

Vermont Law School

Campus Carbon Reduction Plan

Mitigating Greenhouse Gas Emissions

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Finally, we would like to express our sincere thanks to Dan Worth of the National Association of Environmental Law Societies (NAELS) and Campus Climate Neutral (CCN) for his continual assistance and encouragement.

EXECUTIVE SUMMARY

The Carbon Reduction Task Force's (CRTF) purpose is to produce a comprehensive document containing the process and final plan, specifically tailored to the needs of Vermont Law School, which will advance the campus towards the goal of carbon neutrality. The CRTF resulted from a Campus Greening Committee proposal to organize a student group to assess VLS' carbon emissions and, based on that information, create a plan to reduce the law school's carbon footprint. The phases of the CRTF's preliminary one-year plan include:

1. Historical Assessment – research the historical energy usage on campus and the various efforts of student, faculty and staff to reduce consumption.
2. Inventory and Analysis – compile data of all the energy used on campus and calculate the amount of carbon VLS produces.
3. Target – create ambitious, yet realistic emission reduction goals with corresponding target dates.
4. Implementation – recommend a plan consisting of specific measures VLS can take to meet its targets. The implementation plans will consist of actions for both short-term and long-term time frames.

The CRTF used the Campus Carbon Calculator, developed by Clean Air – Cool Planet (CA-CP), to create a greenhouse gas inventory for Vermont Law School. The inventory includes emissions from electricity consumption, distillate oil and propane consumption, and the VLS campus fleet. The CA-CP Calculator converts the gashouse gas emissions to a common unit of measurement, metric tons of carbon dioxide equivalent (MTCO_{2e}), which can be used to compare all emission sources.

In 2007, the total GHG emissions were approximately 933 MTCO_{2e}. Electricity consumption at VLS was responsible for emitting 547 MTCO_{2e}, roughly 59% of total emissions, and the on-campus stationary source consumption was responsible for emitting 371 MTCO_{2e}, roughly 40% of total emissions. The VLS fleet fuel consumption was responsible for emitting 15 MTCO_{2e}, roughly 1% of total emissions. VLS' total emissions have been growing by about 85% since 2005. The energy use per student trend from 2005-2007 is also consistent with the trend of total emissions per student.

Because one of the Carbon Reduction Task Force's primary recommendations is for VLS to participate in the American College & University Presidents Climate Commitment, we have used this commitment as a framework for our short-term and long-term recommendations. Based on the data collected and research conducted by the CRTF, the task force strongly advocates that VLS implement various short- and long-term recommendations, such as behavioral/institutional improvements and physical/structural improvements, to slow and eventually reverse the school's emission levels.

CHAPTER 1: BACKGROUND AND SIGNIFICANCE

1.1 INTRODUCTION

In the spring of 2007, Vermont Law School's Campus Greening Committee proposed the creation of a task force to lead in the development of a Campus Carbon Reduction Plan. The plan proposed performing a comprehensive energy audit of Vermont Law School's campus and providing recommendations, focusing on energy efficiency, for the implementation of a viable carbon emission reduction plan for the campus. The proposal was initiated in response to a number of other colleges and universities that have utilized on-campus student resources for similar projects in light of significant costs associated with retaining a private firm to draft a carbon reduction plan, specifically:

- Rocky Mountain Institute completed a formal climate action plan entitled "Carbon Neutral by 2020" for Oberlin College in 2002.
- Middlebury College students completed a climate action plan after spending a year collecting and analyzing data from 2001-2002.
- Students at the University of California at Santa Barbara's BREN School of Management created a climate action plan in 2001. Dan Worth, President of the National Association of Law Societies (NAELS), assisted the UCSB students with their plan and has generously offered to assist VLS students in the same way free of charge.

This project was to begin at the start of the fall semester of 2007. Interested students applied to join the task force during the summer of 2007. The Campus Greening Committee and the Vice President of Finance and Administration, Lorraine Atwood, reviewed applications and select candidates for the task force. Vice President Atwood was responsible for the final approval of all candidates selected for the project. A group of four students with diverse backgrounds in environmental science, economics, and social sciences form the backbone of this project. Work-study eligible students obtained funds from that program. The following qualifications and requirements were used in the selection process:

Qualifications of applicants:

- Rising 2L or 3L full-time student at VLS; or 2007-2008 MSEL (Masters of Studies in Environmental Law) fulltime student at VLS
- Demonstrated commitment to environmental stewardship and public service
- Academic achievement in undergraduate and/or graduate schools
- Demonstrated capacity for productive group work and collaboration
- Innovative yet practical ideals for improvement of environmental quality
- Demonstrated ability to work independently and with a group to achieving goals and milestones with deliverable deadlines.

CARBON REDUCTION TASK FORCE

Caitlin G. Balch-Burnett



Caitlin is a Master of Studies in Environmental Law (MSEL) class of 2008 student at Vermont Law School. In 2005, Caitlin graduated cum laude from Colorado State University where she received her Bachelors of Science in Wildlife Biology with a minor in Conservation Biology. While studying at Colorado State University, she worked as a research assistant in an ecotoxicology research lab where she helped monitor water quality and health of streams in Colorado by identifying and extracting aquatic invertebrates from different water samples. Before coming to VLS, she interned with the Ecology and Economics Research Department at the Wilderness Society's Central Rockies Office in Denver, Colorado. While interning for the Wilderness Society, Caitlin analyzed the Bureau of Land Management's LR2000 database, which maintains data on oil and gas leases in the western United States. She was also a contributing author for a journal article about the effects of oil and gas fields on habitat fragmentation (still in the publication process).

Lisa M. Campion



Lisa is a Master of Studies in Environmental Law (MSEL) class of 2008 student at Vermont Law School. She received Bachelor of Science degrees in Environmental Science and Management and Fisheries and Wildlife with minors in Science, Technology and Environmental Public Policy and Environmental Economics and Policy, magna cum laude, from Michigan State University in 2007. In Michigan, Lisa participated in "Studies of Antarctic System Science," study abroad program in the winter of 2006-2007, where she traveled to Ushuaia, Argentina and toured the Antarctic Peninsula and continent researching the science, policy, and history of this area. Lisa also worked as a Student Assistant at the Michigan Department of Environmental Quality, Environmental Science and Services Division, Pollution Prevention Section. At Vermont Law School, Lisa is an active member and MSEL Representative of the VLS Environmental Law Society, Solutions Liaison and Water Panel Co-Coordinator for the National Association of Environmental Law Societies Conference Planning Committee of 2008 and is active in the VLS Campus Greening Committee, VLS Environmental Education Group and the VLS Mountaineers.

Mary L. Johnson



Mary is a joint degree candidate (J.D. and Master of Studies in Environmental Law) at Vermont Law School class of 2009. Mary received a Bachelor of Science in Politics and Government with minors in Environmental Studies and English from Illinois State University. As an undergraduate, Mary participated in several student environmental and community outreach groups. At Vermont Law School, Mary is a member of the Environmental Law Society and part of the NAELS Conference Planning Committee. Mary is also an executive board member of the group Student Community Outreach and Education (SCORE).

Sandy L. Marks



Sandy is a Master of Studies in Environmental Law (MSEL) class of 2008 student at Vermont Law School. Sandy received a Bachelor of Science in Management, summa cum laude, from Southern Vermont College in 2007, with concentration in History & Politics, and Environmental Studies. As an undergraduate, she interned for the town's Energy Committee in Bennington, Vermont, working on a town-wide energy efficiency campaign. Sandy also worked with the Vermont Energy Education Program as the Outreach Coordinator of Southern Vermont prior to beginning studies at Vermont Law School in the fall of 2007. At Vermont Law School, Sandy is an active member and MSEL Representative of the VLS Environmental Law Society. Prior to enrolling at Southern Vermont College in 2004, Sandy's career included numerous program director and senior management positions in physician reimbursement and healthcare compliance, where she developed and administered compliance auditing and monitoring programs. She served on numerous national and state advisory boards, including the Healthcare Billing Management Association's Ethics & Compliance Advisory Committee, Connecticut Medicare Outreach & Education Advisory Board, and Massachusetts Medicare Physician Advisory Board.

CARBON REDUCTION PLAN

During the fall of 2007 and spring of 2008, the task force worked to complete a comprehensive analysis of Vermont Law School's energy use with help from CX Associates, an outside firm retained by the law school for past projects, and Dan Worth, the Executive Director of the National Association of Environmental Law Societies (NAELS) and Campus Climate Neutral (CCN). Worth's primary role is to provide students with the necessary resources and guidance to perform the audit.

In November 2007, the task force met with Tim Perrin of Efficiency Vermont for on-site energy evaluation of Vermont Law School. In a follow-up meeting in February 2008, Mr. Perrin summarized some of the major energy-saving opportunities and the task force used these recommendations as a guide for future campus improvements.

The law school created a faculty board of advisors to be involved in the process consisting of faculty or staff from the Environmental Law Center, faculty or staff from the Institute for Energy and the Environment, staff from buildings and grounds, and Vice President Atwood. This board provides general direction to the task force, and meets several times during the academic year for project updates.

Professors David Firestone, Marc Mihaly, and Patrick Parenteau agreed to be on the advisory board for the task force. The role of the advisory board was to serve as a resource of information and experience that the task force may contact for guidance on certain matters. The group met with the advisory board to discuss the group's progress, any problems that have arisen, and to obtain feedback on the recommendation section of the report.

The VLS community has on-campus resources that were available for utilization in completing this project, including:

- **Vermont Law School's Institute for Energy and the Environment (IEE):** The IEE is a sponsor of the energy audit offering some professional guidance. Mark Mihaly, Associate Dean for the Environmental Programs, Director of the Environmental Law Center, and Associate Professor of Law, serves on a board of faculty directors for the project. Through the IEE, Efficiency Vermont also plays a consulting role in the design of the plan.
- **Campus Greening Committee (CGC):** CGC is a main sponsor of this project and the task force sends one representative to CGC's weekly meeting to give an update on the project. CGC provides a forum for brainstorming and additional research support when needed.
- **Buildings and Grounds (B&G):** B&G has the technical knowledge necessary to complete this project. The task force will work closely with B&G to ensure that a feasible plan for the campus is produced.

There are a number of additional resources the task force has available for direction and assistance in completing this project.

- **CX Associates:** CX has been retained by the school for other major projects on campus including construction of Oakes Hall and the renovation of Debevoise Hall. CX will be an invaluable resource for technical data and analysis for the student action plan.
- **Dan Worth, President, NAELS:** Mr. Worth will be available for email and phone consultation to answer student's question about the process and put students in touch with other resources to facilitate the energy audit.
- **Efficiency Vermont:** Efficiency Vermont is the nation's first statewide provider of energy efficiency services. We're operated by an independent, non-profit organization under contract to the Vermont Public Service Board. EVT provides technical advice, financial assistance and design guidance to help make Vermont homes, farms, schools and businesses energy efficient.

The Campus Greening Committee introduced the following strategy and timeline for the Carbon Reduction Task Force to follow:

- **Phase I: Strategy, Goal Setting, and Research (Sept. 2007)**
 - Initial series of meetings with Vice President Atwood, Professor Firestone, advisory board, and CGC to set the specific goals and timeline for completion of the energy analysis and implementation plan.
 - Research conducted by the task force to determine the options available for certification of any climate reduction plan (Energy Star, LEED, offset programs, etc.).
 - At the end of the September, the task force will report their findings on

certification options available for achieving the carbon reduction goals.

- **Phase II: Emissions Data Collection and Analysis (Oct. 2007-Dec. 2007)** Perform a systematic collection of direct and indirect energy and resource consumption of all campus facilities, transportation, and procurement. Input the information into a detailed emissions inventory. Deliverables for this phase include:
 - Fuel Analysis
 - Energy Audit
 - Transportation Analysis
 - Emission Baseline

A comprehensive database will be compiled by the task force for use in future phases.

- **Phase III: Opportunities and Metrics (Dec. 2007-Feb. 2008)**
 - Ground and facilities walkthrough with Efficiency Vermont to identify areas for energy savings and cost reductions as the group prepares *Phase II* deliverables.
 - Construct a building performance evaluation and develop metrics with the goal of achieving ENERGY STAR certification for high performance buildings on campus.
 - Identify opportunities to utilize LEED certification programs for campus facilities.
 - Develop options for carbon credit and offset investment strategies to maximize impact with realistic capital investment.
- **Phase IV: Preliminary Mitigation Strategy (Mar. 2008—Before Spring Break)**
 - The task force will present Vice President Atwood and the faculty advisory board with a draft plan for a mitigation and implementation strategy;
 - Discuss the plan in detail, address questions and areas of the plan that require revision or clarification;
 - Identify times for a series of meetings to review changes to the plan with the goal of presenting the final plan to the Vice President Atwood on May 1, 2008.
- **Phase V: Final Mitigation and Implementation Strategy (May 1, 2008)**
 - The group will present a final mitigation and implementation strategy to the school during a lunchtime or afternoon event.

1.2 CLIMATE CHANGE

Climate change is arguably the most significant problem our generation faces. Unfortunately, its drivers, greenhouse gas (GHG) emissions from energy use and land use changes, are among the most integral inputs to the current economic system. Furthermore, the range of possible effects of climate change, from rising sea levels to increases in extreme weather events, makes addressing the consequences of climate change especially challenging and important.

Over the course of human history, people have dramatically altered the natural landscape for agriculture, housing, industry and countless other activities. Although humanity's footprint

already includes deforestation, altered waterways, and industrial pollutants, a powerful new force, global climate change, will affect natural systems, and the services we derive from them, in new and profound ways. The scientific consensus, reflected by recent reports of the Intergovernmental Panel on Climate Change (IPCC) and confirmed by the U.S. National Academy of Sciences, is that the Earth's climate is warming and that human activities are largely responsible.¹ Specifically, the IPCC notes in its comprehensive report, the Third Assessment Report (TAR), that:

- The present atmospheric CO₂ concentration of 378 parts per million (ppm) is almost 1/3 higher than pre-industrial levels (280 ppm) and is the highest concentration in the last 420,000 years;
- Global average surface temperature has increased by 0.6 C during the twentieth century, likely the largest warming in any century during the last millennium;
- It is very likely that the 1990s were the warmest decade since the instrumental record began in 1861.

The TAR concludes that "There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities," predominantly the burning of fossil fuels and land use changes.²

Scientists are beginning to observe the impacts of the currently modest increase in global average surface temperature: decreases in snow cover, retreat of non-polar mountain glaciers, sea level rise of 0.1 to 0.2 meters, and more frequent and more intense El Nino/Southern Oscillation (ENSO) events.³ However, global warming and its impacts are likely to be of increasing concern in the future. IPCC climate scenarios project CO₂ concentrations by 2100 of 540 ppm to 970 ppm primarily due to fossil fuel burning, with global average surface temperature rising by 1.4 to 5.8° C over the 1990 to 2100 period.⁴ They emphasize that this increase in temperature is much larger than twentieth century warming (with its already observable effects) and is very likely unprecedented in the last 10,000 years.⁵ The projected impacts of such a warmer climate by 2100 include:

- Increases in overall precipitation and in the intensity and variability of precipitation;
- Sea level rise of 0.09 to 0.88 meters due to thermal expansion and melting of glaciers; and,
- Increases in extreme weather events.⁶

Such unprecedented climate change has wide ramifications for human and natural systems world-wide, likely including increased flooding, reduced farm output, animal and plant extinctions, and droughts. Additionally, as GHGs have atmospheric lives ranging from decades to centuries, GHG emissions will affect atmospheric composition and climate for many generations.⁷

Although climate change is a global issue, its impacts are unquestionably local. Due to regional variations in projected climate change and vulnerability, it is important to comprehend how climate change may impact Vermont residents in the coming years. Climate change also has potentially significant and negative implications for Vermont's public health, agriculture, forestry, and natural systems. Taking into account the state of the science and the large future

risks of unabated growth in greenhouse gas emissions, the large majority of the world's scientists agree that the debate over the existence of anthropogenic climate change is over and that the time for significant action to reduce emissions is now.⁸

1.3 CLIMATE CHANGE POLICY

Recognizing this, much of the world (and almost all “developed” countries) is starting to act to reduce GHG emissions, with both the Kyoto Protocol coming into force, the European Union (EU) implementing its Emissions Trading Scheme, and the “Bali road map,” which could put the world on a path to deeper emissions cuts after 2012. Action at the state and local level is important, and a number of initiatives are underway (e.g., Northeastern State’s Regional Greenhouse Gas Initiative, U.S. Mayors Climate Protection Agreement) that will help reduce GHG emissions and demonstrate that doing so need not be detrimental to local and state economies.

Vermont is already leading the way with a number of policies enacted or in the development stages that directly or indirectly address global warming. With the Governor’s 2003 executive order directing state government agencies and departments to reduce greenhouse gas emissions from state government buildings and operations. Vermont's goal is to reduce emissions by an amount consistent with the recommendations of The Conference of the New England Governors and Eastern Canadian Premiers Climate Change Action Plan. The goals established by the Conference are to reduce region-wide greenhouse gas emissions from the 1990 baseline by: twenty-five percent by 2012; fifty percent by 2028; and, if practicable using reasonable efforts, seventy-five percent by 2050.⁹

1.4 WHY VERMONT LAW SCHOOL SHOULD TAKE ACTION

Set against this background is Vermont Law School (VLS), an institution that educates tomorrow’s environmental, political, and intellectual leaders. As the second ranked Environmental Law School in the nation, Vermont Law School is well positioned to play a pivotal role in Vermont’s climate strategy. VLS, with its history of environmental stewardship, can serve as a model to universities and other law schools to show that greenhouse gas emissions mitigation is the right thing to do. Furthermore, universities can reap the following benefits from prioritizing the reduction of greenhouse gas emissions:

- Reduce campus energy costs;
- Hedge against future climate regulations and energy price volatility;
- Transform markets for low-cost climate mitigation technologies through their large purchasing power; and,
- Improve the reputation of the University or Law School.

Ultimately, VLS has the responsibility of producing tomorrow’s leaders and citizens who will significantly influence Vermont’s and the U.S.’s response to global warming. Therefore, commitments to reduce greenhouse gas emissions from campuses are of great importance.

This type of campus activism is appropriate for institutions of higher learning as centers for intellectual inquiry, critical thinking, and innovation. Since universities and law schools are not

bound by the same constraints as other public and private organizations, they are freer to play a leadership role with regard to issues that question the status quo. Within this context, campus leadership on climate change is both appropriate and expected.

Not only can universities and law schools play an important role in shaping future policy concerning climate change, but campus activities today have a direct impact on greenhouse gas emissions. Fortunately, universities can benefit in many ways from prioritizing the reduction of GHG emissions. In addition to contributing to the broader climate change movement, universities can realize several private benefits from campus GHG reductions:

- **Reduce campus energy costs:** Many of the strategies for reducing greenhouse gas emissions involve energy efficiency/conservation projects, which result in energy cost savings over time. Often, such projects recoup the capital investment quickly and can be justified solely on the economics (i.e., without consideration of the GHG emissions reduction benefits).
- **Hedge against energy price volatility:** Strategies for reducing GHG emissions (e.g. energy efficiency and renewable energy investments) help reduce the demand for purchased electricity and natural gas, which can make institutions less vulnerable to fluctuations in fossil fuel prices. By diversifying energy portfolios, campuses may ensure a higher degree of cost stability and certainty in the face increasing fuel prices.
- **Hedge against future regulations:** Early action will also put universities and law schools in a strong position when inevitable GHG restrictions, either regional or national, are put in place, including the possibility of banking emissions reduction credits for the future given participation with the GHG registries.
- **Improve the reputation of the school and appeal to student, alumni, staff and faculty values:** Taking action to address global warming will provide universities and law schools with good public relations opportunities, both among other schools and alumni. Staff and faculty may also respond positively to GHG mitigation, demonstrating that the school shares in the concern for environmental and social values may help to recruit and retain high-quality staff and faculty.

Recognizing these opportunities, an increasing number of campuses have “greening” programs, and some have taken the lead on dealing directly with their impact on climate change. Many have made public commitments to reduce greenhouse gas emissions. Emissions reduction programs on campuses can help influence the behavior of its graduates, as future consumers, investors, and professionals. By incorporating students in the emissions reduction process, schools can help train the next generation of leaders to adequately address global warming.

Clearly there is a need for addressing climate change in the U.S. The benefits of reducing GHG emissions, in the form of energy savings, reduced risk, and increased employee morale, among others, appear to be in place to motivate broad participation for a bottom-up approach. VLS is well positioned to help provide such leadership in Vermont. As the premier Environmental Law School in the nation, VLS can play an important role in Vermont’s climate strategy, as well as the U.S.’s response to climate change.

In addition to the broader implications, a public commitment by VLS to reduce greenhouse gas emissions could yield multiple benefits including:

- **Appeal to student, alumni, staff, and faculty values:** The campus community has a strong culture of environmentalism and prides itself on its beautiful natural setting, in the Green Mountains of Vermont. The Environmental Law Center offers the nation's largest, graduate, environmental law program, and has received the American Bar Association Award for Distinguished Achievement in Environmental Law and Policy. Taking action to address global warming will also provide the Vermont Law School with public relations opportunities, both among other universities and alumni.
- **Strengthen relations with local communities:** A campus commitment to greenhouse gas reductions can improve relations with the local community by establishing the campus as a good neighbor.

The time is right for campuses to provide moral leadership. Not only students, but campus administrators should also press for change in the educational institutions that produce tomorrow's leaders and citizens who will need to address global warming. The students currently enrolled at VLS will eventually be living in a carbon-constrained world. Taking this opportunity to encourage students to be conscious of their carbon footprints is both needed and long overdue.

1.5 VERMONT LAW SCHOOL APPROACH

This Carbon Reduction Task Reduction project encourages Vermont Law School to be a leader, and to provide lessons learned to other universities with a similar vision. Our efforts can be divided into two inter-related tracks – analysis and implementation. In the analysis phase, we characterize the main sources of GHG emissions on campus and how they are likely to change in the future, identify mitigation strategies, develop criteria for selecting mitigation strategies, and analyze the feasibility of several prominent emissions reductions targets. In the implementation phase, we seek to understand VLS as a complex organization and to both identify institutional obstacles that constrain the implementation of the previously described mitigation strategies and opportunities to maneuver around the obstacles. These two parallel and complementary tracks aim to induce VLS to reduce its net GHG emissions over time and to receive the associated benefit.

Campuses can provide both practical and moral leadership with regards to our society's efforts to address climate change by taking steps to reduce their own emissions. The goal of Vermont Law School's Carbon Reduction project is to facilitate VLS's leadership with regard to climate change. We accomplished this goal by identifying projects and policies that will help reduce net GHG emissions related to campus activities and developing the business case for incorporating GHG mitigation plans within VLS's institutional framework. The results of this study will assist other universities and law schools in the assessment and development of decisive action to enable campuses to reduce their GHG emissions within the broader sustainability movement. This project is part of a larger effort spearheaded by Campus Carbon Neutral (CCN) and the

National Associations of Environmental Law Societies (NAELA) to avoid dangerous anthropogenic interference in the Earth's climate system.

It is the goal of the Carbon Reduction Task Force to have Vermont Law School sign on to the American College & University Presidents Climate Commitment. The commitment is a high-visibility effort to address global warming by garnering institutional commitments to neutralize greenhouse gas emissions, and to accelerate the research and educational efforts of higher education to equip society to re-stabilize the earth's climate.

Currently there are 505 signatories to the American College & University Presidents Climate Commitment, including the following Vermont colleges and universities: Castleton State College, Goddard College, Green Mountain College, Middlebury College, and the University of Vermont.¹⁰

CHAPTER 2: GHG EMISSIONS INVENTORY AT VERMONT LAW SCHOOL

2.1 METHODOLOGY & DATA SOURCES

The Carbon Reduction Task Force used the Campus Carbon Calculator (Version 5.0), which was developed specifically for universities by Clean Air – Cool Planet (CA-CP), to create a GHG inventory for Vermont Law School. The inventory includes emissions from electricity consumption, distillate oil and propane consumption, the VLS campus fleet, student, faculty and staff commuting, faculty and staff air travel, fugitive emissions of coolants, and solid waste. However, for the purposes of our primary analysis, we only evaluated the first three emissions sources on the list because these are the significant sources for which VLS is committed to measuring. Moreover, the other emission sources are highly uncertain because of poor data quality.

Using the CA-CP Calculator, activity data (e.g., kilowatt hours of electricity, number of commuters, miles of air travel) are multiplied by an emissions factor (e.g., kg CO₂/kWh, kg CH₄/kWh) to yield emissions for each activity by specific type of greenhouse gas. However, each GHG has a different heat trapping potential and a different atmospheric lifetime, which results in a different global warming potential (GWP) for each GHG (see Figure 1 below).

Figure 1: Global Warming Potentials and Atmospheric Lifetime of several greenhouse gases¹¹

	Atmospheric Lifetime (Years)	Global Warming Potential (100 Year)
Carbon Dioxide (CO ₂)	50-200	1
Methane (CH ₄)	9-15	21
Nitrous Oxide (N ₂ O)	120	310

The CA-CP Calculator solves this problem by converting the GHG emissions to a common unit of measurement, metric tons of carbon dioxide equivalent (MTCO_{2e}), which can be used to compare all emission sources.

BUDGET

The CA-CP Calculator takes into account the operating, research, and energy budget of the campus for comparison purposes. However, VLS only has an operating and energy budget. The actual expenses were provided by the Vice President of Finance and Administration from 2005 to 2007 (see Figure 2). The energy budget includes purchased electricity, distillate oil and propane expenses.

Figure 2: Operating and Energy Budget for VLS

	Operating Budget	Energy Budget
2005	\$18, 279, 986	\$152, 760
2006	\$19, 707, 333	\$216, 329
2007	\$20, 215, 402	\$250, 267

POPULATION

The CA-CP Calculator also uses the number of full time, part time, and summer students, faculty and staff for comparison purposes. The number of full- and part- time students, summer students, faculty, and staff for 2005 to 2007 were provided by the Vice President of Finance and Administration (see Figure 3).

Figure 3: VLS Population

	Full Time Students	Part Time Student	Summer Students	Faculty	Staff
2005	629	10	240		
2006	578	6	219		
2007	608	5	235	51	94

PHYSICAL SIZE

The CA-CP Calculator also uses the total building space for comparison purposes. The total building space for 2007 was 147, 000 square feet as reported by the Vice President of Finance and Administration.

PURCHASED ELECTRICITY

VLS does not generate electricity on campus, but is responsible for the GHG emissions associated with the generation of the electricity it purchases from its electricity provider. The results of the inventory show that purchased electricity is the single largest source of GHG emissions at VLS. For academic years 1999-2007, total electricity demand was determined from the monthly invoices produced by Central Vermont Power Service (CVPS), so we assume the data to be high quality and reliable. The purchased electricity consumption and costs for 1999 to 2007 is shown in Figure 4 below. Figure 5 depicts the purchased electrical use per year along with a timeline of events at VLS that have affected the electrical usage. Figure 6 shows the purchased electric use per year from 2005 to 2007 and Figure 7 shows the purchased electric cost per year from 2005 to 2007. Figure 8 to 11 show building use and cost per year.

Figure 4: Purchased Electricity Consumption and Cost

	Usage (kWh)	Cost (\$)
1999	786,410	96,052.56
2000	811,580	102,593.49
2001	826,328	103,964.50
2002	875,483	109,328.18
2003	891,275	110,620.98
2004	981,853	119,672.82
2005	1,112,413	127,624.10
2006	1,160,136	135,222.65
2007	1,228,651	147,803.33

Figure 5: Purchased Electricity Usage (kWh) per Year

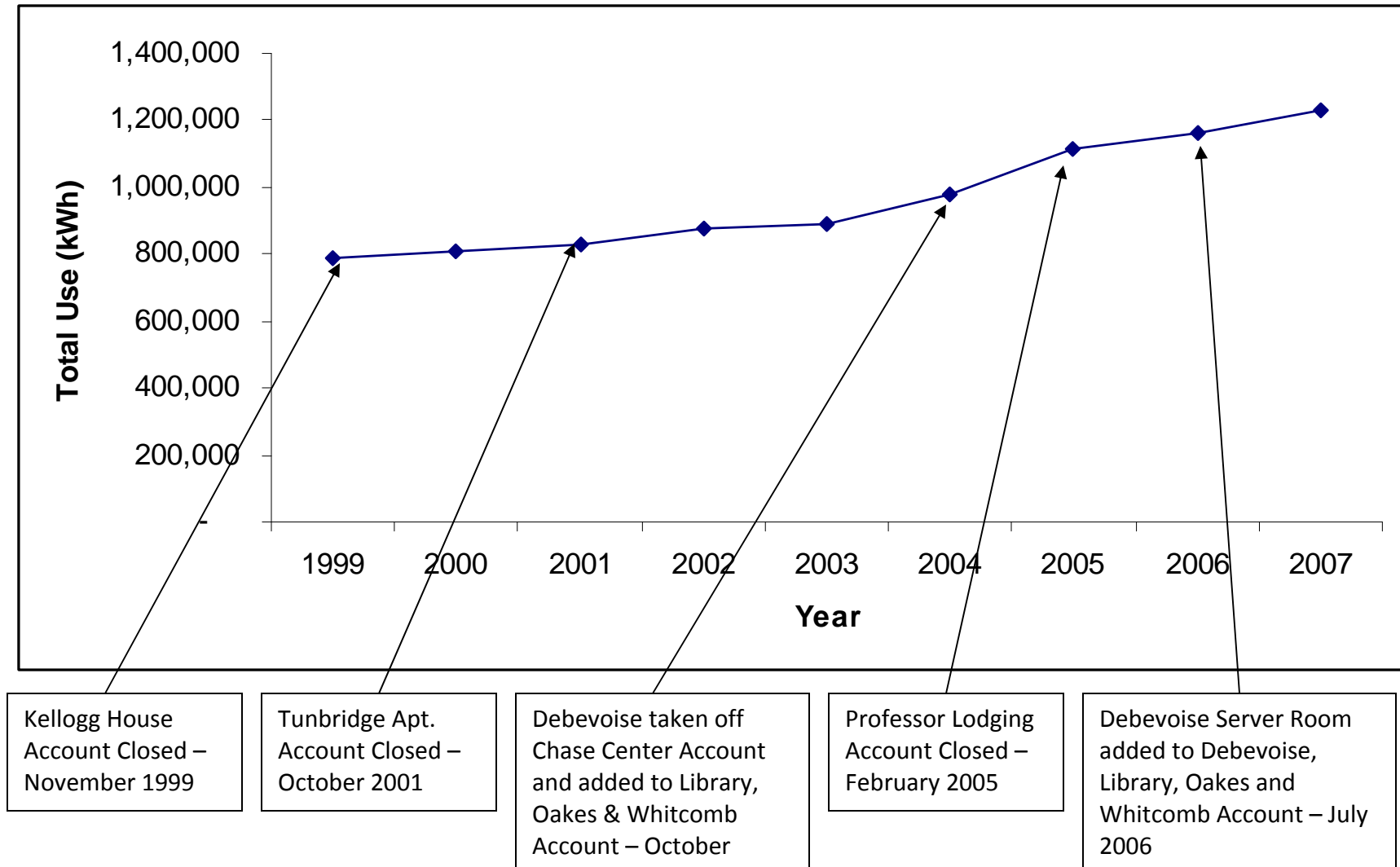


Figure 6: Purchase Electricity Usage (gallons) per Year

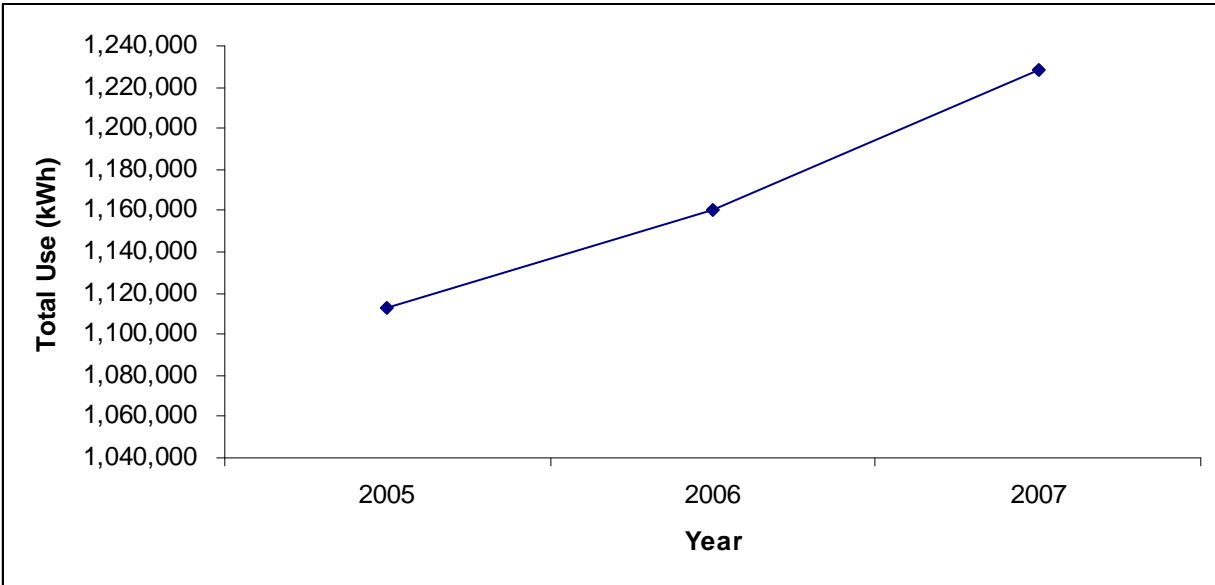


Figure 7: Purchased Electricity Cost (\$) per Year

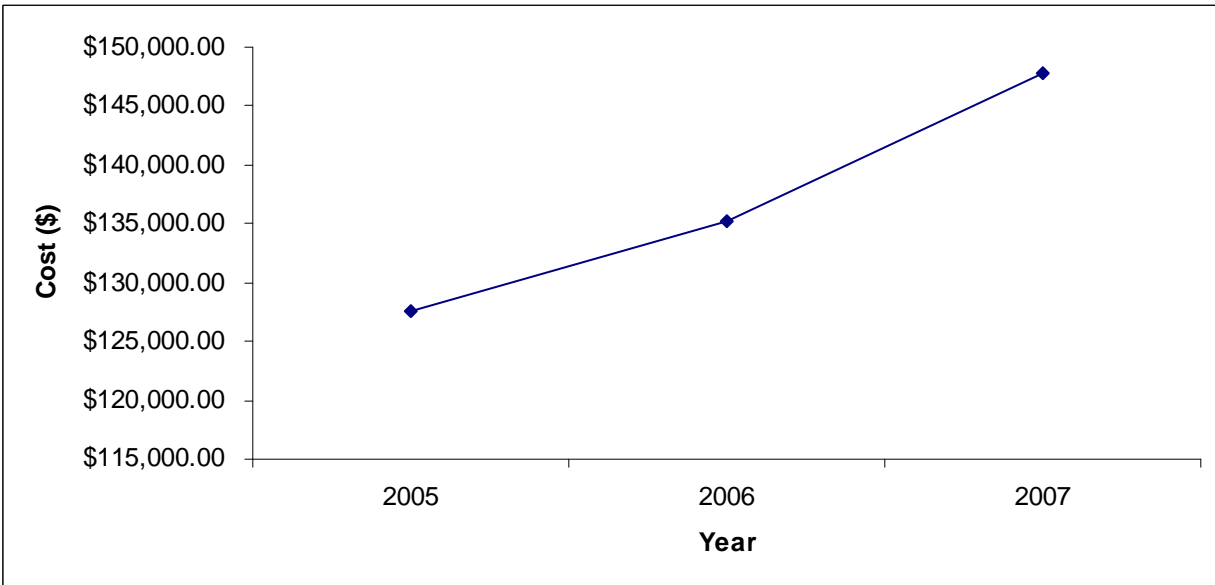


Figure 8: Building Use (gallons) per Year

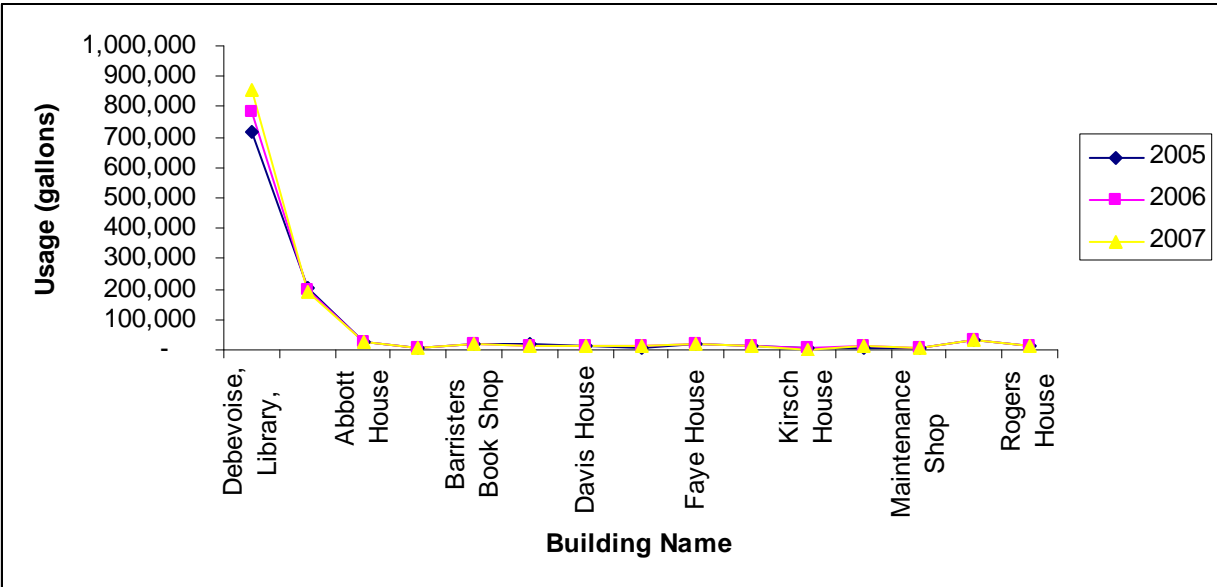


Figure 9: Building Use (gallons) per Year without Debevoise Hall, Cornell Library, Oakes Hall, Whitcomb, and Chase Center

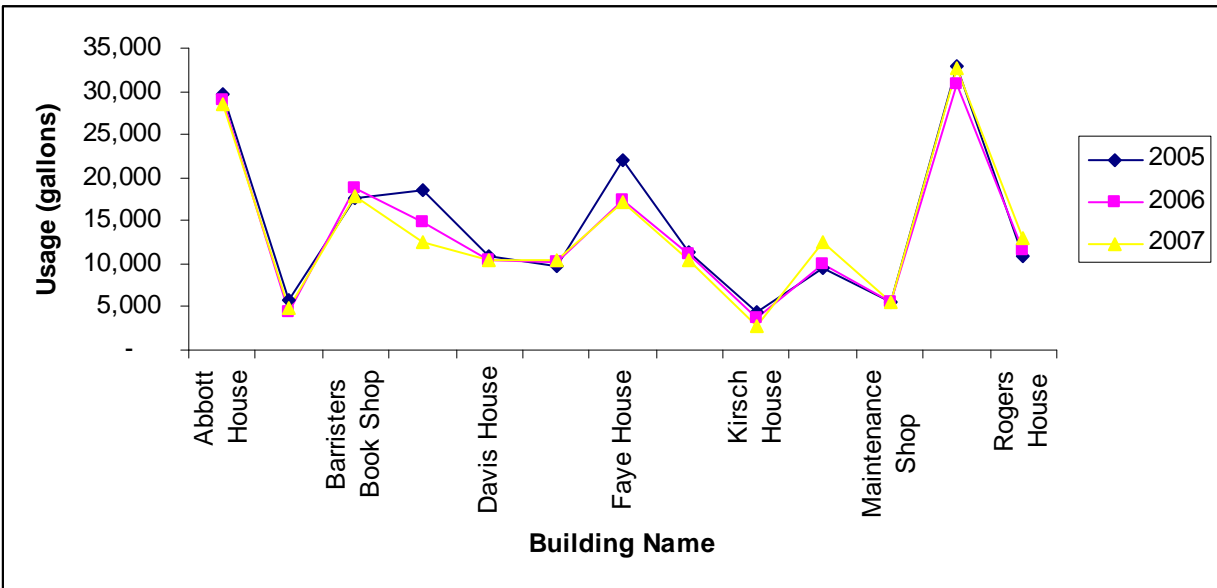


Figure 10: Building Cost (\$) per Year

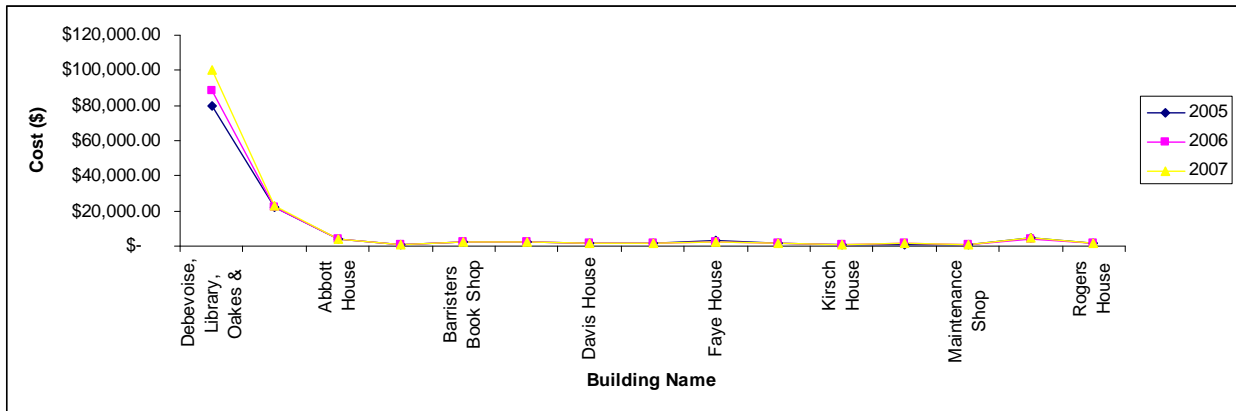
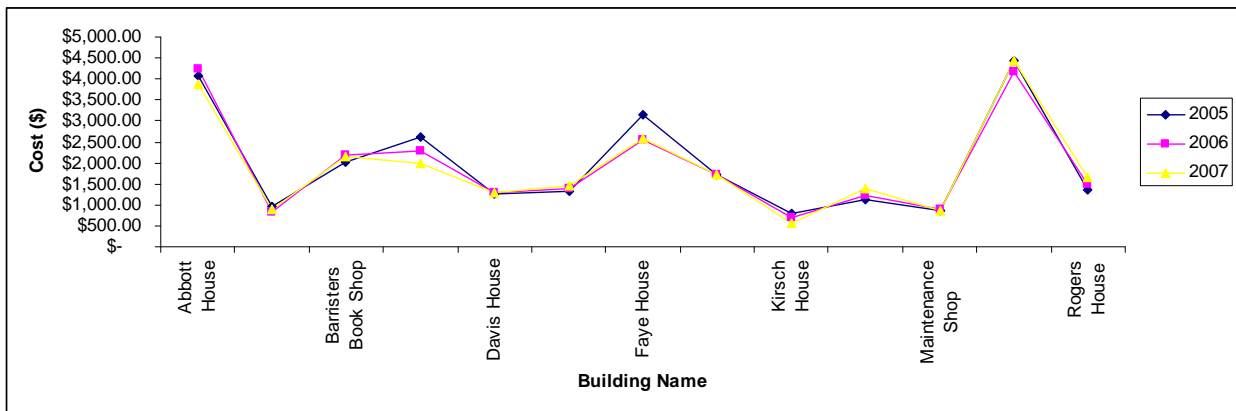


Figure 11: Building Cost (\$) per Year without Debevoise Hall, Cornell Library, Oakes Hall, Whitcomb, and Chase Center



Once annual kWh data is entered, the CA-CP Calculator converts annual electricity consumption data into GHG emissions through a region specific emissions factors for CO₂, CH₄, and N₂O and then converts these numbers into MTCO_{2e}. In 2007, electricity consumption at VLS was responsible for emitting 547 MTCO_{2e}, roughly 59% of total emissions.

ON-CAMPUS STATIONARY SOURCES

VLS utilizes distillate oil (#2 fuel) and dyed K-1 on campus for building heating and cooling requirements. On-campus stationary source use has historically been the second largest single emission category at VLS. For academic years 2005-2007, total distillate oil and dyed K-1 usage was determined from the monthly invoices produced by Irving Oil, so we assume the data to be high quality and reliable. The distillate oil and dyed K-1 consumption and cost for 2005-2007 are in Figure 12. Figure 13 describes the on-campus stationary source usage per year. Figure 14 depicts the on-campus stationary source cost per year. Figure 15 shows the building usage per year and Figure 16 shows that building cost per year.

Figure 12: Distillate Oil and Dyed K-1 Consumption and Cost

	Distillate Oil		Dyed K-1	
	Usage (gallons)	Cost (\$)	Usage (gallons)	Cost (\$)
2005	17,553.2	35,088.92	522.1	1,226.54
2006	31,674.7	70,866.16	956.3	2,270.79
2007	36,240.1	91,390.30	1,181.9	3,099.63

Figure 13: On-Campus Stationary Source Usage (gallons) per Year

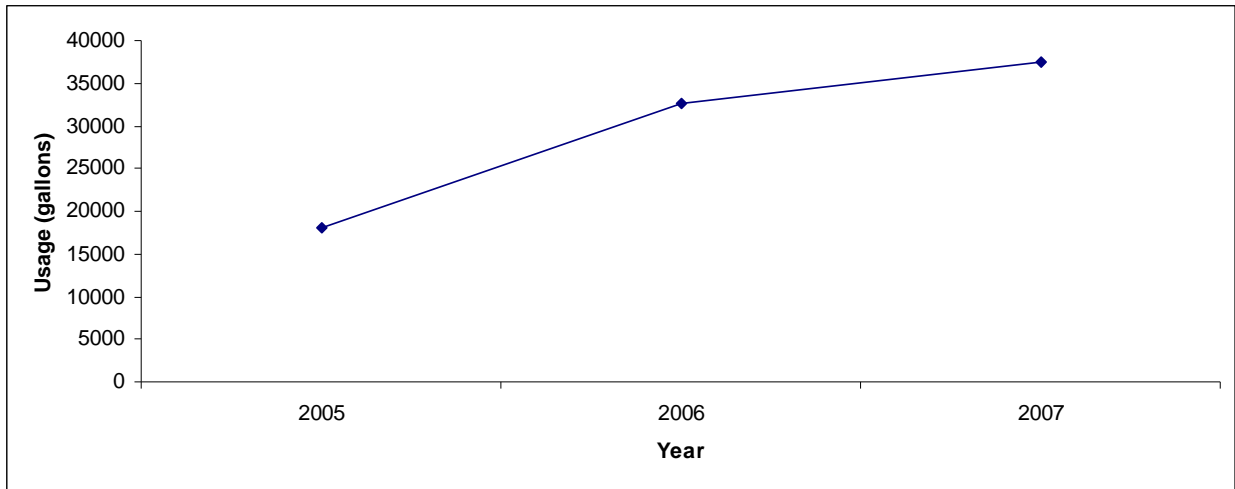


Figure 14: On-Campus Stationary Source Cost (\$) per Year

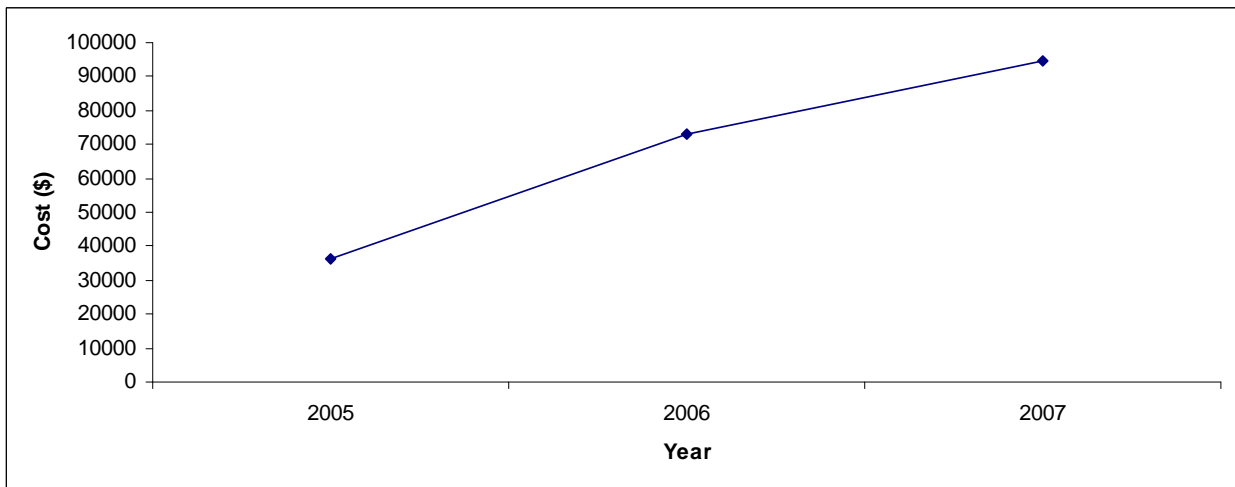


Figure 15: Building Usage (gallons) per Year

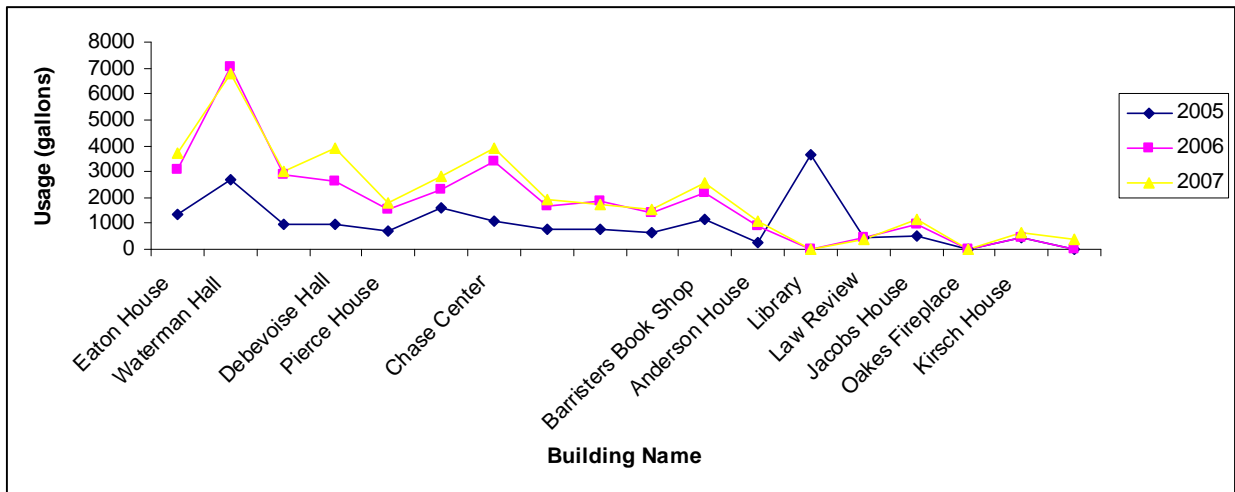
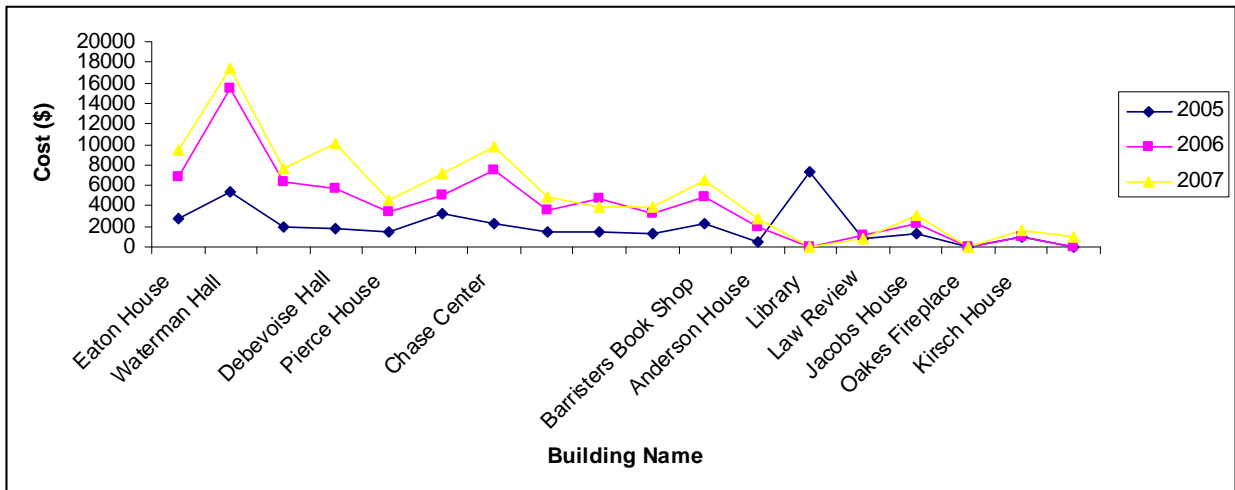


Figure 16: Building Cost (\$) per Year



The CA-CP Calculator converts annual gallons of distillate oil and dyed K-1 use into GHG emissions through emissions factors for CO₂, CH₄, and N₂O and then converts these numbers into MTCO₂e. In 2007, on-campus stationary source consumption at VLS was responsible for emitting 371 MTCO₂e, roughly 40% of total emissions.

TRANSPORTATION

The campus fleet includes all campus-owned cars and trucks. The campus fleet is the smallest of the three categories considered in the inventory and emissions from these sources are almost negligible in comparison to electricity and distillate oil and propane emissions.

The campus fleet includes both gasoline and diesel vehicles, which are entered into the inventory separately because of their differing emissions factors. The Vice President for Finance

and Administration estimated both gasoline consumption data and diesel consumption data for 2007 as there was no direct measurement available and this information was not tracked before 2007. The estimate for gasoline consumption in 2007 was 1040 gallons or 20 gallons consumed per week. Similarly, the estimate for diesel consumption in 2007 was 520 gallons for 2007 or 10 gallons consumed per week. The CA-CP Calculator converts the annual fuel use into GHG emissions through emissions factors for CO₂, CH₄, and N₂O and then converts these numbers into MTCO_{2e}. In 2007, VLS fleet fuel consumption was responsible for emitting 15 MTCO_{2e}, roughly 1% of total emissions.

A preliminary VLS Transportation Survey was conducted in November of 2007 to assess the transportation usage among the faculty, staff, and students commuting to VLS. The survey results were not included in the CA-CP Calculator because the survey parameters were not equivalent and the response rate was 13%. The survey was distributed via email to 758 full- and part-time students, faculty and staff with 98 responses (26 faculty/ staff and 72 students). The total miles commuted by the 98 respondents were 492,309 miles per year or about 5,024 miles per person. If this is extrapolated out to include all VLS students, faculty, and staff using the average miles driven per person to commute to VLS, the results show that 3,807,860 miles are driven per year to commute to VLS. However, this cannot be relied upon because there is only a 13% response rate so it is not a representative sample of VLS. To have a representative sample, the survey response rate should be at least 50%.

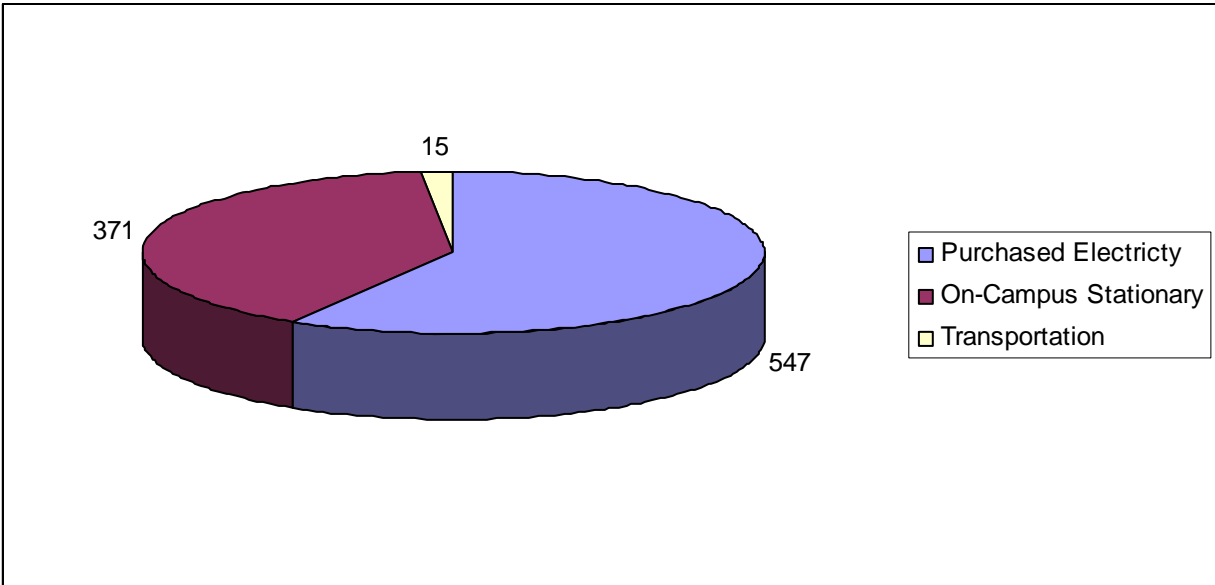
2.2 CURRENT GHG EMISSIONS

The results of the inventory suggest that the largest opportunities for GHG emissions reductions are likely to be related to electricity and on-campus stationary source consumption (see Figure 17 below). Figure 18 shows the total emissions per source. The relatively large size of these emissions suggests that the VLS has the potential to reduce GHG emissions significantly through strategies that address these categories of emissions.

Figure 17: VLS Total GHG Emissions for 2007

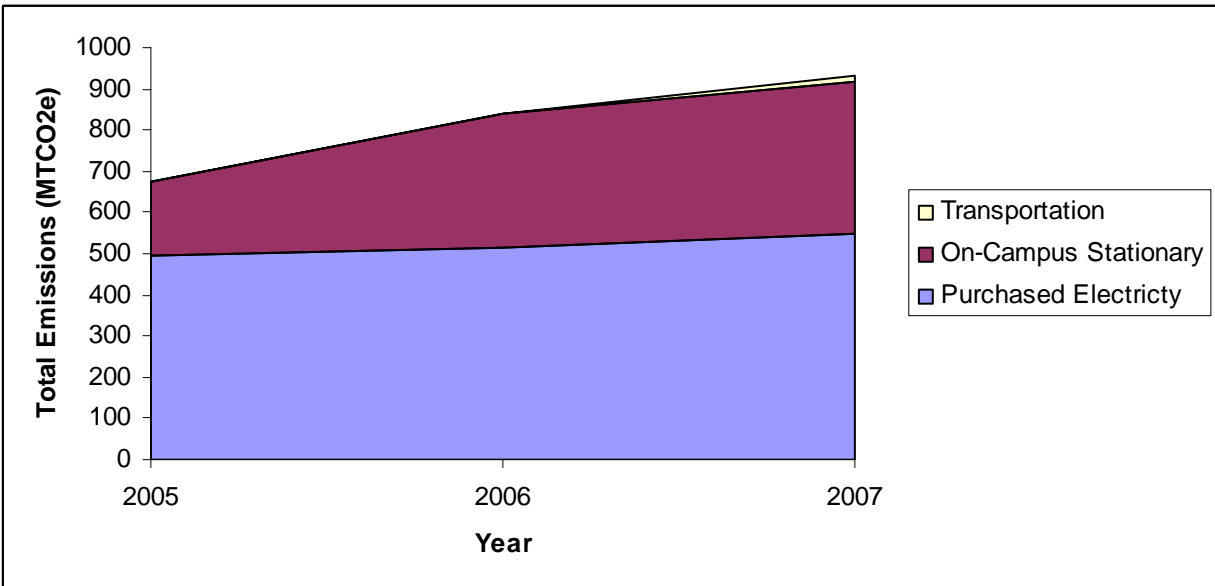
2007	Energy Consumption	CO ₂	CH ₄	N ₂ O	MTCO _{2e}	Percent of Total
	MMBtu	kg	Kg	kg	Metric Tons	%
Purchased Electricity	8,625	546,004	6	2	547	58.7
On-Campus Stationary Sources	5,103	368,567	65	3	371	39.7
Transportation	201	14,262	2	1	15	1.6
Total	13,929	928,833	67	6	933	100

Figure 18: Total Emissions (MTCO_{2e}) per Source



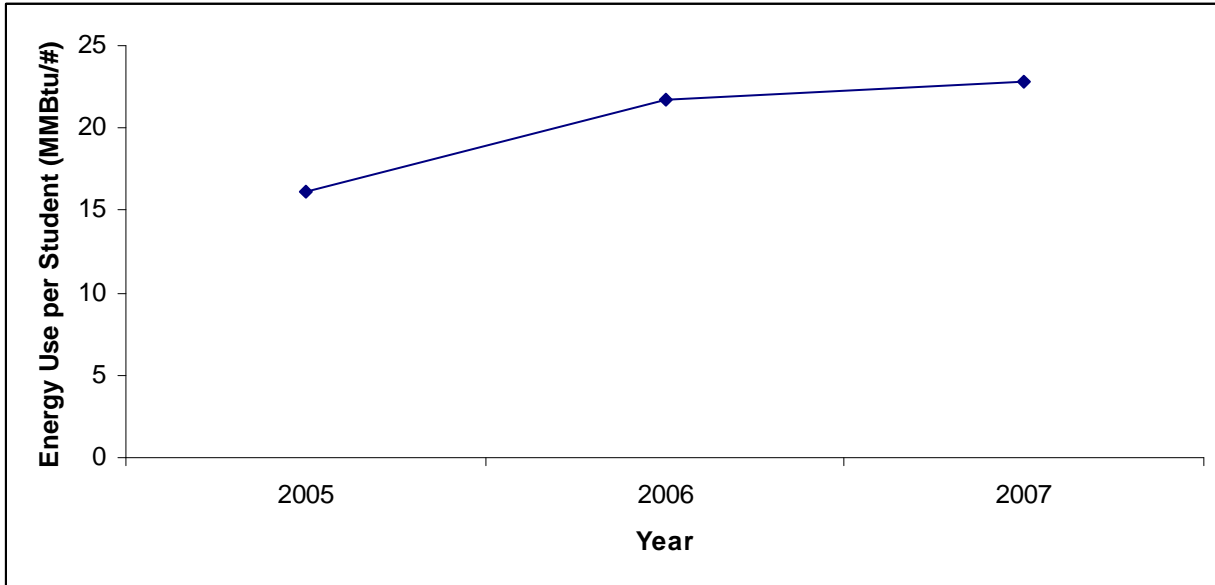
Interestingly, total emissions have been growing by about 85% since 2005 (see Figure 19 below). However, this is not reliable because there are many other factors and consumptive uses that should be entered into the CA-CP before any trends can be verified.

Figure 19: Total GHG Emissions Trend by Source



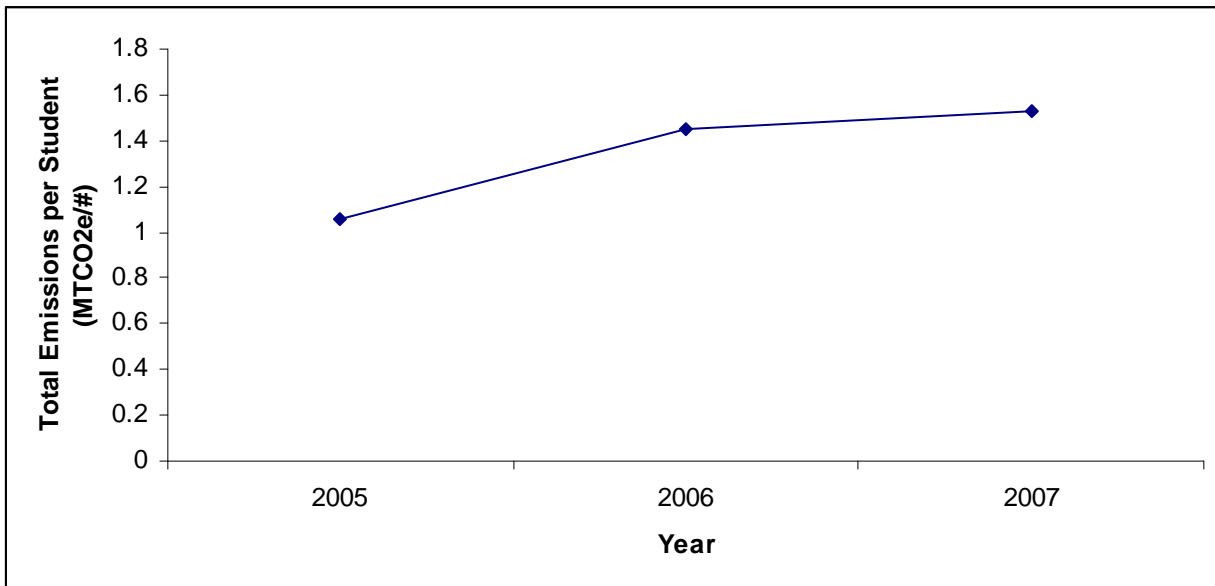
Since 2005, the energy use per student has increased about 85% per year (see Figure 20 below).

Figure 20: Energy Use per Student



The energy use per student trend from 2005-2007 is also consistent with the trend of total emissions per student (see Figure 21 below). Since 2005, the total emission per student has been increasing by about 84% per year.

Figure 21: Total Emissions per Student



In 2007, the most recent year for which we have data, total GHG emissions were approximately 933 MTCO_{2e}. VLS emissions need to be reduced since there seems to be a growing trend of energy consumption on campus. To reduce GHG emissions, VLS will first have to determine a

GHG emissions reduction target. Then VLS will have to dedicate staff time, creation of new programs, buying new equipment, and ultimately, encouraging faculty, staff and students to change their consumption behaviors. The next chapter will consider specific mitigation strategies that VLS can implement to reduce emissions so that an emission target can easily be established.

CHAPTER 3: RECOMMENDATIONS

One of the Carbon Reduction Task Force’s primary recommendations is for VLS to participate in the American College & University Presidents Climate Commitment. Therefore, we have used this commitment as a framework for our short-term and long-term recommendations (covered in section 3.2). In addition to the flexibility that this commitment provides for achieving climate neutrality, we support the President’s Climate Commitment as a way of creating a leadership role to address climate change.

3.1 AMERICAN COLLEGE & UNIVERSITY PRESIDENTS CLIMATE COMMITMENT

The American College & University Presidents Climate Commitment is a high-visibility effort to address global warming by garnering institutional commitments to neutralize greenhouse gas emissions, and to accelerate the research and educational efforts of higher education to equip society to re-stabilize the earth’s climate.¹²

Building on the growing momentum for leadership and action on climate change, the Presidents Climate Commitment, a three-step process, provides a framework and support for America’s colleges and universities to go climate neutral. The Commitment recognizes the unique responsibility that institutions of higher education have as role models for their communities and in training the people who will develop the social, economic and technological solutions to reverse global warming.¹³

Presidents signing the Commitment are pledging to eliminate their campuses’ greenhouse gas emissions over time. This involves:

- Completing an emissions inventory
- Within two years, setting a target date and interim milestones for becoming climate neutral.
- Taking immediate steps to reduce greenhouse gas emissions by choosing from a list of short-term actions.
- Integrating sustainability into the curriculum and making it part of the educational experience.
- Making the action plan, inventory and progress reports publicly available.¹⁴

The college and university presidents and chancellors who are joining and leading the Commitment believe that exerting leadership in addressing climate change will stabilize and reduce their long-term energy costs, attract excellent students and faculty, attract new sources of funding, and increase the support of alumni and local communities.¹⁵

Figure 22 breaks down the Presidents Climate Commitment step by step and explains the aspects of the commitment that VLS has already accomplished and the aspects that VLS needs to improve.

Figure 22: Breakdown of the Presidents Climate Commitment

1. Initiate the development of a comprehensive plan to achieve climate neutrality as soon as possible.

	Where We Are	Where We Are Headed
A. Within two months of signing this document, create an institutional structure to guide the development and implementation of the plan.	<ul style="list-style-type: none"> • Formation of the Carbon Reduction Task Force (CRTF) 	<ul style="list-style-type: none"> • Continue with the task force in following years • Liaison to other campus groups
B. Within one year of signing this document, complete a comprehensive inventory of all greenhouse gas emissions (including emissions from electricity, heating, commuting, and air travel) and update the inventory every other year thereafter.	<ul style="list-style-type: none"> • CRTF has begun a comprehensive inventory of greenhouse gas emissions from electricity and heating • Created a template for future use 	<ul style="list-style-type: none"> • Continuous monitoring • Inventory greenhouse gas emissions from commuting and air travel
C. Within two years of signing this document, develop an institutional action plan for becoming climate neutral, which will include:		
i. A target date for achieving climate neutrality as soon as possible	<ul style="list-style-type: none"> • This option gives VLS incredible flexibility • Able to tailor based on VLS particular needs • Baseline for emissions is 2005 	
ii. Interim targets for goals and actions that will lead to climate neutrality	<ul style="list-style-type: none"> • VLS' CO₂ emissions has been increasing steadily 	<ul style="list-style-type: none"> • By 2011: reduce GHG emissions to 2005 levels • By 2015: reduce GHG emissions by 10% of 2005 levels • By 2020: reduce GHG emissions by 30% of 2005 levels • By 2025: reduce GHG emissions by 50% of 2005 levels • By 2050: reduce GHG emissions by 100% of 2005 levels
iii. Actions to make climate neutrality and sustainability a	<ul style="list-style-type: none"> • VLS has the same goal (from the 	<ul style="list-style-type: none"> • Work with different campus

part of the curriculum and other educational experience for all students	2002 Strategic Plan): <ul style="list-style-type: none"> To develop new courses and programs by strengthening, enhancing, and diversifying academic programs and faculty scholarship by promoting the use of innovative and appropriate technologies 	groups such as: <ul style="list-style-type: none"> Environmental Law Society Campus Greening Committee VLS Mountaineers Environmental Education Group
iv. Actions to expand research or other efforts necessary to achieve climate neutrality		<ul style="list-style-type: none"> Collaborate with campus institutes <ul style="list-style-type: none"> Institute for Energy and the Environment Climate Legacy Institute Land Use Institute
v. Mechanisms for tracking progress on goals and actions		<ul style="list-style-type: none"> Bi-semester meetings with faculty sponsors and advisory board Implement metering for individual buildings

2. Initiate two or more of the following tangible actions to reduce greenhouse gases while the more comprehensive plan is being developed.

	Where We Are	Where We Are Headed
Establish a policy that all new campus construction will be built to at least the U.S. Green Building Council's LEED Silver standard or equivalent	<ul style="list-style-type: none"> Strategy 4 from the 2002 Strategic Plan: <ul style="list-style-type: none"> Maintain and develop the VLS physical plant to provide an environmentally and aesthetically sound, efficient, and safe environment for faculty, students, staff, the 	<ul style="list-style-type: none"> Implement a Green Building Policy for all future projects and renovations

	program, and the community Oakes and Debevoise buildings serve as models	
Participate in the Waste Minimization Component of the national RecycleMania competition and adopt three or more measures to reduce waste (http://www.recyclemaniacs.org/rules-waste-min.htm)	<ul style="list-style-type: none"> • Implemented a campus printing policy which discourages unlimited printing in computer labs • Offer discounts for using reusable mugs in SoRo to Go 	<ul style="list-style-type: none"> • Promote the use of printer settings and paper reduction software (GreenPrint Software) • Create a program to educate staff and students about waste minimization practices • Recognize waste reduction and materials management roles in relevant staff job descriptions including administrative assistants, purchasing officials, and building proctors.
Adopt an energy-efficient appliance purchasing policy requiring purchase of ENERGY STAR certified products in all areas for which such ratings exist.		<ul style="list-style-type: none"> • Implement a Buildings and Grounds purchasing policy requiring the use of energy efficient appliances
Other Options (although not required to implement): <ul style="list-style-type: none"> • Encourage use of and provide access to public transportation for all faculty, staff, students and visitors at our institution. • Within one year of signing this document, begin purchasing or producing at least 15% of our institution's electricity consumption from renewable sources. • Establish a policy or a committee that supports climate and sustainability shareholder proposals at companies where our institution's endowment is invested. 		

3. Make the action plan, inventory, and periodic progress reports publicly available by providing them to the Association for the Advancement of Sustainability in Higher Education (AASHE) for posting and dissemination.

3.2 SHORT AND LONG TERM RECOMMENDATIONS

Based on the data collected and research conducted by the CRTF, the group strongly recommends that VLS implement the following measures to slow and eventually reverse the school’s emission levels. The recommendations are divided between short-term and long-term measures. The short-term recommendations are to be implemented immediately if feasible, and if not, we suggest that these recommendations be implemented within a one year period. These steps are necessary to curb the increasing level of emissions VLS is emitting. The long-term recommendations are to be implemented as soon as they are deemed feasible. These measures will be modified over time as technology and the VLS Greening Fund advance. The CRTF recommendations are listed below and explained in greater detail in the remainder of this section.

Emission Reducing Recommendations	
<u>Short-Term Recommendations</u>	<u>Long-Term Recommendations</u>
<p><i>Physical/Structural Improvements:</i></p> <ol style="list-style-type: none"> 1. Begin an accelerated transition to more energy efficient lighting 2. Install programmable thermostats to control heating 3. Conduct an insulation audit of all the buildings on campus 4. Hire an engineer to assess the HVAC system and make recommendations for more energy efficient systems <ol style="list-style-type: none"> a. Particular focus on the Server Room and Computer Labs 5. Provide composting receptacles in dining center and at all catered events 6. Install composting facilities on the VLS campus to accommodate compostable materials generated by the school <p><i>Behavioral/Institutional Improvements:</i></p> <ol style="list-style-type: none"> 1. Sign the Presidents Climate Commitment 2. Make the CRTF a permanent body on campus to oversee progress of the carbon reduction initiative 3. Implement an Energy Efficient Campus Computer Policy 4. Institute a VLS Greening Fund 5. Implement the Green Purchasing Policy 6. Implement the Green Building Policy 7. Implement a Composting Program 8. Implement a Paid Parking Program 9. Inform Alumni of VLS emission reducing initiatives 	<p><i>Physical/Structural Improvements:</i></p> <ol style="list-style-type: none"> 1. Perform major renovations on or new construction of the following buildings on the VLS campus: <ol style="list-style-type: none"> a. Legal Clinic b. Chase Center c. Campus Dining Center d. Cornell Library 2. Install mechanisms to generate renewable energy on the VLS campus <p><i>Behavioral/Institutional Improvements:</i></p> <ol style="list-style-type: none"> 1. Promote efficiency on an individual level to the VLS community through continual outreach and education 2. Make information regarding progress of the project available to the VLS community 3. Expand the Composting Program by incorporating a community outreach element 4. Support White River and other local water-related restoration projects 5. Support forest restoration, focusing on local and regional projects 6. Institute climate and sustainability proposals at institutions with whom we invest

Short-Term Recommendations

Physical/Structural Improvements

1. Begin an accelerated transition to more energy efficient lighting

VLS has already switched most of the lights on campus to a more energy efficiency lighting system, such as utilizing T8 bulbs and screw-based compact fluorescents (CFLs). In order to reduce additional electric consumption, the CRTF recommends switching over the entire campus to a more energy efficient lighting system. Specific recommendations are as follows: ^a

- Any fixtures that are currently using T12 fluorescents or higher-wattage metal halides should be switched over to a HPT8 lamp and ballast combination. (A short payback is associated with making the switch to newer HPT8 fluorescent technology).
- Fixtures already using standard T8 bulbs, rather than the HPT8 technology would not be cost effective to retrofit to HPT8s based on energy savings.
- If slightly lower light levels are acceptable, energy-saving 25-watt bulbs can replace existing 32-watt bulbs whenever one burns out. A 12-20% reduction in energy use per fixture is possible.
- Utilize the low-energy consuming and long-lived LED (light-emitting diode) lights where possible. Start with a small-scale test in library carrels. Other places to begin the switchover include in exit signs and outdoor lighting on campus, such as parking lot lighting.

^a Tim Perrin, "Energy Evaluation of Vermont Law School," (Dec 2007). Tim Perrin of Efficiency Vermont made the first three recommendations listed based on information gathered during a preliminary walkthrough assessment conducted in Fall 2007.

2. Install programmable thermostats to control heating

For smaller buildings with thermostat-based systems, such as Jacobs House, Eaton House, and Pierce House, CRTF recommends installing programmable thermostats.

- Install programmable thermostats, protected by code or lock to control heating during all times of the day/night.
- Reduce the temperature by at least 10 degrees F for a minimum of 8 hours at night. Approximately 5% or more will be saved per year on the school's heating costs from these buildings if this modification is implemented.^b
- Program thermostat to incrementally increase in temperature over the 3 hour period before school opens.
- Install dual controls in Jacobs House, in order to differentiate between the apartment unit and offices.

3. Conduct an insulation audit of all the buildings on campus

One of the major sources of energy inefficiency on the VLS campus is the amount of inadequate insulation and air sealing measurements in the buildings. CRTF recommends hiring a professional to perform an insulation audit of the campus to determine which buildings are not insulated or need additional insulation improvements. Spray applied or densepack cellulose or polyurethane foam should be used for insulation purposes because it also serves as an air-seal. Fiberglass batts and chopped fiberglass or cellulose are not desirable because they do not stop air from leaking.¹⁶

4. Hire an engineer to assess the entire VLS HVAC system and make recommendations for more energy efficient systems. Particular focus should be give to improving efficiency in the Sever Room and Computer Labs.

The heating and cooling needs of the Server Room and Computer Labs result in major contributions to the school's increasing energy consumption and total emissions. A professional assessment followed by implementation of a more efficient system will greatly relieve the current demand of energy. Until a new system is installed, the CRTF makes the following interim recommendations:¹⁷

- For buildings with energy management systems (EMS), a retro-commission could result in at least 10% electrical savings for the HVAC system. Buildings that would particularly

^b According to the Department of Energy's website, reducing the heating temperature using a programmable thermostat by 10-15 degrees for at least 8 hours could save between 5-15% a year on the heating costs. The savings at VLS would likely be on the lower end of the estimate due to VT's harsh winter climate.

http://www.eere.energy.gov/consumer/your_home/space_heating_cooling/index.cfm/mytopic=12720

benefit from a system like this include the Chase Center, Cornell Library and the Server Room.

- If the current HVAC system in the computer labs has an economizer mode, CRTF recommends utilizing this function. This function pulls in cool outside air to provide air conditioning, rather than using electricity.
- Note: When upgrading the HVAC system in coming years, CRTF recommends purchasing units that are less than 5.4 tons of cooling with a 14 seasonal energy efficiency rating (SEER) and 12 energy efficiency rating (EER) or a higher tonnage unit with an 11.5 EER. Efficiency Vermont is willing to offer incentives for HVAC units meeting these criteria.

5. Provide composting receptacles in dining center and all catered events

Sealable receptacles for composting materials should be placed in the SoRo to Go dining area. These same receptacles should be located near garbage cans during any events on campus that provide food. All leftover food (meat and non-meat items) should be placed into these containers. They will be emptied daily into the composting facilities on campus.

6. Install composting facilities on the VLS campus to accommodate compostable materials generated by the school.

Composting mechanisms should be installed on the VLS campus to accommodate all of the leftover food generated by VLS during regular school hours and events hosted on the campus. The composting system must be able to breakdown any left over food, including meat and non-meat products.

Behavioral/Institutional Improvements

1. Sign the Presidents Climate Commitment

It is critical for VLS to publicly show its commitment to efforts that will combat global warming. VLS is already nationally recognized as a leader in the environmental law arena; signing on to this program will further solidify our commitment to environmental issues in the public eye by taking action on an individual level. While it is important to create a positive public image for VLS, committing to greenhouse gas reductions and following through with measures to make that reduction happen is an ethically sound decision to make. In a time when the issue of global warming is heavily debated and there is a lack of strong leadership, an environmentally minded institute of higher education and the study of law, such as VLS, must set the example.

2. Make the CRTF a permanent body on campus to oversee progress of the carbon reduction initiative

We recommend establishing the Carbon Reduction Task Force as a permanent body on campus to monitor the school's energy use and continue to research ways VLS may advance towards climate neutrality. While the roles of the group may change, depending on current school

projects and advancements in technology, the CRTF will be charged with ensuring that VLS is on track regarding emission reduction goals and timelines. The group shall have the responsibility of constantly reevaluating VLS climate neutrality plan, assessing projected timetables and finding new and innovative ways of achieving these goals. It is also important that the members of the task force come from diverse backgrounds, such as engineering, economics, and business.

3. Implement an Energy Efficient Campus Computer Policy

Currently, campus computers are left on (usually in sleep mode) during the night. While sleep mode saves more energy than having the screen on or in screen saver mode, it is still wasting energy when they are not needed. To solve this problem, the CRTF proposes that VLS adopt the following Energy Efficient Computer Policy. The CRTF recognizes that the IT Department requires the computers be left on certain nights for updates. This computer policy is designed for implementation in accordance with the IT Department's needs. (In the future, some type of a remote mechanism enabling IT to turn on/off campus computers should be researched and installed if it would serve the needs of VLS). The policy language recommended by the CRTF is modeled after the VLS Paper Recycling Policy and is as follows:

Energy Efficient Campus Computer Policy

The Vermont Law School Community is committed to reducing the amount of Green House Gas emissions it generates. The law school recognizes the benefits and necessity for Students, Faculty and Staff to have computer access on campus. Vermont Law School also recognizes the negative impact this energy consuming practice has on the environment, as a whole, through subsequent emissions. As a way to reconcile the goal of emission reduction and retain the benefits of technology access, the law school has established the following policy. This policy is to be executed in coordination with the IT Department's needs.

- *The work-study student working the last shift in the Chase Center computer lab and Library Circulation Desk in the Cornell Library shall turn off all computers in Campus computer labs at night.*
- *All faculty and staff with a computer at their desk shall turn it off before leaving work at the end of the day.*

4. Institute a VLS Greening Fund

The purpose of this fund is to provide financial assistance for structural changes on the VLS campus that will reduce energy consumption and advance the school towards its goal of carbon reduction and eventual climate neutrality. The fund should be specifically reserved for energy efficient capital investments and retrofits.

The fund will initially consist of money allocated out of the overall VLS budget. Over time, financial savings resulting from increased efficiency will go towards paying the school back for the initial investment. From that point on, the financial savings from these projects will be paid into the fund, which will then be allocated towards future projects. Final approval shall be reserved until both the VLS Administration and the CRTF have agreed upon all aspects of the project.

5. Implement the Green Purchasing Policy

To ensure that the goal of emission reduction is advanced, any appliance purchased by VLS should be selected based on its superior energy efficiency. When possible, products that are Energy Star[®] certified should be purchased.

6. Implement the Green Building Policy

Institute a permanent Green Building Policy providing that all future projects and renovations will be built in such a way as to utilize energy efficiency building mechanisms. Efficiency and greenhouse gas reduction shall be criteria for project planning and executions. LEED[®] certification is an ongoing goal to be achieved when possible.

7. Implement a Composting Program

Implement a Composting Program on the VLS campus. Compostable items include all left over food products from the dining facility or any catered events. Composting receptacles shall be placed in the dining area and at any catered event. To encourage compliance with the program by the VLS community and any visitors, education will be a major component. An initial awareness campaign will be launched by the CRTF explaining how the program works, which items are acceptable, where people may dispose of those items, how the actual process of composting works, and the many benefits it will provide. Signage explaining how to use the composting receptacles will be placed on or near each receptacle.

8. Implement a Paid Parking Program

Decreasing transportation emissions is a major challenge facing VLS. Due to the school's rural location, the VLS community does not have the same access to public transportation that schools in more urban areas utilize. Currently, the best way to reduce transportation emissions is by encouraging students, faculty, and staff to walk or carpool to campus. A Carpool Listserve is already in place. To further initiative, the CRTF recommends implementing a Paid Parking Program that utilizes a flat rate, per semester charge for students and, initially, on a donation basis for faculty and staff. The following is the Paid Parking Program put forth by the CRTF, though it will be subject to modification through the Student Bar Association and Administrative approval process:

- A flat rate (the amount of which will be determined at a later date) will be charged to any

- The responsibility of setting up a carpool will be left to the students purchasing the permit. “Carpool passes” will not be issued at a discounted rate. Rather, students will be able to independently purchase a permit and divide the cost among those with whom he or she has agreed to carpool.
- Initially, faculty will not be charged to obtain a parking permit. However, they will have the opportunity to “donate” to the VLS Greening Fund. This may change as time allows the VLS community to adjust to the idea of paid parking on campus.
- A second requirement of obtaining a parking permit is completing a mandatory Transportation Survey. The survey results will enable the CRTF to more accurately calculate the school’s transportation emissions.
- Visitor spaces shall be designated. Visitors will need to register their vehicle for the day.
- Enforcement will be in the form of six random checks throughout the month. Buildings and Grounds work-study students or members of the CRTF may be required to conduct these random checks. Those caught parking without a permit will be fined (the amount of which will be determined at a later date).
- All of the proceeds from the sale of parking permits and violations will go into the VLS Greening Fund.
- One proposal for determining the parking permit price would be to take the cost of parking lot maintenance that is charged to all students in their fees, and have it be paid out of the parking charge by those who actually use the facility.

9. Inform Alumni of VLS emission reducing initiatives

Alumni contributions comprise an important part of VLS funding. They should be made aware of this project and have the opportunity to financially support the emission reducing projects on campus.

Long-Term Recommendations

Physical/Structural Improvements

1. Perform major renovations on or new construction of the following buildings on the VLS campus: Legal Clinic, Chase Center, Campus Dining Center, and Cornell Library

The Legal Clinic, Chase Center, Campus Dining Center, and Cornell Library are buildings with the greatest opportunity for emission reduction through renovation or new construction due to their significant energy consumptions. Any physical alterations to these or any other buildings should be made in accordance with the Green Building and the Green Purchasing Policies. A new Dining Center on campus should not allow disposable containers or utensils. Only reusable

supplies that could be washed using energy efficient machines should be permitted. If patrons wish to take food with them, they would need to provide a container from home.

2. Install mechanisms to generate renewable energy on the VLS campus

The CRTF will continue to research the feasibility of various demand side generation options for the VLS campus. Feasibility will be determined by balancing the environmental impact, greenhouse gas emission reducing potential and financial costs of a project. Specific examples include wind turbines and solar panels.

Behavioral/Institutional Improvements

1. Promote efficiency on an individual level to the VLS community through continual outreach and education

The CRTF will continue to increase awareness of emission reducing projects on the VLS campus, as well as educate the VLS community on what individuals may do to reduce their own carbon footprint. Education and outreach may include, but is not limited to, a webpage linked from the VLS website, email updates, speaker events and posters.

2. Make information regarding progress of the project available to the VLS community

Transparency of data is important. The information regarding VLS emissions and its progress toward the eventual goal of climate neutrality should be publicly available to members of the VLS community. Students, faculty, and staff should be able to obtain this information from the CRTF website.

3. Expand the Composting Program by incorporating a community outreach element

VLS should continue to invest in state of the art composting mechanisms in order to compost as much waste as possible on site. VLS should also add a community outreach element to the program by forming relationships with local farmers and schools who may benefit from the composted soils. Student groups on campus will be a useful resource and their expertise and local and nationwide connections should be fully utilized. For example, the Gardening Club, EEG (Environmental Education Group) and SCORE (Student Community Outreach and Education) have strong relationships with the community and an environmental awareness component.

4. Support White River and other local water-related restoration projects

VLS should financially contribute to local water-related restoration projects, particularly those benefiting the White River. VLS should also encourage various student initiatives to help do the physical work of repairing these crucial ecosystems. Certain groups such as the Environmental Law Society already have a history of working with local groups that organize these projects.

River ecosystem restoration has multiple benefits to not only the VLS community who live near the White River, but to all Vermonters and those living near these waterways. Restoring these “buffer zones” will help return the environmental balance of the ecosystem, keep the rivers cooler, and mitigate flooding. It will also help restore the potential of these areas as carbon sinks. Beyond the purely environmental effects, projects like these will help strengthen the ties between VLS and the surrounding communities.

5. Support forest restoration, focusing on local and regional project

VLS should financially contribute to forest restoration, with priority given to local projects. For many of the same reasons previously listed to justify financial support of water-related restoration, the VLS community and society as a whole will benefit from the results of these projects. To reemphasize, they will help restore natural environments, increase carbon storage potential and strengthen the relationship between VLS and its neighboring communities.

6. Institute climate and sustainability proposals at institutions with whom we invest

VLS should institute various climate and sustainability proposals at institutions with whom the school invests. This practice will help VLS spread its emission-reducing mission outside the physical boundaries of the VLS campus.

CHAPTER 4: CONCLUSION

The Vermont Law School, an institution that educates tomorrow's environmental, political, and intellectual leaders, is well positioned to play a pivotal role in Vermont's climate strategy. VLS, with its history of environmental stewardship, can serve as a model to universities and other law schools to illustrate how greenhouse gas emission reduction plans can be successfully achieved. Additionally, VLS can benefit from prioritizing the reduction of greenhouse gas emissions through initiatives that reduce campus energy costs, protect against future climate regulations and energy price volatility, and improve the reputation of the school.

In 2007, the total GHG emissions were approximately 933 MTCO_{2e}. Electricity consumption at VLS was responsible for emitting 547 MTCO_{2e}, roughly 59% of total emissions, and the on-campus stationary source consumption was responsible for emitting 371 MTCO_{2e}, roughly 40% of total emissions. The VLS fleet fuel consumption was responsible for emitting 15 MTCO_{2e}, roughly 1% of total emissions. VLS' total emissions have been growing by about 85% since 2005. The energy use per student trend from 2005-2007 is also consistent with the trend of total emissions per student.

Ultimately, VLS has the responsibility of producing tomorrow's leaders and citizens who will significantly influence Vermont's and the U.S.'s response to global warming. Therefore, commitments to reduce greenhouse gas emissions from campuses are of great importance. After analyzing VLS's greenhouse gas emissions data and observing an upward trend in CO₂ emissions, the Carbon Reduction Task Force strongly encourages implementing the short- and long-term recommendations listed in the report. More significantly, the task force recommends that VLS participate in the American College & University Presidents Climate Commitment. VLS is already nationally recognized as a leader in the environmental law arena; signing on to this program will further solidify our commitment to environmental issues in the public eye by taking action on an individual level. In a time when the issue of global warming is heavily debated and there is a lack of strong leadership, an environmentally minded institute of higher education and the study of law, such as VLS, must set the example.

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¹² American College & University Presidents' Climate Commitment

¹³ American College & University Presidents' Climate Commitment

¹⁴ American College & University Presidents' Climate Commitment

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