corporate Environmental Strategy*, 9(2).
- Skidmore College Dining Services. (2011). Dining Services is committed to a sustainable Skidmore College. *Skidmore College*. From <http://cms.skidmore.edu/dining/service/sustainability.cfm>.
- Stanford School of Humanities and Sciences. (2009). Stanford Artists Swept Up in Rising Tide of Environmental Awareness. In *The Human Experience*.
- "STARS Report-Dickinson College". (2011). Association for the Advancement of Sustainability in Higher Education. *Sustainability Tracking and Assessment Reporting System*. From <https://stars.aashe.org/institutions/dickinson-college-pa/report/2011-06-13/>
- "STARS Report-Gettysburg College." (2011). Association for the Advancement of Sustainability in Higher Education. Retrieved from <https://stars.aashe.org/institutions/gettysburg-college-pa/report/2011-12-01/>
- SCA Tissue North America. (2011). Third Party Certification. *SCA Tissue*. From <http://www.torkusa.com/environment/third-party-certifications1/>
- Stibbe, A. (2009). *The Handbook of Sustainability Literacy: skills for a changing world*. Totnes: Green Books.
- Sustainability Advisory Committee. (2008). Minutes for February 19, 2008. In *Meeting Minutes*. From [http://www.gettysburg.edu/about/sustainability/about/committee/feb\\_19\\_2008\\_minutes.dot](http://www.gettysburg.edu/about/sustainability/about/committee/feb_19_2008_minutes.dot)
- Sustainability Advisory Committee. (2009). Minutes for May 27, 2009. In *Meeting*

*Minutes*. From <http://www.gettysburg.edu/dotAsset/2615274.pdf>

Sustainability Advisory Committee. (2010a). Minutes for February 12, 2010. *In Meeting*

*Minutes*. From <http://www.gettysburg.edu/dotAsset/2688258.pdf>

Sustainability Advisory Committee. (2010b). *Sustainability Advisory Committee*

*Membership*. Gettysburg College. From

<http://www.gettysburg.edu/about/sustainability/about/committee/membership.dot>

Sustainability at Eckerd College. (2009). *Eco-Clamshell*. Eckerd College. From

<http://www.eckerd.edu/green/waste/ecoclamshell.php>

Sustainable Endowments Institute. (2011). *The Green Report Card*. From

<http://www.greenreportcard.org/report-card-2011/indicators>

"The 50 Most Amazing College Campuses." (2011). *In The Best Colleges*.

The College Sustainability Report Card. (2011). Gettysburg College – Green Report Card. (2011).

*Green Report Card*. From [http://www.greenreportcard.org/report-card-](http://www.greenreportcard.org/report-card-2011/schools/gettysburg-college#)

[2011/schools/gettysburg-college#](http://www.greenreportcard.org/report-card-2011/schools/gettysburg-college#)

"The Growth of Social Media." (2011). From <http://www.searchenginejournal.com/the-growth-of-social-media-an-infographic/32788/>

Thompson, D. (2011). Compost with Eco-Reps. *In Dickinson College Eco-Reps*

*Blog*.

Thompson, T., Burgstahler, S., and Comden, D. (2003). Research on Web Accessibility in Higher Education.

*Information Technology and Disabilities*. 9(2) 2003. From

<file:///C:/zhuqi/uhv/paper/Accessibility08/thompson.htm>.

Tidy Planet. (2011). How We Can Save You Money. *TidyPlanet.co.uk*. From

<http://www.tidyplanet.co.uk/how-we-can-save-you-money>

Ulrich, R. (1984). View through a window may influence recovery from surgery. *Science*,

224, 420-421.

University of Maryland. (2010) Chesapeake Project. *University of Maryland*. From

[http://www.sustainability.umd.edu/content/curriculum/chesapeake\\_project.php](http://www.sustainability.umd.edu/content/curriculum/chesapeake_project.php)University of

Pennsylvania. (2011). Designing Green. In *Penn Green Campus Partnership*.

Ursinus Sustainability Website. (2011) From

<http://www.ursinus.edu/NetCommunity/Page.aspx?pid=2147>

U.S. Department of Energy. (2002). Pennsylvania Colleges and Universities Are The Force Behind Wind Power. From

[http://apps3.eere.energy.gov/greenpower/markets/pr/0402\\_communergy\\_pr.html](http://apps3.eere.energy.gov/greenpower/markets/pr/0402_communergy_pr.html)Washington and Lee

Sustainability Website. (2011). *Washington and Lee University*. From

<http://www.wlu.edu/x18417.xml>> accessed 28 November 2011

Washington Center for Improving the Quality of Undergraduate Education: Curriculum for the Bioregion Initiative (WCCBI). (2006). *Washington Center*. From

[http://www.evergreen.edu/washcenter/resources/upload/Integrating\\_Sustainability\\_Across\\_the\\_Curriculum.pdf](http://www.evergreen.edu/washcenter/resources/upload/Integrating_Sustainability_Across_the_Curriculum.pdf)

Wong, L., ed. (2009). *United Nations Educational, Scientific and Cultural Organization*. Globalization and Education for Sustainable Development: Sustaining the Future.

Wu, C. (2011). Pomona Becomes First Liberal Arts College to Earn sustainable Seafood Certification. *The Student Life*. From <http://tsl.pomona.edu/articles/2011/9/30/news/415-pomona-becomes-first-liberal-arts-college-to-earn-sustainable-seafood-certification>