Innovation through Collaboration:

Campus Sustainability
&
Climate Action Plan

Final Draft
Submitted by the Sustainability Council
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Contents

Foreword

As stated in our mission statement, Paul Smith's College is committed…*to promoting and practicing the principles of sustainable development and encouraging environmental awareness and maintaining an environmentally sound campus.* This commitment was reaffirmed in April 2007 when the president of the college, Dr. John Mills became a charter signatory of the American College and University Presidents' Climate Commitment (see Appendix A).

From the point of signing, institutions are required to conduct an inventory of their greenhouse gas emissions and develop a campus plan for reaching carbon neutrality. The Sustainability Council was formed in the fall of 2008 to provide organizational support to sustainability initiatives and to develop the college's climate action plan. This effort was first initiated by Dr. Mills and the Environmental Resource Management Committee (reconstituted as the Climate Commitment Committee) in the fall of 2007.

The work on developing a climate action plan was accelerated in November 2008 so as to be included as part of the college's strategic plan to be presented to the Board of Trustees in February 2009. It is hoped that as the college makes credible changes in the spirit of sustainability, college planners will understand the need for a carbon-informed decision-making process when formulating the institution's strategic plan.

The Sustainability Council set the priority of reaching carbon neutrality through a commitment to energy conservation and efficiency while transitioning the college's operations to renewable fuels and adopting an array of waste reduction methods. The purchase of additional carbon offsets is considered as an option of last resort.

Lastly, it is expected that the plan will be revised multiple times both before and after it is submitted to the Association for the Advancement of Sustainability in Higher Education who oversees the Presidents' Climate Commitment initiative.

With sincere appreciation to all who assisted in compiling this report and for the leadership displayed by President Mills in pledging the climate protection efforts of the college, the members of the Sustainability Council respectfully share this sustainability and climate action plan with and for the entire PSC community.

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Executive Summary

This proposed plan for growing a more sustainable campus and reaching carbon neutrality is a clear indication that the college takes its climate commitment seriously. Accomplishing the goals outlined in the plan will require an integrated collaboration and shared commitment across the entire PSC community. Since the majority of our carbon emissions are related to non-renewable energy consumption, our plan places emphasis on decreasing fossil fuel consumption, implementing energy efficiency and conservation practices, and transitioning to renewable energy sources.

It becomes more evident every year that high energy-using societies, organizations, and individual lifestyles are quickly becoming a blip in the long run of human history. Such a way of life which outstrips ecosystems cannot, by definition, be sustainable. True sustainability involves more than just a window-dressing of green practices or gestures. It involves an understanding of our energy profligate ways and the associated true environmental costs, and that peak energy consumption must ultimately begin to decline. Colleges that embark to quickly retool their enterprises will better ride the energy descent in the coming decades. Given the consequences of our high energy times – namely that humanity's consumption outpaces the ecospheres generative and restorative capacities – the only sane choice is a changing of our ways.

Although this report does not call for an independent budget to fund the recommended emissions reduction projects, it does include financial strategies in support of the long-range plan. Waiting for better financial times to do this work is not an acceptable option even though the current economic crisis continues to worsen. In most cases, energy management improvements can be achieved while positively impacting annual budgets.

As the following report outlines, the core strategies of our climate action plan include:

~ Multiple energy conservation and waste management projects and initiatives to be implemented with grant funds to supplement annual budgets;

~ A continuing commitment into the near future to meeting 100% of the college's electricity needs from renewable energy sources, most notably wind power;

~ A plan to transition the college to local biomass to both heat and power a significant portion of the campus while all new buildings will meet silver-level LEED standards;

~ An incentivized program to increase the number of staff, faculty and students who carpool to campus and coordination with local public transportation services;

~ An integrated sustainability program involving the college's curriculum, co-curricular activities, outreach and partnerships with local and regional stakeholders;

~ The development of climate-friendly purchasing and investment plans;

~ And, lastly, purchasing local carbon offsets to mitigate the college's remaining greenhouse gas emissions to include air travel related offsets by 2011.

Chapter 1: Introduction –Taking Action on Climate Change

The human prospect now depends a great deal on the ability of educational institutions to respond with intensity and ingenuity to the larger ecological disorders of our time.
~David Orr

1.1 Problem or Predicament?

Global climate change is fast becoming the most important moral issue of our time. Colleges play a critical and potentially transformative role in responding to this threat facing humankind, which is also diminishing the biodiversity of the planet at an alarming rate. We can not overstate the seriousness of the crisis that confronts us. The news worsens on almost a daily basis as global temperatures rise and the trajectory of greenhouse gas emissions steepen, which in turn leads to more future warming. (Ironically, one "bright spot" of the global recession is a slight downturn in carbon emissions. Early reports indicate that the European Union's emissions have dropped 6% last year. It is likely that most nation's will report similar news, which underscores the basic point that the global economy will either need to sharply decline or dramatically restructure for mitigating climate change.)

In 2007, U.S. greenhouse gas emissions increased 1.4 percent and up over 16 percent from 1990 levels (Source: Energy Information Administration). Here at home in the Adirondacks, author and ecologist Jerry Jenkins recent book, Climate Change in the Adirondacks, outlines significant changes in our boreal forests over the coming decades if current warming patterns continue because of increased carbon emissions. The Adirondack region is already deeply impacted by high levels of acid rain due the atmospheric drift of emissions from Midwest coal-fired power plants. It is a well-known fact that hundreds of the lakes and ponds in the region are biologically sterile through acidification. Vast stands of forests are also weakened by the increased acidity of the soils.

Perhaps it is a falsehood to even term the threat of climate change a problem which can be solved, as we know that regardless of even our best efforts, some degree of increased global warming is expected in the upcoming decades. Instead, what we face is more of a predicament, which has no easy solution.

Author and environmentalist Bill McKibben says there is no single silver bullet fix, but rather what is needed is silver buckshot to include a host of concerted actions such as a pricing of carbon and a global climate policy. Carter Bales at a recent conference on climate change at The Wild Center in Tupper Lake, NY pessimistically sees only a few silver B-B's in the form of a massive national investment in energy-efficiency projects, which would only slow the pace of global warming. In his view, the rise in greenhouse gas emissions is just too quickly outpacing any chance of responding in time. Reducing

the concentration of atmospheric CO2 below 350 parts per million (emphasized by McKibben, Jim Hansen and others) may simply be out of reach.

The question is will colleges mobilize and respond in time, and in so doing, become essential partners in mitigating climate change and thereby avoid the most severe consequences of global warming? Or stand idly by and take a business-as-usual do-nothing approach to the crisis? How will colleges meet their energy needs on a low-carbon diet?

The dilemma we face over the long haul isn't about having to adjust to little or no fossil fuel energy in reducing carbon emissions. It's having to make do with less and less each year, until finally we get down to levels that can be sustained indefinitely. Peak oil experts predict that a localized, low-tech, sun-powered economy and culture which preceded industrialization will inevitably return during the long energy descent as the world tumbles from peak oil and the heights of industrial development. It will then fall to the college's to assist in educating the citizenry during this transition. Post-peak oil society will retool using a less energy intensive appropriate technology and designing and constructing an economy with nature in mind. Humankind's chief concern will be growing food and fiber using non-renewable energy sources on a much smaller scale, and renewable energy sources on an increasingly larger scale.

At this point in time it may, in fact, be too late to transition to truly sustainable ways of living and doing business on a global scale which increasingly has depended on a cheap and readily available supply of oil and other fossil fuels. However, it is not too late for individuals, groups, and communities to do what they can to preserve and apply essential cultural and practical knowledge combined with ecologically inspired innovation for creating sustainable societies on a local and regional scale. In support of this goal, there is much that colleges can do.

1.2 Paul Smith's College's Climate Commitment

Paul Smith's College is committed to developing an innovative, integrated sustainability program to both fulfill its obligation to the American College and University Presidents' Climate Commitment while also attracting the next generation of young minds, dedicated staff and leading faculty who are willing to perform the long term sustainability-related work of the 21st century.

As *The College of the Adirondacks*, we endeavor to create a sustainable campus while also forming local and regional partnerships in creating the change we wish to see in the world. In partnership with other dedicated community groups we strive to address the environmental, social and cultural challenges of the region while educating tomorrow's professionals in creating a sustainable future. We have every expectation that students who are equipped with the requisite knowledge, skills, and determination will be sought after in the emerging post-carbon economy to help mitigate the worsening climate condition.

As an educational institution we also have a responsibility to model a more sustainable use of natural resources in the workings of our campus. We continue to make progress in reducing our resource use while implementing environmental best practices regarding reusing and recycling. We strive to make our campus carbon neutral through resource conservation, the use of renewable sources of energy to power and heat our campus, the installation of energy efficient technology and the adoption of energy management best practices.

In short, we are committed to increasing efficiency and decreasing waste in all of our campus operations. This is, of course, an obvious response to the problem of peak oil and the expected rise in energy prices in the coming decades. We understand that our long-term viability as a college will depend on reducing our dependence on fossil fuels and relying instead on local, sustainable, low-intensity energy inputs and human resources and skills. Institutions that require more energy will do worse than those that can make do with less. Likewise, colleges that graduate professionals to meet actual needs in a world of resource depletion, energy shortages, economic contraction and volatile change will fare better than colleges who do not.

A strong proponent of experiential learning, we see our campus as a living/learning laboratory where students become change agents here at PSC and then out to all the places of the world that need tending. We take seriously the charge to prepare our students for the sustainability work of the 21st century and the ecological restoration that is required for the successful transition to a habitable planet for all concerned. We are especially concerned about vulnerable populations who have already begun to experience devastating changes due to global warming, chemical contamination, and resource exploitation. We will fail in our educational mission if we do not also impart to our students a spirit of compassion in action in serving those who will most need a helping hand in navigating the transition to a post-industrial, energy-compromised future. Our graduates are likely to see periods of economic contraction and technological decline followed by periods of relative stability and a relocalization of meeting human needs in small communities.

It is significant to note that the drafting of our climate action plan is being prepared at a time of great financial uncertainty as the world lurches into a global recession. This crisis has myriad ripple effects for institutions such as Paul Smith's College. As a small private institution, the college struggles with balancing annual budgets which are dependent on tuition revenue from a population that consists mostly of low and middle income students. It is expected that many of our students' families will suffer from increased unemployment and the inability to secure loans for college tuition and fees. We may be entering a time of declining enrollment into the foreseeable future, and with it a greater need for cost containment.

Yet, this time of financial insecurity must not cause college planners to put its sustainability and climate commitment on hold. Rather, it must concentrate the institution to more efficiently use its already limited resources to create the greatest outcome through creative collaboration, integrated planning, and informed decision-

making. It will be of paramount importance that members of the Executive Cabinet and Deans Council collaborate in the implementation of this plan, in the recognition that sustainability is how successful institutions are organized and operated in the 21st century. It is encouraging that a great many positive contributions to the college's sustainability initiatives have come from the grassroots level of students and staff, but for the college to continue to make significant progress (in comparison to its peer institutions) greater involvement from faculty will be required.

With the challenge of climate change also comes a rare opportunity to practice crisis management and train students to do the work of the future at the same time. This is perhaps the best way of preparing and educating students for the 21st century, which is likely to be a period compromised by limited financial and natural resources. The mission of the college and its unique academic programs is particularly suited for this work, and our faculty by a more intentional commitment can be a positive force in transforming higher education at this critical point in human history.

In this context, the long-range strategic planning process is ideally suited to assisting the development of a long-range climate action plan and vice versa. We applaud the Strategic Planning Committee in selecting the theme of Climate Commitment as one of its four organizing themes for the college's next multi-year strategic plan. (Sustainability Council member Brett McLeod also serves on the Strategic Planning Committee and served as the leader of one of community input sessions related to the development of the strategic plan. See **Appendix S** for the ideas generated during this session.)

The college also faces numerous other mid- to long-term enrollment threats related to troubling demographic patterns in the form of shrinking high school graduation class sizes where we historically draw the greatest number of our students (NY, VT, PA, and other Northeast states). Also, we have not appreciably increased the number of incoming transfer students, or increased female enrollment or students of color, which increasingly make up a considerable portion of higher education enrollment. As President Mills remarked during a recent President's Day opening session, independent private colleges must "differentiate or die" if they are to survive in this tightening pool of potential students. As colleges compete for fewer incoming students they must quickly develop or reinvent new majors which appeal to this intensely recruited smaller crop of students.

It makes good sense then for the college to reinvent itself along sustainability lines to both attract new students (females especially) while also lowering operating costs through reducing waste (energy, materials, etc.). With this in mind, the newly proposed and "transfer friendly" Sustainability Studies B.S. degree program could not have come at a better time to enroll new students while retaining current students who are eager to do the work at hand. We know that the number one factor for students when choosing colleges is academic program. There is no reason to doubt that enrollment in sustainability-related programs will increase as the world grapples with the climate challenge, and the greening of the economy is expected to play a major role in recovering from the global recession both in New York State and the entire nation.

As the new Obama Administration takes the reins of power and concludes its first 100 days in office, a clear course is emerging in the direction of reviving the economy through a commitment to climate action in the form of a sustainable energy policy to create thousands of green, clean energy jobs. Several times since taking office, President Obama has reiterated his support for reducing emissions 80% by 2050 marking a complete turn-around from the previous Bush Administration. The 2009 State of the World Forum takes place in Washington, DC from November 12th to 14th and will address the theme "The Real Crisis of Climate Change: Truth Is Not Enough." The Forum will call on all nations to commit to a 10-year plan to green the world's economies.

The path forward will not be easy since once an economy overshoots the carrying capacity of its environment, the cost of resource depletion and pollution rise faster than the rate of economic growth. Also, modern civilization cannot turn quickly on a dime. It takes considerable time to replace the fossil fuel-based infrastructure with a new system to run on alternative forms of energy, which do not have anywhere near the net energy potential such as coal and oil. Even though some of these new technologies will be made to work, retooling the modern energy economy will demand immense amounts of money, resources, and time. The net energy produced would be negligible compared to today's fossil fuel levels. To effectively replace compact fossil energy with renewable sources will require massive reductions in waste and inefficiency. In the long run, we may have missed this window of opportunity to power the economy with a renewable energy infrastructure. Finding the silver B-Bs in the proverbial hay-stack will be challenging to say the least.

1.3 Overview of S-CAP

For the purposes of this report as directed by Dr. Mills, we did not "count" the carbon sink of our thousands of acres of forested lands as a means of reaching carbon neutrality. If such a method was employed we would already surpass the goal of a carbon neutral campus. Instead we focused our efforts on transitioning the 200 acre main campus of buildings and operations to a state of greater sustainability and reduced environmental impact while strengthening and integrating our curricular and co-curricular activities into a cohesive sustainability program.

As required by ACUPCC, our climate action plan includes:

--a target date for achieving climate neutrality;
--interim targets for goals and actions leading to carbon neutrality;
--actions to make climate change and sustainability education part of the curriculum;
--and, mechanisms to track progress.

The Sustainability and Climate Action Plan (S-CAP) for Paul Smith's College integrates an assessment of campus sustainability programming and carbon emissions calculation with specific carbon reduction measures. An overview of our emerging sustainability program considers three broad categories: **Education and Research**, **Operations**, and

Administration and Finance. This organizing framework was adopted from the Sustainability Tracking, Assessment & Rating System (STARS) developed by the Association for the Advancement of Sustainability in Higher Education (AASHE) to better facilitate initial benchmarking and measuring progress in meeting our climate commitment goals.

Thus, our plan was initially informed by an assessment of the college's sustainability accomplishments which then led to the development of strategies and actions items for creating a coherent and integrated sustainability program for reaching carbon neutrality. Recommendations that are more of a programming nature in support of our climate commitment are outlined in Chapter 2 - Sustainability Matters. The greenhouse gas emissions inventory for the college is analyzed in Chapter 3. The strategies and recommended tangible actions that directly relate to emissions reductions for the college are outlined in Chapter 4.

Chapter 5 reviews current options regarding the purchase of carbon offsets as a way of cutting any remaining emissions for reaching neutrality. They are considered as a strategy of last resort once the bulk of the college's emissions are mitigated through energy-efficiency improvements, reduction of carbon-emitting fossil fuels, and the direct reliance on renewable fuels.

Chapter 6 provides an overview of implementing emissions reduction measures and projects over time, beginning with the next four years and through 2029 and beyond.

In Chapter 7, all of the proposed recommendations are collated for easy reference for decision-makers and managers to access by category. Final thoughts related to what the world and work place may be like twenty years in the future are offered.

Finally, extensive supporting documents are included in the Appendices section.

1.4 Carbon Neutral by 2029

We have set the target year 2029 for becoming a carbon neutral campus believing that this goal is realistically attainable over the next two decades. Given the urgency of our task of mitigating climate change while preparing our graduates for the jobs of the 21st century, it is hoped that Paul Smith's College can achieve carbon neutrality sooner, preferably by 2020. This date is an achievable goal if the college can successfully reduce waste while increasing efficiency and transition to renewables in the heating and powering of the campus sooner instead of later.

During the development of our S-CAP, the Sustainability Council recognized that the emissions inventory first begun by our Facilities Department did not accurately reflect the total carbon footprint of the campus. Air travel was not included, emissions from transportation were under-reported, and additional sources of emissions through procurement (purchasing of supplies, food, furniture, etc.) and construction were overlooked. Therefore, during the drafting of this plan a greater accounting of these

emissions were made and added to the original greenhouse gas report for the college. Clean Air-Cool Planet's Campus Carbon Calculator (version 6) was adopted to more effectively measure our carbon footprint while establishing a portfolio to track carbon reduction projects on an annual basis.

Chapter 2 **S**ustainability **M**atters: **G**reen **S**TARS at **P**aul **S**mith's **C**ollege

Sustainability is no longer an elective.
~David Skorton, President, Cornell University

EDUCATION AND RESEARCH

Co-Curricular

Student Sustainability Outreach Program

Currently, most of the college's outreach to students along sustainability lines is coordinated through the student organization, *Students for Environmental Action* (*SEA*) as the college does not directly employ any staff or faculty members in support of sustainability-oriented programs.

SEA has been involved with recycling efforts, petitioning for renewable energy, coordinating Earth Day events, a Squeeze the Juice Energy Conservation Challenge, end of semester Trade-A-Paloozas, showing environmental videos ("The Story of Stuff" most recently), and an assortment of other environmental awareness programs. Two Council members, Lauren Richard and Bethany Garretson are also *SEA* members and have organized several of the sustainability related activities over the past two years.

SEA and other student-led initiatives have received support from the Coordinator of Student Activities, Jill Susice, *SEA* Advisor, Pat Clelland, and Residence Life Area Coordinator, Kate Glenn. Within the TRiO Student Support Services program, a sustainability program initiated in the spring of 2006 has included a speaker series, cultural enrichment trips (green home tour, visits to wind farms in New York State and LEED-certified buildings, organic farms, etc.) and participation in the North Country Sustainable Energy Fair in Canton, NY.

Additional outreach has occurred through the Campus Sustainability course, the Recycling Action Team, campus clean-ups coordinated through Student Activities, the Sustainability Matters webpage, and the recently formed Campus Sustainability Center (located in Lakeside Dining).

Paul Smith's College celebrated Campus Sustainability Day for the first time on 10/22/2008 hosting a sustainability fair in the Hutchins Study Café and officially unveiling the Zenn patrol car and first edition of the Sustainability Matters web page. The day also included a presentation of the results of the Biomass Feasibility Study to the Executive Cabinet and a presentation on energy related careers from an alumnus.

The college's Step It Up rally (organized nationally by Bill McKibben) in April 2007 drew 400 participants and is evidence of how important sustainability and taking action

on climate change is to the PSC community. This event, which included an energy fair and speakers, demonstrated broad collaboration with group's external to the college and also involved partnership with one of the college's newest course offerings – *Introduction to Renewable Energy.* Students from the course helped coordinate the event.

Broad collaboration – the hallmark of campus sustainability – is currently underway for the college's 2009 Earth Day celebration. The day long event will feature an evening festival to include a local food Adirondack BBQ, wood-fired hot tubs, and musical hootenanny. The Earth Day program is centered on the involvement of Jim Merkel and the Global Living Project that he began in 1996. Jim and his Cycling for a Sustainable Future Cycling Team will be traveling 350 people pedaled miles (see below regarding the importance of 350 ppm) from Norwich, Vermont to the North Country Sustainable Energy Fair in Canton, NY and stopping off at PSC on Earth Day. While on campus they will be giving guest presentations including *Radical Simplicity*, (named after one of Jim's books) during the evening program. Jim will also provide consulting support to the college while on campus given his past position as Director of Sustainability at Dartmouth College. He has also agreed to provide peer review of the S-CAP.

Also, on Earth Day, the Campus Sustainability & Climate Action Plan will be made available to the PSC community, so broad input can be received for the final draft expected by the middle of May 2009. Dr. Mills will present the plan to the Board of Trustees at their May meeting. It is recommended that the plan receive additional editorial assistance and input from the Executive Cabinet over the summer months prior to a summary report being submitted to AASHE on or before 9.15.2009.

Planning is soon to begin on coordinating a similar action to *Step It Up 2007* on 10/24/2009 with Bill McKibben's new 350.org - a world-wide focus on the problem of global warming and the urgent need to create government sponsored climate legislation in reducing carbon emissions below 350 parts per million (ppm). As Bill said during a recent campus talk, he wants a "cool thing to happen at PSC" on 10/24/2009. Perhaps the 2009 First Year Seminar and the 350 new students expected in fall can play a large participatory role in the fall climate action. It is hoped that large global actions will impact the climate negotiations at Copenhagen, Denmark in December 2009.

Recommended Action: Include the Campus Sustainability table at college open houses and other similar events next to student clubs and organizations to inform prospective students about our sustainability-related efforts and climate commitment.

Recommended Action: The sustainability matters webpage requires greater IT support to be fully operational as originally conceived. Once the full text and images have been loaded, a maintenance plan needs to be developed so that the page is continuously updated to reflect current sustainability events and projects.

It is further recommended that a link be added on the webpage to the Campus

Sustainability Blackboard site, which contains all the documents developed in support of sustainability initiatives at the college. The most recent draft of the college's climate action plan will be made available for full public viewing. In essence, it will serve as a "one-stop shop" for sustainability matters at PSC.

Student-led sustainability initiatives require additional staffing and financial support to be better integrated into co-curricular offerings at the college. The Student Government Association in February 2009 voted in favor of a student-supported Sustainability Fund to be initiated in the fall of 2009. *SEA* developed a survey to solicit student input on the proposal (see Appendix E). 65% of students who participated in a campus referendum voted in support of the Sustainability Fund to include a $25 annual fee to their cost of attendance.

Sustainability-Related Competition

As part of PSC's climate commitment President Mills encouraged student participation in the ten week national RecycleMania competition during the spring 2008 semester. A new Special Topics course entitled *Campus Sustainability – Students as Change Agents* was created to organize this effort and initiate other campus greening projects. At the end of the competition and thousands of pounds of recyclables collected later, PSC finished prominently in New York State in paper and cardboard recycling.

On Campus Sustainability Day '08, *SEA* and Area Coordinator Kate Glenn launched Squeeze the Juice Energy Challenge (to include an interdormitory competition).

Sustainability in New Student Orientation

Only a brief overview of college initiatives was included as part of the TRiO-SSS presentation during the Summer 2008 orientation.

Recommended Action: We recommend that a short informational session (10-15 minutes) on the college's sustainability accomplishments and current and future initiatives be included in the new student orientation for the summer of 2009.

Curriculum

Sustainability-Focused Academic Courses

New courses recently added to the college's curriculum of a sustainability nature include:

--Introduction to Renewable Energy
--Campus Sustainability: Students as Change Agents
--Renewable By Design: Homesteading in the 21st Century
--Ecological Change and Society
--Sustainability Studies Externship

--Permaculture Design Course.

Several additional new courses are being created as part of the Sustainability Studies BS degree program and recently approved by the Educational Standards and Practices Committee and Faculty Council and hopefully by New York State's Department of Education during the summer of 2009. Courses which are directly offered in the Sustainability Studies degree will carry the SUS identification.

Sustainability-Related Academic Courses

See **Appendix F** for the course review that faculty member Randall Swanson conducted of the SLAB division as a member of the Environmental Resource Management Committee in 2007.

The *Campus Sustainability* course offered in the Spring of 2008 included a course project to develop a Campus Sustainability Manual to document policies, practices, and procedures (see **Appendix L**), which was shared with the Facilities Department.

Several individual student capstone projects completed over the preceding years have addressed sustainability-related topics and are cited on the Sustainability Matters web page. In the fall of 2008 several sections of the First Year Seminar course were thematically organized around the topic of sustainability and co-sponsored alumnus Mike DeWein's talk on Campus Sustainability Day and Bill McKibben's visit to campus on 11/13/2008.

A First Year Seminar section taught by Anne Sterling, named *The Sustainable Table,* is being developed as a new course to be offered in 2009. Students in the class this fall actively participated in the sustainability fair that was organized as part of Campus Sustainability Day.

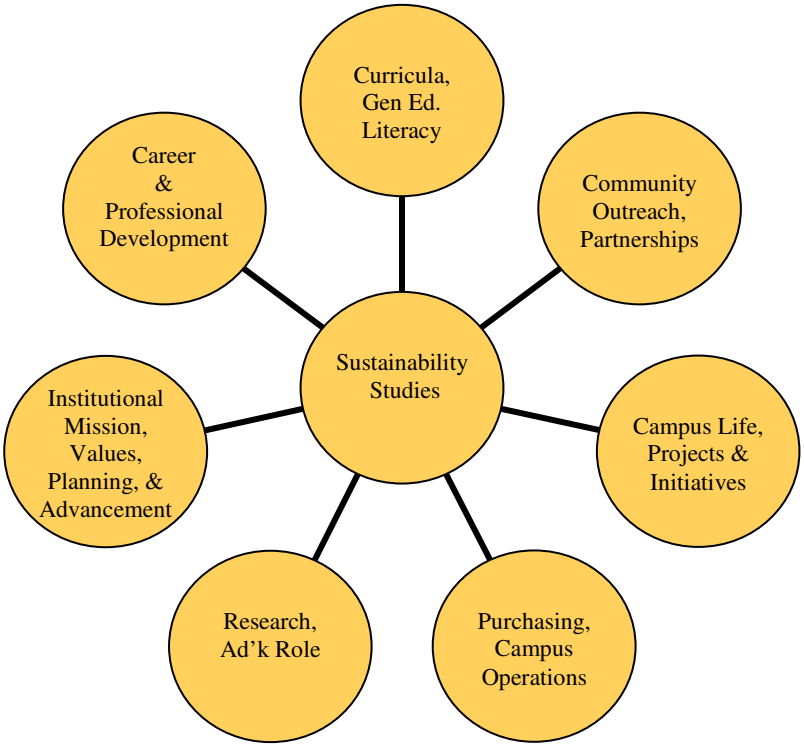
Chemistry professor, Cheryl Joyce is currently introducing the study of biofuels into the General Chemistry and Organic Chemistry laboratories. This year both classes have made small amounts of biodiesel from used vegetable oil. Next year the classes will experiment with several different biomass stock materials, such as fire cherry, potato plants and wood scraps, to determine the ash, potassium and chloride content of each.

At the end of August 2009, a two-week intensive Permaculture Design Course will be offered to PSC students and members from the local community. The course will be taught by master teacher and *Permaculture Activist* publisher/editor, Peter Bane with Vermont Permaculture teacher and designer, Keith Morris.

Sustainability-Focused Academic Program

A new academic program -- Sustainability Studies, Bachelor of Science degree program was proposed (see **Appendix H**) in the fall of 2008, approved by Educational Standards and Practices Committee (ESPC) and Faculty Council in Spring 2009, and now requires

state approval. It is expected that the new degree program will be offered in fall 2010. New degree programs in the area of sustainability provide not only career opportunities for students, but also serve to integrate a broad range of institutional components and functions as the following diagram illustrates:



Sustainable Living Center

As a way of integrating experiential, co-curricular activities with a sustainability-informed curriculum, a student-led sustainable living center could be designed and constructed as a living and learning laboratory where theory is put into action. One possible location is the community garden near the soccer field on campus (see proposed Gould's Garden, named after Gould Hoyt who has gardened at PSC for 54 years – **Appendix K**). Several existing courses including the new Permaculture Design Course could be involved in such a project to directly integrate ecological design principles, small-scale renewable energy systems, natural building, and sustainable agricultural practices related to composting and gardening. Such an undertaking would be in alignment with the college's motto – *It's all about the experience* – and would provide an opportunity for students to study first-hand, integrated sustainability choices related to agriculture, energy, waste management, and shelter.

Since sustainability is a broad and interdisciplinary subject, which goes beyond a simple categorization, opportunities exist for colleges to utilize a range of partnerships with local, regional, national and international affiliations. Over the past few years, members of the PSC community have encouraged the college to explore the possibility of joining

the Eco-League of Colleges. With state approval granted for the Environmental Science, B.S. degree program and the new Sustainability Studies degree program expected for 2010, combined with the college's standing as the only baccalaureate degree-granting institution in the Adirondack Park, the Council believes the time is right for the college to be considered for membership in the Eco-League.

Recommended Action: The Sustainability Council recommended to the President that Paul Smith's College take the next step to join the Eco-League of Colleges. The recommendation was forwarded to the Vice President for Enrollment Management, Kathy Fitzgerald to make contact with the league in the fall of 2008.

Integrated Sustainability Literacy Requirement

No such literacy requirement exists at PSC. However, many of the progressive, environmentally-leading colleges have either put a sustainability literacy requirement in place or are in the process of doing so. Furthermore, more employers are expecting college graduates to be well-versed in sustainable development principles and practices as businesses and organizations of all kinds work to implement energy and waste management practices. The college is of course committed to both preparing students for the professions of the 21st century and for competent citizenship as members of an emerging sustainable society.

On March 25th, 2009 the General Education Assessment Council joined with the Sustainability Council and Deans Council to discuss the role sustainability should play in the college's Integrated General Education program. See **Appendix V** for the synthesis of the main points discussed during this joint meeting as recorded by Gail Gibson Sheffield, Chair of the General Education Assessment Council.

Sustainability Study Abroad Program

PSC's partnership with the Center of Ecological Living and Learning (CELL) provides a 15 credit hour sustainability oriented study abroad program (Iceland in the fall, Central America in the spring) and incorporates service learning with experiential, hands on community projects. The CELL Director, Dr. David Oakes strategically recruits students from Eco-League member colleges and other like-branded institutions such as PSC.

Employee Sustainability Outreach Program

Since the college does not currently include sustainability in its new employee orientation program, the Council **recommends that an overview of the college's climate commitment be included in the form of each new member reviewing the sustainability matters web page and the related documents posted to Blackboard**. Creating campus-wide awareness of energy conservation and waste reduction and recycling practices, as well as carpooling opportunities is critical to insure active participation in the college's sustainability program.

Research

Research Inventory

Adirondack Biodiversity Project (Mission & Vision)

Mission

The mission of the Center for Adirondack Biodiversity at Paul Smith's College is to conserve biodiversity in the Adirondack Park by connecting stakeholders working towards this common goal, and by helping citizens value and understand the natural world through participation in the Adirondack All Taxa Biodiversity Inventory (ATBI).

Vision

The vision for the Center for Adirondack Biodiversity (CAB) is to bring stakeholders in the Adirondacks together, helping each group meet their own missions and objectives while furthering the common goal of conserving the Park's biodiversity. This collaboration is fostered through providing additional expertise in research, grant writing, outreach and education, and integrating the activities of CAB into the curriculum at Paul Smith's College. A principle component of this vision will be managing the Adirondack ATBI. This program is centered upon a scientifically-based inventory of the biological diversity in the Adirondack Park, including a strong component of citizen participation. The inventory information will support scientific inquiry within a standardized framework, promote coordination and information transfer, and will lead to a better understanding of the richness and diversity of life in the Adirondacks.

Overall, this integrated vision for the Adirondack ATBI will be achieved by creating learning opportunities whereby citizens actively participate in biological inventories in cooperation with scientific experts, have broad access to inventory information, become aware and knowledgeable about organisms and their ecosystems, develop a sense of honor and respect for biological diversity, and develop a commitment to stewardship and to retaining the benefits that conservation of our natural communities offer to humans and all life.

David Patrick, Director of the Center of Adirondack Biodiversity

Dr. David Patrick is an Assistant Professor of Fisheries and Wildlife Science and Director of the Center for Adirondack Biodiversity at Paul Smith's College. Prior to coming to PSC, he was based at SUNY-ESF, working with Dr. James Gibbs and the New York State Department of Transportation on a project to reduce the effects of roads on amphibians and reptiles in the state. He holds a BSc in Zoology and Animal Ecology from Bangor University North Wales, an MSc in Conservation Biology from the Durrell Institute of Conservation and Ecology and a PhD in Wildlife Ecology from the University of Maine, Orono.

His research and teaching focus on conservation biology and wildlife management with a focus on population biology and landscape ecology. He has a specific interest in understanding the effects of habitat change on populations of biodiversity, and developing realistic approaches to mitigation through collaborating with stakeholders. His research interests have been developed through work with amphibian and reptile conservation in Tanzania, community-based conservation in the United Kingdom, working with endangered seabirds in Ireland, and amphibian and reptile conservation in the United States. He is also part of a group sponsored by National Geographic, working to understand the effects of harvesting on endemic chameleons in the Tanzanian rainforest.

Adirondack Watershed Institute (AWI)

The AWI was developed to create scientific knowledge about terrestrial and aquatic ecosystems and their human interrelationships. The institute provides educational opportunities to undergraduate students at the college and provides a range of services to the public including invasive species management (Adirondack Stewardship Program), water quality monitoring, recreation use and ecological studies, fisheries management as well as public education programs. The institute also hosts an Adirondack Water Quality Conference each year at the college. In 2009-10 the Institute will move to its new headquarters within the LEED-certified Countess Alicia Spaulding-Paolozzi Environmental Science and Education Center.

Faculty Involved in Climate Change Research

Curt Stager, a Professor of Biology and Paleoecology at Paul Smith's College since 1987 has a notable background in conducting climate change research over his career. **Appendix Q** provides a bibliography of Dr. Stager's extensive research activities to date and includes reference to a current book project on the subject.

Richard Brandt, Ph.D. a Polar Climate Researcher employed by the University of Washington is a resident scientist at Paul Smith's College. His work throughout the Polar Regions involves measuring the impurity content, energy fluxes and optical properties of snow, sea ice, glacier ice and marine ice. These measurements are then incorporated in climate models to improve our understanding of polar climate systems and to better predict future climate change.

Dr. Brandt has been involved with numerous outreach programs involving local schools and PSC students to encourage young people to consider careers in science and to understand and care about earth's climate, with an emphasis on the Polar Regions. He also makes local and regional presentations at a variety of venues.

Library Collection

It deserves mentioning that the library staff is continuously adding new books, periodicals, databases and other resources related to the sustainability and the

environment. Among the topics covered are: campus sustainability, ecological restoration, land-use planning, sustainable agriculture and local food, global climate change, energy-efficiency and renewable energy, peak oil, and many others. The library maintains this excellent collection in order to support the programs and courses related to the environment taught at the college and because of the high level of interest in these topics among students, employees and the local public we serve. In order to promote public awareness, new acquisitions are featured in a special bookcase, located near the entrance, as they are added to the collection.

OPERATIONS

Buildings

New Construction, Renovations, and Commercial Interiors

In the fall of 2007, the President's Climate Commitment Committee recommended and the Board later approved in early 2008 a new policy requiring that new building construction would be LEED-certified (and third party commissioned) at or greater than the silver level. The new headquarters of the Adirondack Watershed Institute located within the Countess Alicia Spaulding-Paolozzi Environmental Science and Education Center is expected to be the first LEED-certified building on campus with construction to start in 2009 (see **Appendix O**).

Also in 2007, the college constructed new student housing (Upper and Lower St. Regis) which incorporated several green features such as exceptional insulation levels and utilization of Energy Star appliances and equipment.

Building Operations and Maintenance

A campus energy audit is currently being completed by Loyalton Group (based in Minnesota) as part of the college's facility management contract with Sodexo. It is hoped that the results of the audit will be completed in spring 2009 so as to guide a number of action items related to energy efficiency improvements. **From both a climate and financial standpoint, PSC has the most to gain from an aggressive commitment to energy efficiency upgrades.**

The Facilities Capital Action Plan includes proactive recommendations in addressing capital improvement, capital renewal and deferred maintenance projects at the college. However, this plan would be more beneficial if it were prioritized by energy efficiency considerations.

Future contracting of energy audits and other energy-related services should first involve local, state and regional resources; in particular, consideration should be given to cost-share resources with NYSERDA.

Potable Non-Irrigation Water Consumption Reduction

Facilities Capital Action Plan completed by Sodexo includes a number of recommendations related to water consumption such as the replacement of old shower heads with water conserving units.

In the fall of 2007, Sodexo Food Service Manager Patrick Clelland transitioned Lakeside Campus Dining to a tray-less operation thereby reducing the number of plates used and correspondingly saving energy and water. Removing trays also dramatically reduced food consumption.

In the summer of 2008 the college purchased 112 new washers and dryers for the residence halls which will lead to significant energy and water savings on an annual basis.

Green Cleaning Service

Green cleaning supplies were adopted by the Facilities Department in 2007.

Dining Services

See **Appendix I** for list of Dining Services accomplishments, which are also posted to the sustainability matters webpage.

Local Food

An exact percentage of food served on campus from local food vendors is difficult to arrive at, but probably represents upwards of 20% from regional sources. Bread, soda and dairy products provided through Crowley/Hood come from New York and Vermont farms and distributed through Keeseville Distribution which employ 55 local workers.

Dining Services regularly promotes and celebrates the integration of local food into its food service operation. A bio-regional approach is employed and products when seasonally available through vendors are incorporated in daily meal plans. Dining Services is currently developing a more comprehensive purchase program involving regional vendors as secondary to SYSCO (who is the primary national vendor) while ensuring that delivery and distribution standards result in providing safe and wholesome foods to patrons.

On Earth Day 2009, Sustainability Consultant Jim Merkel strongly urged the college to construct a **root cellar food storage system**, which would allow for bulk purchasing of local organic produce at an affordable price. Storage crops such as potatoes, carrots, beets, cabbage, parsnips, rutabaga, kohlrabi, apples and pears can be contracted for prior to the growing season to obtain lower prices from local farms. The food items could then be planned for use over the academic year when such items are unavailable from regional distributors. Such a food storage system could also protect the college from rising food costs due to increased energy prices, food-related pathogen outbreaks, and other food

supply vulnerabilities. Additionally, to make this operation more viable would be a food processing facility operated by the culinary program that would can, ferment, dry, and properly store (dry-cool and humid-cool) the harvest.

See guidelines related to Yale's Food Project:

http://www.yale.edu/sustainablefood/food_purchasing.htm

http://www.yale.edu/sustainablefood

Yale's Berkley Dining Hall implemented 100 % local organic for one year then instituted a 40% local organic goal for the entire campus with an ultimate goal of 100 % local organic. **Paul Smith's College should also consider the long-term goal of 100% local organic fair-trade food for multiple opportunities to provide educational programming, healthier diets, and to strengthen the local and regional food economy.**

There is also strong support for starting an herb garden on-campus to supply the culinary labs with fresh herbs and other greens. Consideration should also be given to starting a **campus organic farm** using season extending high tunnels or hoop houses designed to supply the campus with a portion of its food needs. The farm could be centered on a Permaculture model that focuses heavily on storage crops of fruits and vegetables (see Appendix K Gould's Gardens).

Food Alliance and Organic Certified Food

Campus Dining Services partners with Adirondack Harvest and Cornell Cooperative Extension in hosting and supporting local food events. A recent "Farm to School" food program was held on campus in November 2008, which brought a diverse group of educators, farmers, and food service personnel together to increase the direct involvement of local food production and distribution into public schools.

Fair Trade Coffee

All non-flavored coffee products served on campus are fair trade-certified (Green Mountain).

Energy and Climate

Strategy: Apply energy best management practices, techniques, monitoring tools, and new equipment to improve the energy performance of the campus, reduce greenhouse gas emissions, and positively impact annual budgets. In addition, the formation of a broad Energy Awareness Network consisting of staff and faculty across campus would insure greater participation in implementing energy conservation practices.

The Council recommends that signs be posted in every campus building which

provides energy consumption data followed by cost-savings and emissions reductions incurred through the adoption of energy-efficiency measures.

[An overview of recommended energy management practices as the primary means to reduce greenhouse gas emissions of the campus is provided in Chapter 4 Emissions Reduction Measures. An **Energy Task Force** consisting of Steve McFarland, Vice President of Capital Projects, Don Kirche, Professor of Mathematics, Tony Tufano, Director of Facilities, and John Foppert, Junior, Forestry - Ecological Forest Management was formed in March to review and give input regarding the energy-related recommendations of this report.]

Greenhouse Gas Emissions Reductions

Thus far, the college can only verify a net reduction in GHG emissions through its green power contract with Community Energy. Unless we continue to accurately calculate our total GHG emissions, it will be difficult to correctly measure reductions in emissions. At the end of 2008, improved data collection efforts have resulted in a more accurate carbon footprint measurement for the 2007-08 year.

The Sustainability Council recently adopted version 6 of the Campus Carbon Calculator developed by Clean-Air Cool Planet to measure campus emissions and analyze long-term strategies to reduce our carbon footprint.

Campus Grounds

Organic Campus

The maintenance of the campus grounds occurs without the use of chemical fertilizers, herbicide and pesticides and receives consulting support from our Arboriculture and Landscape Management degree program coordinated by Randall Swanson.

Materials, Recycling, and Waste Minimization

Strategy: Reduce, Reuse, and Recycle at least 50% of the campus waste stream by 2014. (See zero-waste proposal in section 4.4 Waste Management*)*

In 1999, a college-wide program was formally established to encourage recycling of plastics (#1 & #2), clear glass, tin and aluminum, paper, and cardboard. One noteworthy accomplishment occurred in 2003, when *Students for Environmental Action* made paper-recycling one of its environmental priorities resulting in over 56 tons of paper being removed from the waste stream - the highest quantity of paper collected to date. In the summer of 2007, the Recycling Action Team (RAT) was formed to re-invigorate the college's recycling program and to encourage greater compliance among staff, students and faculty.

In the fall of 2007, President Mills encouraged student participation in the ten week national RecycleMania competition for the spring 2008 semester. A new Special Topics course, *Campus Sustainability – Students as Change Agents* was created to organize this effort and initiate other campus greening projects. At the end of the competition and thousands of pounds of recyclables collected later, PSC finished prominently in New York State in paper and cardboard recycling.

It is estimated that the college could save thousands of dollars through a reduction in waste disposal and tipping fees if it were to successfully reduce the waste the college generates in half. This strategy for waste reduction and related emissions reduction is fully examined in Chapter *4.4 Waste Management.*

Construction and Demolition Waste Diversion

The Council recommends that an assessment of current recycling of construction materials be conducted and related guidelines be established to insure that a high percentage of materials be recovered for reuse and recycling purposes.

Electronic Waste Recycling Program

In the fall of 2008 Student Activities acquired the containers to support recycling the following electronic materials:

DVD's, CD's, and Diskettes
Video, Audio, and Computer Tapes
Jewel Cases and Video Cases
Cell Phones, Pagers, and PDA's
Computer Cables, Cords, Chips, and Boards
Handheld Devices and Accessories
Printer Cartridges (All types)

http://www.greendisk.com/

Hazardous Waste Minimization

Paul Smith's College has multiple sold waste streams generated by a variety of college facilities and campus activities. The waste streams include solid waste, hazardous waste, and medical waste. Wastes are managed by the Facilities Department. Table I in Appendix A of the *Campus Sustainability Manual*, lists the college waste inventory, approximate waste quantities generated on an annual basis, the type of waste, and the final disposition of the waste. New waste streams are evaluated by the college to access their regulatory status and how to ensure they are minimized and properly managed.

The Council recommends that an assessment of current recycling of construction materials be conducted and related guidelines be established to insure that a high

percentage of materials be recovered for reuse and recycling purposes.

Purchasing

Currently, the college does not have a climate informed purchasing policy. In January 2009 a task force was formed to begin drafting a green purchasing policy and procedure process for implementation in 2009-10 (See **Appendix U**). Membership of the task force included Tom Huber and Cheryl Joyce of the Sustainability Council and Terry Lewis from the Purchasing Department.

Recommended Action: Develop and implement a purchasing policy for the college guided by the following considerations:

--procurement of products which are durable, reusable and recyclable
--consist of post-consumer recycled materials
--non-toxic
--energy efficient
--sustainably harvested with proper external certification
--preference for materials and products made/derived closer to home
--adoption of EPEAT guidelines (see below)

ENERGY STAR Purchasing

In the fall of 2007, the President's Climate Commitment Committee recommended and the Board later approved a new purchasing policy requiring all new electronic equipment and appliances meet federal Energy Star ratings. Since fuel costs are expected to continue to rise, especially as the college's infrastructure grows, it is imperative that the best planning and available technology be implemented in managing finite resources.

EPEAT Purchasing

Electronic Product Environmental Assessment Tool (Silver Level or higher) developed by the Zero Waste Alliance incorporates energy efficiency, the reduction and elimination of environmentally sensitive materials, materials selection, design for end-of-life, product longevity and life cycle extension, end-of-life management, corporate performance, and packaging characteristics of products into its evaluation criteria.

Purchasing Green Cleaning Products

In spring 2007 the Facilities Department adopted the use of all-natural cleaning products. All dishwasher detergents, cleaners and soaps used by Lakeside Dining are also environmentally friendly.

Environmentally Preferable Paper Purchasing

In 2006, the college acted on a recommendation by the Environmental Resource Management Committee to purchase 100% post-consumer content recycled paper even though it means paying an additional $5 per case amounting to an increased annual cost of approximately $4,000 (2006-07). Through reduced paper consumption this cost has been decreased almost in half based on the amount of paper order in 2008.

Vendor Code of Conduct

It is expected that the college's written purchasing policy will also include a vendor code of ethics.

Transportation

Fleet Greenhouse Gas Emissions

In the fall of 2008, the college purchased an all electric Zenn Car vehicle for campus patrol purposes to reduce the use of a low-mileage Jeep Liberty during non-winter seasons.

In October 2008, a diesel truck was purchased for catering services as a way of using Dining Services used vegetable oil to make biodiesel to power the truck. An arrangement is underway with SUNY Canton to purchase biodiesel from their biofuels lab.

Commuter Options

Given the remote location of the college which results in considerable commuting distances for the majority of its employees, it is important that we work to increase the percentage of staff and faculty who travel to the campus by means other than single occupancy vehicle transportation.

Strategic Goal: Increase carpooling 10% by 2011, 20% by 2014, 30% by 2019, and 35% by 2029.

See *4.3 Transportation/Mobile Combustion Emissions Reductions* for recommendations in reaching this important strategic goal.

ADMINISTRATION & FINANCE

The Sustainability Council was formed in the fall of 2008 to provide oversight and direction in support of collaborative and integrated sustainability programming to meet the college's goal of carbon neutrality through participation with the American College and University Presidents' Climate Commitment. The Council is charged with drafting the institution's climate action plan.

Scope of Role

1. Review and evaluate the recommendations of the Campus Sustainability class and other stakeholders received thus far, and request of the President and Executive Cabinet to consider specific action on recommendations that further the college in meeting its climate commitment goals (**Appendix D**).
2. Provide oversight to the proposed Sustainability Fund (**Appendix E**) in guiding the use of such funds for campus sustainability initiatives.
3. Advise and the assist the formation of an Office of Campus Sustainability and provide administrative support during its start up period.
4. Provide outreach and collaboration to the PSC community and larger external community regarding sustainability initiatives, actions, and projects.
5. Evaluate and recommend potential grant opportunities in support of the Office of Campus Sustainability and its programs.
6. Recommend other actions, policies, and procedures toward an integrated greening of the campus to include the college's curriculum, living/learning community, college facilities and lands.
7. Identify and recommend the use of existing resources and partnerships in developing low-cost sustainability programs and events.
8. Provide oversight and guidance on the development and maintenance of the "Sustainability Matters @ PSC" webpage, which promotes and documents the greening of the campus and the college's progress in meeting its climate commitment goals.

Council Membership

The membership of the Council will reflect the make-up of the PSC community in having an equal representation of students, staff and faculty. At least one student will also be a member of *Students for Environmental Action (SEA)*, and the faculty will consist of a representative of each instructional division. It is expected that members will serve for at least one academic year with new members expected in future years. The Council reports directly to the president of the college.

For the 2009-10 academic year, it is **strongly recommended that the college's Deans and Executive Cabinet members be considered for appointment to the Council by the president so as to insure a successful "buy-in" and early phase of implementation of the climate action plan.** Including the academic deans would insure greater faculty involvement in the college's sustainability program, given that in this time of financial crisis and budget cuts, it is unlikely that the college will be adding any new staff such as a sustainability coordinator. Thus, it will be critical that key faculty more directly incorporate sustainability literacy in courses and actively promote and participate in related co-curricular activities.

The Sustainability Council at the end of 2009-10 will also play an important role in developing an annual progress report to follow-up the Climate Action Plan submitted to AASHE the previous fall; thus, another important reason to have senior administration and key faculty members on the Council at this time. It is expected that many of the

proposed short-term recommendations of this plan will be implemented or initiated over the 2009-10 academic year.

Investment

Since the college does not have an investment policy which includes climate considerations, the **Council recommends that a task force involving the Board of Trustees be assembled to develop a policy to include:**

Investment Transparency
Committee on Investor Responsibility
Screening for Negative Investments
Positive Sustainability Investments
Shareholder Engagement

Planning

Strategic Plan

We appreciate the Strategic Planning Committee decision in selecting the theme of Climate Commitment as one of its four organizing themes for the college's next multi-year strategic plan. (Ideas generated during a community input session are outlined in **Appendix S**.)

Sustainability Plan

The college's sustainability plan is integrated with the Climate Action Plan (S-CAP).

Recommended Action: Adopt the Sustainability Tracking, Assessment & Rating System (STARS, Version 0.5) for colleges and universities developed by AASHE to benchmark and measure sustainability related goals and accomplishments over time.

Sustainability Infrastructure

Sustainability Officer

To date, sustainability programming at the college has been supported mostly through the volunteer efforts of a small number of committed staff, faculty and students. In order to continue making measurable progress on the sustainability front and fulfill the college's responsibility in meeting its climate-related goals, the time has come to dedicate at least one full-time position to coordinate the college's sustainability programming. Moreover, it is expected that the new Sustainability Studies degree will also require personnel support to be viable in attracting new students and strengthen its co-curricular outreach efforts.

A greater integration between co-curricular programs and the college's curriculum would also be better facilitated by employing a sustainability coordinator, especially one who teaches sustainability courses on a part-time basis. Additionally, many of the recommendations of this report will require full-time coordination support working with all the college's stakeholders to be effectively implemented. There's no shortage of good ideas at PSC; just a shortage of coordinated time and effort in realizing a sustainability-inspired and focused vision for the college.

Recommended Action: Hire a Sustainability Coordinator whose primary responsibility will be to oversee the implementation of the Sustainability and Climate Action Plan. $50 million in federal grant opportunities is expected in the 2010 FY budget in support of the Higher Education Sustainability Act (HESA) signed into law in 2008. If this fund is appropriated by Congress, it could provide a viable source of funding for a coordinator position. (See Appendix C for proposed job description.) Given the current budget constraints, it may be necessary to initially hire a half-time Sustainability Coordinator and then make the position full-time based on available funding.

Inter-Campus Collaboration on Sustainability

Currently, collaboration occurs through interaction between the members of the Sustainability Council, *SEA* membership, President of the college, and other stakeholders. A Campus Sustainability Center was temporarily located in Lakeside Dining Services, however the noise level and lack of office equipment prevents the Center from being fully functional. **This level of collaboration will need to be much more intentional and organized for the institution to make measurable progress in meeting its climate commitment. In particular, greater faculty involvement is needed in connecting co-curricular activities with curricular offerings.**

Recommended Action: We recommend the Space Allocation Committee determine a suitable location on campus for a Campus Sustainability Center equipped with sufficient office equipment and space for roundtable style meetings and gatherings. The Group Study Room 211 in the library should receive consideration as a temporary location for the CSC and as an office for the Sustainability Coordinator. (Room 109 may be the best location once the AWI moves to its new headquarters.)

Community Relations and Partnerships

Student Participation in Community Service

The college does not have an organized structure in support of community service activities beyond the campus. However, students required to complete community service hours due to student code violations are often assigned to sustainability projects such as recycling as a way of working off their mandated community service hours.

The new Sustainability Studies degree will include an externship requirement which will also provide outreach opportunities for the college.

Outreach & Partnerships

Loose relationships exist with the Adirondack Energy $mart Park Initiative, environmental groups (Adk Green Circle, etc.), Tri-Lakes Transition Initiative, The Wild Center, etc., which with strengthening would solidify the college's role as a coalition builder and leader where sustainability is concerned. Council member Josh Wilson was instrumental as a student intern in connecting the college with the Adirondack Energy $mart Park Initiative, which led to the college receiving the E$PI supported grant to conduct a biomass feasibility study for the campus. (See **Appendix R** for a proposed partnership agreement with the Adirondack Energy $mart Park Initiative.)

Kat Kash

The college's Kat Kash program is a significant form of partnership with the Saranac Lake Area Chamber of Commerce. The program was initiated in September 2007, and provides a $1,000 pre-paid debit card to students so that they can purchase meals at local eating establishments. The program was expanded in 2008 to include the purchasing of goods and services in Saranac Lake. The Chamber announced in July 2009 that the partnership has generated $73,000 in local business, and according to Executive Director Sylvie Nelson, translated into an overall economic impact of $365,000 to the local economy.

CORE

The Community Outreach through Renewable Energy (CORE) program works closely with the Brighton Food Pantry to provide firewood to needy local families, which was initiated by forest technician students in the fall of 2008. It is expected that this partnership will continue into the future to assist low-income families in their home heating needs as energy costs continue to rise.

Diversity, Access, and Affordability

A comprehensive sustainability program should also include considerations related to diversity, access, and affordability so as to be inclusive in the make-up of the college's community.

The Diversity Initiative at Paul Smith's College is designed to promote awareness of and appreciation for the diversity that can be found on our campus, and to assess how this diversity can best grow and be sustained long-term.

The campus committee that is primarily concerned with the execution of the Diversity Initiative is the Affirmative Action Committee. It has been the goal of the Affirmative Action Committee to discuss the current climate on the Paul Smith's College campus

regarding diversity, and what can and must be done to improve that climate. Soon, the focus of this committee will change, becoming more specifically focused on the College's admissions procedures, and thereby working closely in conjunction with the Admissions department. A new subcommittee of the Affirmative Action Committee, the Diversity Task Force, is responsible for actively tackling the diversity questions that still remain unanswered and implementing programs that will advance the diversity initiative on campus.

The Diversity Initiative is focused primarily on educational programming. Programs include a diversity film series and an annual town hall meeting. Furthermore, there is a diversity newsletter entitled, "The Changing Times," which is distributed monthly to all members of the campus community, and there has been much talk surrounding the possibility of an increase in courses available to students that address issues of diversity in all of its facets.

The diversity film series is a once-a-month screening of a film that is open to all members of the campus community and which addresses an issue pertaining to diversity, such as race, class, gender, ability and/or sexual orientation. Some examples of anticipated films include: *Good Will Hunting*, *North Country*, and *Crash*. The annual town hall meeting was held last January of 2008, and is an open forum for students, staff and faculty to engage in a dialogue with one another about the social health of the campus. The second annual town hall meeting is scheduled for April 2009. Lastly, the monthly diversity newsletter, which was first issued in September of 2008, is one that serves to publicly acknowledge both national and international holidays, as well as promoting the opportunities that the College offers for students to experience and increase their exposure to diversity training and education.

Affordability and Access Programs

TRiO Student Support Services

The college was awarded a $1.1 million TRiO Student Support Services grant in the spring of 2005. TRiO Student Support Services is a federally funded program sponsored by the U.S. Department of Education, which provides comprehensive academic support services to eligible participants at Paul Smith's College. Participants are either first generation college students (neither parent completed a four year college degree), meet family income guidelines, and/or have a documented learning disability.

Project participants reflect a more vulnerable segment of the American population. They proportionally pay a higher percentage of their family income on energy costs and when living in urban environments often face higher levels of persistent pollution related to power plant emissions and other sources of contamination. On a global level, impoverished populations will continue to be the most dramatically impacted by climate destabilization unable to quickly move to higher ground when sea levels rise or levees break as evidenced in the case of Hurricane Katrina in New Orleans in 2005. Does this foretell a future where poor people across the globe will be left to fend for themselves as

warming of the globe increases? Or will a new green-collar economy emerge to include populations previously excluded by previous environmental movements?

The TRiO-SSS program is directed by Council member, Tom Huber and through its own sustainability initiative provides cultural enrichment field trips and sponsored speakers and events. TRiO-SSS has regularly collaborated on sustainability programs at the college including the *Step It Up* rally and energy fair/festival in April 2007, Campus Sustainability Day in October 2008, and co-sponsored James Howard Kunstler's talk in May 2009. In April 2009, Tom Huber gave a presentation at the New England Opportunity Association's regional conference, entitled *The Greening of TRiO: Stakeholders for Sustainability*, emphasizing the importance of directly involving TRiO-SSS participants as critical stakeholders in campus sustainability programs and making the transition to a sustainable society and the greening of the economy.

The Arthur O. Eve **Higher Education Opportunity Program**

The Higher Education Opportunity Program (HEOP) provides academic and financial support to New York State residents who meet academic and income eligibility guidelines. Students take part in a summer program which orients them to college life, and helps build their academic skills to prepare them for college level course work. They continue to receive regular academic assistance on a semester basis as they pursue their degree at PSC.

The college has also been a strong supporter of College for Every Student (CFES), which actively promotes college enrollment for first generation, low-income students from NY State. This past fall President John Mills received the annual Mario Pena award for his efforts in championing the program. The recipient is a CFES member who has strengthened the partnership between their college or university and the mission and goals of CFES by significantly helping underserved students take steps towards college.

AmeriCorps and College Work Programs

Opportunities exist at PSC in conjunction with existing programs and community organizations to secure AmeriCorps funding in support of sustainability-related work on campus. AmeriCorps is made up of three primary programs: AmeriCorps State and National, AmeriCorps VISTA, and AmeriCorps NCCC (National Civilian Community Corps). AmeriCorps VISTA provides support to community organizations to create and expand programs to help bring low-income individuals and communities out of poverty.

The recently passed Edward M. Kennedy Serve America Act will triple the size of the AmeriCorps Programs, from its current 75,000 volunteers to 250,000 by 2017. A new Clean Energy Service Corps, has also been added to AmeriCorps which will train workers to install solar panels, weatherize low-income homes, conduct home energy audits, and consult with small businesses on their energy use. The Clean Energy Corps offer living stipends of $11,000 to $22,000 a year and education grants of up to $5,350 at the end of a year of service.

Lastly, given the experiential learning model of the college, it makes sense for PSC to consider becoming a **working college** where students are required to work on campus as part of their educational experience. An array of skills related to sustainability could be developed to include food production, processing and storage; energy weatherization, efficiency upgrades/retrofits and management; building assessment and installation of small-scale renewable energy systems and more.

Chapter 3 GHG Emissions Inventory

If we don't change our direction, we'll wind up where we are headed.
~Old Chinese Expression

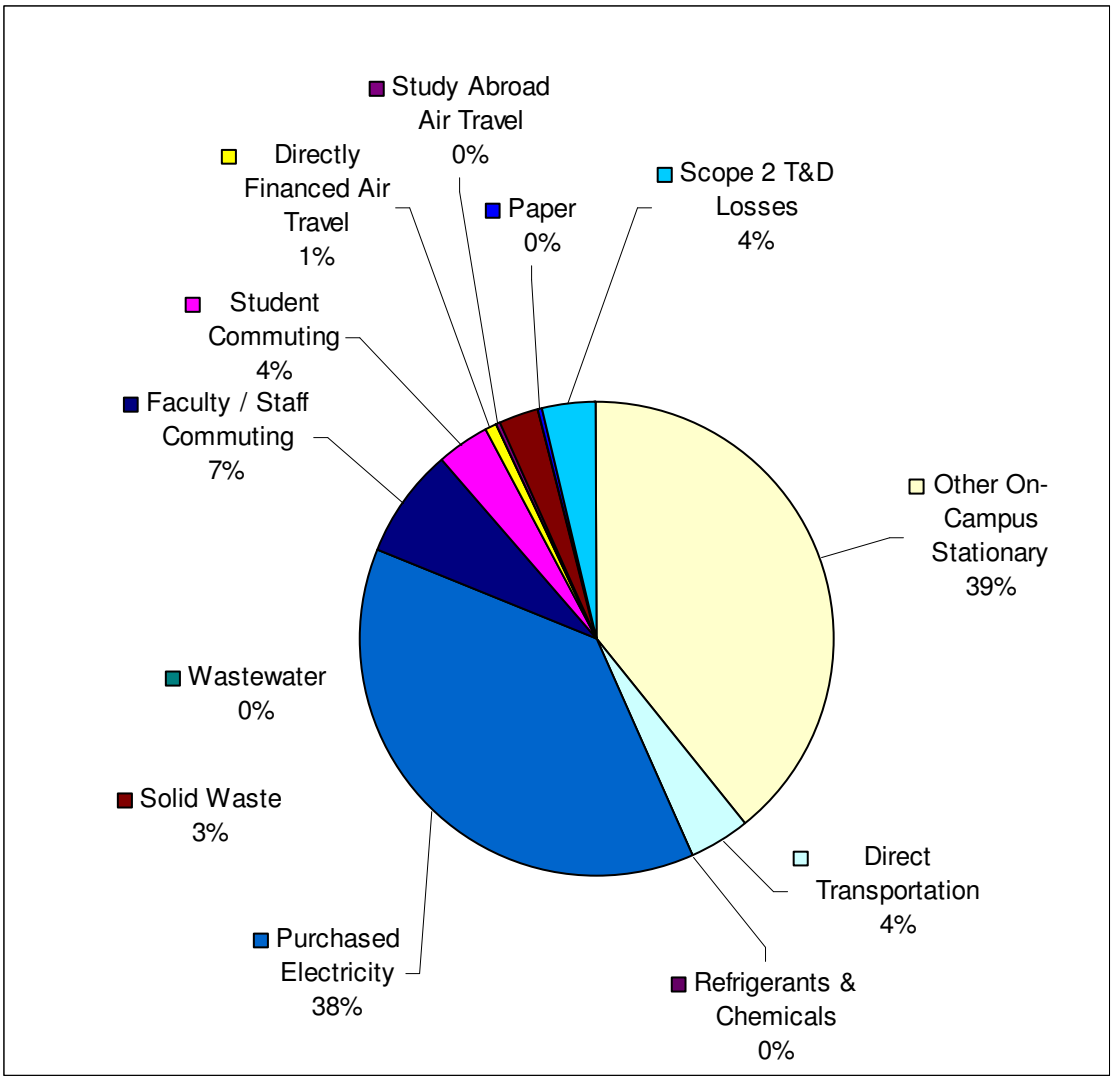
3.1 Inventory of Emissions

Formal tracking of the college's greenhouse gas emissions have been conducted for the 2007-08 fiscal year. Many of the data sets important for a full assessment of total emissions have just recently been collected. Where data has been difficult to collect, educated guesses have been made to be as accurate as possible in accounting for our carbon footprint. In December 2008, version 6 of the Carbon Calculator developed by Clean Air-Cool Planet was adopted for measuring our GHG emissions (**Appendix M**).

PSC, like most colleges, consumes significant amounts of fossil fuels

The Greenhouse Gas Emissions Report for the college, which was submitted to AASHE, is included in **Appendix B**. In 2007-2008, the college consumed 240,441gallons of #2 fuel oil and 28,000 gallons of propane primarily for its heating needs, 26,890 gallons of unleaded gasoline and diesel for its fleet use, and 4,003 megawatt hours (MWh) of electricity for powering and lighting the campus. 331,000 pounds of waste were generated. Approximately, 78,000 miles were traveled by the Admissions staff for recruitment. Air travel miles are estimated to be around 87,000 miles. 340 cases totaling 6,800 pounds of 100% post-consumer content recycled paper were purchased mostly for Xeroxing and word processing-printing applications. Refrigerant related gas releases are negligible. The cool climate of the region eliminates the need to provide the campus with extensive air conditioning from commercial size chiller units. Only the new St. Regis residences halls are equipped with central air conditioning systems.

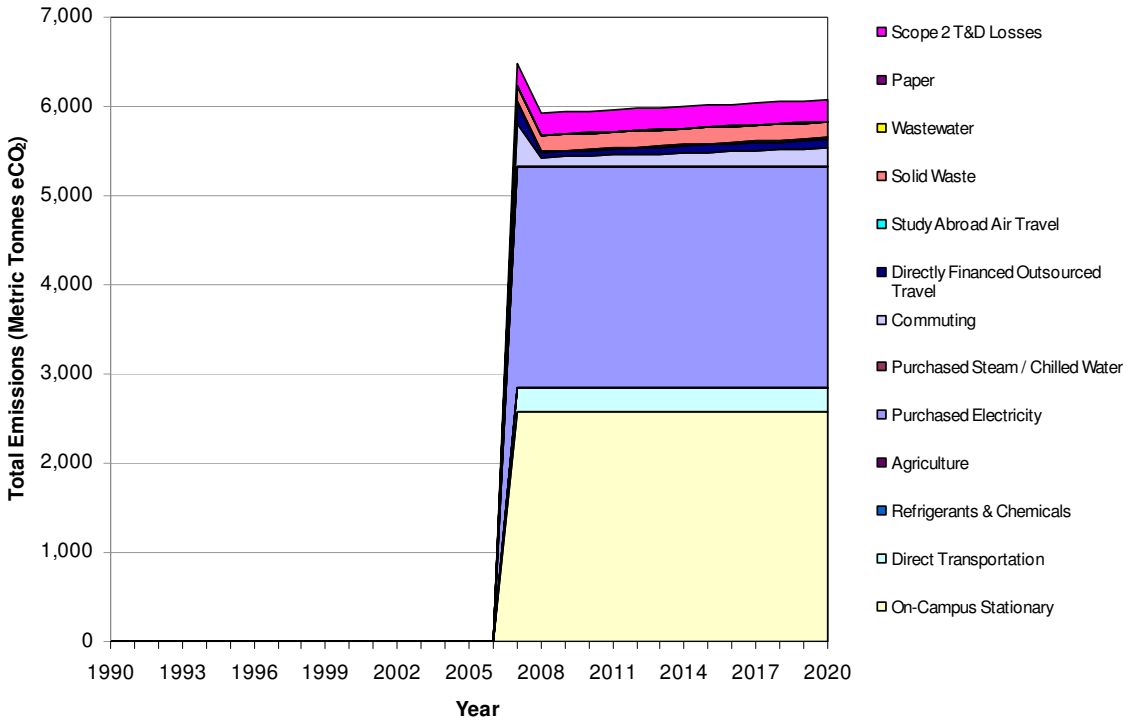
The majority of PSC's GHG emissions come directly from stationary combustion of fuel oil for heating campus buildings and domestic hot water, and transportation to and from campus for PSC employees and commuter students. Important but secondary emissions are generated from the disposal of waste materials, fleet vehicle usage, air travel and other campus operations that require fossil fuel use. The graph below shows the 2008 greenhouse gas emissions profile of the college. (Emissions related to electricity consumption are offset through the purchase of renewable energy credits, which is not indicated in the pie-shaped graph.)



2007-08 Greenhouse Gas Emissions

3.2 Carbon Footprint Calculation

A greenhouse gas emissions inventory calculating the impact from heating and cooling, electricity use, transportation, solid waste disposal, and other stationary and mobile combustion sources resulted in 6,285 metric tons of carbon dioxide equivalents emitted into the atmosphere from campus operations in FY 07-08. This is the equivalent of 5.9 tons per community member and 6.9 per full-time student enrollment. Offsetting the electricity-related emissions reduces the footprint to 4,306 metric tons of annual carbon and other greenhouse gas emissions.



3.3 Projection of Emissions Trends

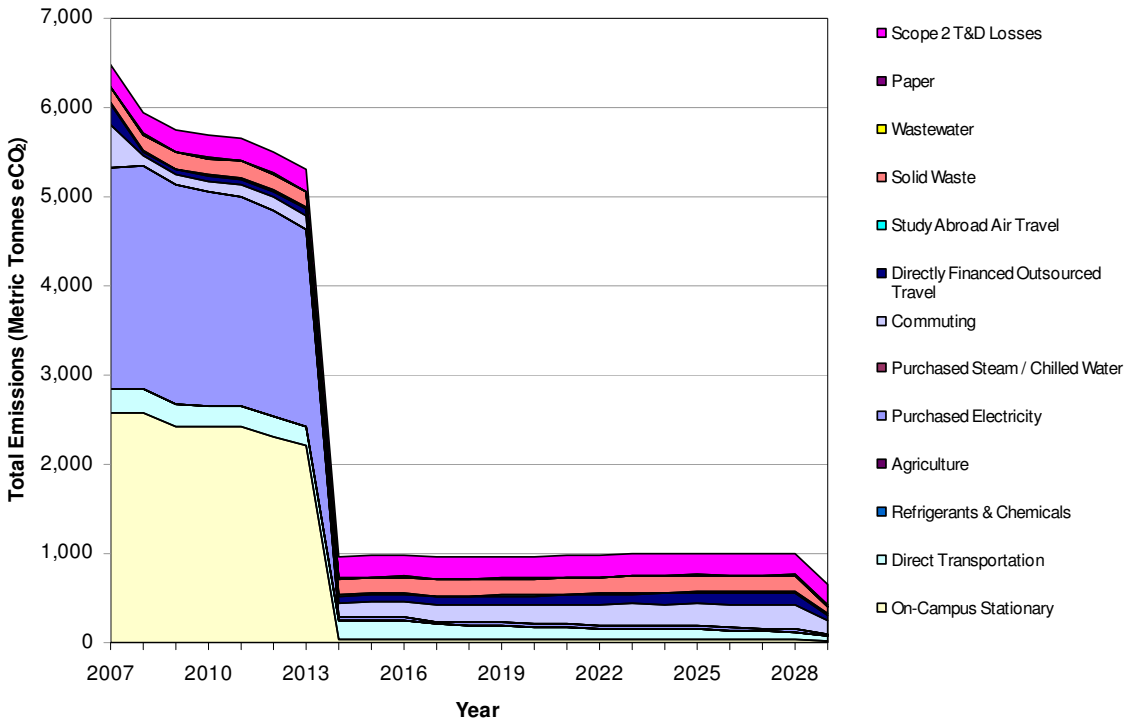
Although we have only started to track our campus emissions, given the new infrastructure projects on campus (new St. Regis residence halls and the future headquarters of the Adirondack Watershed Institute) it is expected that our GHG emissions are likely to continue increasing over the next couple of years.

Overall emissions will then begin to stabilize before taking a downward turn as emissions reduction projects take effect especially those related to reducing energy consumption on campus. The greatest single drop will occur when the college turns to biomass for a co-generation heat and power plant as projected in the graph below. Emissions from stationary combustion related to heating buildings and water account for the largest proportion of our carbon footprint (39% or 2,553 metric tons). More gradual decreases will also be realized as a greater percentage of the PSC community utilizes carpooling and public transportation opportunities. Likewise, gradually decreasing emissions will happen as the college continues to reduce waste and begin a food composting program, which would cut its methane gas emissions. A greening of the college's fleet of vehicles will also reduce transportation related emissions.

It is also possible that a stagnant or declining student enrollment will play a role in automatically stabilizing and decreasing emissions through a downsizing of the campus community. A decreased heating load beginning 2009-10 is expected with the lower campus housing occupancy and the possible sale of the Saranac Lake Residence Hall. The same effect albeit smaller would occur from a shrinking workforce such as hiring fewer part-time adjunct faculty or cutting academic programs.

Once it is determined that the college has successfully realized its emissions reduction targets, reaching carbon zero will result finally from directly purchasing verifiable emission reduction offsets. If all of the reduction actions outlined in this plan are pursued and adopted, it is broadly estimated that by 2029 annual carbon emissions will drop over 78% to 938 metric tons. Using an estimated market price of $10/ton, the additional annual cost in carbon offsets would total $9,380. However, aggregated purchasing of carbon offsets currently average around $5 - 7 per ton. Cap-and-trade carbon policies, carbon taxes, and renewable energy portfolio standards implemented at the federal level in the near term is likely to dramatically affect the pricing of carbon offsets as the market moves from a voluntary to a more mandated system of enterprise.

The Campus Carbon Calculator spreadsheet developed by Clean Air-Cool Planet can assist in calculating the cost of reduction measures per metric ton. **The Sustainability Council recommends that a sustainability intern be employed (using federal work study funds) for more comprehensive data updating of the Carbon Calculator.** In this way, using detailed energy budget estimates and other data sets, a clear cost/benefit projection can be conducted regarding short, medium and long-term investment in carbon reduction actions.



Chapter 4 **E**missions **R**eduction **M**easures

We are in the middle of one of those rare moments when the right thing to do is also the economically smart thing to do.

~Kathleen Schatzberg, President
Cape Cod Community College

Long-term sustainability is a wise thing to do

In developing short and long-term measures for reducing carbon emissions, the institution is making investments that in most cases will reduce annual costs through energy savings, and in other cases, are cost neutral or cost positive when involving capital budgets.

4.1 Buildings and Energy

Reducing energy use in buildings is the most widely agreed upon strategy for lowering both emissions and fuel bills at colleges across the country. For this reason, in 2008 the Board of Trustees approved policy which requires all new buildings be constructed to meet **LEED-certification** (silver level or above) is a significant long term energy strategy for the college.

PSC's electricity costs have increased **38%** over the past five years. Although the college currently purchases Renewable Energy Credits (RECs) to offset its electricity related emissions, cost savings realized through energy-efficiency measures and other conservation methods can be reinvested to further lower emissions or be used to purchase other carbon offsets. The higher overall cost the college pays for electricity given its location (New York State has one of the highest electric rates in the nation), combined with the extra cost it pays for certified RECs serves as extra incentives for the institution to adopt progressive energy conservation strategies.

Strategy: Apply energy best management practices, techniques, monitoring tools, and new equipment to improve the energy performance of the campus, reduce greenhouse gas emissions, and positively impact annual budgets. In addition, the formation of a broad Energy Awareness Network consisting of staff and faculty across campus would insure greater participation in implementing energy conservation practices.

Energy Intensity Trend

We have noted a 9% increase in electric consumption on campus from the 2006-07 fiscal year to 2007-08. ***As the campus infrastructure grows such as the newly added St. Regis residence hall complex, it is expected that energy consumption (and related emissions) will increase unless energy efficiency measures are taken in the near term.***

Electricity Consumption and Reduction Efforts

Electricity consumption is responsible for the second largest form of greenhouse gas emissions for the college. Although the college offsets this category of emissions through the purchase of renewable energy credits, considerable savings can be realized through best energy management practices and conservation programs.

One initiative enacted in 2007-08 was the removal of all but one of the refrigerated beverage vending machines distributed across campus. This one decision made by Campus Dining and the President is believed to save over $12,000 annually in electricity costs and the reduction of 54.8 metric tons of carbon emissions.

Action Item: The Council recommends the formation of an Energy Task Force headed by Steve McFarland, Vice President of Capital Projects to review and implement the recommendations that result from the campus energy audit conducted by the Loyalton Group. This audit is expected to be completed in the spring of 2009.

Additional suggestions for the Energy Task Force to evaluate and consider:

--The lack of air lock entrances on several campus buildings.
--Reports of residence hall windows being left open during the winter months due to overheating of dorm rooms.
--The college could apply to be a higher education Energy Star partner and designate a location in the library to serve as an energy demonstration center.
--Assess the opportunities to reduce any redundant electric lighting and other electric consumption in the library, 24-hour study room and other buildings on campus.
--Ban leaf blowers and reduce mowing. Plant edible landscaping to reduce mowing.
--The Forestry Cabin water heater thermostat could be turned down during times of low-use (semester breaks, spring break, etc.).

In November 2008, *SEA* launched the *Squeeze the Juice Energy Challenge* to encourage students to reduce their electric consumption and carbon footprint through energy conserving behavioral change, the installation of compact fluorescent light bulbs, and eliminating phantom load losses by unplugging electric devices when not in use or through installing manual power strips. The Energy Challenge includes an interdormitory competition, but the absence of separate electric meters does not allow for the measurement of individual dorm electric use for comparison purposes.

Recommended Action: Use direct funding and cost-share grants from NYSERDA to install electric meters on residence halls and other campus buildings (proposed for 2010-11 FY) to enable real-time monitoring of electricity consumption. This in combination with the purchasing of other energy equipment will stabilize and decrease electric consumption and GHG emissions resulting in financial savings for the college.

NYSERDA's Existing Facilities program provides pre-qualified incentives and performance-based incentives for Energy Management Systems - HVAC, interval meters, Combined Heat & Power (CHP), and can pay up to 50% of the costs (**see Appendix N**).

Action Item: The Sustainability Council recommends that an energy professional be hired on a performance based contract to guide the overall energy management of the campus, in particular to:

1. **Review the campus energy audit and determine its usability with respect to NY programs and incentives**
2. **Prioritize efficiency measures**
3. **Develop strategies for implementing the prioritized measures such as performance contracts and lease-purchase agreements which finance efficiency improvements using money saved from future utility bills**
4. **Identify incentive and grant programs and apply for assistance from those programs in coordination with Sodexo and the Loyalton Group.**

Performance contracting uses energy savings from efficiency measures to pay for the cost of installing energy-saving equipment and related maintenance costs.

Further, it is recommended that the position be either cost-shared by both the institution and Sodexo Education Services who manages the college's facilities as a collaborative joint venture to ensure greater accountability or be supported by Sodexo as part of a performance based contract.

Consideration should be given to larger contracts with Energy Service Companies (ESCos) to implement energy-efficiency improvements on a performance-contracting basis, providing third-party financing and guaranteed energy cost-savings.

Recommended Action: To better track energy consumption, it is recommended that the college utilize the EPA Energy Star Portfolio Manager software. It is available at:
www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager

College work study students can be utilized to perform data entry, enabling the institution to track its energy usage and GHG emissions on an annual basis. Without a consistent monitoring and verification system of energy consumption, the integrity of the climate action plan is greatly compromised.

The Growth in Computer Use

Like most colleges, the increased use of computers, printers and other electrical office equipment is responsible for a fair share of the rising consumption of electricity at PSC. Since the new library was built in 2003, the number of computers and printers at the college has risen significantly. Additionally, an increase has been noted in the number of

PSC staff who have acquired desktop printers. Even though the college has adopted a purchasing policy requiring that all new electrical equipment and appliances be Energy Star certified, this equipment still regularly consumes significant electricity. Even when computers and other devices are turned off, today's electronics continue to draw electricity – a condition referred to as phantom loads.

New power strips generally referred to as "smart strips" are able to monitor power consumption and can determine when computers and other electronic devices are to be shut down. The smart strips in turn cut off all current being drawn, whether the appliance is running idle or shut down for the night. The smart strips also serve as surge protectors. The difference is that these power strips save enough energy to pay for themselves in just a few months time even though they cost more than the basic surge protector strips. The sensors automatically eliminate phantom loads from being drawn, and thus do not depend on the user manually turning off the power strip (see www.tripplite.com and search "smart strips" for vendors).

A study conducted by the Long Island Power Authority in 2007 demonstrated that smart strips installed per computer saved over $11 per month. The savings at PSC are expected to be even greater given our higher electric rate along with the additional cost we pay for buying green power.

Recommended Action: Purchase and install plug-in smart power strips wherever electrical equipment is in use to reduce phantom loads (at night and weekends). [$6,000 in funding approved for smart strips for 2009-10.]
Research funding and bulk purchasing options for implementation to include NYSERDA's Existing Facilities cost share program. Implement NYSERDA's recommended steps for the creation of Energy $mart Offices.

Recommended Action: Printers and copy machines by having default settings to duplex printing will help save paper automatically with little change in human behavior. It is recommended that the IT Department set all print servers to duplex printing.

Energy $mart Offices

In addition to the recommendations related to the installation of smart power strips, NYSERDA recommends a detailed action plan for reducing office-related electricity entitled "Six Steps to Implementing Power Management." These steps are outlined in **Appendix N** (following the list of grant opportunities) and can be put in place with the assistance of the college's Energy Manager, members of the Energy Task Force and federal work study students. This would also serve as a concrete way of following up the energy audit to be completed in spring 2009. In the future, the college's Sustainability Coordinator will also oversee this effort.

See http://www.nyserda.org/programs/offices/default.asp for the entire program.

Renewable Electricity

Energy consumption is the single largest source of greenhouse gas emissions for institutions of higher education. Coal-fired power plants account for the largest percentage of the nation's electricity production contributing to global warming, acid rain and smog. From 2007 – 2010, the College has committed to purchasing green power for the campus in the form of Renewable Energy Credits (RECs) at a 100% level with Community Energy, a wind power developer based in Pennsylvania, which was acquired by the Spanish-owned company Iberdrola (see **Appendix P**). [Note: Given the increased electricity consumption for 2007-08, the college is currently only purchasing renewable energy credits representing 91% of its electric needs.]

The purchase of renewable energy credits is an important means of funding the construction of new power plants that harvest renewable sources of energy such as wind farms. The REC market has been steadily growing over the past few years and rates have fallen recently in part due to the global recession. Some experts predict that the passing of a federal Renewable Energy Standard later this year will cause prices to increase sometime next year. **Current green power quotes received for the college (Next Era Energy and Renewable Choice Energy) have averaged between $3-4 per REC or MWh, which is less than half of what the college is currently purchasing for certified wind power RECs. It might be wise to lock-in the next two-year contract as soon as possible.**

Recommended Action: A pre-feasibility study was conducted on the old site of the hydroelectric dam built by Paul Smith, but requires a more expensive engineering study to determine the feasibility of returning it to hydroelectric production. The council recommends that a Flex Tech grant be considered to fund 50% of the cost for the study.

Recommended Action: Apply for a technical assistance grant through NYSERDA to conduct an engineering study to evaluate the feasibility of renovating the old central boiler house and stack for a woodchip boiler and district energy plant for the entire campus and/or identify an alternative location.

4.2 Combined Heat and Power with Biomass

The best long-term strategy for reaching and maintaining carbon neutrality is potentially through utilizing the college's sustainably managed forested lands as a means to heat and power the campus. This one decision would dramatically decrease the stationary combustion-related emissions of the campus. The use of biomass in this way can also save the college money given the expectation of rising fossil fuels over the coming decades. Additional biomass resources throughout the region can also be secured for a long-term supplying of the college's heat and power needs.

Both a previously completed student capstone project (Hilderbrant & Quinn, 2007) and a feasibility study supported by a grant from the U.S. Forest Service and supported by the New York Department of Environmental Conservation Division of Lands and Forests conducted by Richmond Energy Associates (**Appendix T**) have concluded the viability of using local biomass resources for meeting some portion of the heating needs of the campus.

In the Hilderbrant and Quinn study, they compared the annual allowable cut of the college's forest management plan with the annual average consumption of heating oil to determine if sufficient biomass could be used to replace the use of #2 heating fuel. Such an approach would not only dramatically reduce the college's emissions but also significantly decrease emissions of sulfur dioxide and nitrous oxide as well. The total acreage of the college's certified management area covers 12,285 acres, although only approximately 11,000 acres are actively managed for timber production.

Whereas the senior capstone study concluded that 95% of the college's annual allowable cut could meet the annual heating requirements of the campus other limiting factors exist which deserve consideration. Although true that the college is allowed 390 acres from which to acquire its allowable cut through SmartWood, it is unlikely that the professionally managed plan would recommend the harvesting of 3,559 cords of pulpwood as suggested by the study to meet the heating needs of the campus.

Moreover the Capstone study tracked the increase in the cost of fuel oil from 2002 to 2007 to heat the campus which ranged from $296,825 in 2003-04 to $549,360 in 2006-07; an overall increase of 127% over a five year period. This increasing trend is expected to continue throughout the 2008-09 heating season as fuel oil increased an additional dollar per gallon ($3.23) resulting in an estimated $650,000 to heat the campus through the spring of 2009. However, costs are expected to decrease in 2009-10 as the college recently locked in a much lower rate for #2 fuel oil ($2.75 per gallon) - a consequence of the overall lower demand due to the global recession.

Clearly both the increased costs of continuing to heat the campus with a derivative of oil as well as the carbon reduction of switching to biomass are strong incentives for the college to make this transition.

Technology exists today to burn biomass for heating and power generation. Steam turbine-generators can be fitted to wood boiler systems to produce electricity to power the campus needs. A dramatic drop in demand for electricity occurs in the summer months when few students live on campus. Therefore, electric production from the college's biomass plant could be sold to the electric utility when the state experiences its greatest need to meet peak load demands. Additionally, since the college is generating this electricity through the use of a renewable resource, the college could earn renewable energy credits as well - a potential source of revenue or more likely as a means of offsetting other campus-generated carbon emissions.

Hilderbrant and Quinn also recommended in their study that the college use 148 acres of open land to grow various fast growing willow crops to be harvested for a biomass heating plant. They calculate that 617 cords per year equivalent to 8.3 billion Btus of heating capacity could be produced on an annual basis through a willow plantation. Willow crops are being promoted at several colleges for their biomass potential given their short propagation cycle and ability to regrow after several cutting cycles with few inputs and low soil fertility requirements. As noted in the study, fast-growing willow as a biomass supplement would serve to provide more flexibility in staying within the annual allowable cut requirement of the forest management plan.

It should be pointed out that for the college to take on the complete task of securing woodchips for a district biomass heat and power plant from its forested lands would require an extensive upfront investment in owning or leasing the necessary equipment. It may make greater financial sense to outsource the woodchip production or purchase the required volume directly on the open market. However, whereas the state of Vermont has several woodchip biomass plants to heat schools and municipalities, there does not currently exist comparable facilities in northern New York. Thus, the lack of current local demand also presents challenges from a supply and cost standpoint.

NYSERDA and DOE Grants

One drawback for PSC in making the conversion to a biomass plant is the lack of a centralized heating system for the campus. However even considering this limitation, the decision was made in December 2008 to apply for a NYSERDA grant to provide matching funds for a Biomass Combined Heat and Power system for the campus. In applying for this $2 million grant, the college partnered with Northeast District Energy Corporation, a 501(c) (3) not-for-profit group which would design, build and manage the plant on a multi-year lease-purchase basis.

An additional $2.4 million in grant funding for the co-gen plant could also be acquired thorough the U.S. Department of Energy as part of the 2009 American Recovery and Reinvestment Act. The National Energy Technology Laboratory has posted a Funding Opportunity Announcement (DE-FOA-0000044) toward the deployment of combined heat and power systems and district energy systems, which modernize infrastructure, enhance energy independence, and also promote job creation and economic recovery.

The biomass plant is expected to cost $9 million, and it is hoped that half can be paid for in grants and other half through a performance based contract extended over 20 years or more. Expected annual energy cost savings would be used to make the lease payments over the specified terms of the contract. This is typical of an ESCo type arrangement.

Recommended Action: The Sustainability Council believes that it is the best interests of the college from both a financial and climate commitment perspective to transition the institution to a biomass district energy plan potentially for both heat and power. A biomass cogeneration plant would not only dramatically reduce the college's carbon footprint, but it would position the college's forestry program to

take advantage of the expected demand for biomass related jobs. Although this is an ambitious undertaking, it also would incorporate one of the college's greatest resources – its forested lands – and strategically use it towards long-term, energy independence while stabilizing the college's operating budget through a dramatic decrease in heating oil consumption. It is expected that such a bold decision would also result in strong alumni and other donor support, along with being of interest in attracting external grant sources to fund the considerable infrastructure related costs.

Further, it is recommended that the college partner with an Energy Services Company in realizing a biomass CHP plant on campus. NYSERDA and DOE provides grant opportunities in support of technical and financial assistance for large scale infrastructure projects. Such opportunities should be explored by the Office of Institutional Advancement with assistance from the Vice President of Capital Projects, proposed Energy Management Consultant, and Facilities Department.

One strategy that deserves consideration for lowering energy and operating costs and their related emissions is moving part of the college operations to a four-day work week. The Council recommends that the Executive Cabinet study the potential budget savings, and where a reduced work week could initially be implemented. Such a move is anticipated to reduce employee commuting costs and boost both productivity and morale.

Recommended Campus Energy Management Strategies by Sustainability Consultant, Jim Merkel:

Populate Energy and Climate Inventories at the campus-level with Clean Air Cool Planet spreadsheets. Then drill two levels deeper, with inventory data, the building level and then the system level. These inventories should be designed to provide rankings such as Btu/sq-ft, total annual GHG emissions and cost savings by bringing the entire building fleet at PSC to the state of the art standards gleaned from the best examples of campus buildings. (It might be worth looking to European Campuses where zero-energy and positive energy examples have been running longer.) This strategy also involves surveying the best examples by building type such as labs, dorms, classrooms, dining halls; all have different use patterns and energy intensities. Other information that could be mined from this database include: individual buildings and energy systems sorted by system pay-back periods, rankings by reduced GHG emissions per dollars invested, etc.

It might be discovered that certain upgrades have better cost-effectiveness compared to purchasing carbon offsets. Once projects are ranked, strategic upgrades can be bundled for desired combined payback periods. For example, we might first complete the most rapid payback projects or alternatively combine several upgrades that address user comfort, aesthetics, delayed maintenance, insulation and system efficiency that together

yield an eight-year return on investment. PSC is in the business for the long-haul and it might be wise to meet multiple objectives with a single well-structured upgrade.

The building-level inventory would include data for all campus buildings that might include: sq-ft, heating (Btu, GHG & cost), cooling (tons, GHG & cost), electric (kWh, GHG & cost), water, solid waste, other emissions, effective R-values for walls, floors, roofs & windows, occupancy, scheduling effectiveness, weekend, holiday, daylighting effectiveness, evening set-backs, building type (dorm, lab, classroom, administrative, dining, facilities), etc. Included in this inventory would be best-case data for similar type campus buildings. For each building, analysis could include Btu/sq-ft, GHG/occupant, water/student, and other comparison variables. Going one step further, well-populated inventory sheets would then sum the potential energy, dollar and GHG savings possible by upgrading building to best-sustainable practices.

The system inventory would include heating system efficiency, lighting efficiency, control system effectiveness (CO2 sensors, occupancy sensors, AV equipment controls, fuel type (cost/Btu, CO2/Btu), heat recovery for air & waste water, user potential for reductions and dollars required to upgrade specific systems along with expected efficiency.

To provide an example of the potential strategic reductions would involve a robust identification of the multiple factors or variables that influence Paul Smith's impact and developing a model and plan to accomplish desired measurable outcomes. The model should be inclusive of multiple factors and include feedback loops so each project learns and adjusts future steps based upon a growing information base and experiential wisdom.

As an example, the following factors influence a building's emissions:

Area per occupant -- A
Technology of systems -- T
Envelope effectiveness -- E
Operational controls -- O
Management effectiveness -- M
User habits -- U
Extending useful life -- L
Emissions/Btu of fuel source -- F

Total building performance = A x T x E x O x M x U x L x F

If we designed for a performance increase in each factor by a "best practices" margin, total system performance can be substantially improved as certain factors multiply by one another. Assume "1" to be current practices and that the following usage reduction multipliers could be achieved over a 20 year period.

Area per occupant -- 0.8
Technology of systems – 0.8
Envelope effectiveness – 0.8
Operational controls – 0.8
Management effectiveness – 0.8
User habits – 0.8
Extending useful life – 0.8
Emissions/Btu of fuel source – 0.8

The total building emissions now become the following fraction:

= A(0.8) x T(0.8) x E(0.8) x O(0.8) x M(0.8)x U(0.8) x F(0.8)

= 0.21

In actual practice, the above model would be customized for each building, system or asset identifying variables and assessing their level of independence and interdependence. A time period for target performance increase would be assigned and could be periodically assessed.

Often the work of energy reduction, albeit less glamorous than large new energy systems, yields stronger returns. However, if prioritized, a second phase of renewable energy installations could result in dramatically smaller systems, in the above example, 80 % less energy. This could thus make solar thermal, photovoltaic, and small-scale hydroelectric viable and biomass could be used as a back-up when the sun isn't shining.

Several strategies or policies to consider include:

a.) Freeze emission growth. Attempting to reach a moving target is discouraging. All new programs and initiatives could be required to demonstrate carbon neutrality. Ensure each new building completed is carbon neutral or energy positive through efficient design, on-site energy production, documented reduced usage elsewhere on campus and purchase of renewable energy credits and/or offsets. A commitment to not allowing the target to continue to grow would inspire creative problem solving and management. Accepting that limits exist (design constraints) can foster ingenuity.

b.) Reducing the use of fossil fuels (direct and embodied) through resource efficiency and conservation in all operations including commuting. Populate inventories with identified targets for various variables including: Utilization, Technology, Building Performance, Operational Decisions, Administrative Drivers, Management Effectiveness, User Habits, Energy Choices…

c.) Optimizing the utilization and care of assets. Decisions to demolish buildings should be preceded by a detailed economic and ecological footprint analysis that would compare a tear-down to a strategic retrofit. Preventive maintenance and extending the useful life can dramatically reduce impacts. A building or asset discarded or torn down half-way into its useful life doubles its fabrication/construction and disposal footprint. Demolition typically releases toxic substances into the environment and the salvage value is a fraction of the assets value. Some cases certainly warrant a tear-down. (A study conducted in Bellingham Washington determined the value of salvage materials to be $1.04 per sq ft. New construction typically costs over $250 per sq ft.)

d.) Fostering an environment of commitment to excellence in sustainable daily practices beginning with staff, faculty and administration spreading into student life. Behavior changes can yield significant reductions. For example, the benefit of a vehicle that is 20% more efficient is erased if we travel 20% more. Efficiency coupled with behavior however increases the benefit. Critical to any comprehensive program is education and buy-in to the initiatives objectives.

e.) Burning cleaner fuels.

f.) Installing renewable energy equipment such as small-scale hydroelectric, solar thermal and photovoltaic panels on campus. Use biomass as a source after cleaner forms are in place.

g.) Purchasing renewable wind and solar energy credits.

h.) Establishing procurement guidelines aimed at purchasing commodities such as food, services, materials and supplies from businesses with documented sustainability practices located within the local region.

i.) Managing land holdings for ecosystem services including biodiversity, air quality, carbon sequestration, soil stabilization, watershed integrity, wilderness and cultural values. Land can be managed such that the carbon stored on the land (volume of standing trees) increases each year. Either through restoring lands or documenting an increase in stored carbon, this land could be used to offset campus CO2. If forests are harvested beyond sustainable yield, stored carbon would decrease.

If the college lands were taken out of forestry and managed for ecosystem services, they appear to have the capacity to sequester most of the current emissions. The caution here is that the science is not clear of the long term sequestration of forests, which tend to look carbon neutral over long periods. But there are other serious impacts associated with industrial extraction of biomass.

j.) Usage of plant-based fuels. There is an increase in carbon emissions per Btu from burning woodchips compared to #2 fuel oil: 221.9 vs. 161.4 pounds of CO2/Million Btu. Bio-diesel from waste oil can be an interim strategy while available; however, our large consumption of heating oil far exceeds regionally available used fryer oil. Virgin bio-diesel is not recommended due to the impacts of converting forest lands to mono-cultures or using crop land for energy. The trading of externalities, ecosystem services and world food supply (one billion humans face debilitating poverty) need careful evaluation.

k.) Purchasing of carbon offsets. These can currently be purchased for $10/metric ton of CO2.

4.3 Transportation/Mobile Combustion Emission Reductions

Transportation related emissions are a significant source of pollution in the Adirondack Park and for the college given the low population density of the area, large distances between residences and places of work, and a higher proportion of commuters who drive trucks, SUVs, and other low mileage vehicles typical of northern climates.

Emission reductions can be achieved by reducing overall vehicle miles traveled and increasing vehicle fuel efficiency. Reducing miles traveled can be achieved through an aggressive encouragement of carpooling among employees and students.

Increasing the fuel efficiency of the college's fleet is the most straightforward method of decreasing the other portion of the institution's mobile combustion emissions.

Fleet Greenhouse Gas Emissions

Over the past few years, the admissions staff has averaged 78,000 miles for recruiting related travel by car (6 counselors X 13,000 annual miles). This works out to about 3,545 gallons of gasoline on an annual basis and 32 metric tons in carbon emissions.

Recommended Action: Diversify the college's fleet of vehicles to include one or more high mileage/hybrid vehicles to support travel by the Admissions staff.

Commuter Options

Given the remote location of the college which results in considerable commuting distances for the majority of its employees, it is important that we work to increase the percentage of staff and faculty who travel to the campus by means other than single occupancy vehicle transportation.

We are currently participating in a pilot program with carpoolworld.com - (**http://www.carpoolworld.com/PSC**) to evaluate the logistical support services they

offer for carpooling. Some kind of viable strategy is needed to reduce transportation related emissions as it accounts for the next largest category of emissions for the college - second only to stationary combustion for heating the campus.

A survey to the college community was conducted in January of 2009 to determine interest and incentive preferences for a carpooling program (**Appendix G**).

A ride board for faculty and staff was created in the student center in November 2008, but thus far no one has utilized this attempt at matching drivers and riders. An on-line matching system such as through carpoolworld.com is preferable given its easy form of access and low-cost coordination. A survey administered to faculty and staff in December 2008 and January 2009 indicated a high level of support to the college's carpooling initiative.

If the college were to directly pay for carbon offsets at current market prices in reducing its transportation related emissions, the cost would be almost $8,000 per year. Participation in carpoolworld.com would cost only $120 per year.

Inherent in expanding carpooling come both employee and employer benefits. Employees can reduce the wear and tear on vehicles, save gasoline costs – which will eventually increase again, and strengthen relationships with colleagues. The college would not only reduce its overall carbon footprint, but would reduce the number of parking spaces needed and be benefited by greater staff morale.

Recommended Action: The Sustainability Council and the Staff Advisory Council propose the college contract with carpoolworld.com in support of a campus wide commuting program for staff, students, and faculty. [Approved by Dr. Mills – 4/2009] Further, the Councils recommend that a host of incentives be considered in support of commuting to include flex time and other employee benefits.

Recommended Action: Consider establishing a café/transit center where the campus community can get information on local and regional transit, car-pools, car co-ops, ride-boards, van-pools, borrow bicycles (with deposit) and have a bike-pool for class outings.

Recommended Action: Take concrete steps to enhance the campus climate for cycle commuting. Incentives could include covered bike parking at all buildings and full access to the campus repair shop with frequent training in bike repair and commuting skills. The program can include cycle racing, recreation, touring, mountain biking with an emphasis on utility such as commuting and work bikes along with education about the health benefits. Well-built work cycles exist today that include large capacities for on-campus projects such composting, campus deliveries and other Facilities and Grounds jobs. The overall idea is to create an environment and contingent of cycle enthusiasts who are fluent and habituated to bicycles as a primary means of transportation.

Through implementing an incentivized carpooling and cycle commuting program, we conservatively believe the following goal can be reached:

Strategic Goal: Increase carpooling 10% by 2011, 20% by 2014, 30% by 2019, and 35% by 2029.

By reaching this goal, carbon emissions related to employee commuting would in turn be reduced by 35% dropping from 719 metric tons to 467 metric tons per year.

Air Travel

PSC's air travel miles (approximately 87,000 annually) is not as large as its peer institutions, but the college's remote location in NY State does lead to higher air travel use for staff and faculty professional development and conference attendance. The lack of satellite communications to support distance learning opportunities also factors in to a reliance on air travel. However, the increased availability of web-based seminars and trainings do provide alternatives to air traveling to conferences, etc.

Currently the college does not have a centralized method of accounting for tracking the air travel of its employees or an agreed upon policy related to purchasing carbon offsets for air travel. The Council in requesting data on air miles found that a few college employees have as a matter of course purchased carbon offsets when booking flights, mostly through TerraPass.

Recommended Action: Develop an air travel accounting method for documenting annual air miles and a set of recommendations regarding the purchase of carbon offsets so that the institution has a uniform purchasing policy to guide budget managers. Implement air travel offset purchasing policy by 2011.

The current budget crisis has resulted in a recommendation from the senior administration to curb travel related costs. In this light, it is expected that the purchase of carbon offsets would also be at least temporarily suspended. However, given the relatively low cost of air travel offsets for the institution, it is recommended that a purchase policy be implemented by 2011. At current market prices, offsetting annual air travel emissions (70 tons) for the entire institution would only cost between $500 and $1,000. The lowest cost is achieved by tracking annual air travel and making an aggregate purchase of carbon offsets at the end of the fiscal year with related departmental billing.

Better yet perhaps would be the development of an on-campus offset program where offsets are accomplished on site keeping the money and improvements tangible and visible and the benefits local.

4.4 Waste Management

Although the college currently lacks comprehensive longitudinal data regarding wastes generated on an annual basis, a preliminary assessment indicates that considerable costs could be saved with improved waste management practices. Although gains have been made in the college's recycling program by participating in the annual RecycleMania competition more opportunities exist through overall waste minimization and increasing the amount of materials captured from the waste stream through improved recycling practices.

Materials, Recycling, and Waste Minimization

Strategy: Reduce, Reuse, and Recycle at least 50% of the campus waste stream by 2014 with the goal of reaching zero-waste by 2029.

Waste Minimization

It is believed significant cost savings could be accomplished through reducing waste and increasing recycling based on current expenditures for waste disposal. A preliminary assessment indicates that recycling related costs in the form of weekly pick ups of recyclables amounts to only 9% of the total cost for waste disposal at the college. The largest recycling cost is related to the twice weekly pickup of cardboard generated by Campus Dining Services while also paying a monthly fee for a cardboard compactor which has a very large capacity. If this cardboard were to be either baled on-site or regularly moved to the cardboard compactor on campus using work study students or Facilities staff, at least $2,500 could be saved on an annual basis.

In January 2009, the instructional divisions moved to a paperless syllabi storage system in an effort to save paper. Many faculty utilizing Blackboard have also moved to paperless course instructional methods.

Recommended Action: Develop a zero-waste policy which bans recyclables and compostables from the waste stream, curtails procurement of packaged items, and requires vendors to reduce and reuse packaging in creating a campus culture truly committed to waste minimization.

Recommended Action: Track the costs on a monthly basis for waste disposal and recycling pick-up. A work study position could be utilized for this data tracking.

Recommended Action: A large amount of paper junk mail is delivered to the college on a weekly basis. The Council recommends that someone at the institution be charged with researching how the college can be removed from many of these lists that regularly solicit and promote their products through the U.S. Postal Service.

Waste Diversion

Food Waste

In the fall of 2007, Campus Dining introduced a tray-less dining operation. This one decision is responsible for reducing patron food waste by an estimated 20% or more. Moreover, it sets the stage for a food composting program to properly manage the remaining waste and reduce the considerable methane emissions associated with land-filled food waste.

Campus Dining also anticipates that through the use of post-meal data linked to the web-based menu system, predictions can be made regarding food waste/compost volume when similar menu items are served again.

Food Composting Program

A number of composting related proposals have been considered at Paul Smith's College over the past 15 years. However, the Adirondack setting of the campus poses a number of challenges that have yet to be successfully resolved for a viable food composting program to take root at the college. Given the sub-zero temperatures, in-vessel composting systems that include an auger-driven aeration system are prone to freeze and develop structural problems over time unless situated in a protected location. An indoor composting facility may need to be developed given the long winter season (Ithaca College and Dartmouth College both have indoor facilities.) Fencing out wildlife is an additional consideration for any open windrow or bin method of composting, which requires additional equipment and labor costs.

The considerable precipitation of the region combined with the high water table of the lakefront campus are additional factors important in the placement of a campus composting operation which would require proper permitting and approval through the Adirondack Park Agency and Department of Environmental Conservation (DEC). The New York State DEC's regulations pertaining to composting can be found in NY Codes, Rules and Regulations, Part 360 (Solid Waste Management Facilities, composting sections – subpart 1 & 5). Most institutions are exempt if less than 3,000 cubic yards of waste are being composted on an annual basis. The APA conducts case studies of composting operations and requests that a Jurisdictional Information Form (JIF) be completed.

Feasibility Studies

Over the past several years, a number of senior capstones have studied the feasibility of a food composting program at the college or for businesses. Faculty members Randall Swanson and Ruth Smith during a special Sustainability Council session on the topic of food composting shared additional information related to student capstones and proposals over the past several years. A review of these capstone projects and proposals has provided helpful guidance in formulating recommendations regarding a food composting program at the college. The development of a campus composting program now factors

in the additional costs of greenhouse gas emissions related to land-filled food waste as part of our climate commitment.

In 1995 a composting feasibility study was completed by the Sub-Committee on Composting of the Waste Management Committee. At the time, it was estimated that 13% of the college's annual costs relative to waste management was related to food waste disposal. The committee researched the quantity of food waste generated, uses for the compost, methods of composting and respective costs, and explored related regulatory issues with assistance from DEC staff member Dave Winchell. It was determined that only minimal cost savings could be realized, but additional benefits in the form of home-grown soil amendment along with relevance to academic programs and engaging in environmentally sound practices could be successfully achieved. The subcommittee also recommended making a grant application to the NYS Department of Economic Development (now Empire State Development, Pollution Prevention & Recycling) as composting is encouraged as a means of reducing land-filled waste. (See **Appendix J** for the full components of the 1995 Composting Feasibility Study along with related information on the quantity of campus food waste and composting methods).

A senior capstone entitled *Composting for Small Institutions* by Jeremy Nikander and Nik Mckay in 2000, examined the factors for implementing an organic composting program at smaller institutions such as Paul Smith's College. In particular, they explored the science and types of composting, costs related to the methods, the overall benefits and uses of the end product, and the related legal considerations for an institution-wide composting program. The Nikander/Mckay capstone included a review of the composting program at Mohawk Valley Community College (Rome campus), Keene Valley Central School, Franklin County Correctional Facility in Malone, and a food waste assessment of PSC's food service program at the time.

In the spring of 2005, Dylan Pierpont's capstone reviewed four composting systems considered viable for college-based composting programs: passive aerated windrow systems, in-vessel systems, three bin container method, and vermicomposting (worm-assisted composting). His capstone also provided estimates on the quantity of food waste generated by the college.

Jackie Zehl's capstone in 2007, focused on creating a recycling and composting program for the culinary labs. Her study found a high level of support among the PSC community for composting including an agreement among students to pay a fee to support the establishment of a food composting program. One component included the diversion of food waste from the labs to the small poultry farm of staff member Jim Tucker who lives just a few miles from campus. This capstone too provided important data in the form of the quantity of weekly food waste generated by the culinary lab based courses.

Assessment of Food Waste

The above research efforts of our students along with the current tracking of weekly semester waste discarded in Lakeside Dining provide important benchmarking for establishing a composting program that also reconciles our local composting difficulties.

It is clear that the college can further reduce its waste stream by implementing a food composting program. Although considerable progress has been made in minimizing food waste on campus, it is estimated that upwards of 1,500 lbs of compostable food waste are generated on a weekly basis in Lakeside Dining during the fall and spring semesters. An additional 250 lbs of weekly food waste are produced on average by the college's culinary labs when culinary classes are in session.

One learning activity to incorporate in the culinary labs is to assess the cost of throwing away or wasting prepared food. This would help determine the actual cost per pound of purchasing, preparing and serving food including overhead to help lower food waste. The savings could then help fund the use of a higher percentage of organic local food in the culinary labs and in Lakeside Dining.

The compost generated is usually 25% of the original food waste (a 75% reduction in volume). Using the ballpark estimate of 55,000 lbs of food waste per year equates to 13,350 lbs of compost or approximately 13.35 cubic yards (at 1,000 lbs of compost per cubic yard). However, this amount is likely to be 2 – 3 times greater with the addition of wood waste, leave litter, etc. which would be added to the food waste for composting. Still this would only result in approximately 40 cubic yards of compost, a quantity much less than the 3,000 cubic yards level which would require state permitting.

Wood Waste as Bulking Agent

The good news is that the college also generates approximately 250 pounds of sawdust and woodchips on a weekly basis through its forestry operations and Woodsman's Team practices and competitions. And just a few miles away from campus, several hundred more pounds of sawdust and chips are available free for the taking at an area sawmill. More wood waste materials could also be acquired from local tree trimmers who regularly cut tree branches and under story brush below electric power lines near campus along state routes 86 and 30.

The use of bulking agents in the form of wood waste, shredded paper and leaves add carbon to the nitrogen-rich food waste and assist the aeration process by creating air pockets. The optimal carbon to nitrogen ratio is 30:1 (carbon to nitrogen). Providing oxygen is also critical for microbial activity for composting; without proper oxygenation anaerobic decomposition takes place which is responsible for generating the rotten egg smell due to the buildup of hydrogen sulfides.

By combining the two categories of waste materials (food and wood waste) in a composting program, a soil enriching supplement for the college's gardens can be created while reducing methane, a greenhouse gas over 20 times more potent that CO2. In

addition, ash by-product from a future biomass combined heat and power plant could also be utilized as a composting component. "Waste" is just a resource out of place.

Re-Assessment of Food Waste & Composting Pilot Program

During the spring 2009 semester, Lakeside Dining procured a stainless steel food sorting system and large weighing scale to more closely measure and sort daily food waste in support of a pilot food composting program. Meats, foods high in fats, oils, and bones are separated from food compostables to reduce odors and pest problems in the composting operation. The sorted food waste is collected in a plastic bag-lined 35 gallon container, which can easily be rolled to the loading dock onto a pickup truck for delivery to a local farm or the campus composting center.

Preliminary estimates beginning in March indicate that approximately 950 pounds of post-consumer food waste are generated on a weekly basis within Campus Dining. These newer totals indicate a further reduction in previously gathered food waste data most likely due to the better sorting of compostables from non-compostable food waste.

Recommended Action: It is strongly urged that the college design and construct a community scale composting center on campus. Food waste from campus dining services and culinary labs along with wood waste from the forestry program and other local sources can be converted to a quality compost material. Additionally, small amounts of ash product from a future biomass heating could also be directed to the composting facility. In so doing, waste materials can be used as feed stocks for generating compost for the campus garden and in support of local community gardens.

Through the assistance of a composting task force a multi-pronged approach to composting has been developed and recommended to be piloted in the spring and fall of 2009. Specifically, food waste from the culinary labs are properly sorted and picked up by local farmers to feed livestock (chickens and pigs) which minimizes the total waste to be composted; college wood waste is combined with pre-sorted food waste from Campus Dining for composting, which is then transported to the college garden for soil enrichment.

The re-use of discarded wooden pallets for a small-scale hybrid bin/windrow system could be piloted at the soccer field garden location. The pallets would be positioned at the bottom and sides for aeration with a perforated air tube running horizontally through the middle of the windrow. This has some similarity to the Passive Aerated Windrow System (PAWS) in use at Middlebury College in Vermont. The pallets provide extra protection from wildlife and side supports to hold the alternating layers of food and wood waste. As long as the elongated pile receives sufficient air, no manual turning will be required. This small pilot project could be initiated this spring with assistance from the Facilities Department to move the discarded pallets and woodchips to the site. Food waste would be delivered in small batches until one long row is established near the pine trees which provide a screen between the soccer field and the gardens. This enclosed

windrow will then be monitored regarding its scale and labor requirements, state of decomposition, odors, and animal infestation. No additional food waste will be added during the winter months. (An alternative location for on-campus composting that deserves consideration is near the wastewater treatment system; closer to the point where the food waste is generated.)

Additionally, it is expected that students in the culinary labs will be trained on sorting the food waste in the proper bins within Cantwell Hall. If the food waste is not picked up by area farmers on a regular basis, then it is suggested that an in-vessel unit (Earth Tub - manufactured by Green Mountain Technologies) be purchased for use in the Cantwell recycling area. The Earth Tub has a processing capacity of up to 200 pounds per day of food waste with an overall volume of 3 cubic yards. The current list price is $9850, but could be less based on features selected. One advantage of placing an in-vessel composter in Cantwell (an enclosed location) is the potential freezing of the Earth Tub unit will be reduced in the winter months. It is advised during the coldest months that the auger-driven aeration system not be engaged to avoid mechanical problems. Overall, in-vessel composting allows for faster decomposition and fewer problems related to odor and aesthetics, run-off, space restrictions, labor issues, and wildlife infestation.

The end product of composting can be utilized as a soil amendment for campus landscaping and for the college gardens and tree nursery at the soccer field. Additional surplus compost can be made available to college employees, area farmers, local schools, and the Saranac Lake community garden project. The composting process offers educational opportunities (curricular and co-curricular) for the entire PSC community, but especially for students enrolled in the culinary arts, sustainability studies, and environmental studies programs or through individual courses such as *Campus Sustainability, Permaculture Design,* and *The Sustainable Table*. Certainly student labor can be effectively employed in many aspects of a successful food composting program. It is also expected the college's Sustainability Coordinator (when hired) would work with the Facilities Department to provide organizational support to the composting program.

Decomposition Systems

Lastly, faculty member Mary Abt from the Hospitality, Resort & Culinary Management division researched a high-volume organic waste decomposition system manufactured by Bio Hitech America (http://www.biohitech.com/index.html). Bio Hitech market their systems to supermarket chains, hotels, and restaurants, and manufacture three units with a handling capacity of 400, 800, and 1200 pounds of waste per day. Organic waste is combined with a highly refined formula of microorganisms and using a grinder/centrifuge/dewatering unit converted into a clean effluent discharged as water. The unit requires an installed water line and electrical connection. The cost for a mid-size unit (800 lb capacity) is estimated at $43,500 excluding installation. The culinary arts faculty determined that the mid-size unit would meet the needs of both the culinary labs and Campus Dining Services and recommended it for purchase to the President.

Further input on the subject of waste decomposition units was received from Steve McFarland, Vice President for Capital Projects. According to Steve, it is preferable to install a properly sized unit to handle the waste volume as close as possible to the point of use, thereby eliminating transportation of the waste to another location. With this in mind, having a unit near the culinary labs and a second one installed for Campus Dining would be a better design for handling the food waste generated.

Current estimates of daily food waste suggest that the smaller size unit (400 lb) would be sufficient to handle the waste generated in campus dining, which would cost $23,500 including installation. However, this approach would not turn the problem of food waste into the solution of compost material as the other methods outlined above would.

It is recommended that a small-scale pilot program of food composting be implemented in the spring and fall of 2009. The results of this pilot project will inform the proper scale of the institution's composting program over time. Future expansion of the program will be guided by the success of the methods employed, construction, labor and equipment costs, quantity of waste generated, legal aspects, and the calculated reduction in methane gas emissions.

4.5 Reduction Costs and Benefits

Since the greatest source of emissions is related to the consumption of fossil fuels, stabilizing and then reducing emissions through energy-efficiency improvements across campus forms the broad strategy for reaching carbon neutrality. In the short-term, some reductions could be costly, but in the long-term energy related projects pay for themselves and through cost savings to the annual budget can be reinvested into additional reduction projects. Therefore the key is selecting low-cost/quick return projects as soon as possible followed by more costly, long-term return projects. Another strategy is to bundle fast payback with longer payback projects on a single building for extension of life and reduced maintenance costs, with perhaps a 10-year average return.

Securing external funds to lower the investment costs and consequently quicken the overall returns becomes a deciding factor in prioritizing the order of reduction projects over time. The implementation plan outlined in Chapter 6 is influenced by this approach.

Over the next 20 years, the college is expected to pay nearly **$50 million** for electricity, heating fuel, propane, unleaded gasoline and diesel fuel when factoring in inflation and expected cost increases (steady increases of 5 – 10% based on consultation with Jack Burke, V.P. of Business & Finance and Steve McFarland, V.P. of Capital Projects). As earlier noted (p. 39), heating fuel alone increased 127% from 2002-2007. These costs are based on the college's current procurement of fossil fuels for meeting its energy needs without adopting the recommendations for transitioning to renewable fuels for campus operations. Energy experts predict severe price increases as global oil production peaks, which are not reflected in this overall calculation. **Actual costs could be dramatically higher due to oil shortages, volatile prices, and carbon-related taxes**.

Chapter 5 Offset Options

You can pay now or pay later…there's no such thing as a free lunch.

In this newly emerging climate-oriented market economy, carbon offsets are likely to play a significant role into the future as institutions take responsibility for managing their respective carbon footprints and regulatory strictures are enacted. However significant purchasing offsets will become, it is incumbent of organizations to use offset options to as a strategy of last resort. In no way, should decision-makers rely on offsets in place of taking measures to reduce emissions through transitioning away from fossil fuel dependence.

5.1 Green Power

The college's current contract with Community Energy involves offsetting 91% of our electricity-related emissions through purchasing wind power correlated renewable energy credits. In early 2008 this contract was renewed for two more years through the end of the 2009-10 fiscal year.

The college can continue to purchase renewable energy credits from Community Energy or another green power supplier or directly make its own green power through investing in a biomass CHP plant and/or updating the old hydroelectric dam on campus. As previously researched in a student capstone, one commercial wind turbine sited along Rt. 30 would be sufficient to power the college campus, if not currently prohibited by the Adirondack Park Agency's tower policy.

5.2 Campus Power Generation

A decision to power the campus with biomass would also likely create the opportunity to sell renewable power to the electric grid. Whereas the state of New York experiences its peak load demand during the summer months, the power needs of the campus drop from the departure of most of its students. Not only is there a potential revenue source from selling this power, there is also an opportunity to sell renewable energy credits which could be used to offset carbon emissions.

5.3 Carbon Sequestration

The college campus is located within 14,200 acres of land holdings, most of which is sustainably managed forest certified by SmartWood. It appears that we are just at the beginning of the formation of new carbon-based market where carbon sinks may be part of a growing future carbon-offset trading marketplace.

As much as President Mills has vowed not to count the considerable carbon-absorbing capacity of the college's woods in reducing its carbon emissions, if treated like a

commodity with a rising demand the temptation to sell carbon offsets may be to great too ignore.

It may be entirely possible that the college successfully reaches carbon neutrality by 2029 in part through selling its own certified offsets. In a carbon-priced and taxed economy, the college's wooded land holdings may become even more valuable in the decades to come.

5.4 Emissions Offset Markets

The emissions offset market place has grown considerably in just a few years time driven by the voluntary action of green businesses of all kinds as well as by the business of higher education. The carbon offset market is growing dramatically on an annual basis. However, for many college financial planners, purchasing carbon offsets can appear to be an abstract and risky business. How is one to know if the money paid actually relates to good climate-related action? To provide investor confidence, third party certifications have been put in place to insure the credibility of the carbon claims made by the provider.

Also, most reputable offset providers demonstrate their worthiness through what's called an Additionality Test. This standard assures that the environmentally-positive project invested in is solely due to the offering of the specified carbon offsets.

5.5 Regional Carbon Offsets

In 2008 the Regional Greenhouse Gas Initiative (RGGI), a cap and trade program to reduce GHG emissions from power plant within its 10 Northeastern member states went public by offering carbon permits for auction. The first auction in September raised over $38 million with proceeds going to promote energy conservation and renewable energy projects through NYSERDA. Allowances were sold for $3.07 per ton of carbon dioxide. In December the second auction sold over 31 million allowances for $3.38 per ton. Each year the number of allowances available at action is decreased until the emissions reduction target is reached (10% in the Northeast region by the year 2019).

Several environmental groups participated in the auction across the Northeast including the Adirondack Council which purchased carbon credits as part of their Cool Park/Healthy Planet Carbon Retirement Program. These credits were later made available for sale within the Adirondack Park. Former U.S. Representative Kirsten Gillibrand (now a U.S. Senator) and the Golden Arrow Lakeside Resort in Lake Placid were among the buyers who permanently retired the pollution permits. North Country Public Radio as part of their annual spring fund drive (in cooperation with the Adirondack Council) offered a Carbon Reduction Certificate coupon worth three carbon dioxide credits (three tons) to new and renewing members who support public radio.

Given the wrath of power plant-created pollution in the Adirondack Park, it makes sense for the college when considering carbon offset purchasing to be receptive to RGGI-type offerings, which raise revenue for renewable energy projects through reducing power

plant emissions. Another avenue to pursue is a Northern New York farm-related carbon offset program coordinated through a consortium consisting of Northern New York Farmer's Partnership, Adirondack North Country Association, The International Heifer Project, Cornell Cooperative Extension of Franklin County, University of Vermont (Vermont Pasture Network), and the Northern New York Agricultural Development Program. Purchasing offsets in this way would be directly supporting the development of sustainable agriculture in the North Country.

5.6 Long-Range Strategy of Last Resort

Other than the renewable energy credits that are purchased for offsetting our electricity needs over the near future, the purchasing of other offsets towards carbon neutrality are considered to be an option of last resort. That is, we should first invest directly to make the campus as efficient as possible and correspondingly reduce our carbon emissions before we purchase additional credits on the open market. The only exception to this strategy is perhaps in relation to the air travel that occurs on an annual basis. In this case, it may be advantageous to track and document air travel over the course of the year and then purchase offsets on an aggregated basis at the end of the fiscal year. Campus departments would then be taking responsibility for the true costs related to travel through an end of year billing system. Due to the relatively low air travel for the college, the annual cost for offsets is estimated to be less than $1,000.

Chapter 6 **I**mplementation **P**lan & **T**imetable

As for the future, your task is not to foresee it, but to enable it.
~Antoine de Sainte-Exupéry

A number of short and long-term strategies have been identified for carbon reduction

During the Spring 2007 semester students in the Campus Sustainability course submitted their recommendations for growing a sustainable campus, which included a host of categories such as energy, local food, purchasing, transportation, waste minimization and recycling, and sustainability programming and promotion (see **Appendix E**). This report summarized 35 strategies directed to the President of the college, which in turn were reviewed and acted upon by the Sustainability Council, many of which guided the development of this report's recommendations. The majority of these recommendations have been considered as a means to reduce the campus's climate impact and have been incorporated into an initial carbon reduction portfolio and this S-CAP.

What now follows is a discussion of how these recommendations are to be implemented on a short-term, mid-term, and long-term basis.

6.1 Short-term Actions through 2013

Getting one's house in order from a climate standpoint requires that personnel be charged with this job as the primary goal of their employment**.** Currently, the college does not employ any staff to carry out the varied tasks necessary for the college to reach carbon neutrality. Since most of the work relates to re-organizing many of the college's practices to include both assessment and implementation in relation to emissions, it primarily requires coordination support.

The coordination of the proposed energy efficiency upgrades and related grant applications, waste reduction and composting measures, promotion of co-curricular and curricular sustainability projects, as well as the continued measurement of the college's GHG inventory would all be benefited and completed through the assistance of a Sustainability Coordinator. By 2013, most of these recommendations are expected to stabilize the college's emissions and begin a downward trend moving forward.

6.2 Mid-term Milestones through 2020

By 2020, it is expected that the college will have dramatically reduced its energy needs and made the transition to renewables including biomass as a means to heat the campus and power a considerable portion of its electrical needs. Biomass will be furnished by the college's forested lands, the local Adirondack market, and other timber resources that may require incineration due to invasive insect infestation expected to increase due to

global warming. The resulting purchase of renewable energy credits will be cut by 50% or more due to on-campus electric generation from biomass.

Certainly by 2020, a food composting program for the campus will be fully operational to reduce the college's carbon footprint annually by 179 tons - equivalent carbon dioxide (methane emissions). Overall annual waste will be cut from 16,000 tons to 5,000 tons from reduced product packaging and improved recycling practices.

Thirty percent of the food consumed on campus will come from local and regional sources. Life cycle analysis of the college's purchases would also demonstrate a one-third reduction in carbon-related emissions through a relocalized purchasing policy put in place.

Greater carpooling practices will result in nearly a third of the community commuting to and from the campus on a shared basis. Air travel related offsets will be purchased on an annual aggregate basis resulting in zero emissions air transportation.

6.3 Long-term Strategic Plan – 2029 & Beyond

It is expected that by the year 2029 or earlier the college will be carbon neutral as a campus. By this time, it will be offsetting approximately one-fifth of its total emissions through the purchase of verifiable emissions certificates mostly in offsetting its non-renewable transportation fuels consumed by its workforce and students.

The college's fleet of vehicles will consist of biodiesel-powered vans, trucks, and other equipment, electric and electric-gasoline hybrid automobiles, and long-range vehicles fueled by cellulosic-based ethanol and other biofuels.

Also at this time, a new round of energy retrofits in all campus buildings will be initiated since the last renovation that was completed by 2015.

Chapter 7 **R**ecommendations and **C**onclusions

You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.

~Buckminster Fuller

7.1 Honoring our Commitment

As the college prepares to submit its climate action plan to AASHE in 2009, a new administration has taken up residence in the White House, which continues to be outspoken in its commitment to climate protection. It has also unveiled a bold plan for stimulating the economy through an extensive rebuilding of the nation's infrastructure to create 2.5 million new jobs. Many of these jobs are expected to be "green-collar" in an attempt to create an American eco-economy powered by renewable energy and informed by a comprehensive energy policy. President Obama is still holding firm on his intention to reduce 1990 carbon emissions levels 80% by 2050. The stage has been set potentially for real climate-oriented change in America.

Similarly, at Paul Smith's College our own President has demonstrated climate leadership and a willingness to guide the institution in becoming more sustainable knowing full well that financial resources will need to be allocated to this greening of the campus. Given the large tract of forested lands owned by the college, the easy way out would be to simply declare the campus carbon neutral due to the considerable carbon sequestration capacity of its sustainably managed forests.

Such an approach though would not pass muster for the PSC community or for prospective new students who will be more discerning when shopping for a sustainability-committed college and green degree programs. Sustainability has finally, and will continue to be, big business into the foreseeable future. Buyers are more conscious and leery of "green-washing" when it comes to the branding efforts of colleges. A green window-dressing will not suffice in this new market place. Consumers will expect concrete and measurable actions that make a difference; anything less will be considered unethical and even hypocritical from a sustainability perspective.

Lastly, colleges that do not continue to fulfill their commitment to climate protection and infuse and integrate their curriculum along sustainability lines will simply be left behind by the colleges who do.

7.2 Climate Action and Experiential Education

Paul Smith's College will not be successful if it aspires to compete with the better endowed and self-branded "progressive environmental" colleges of the day. These elite institutions are in a league of their own and their high prices tags make them affordable mostly for the well to do.

Although we too need to be careful that our increasing tuition costs do not put our academic programs out of reach for our lower-income customers, our financial sustainability depends on staying true to our mission of providing a real world, experiential education. We must continue to improve our product to better draw the doers of the world as such workers will be increasingly in demand as the world is remade in the age of climate change. Unless a very quick turnaround is realized in the workings of the industrialized world, sweeping changes are predicted in the decades to come which will require essential "hands on" skills to rebuild the world in a more sustainable fashion. Images of a hurricane Katrina-strewn landscape come to mind.

In this respect the small size and focus on doing at Paul Smith's College becomes its greatest assets. The ability of our students to quickly step into disaster zones and get the job done, to manage a world and workplace impacted by shrinking natural and financial resources, and to redesign more sustainable alternatives with an eagerness to roll up one's sleeves and get to work will insure gainful employment prospects for our graduates.

The future is likely to portend a global reality characterized by both "best of times" and "worst of times" scenarios. We are likely to see newer, greener technologies implemented side-by-side with increased mining and burning of coal and a larger proportion of oil production captured from Canadian tar sands. It is unlikely that the world will gradually become a new shiny sustainable city on the hill of future progress. Correspondingly, colleges will increasingly need to prepare it graduates for the good and bad times ahead.

7.3 Beyond Sustainability

Colleges regularly consume vast quantities of fossil fuels and natural resources for campus operations dedicated to the modern education of its students. In turn, they contribute in no small part to an American way of life epitomized by an unquestioned belief in an ever-increasing technological and economic expansion. However, a sustainable future is unlikely to be shaped for the better by the unquestioned promise offered by the myth of progress. We can't simply put the right technological fix in place to solve a problem which technology created in the first place.

A new dream for the Earth and its inhabitants will need to be of a different order and birthed quickly before a business-as-usual way of doing business takes us off the proverbial cliff. In a world where fossil-based energy and all other nonrenewable resources are likely to get progressively more scarce and expensive over the coming decades, it is time to re-think, re-tool and re-design the methods for educating our citizenry. If there was ever a time which demanded the American spirit of innovation, the time is now.

If we don't find a truly sustainable way of changing the ever-greater promise of economic growth it will be replaced with longer periods of decline and crisis. Climate change and peak oil scenarios over the next century plot a future course of long descent marked by extended periods of economic turn-down and environmental degradation (as well as social unrest) unless we undergo a rapid and complete transformation as a civilization.

Tools needed for this transition will likely require more than a tinkering approach often embodied in the word "sustainability." A much greater powering down of our economies while repairing the damage to the world's ecosystems - many which are currently on life support - will be needed during this period of ecological restoration. The biggest way of impacting the environment for the better is to have as little impact as possible.

Paul Smith's College has a long history of being a college cut from a different cloth. As we look to the future, it is hoped that the signature PSC experience will continue to provide experiential learning in making the transition to a sustainable way of life in the 21st century.

7.4 Time for Action – A Climate To-Do List

The following inventory of climate action items provides a summary of the specific recommendations delineated within the Campus Sustainability and Climate Action Report.

Climate Action Recommendations

Energy

Strategy: Apply energy best management practices, techniques, monitoring tools, and new equipment to improve the energy performance of the campus, reduce greenhouse gas emissions, and positively impact annual budgets. In addition, the formation of a broad Energy Awareness Network consisting of staff and faculty across campus would insure greater participation in implementing energy conservation practices.

--Future contracting of energy audits and other energy-related services should first involve local, state and regional resources; in particular, consideration should be given to cost-share resources with NYSERDA.

--Signs should be posted in every campus building which provides energy consumption data followed by cost-savings and emissions-reductions incurred through the adoption of energy-efficiency measures.

--College work study students can be utilized to perform data entry, enabling the institution to track its energy usage and GHG emissions on an annual basis. Without a consistent monitoring and verification system of energy consumption, the integrity of the climate action plan is greatly compromised.

--The Council recommends the formation of an Energy Task Force headed by Steve McFarland, Vice President of Capital Projects to review and implement the recommendations that result from the campus energy audit conducted by the Loyalton Group. This audit is expected to be completed by May 2009.

--Use direct funding and cost-share grants from NYSERDA to install electric meters on residence halls and other campus buildings (proposed for 2010-11 FY) to enable real-time monitoring of electricity consumption. This in combination with the purchasing of other energy equipment will stabilize and decrease electric consumption and GHG emissions resulting in financial savings for the college.

--Hire an energy professional on a performance based contract to guide the overall energy management of the campus, in particular to:

1. **Review the campus energy audit and determine its usability with respect to NY programs and incentives**
2. **Prioritize efficiency measures**
3. **Develop strategies for implementing the prioritized measures such as performance contracts and lease-purchase agreements which finance efficiency improvements using money saved from future utility bills**
4. **Identify incentive and grant programs and apply for assistance from those programs in coordination with Sodexo and the Loyalton Group.**

--To better track energy consumption, it is recommended that the college utilize the EPA Energy Star Portfolio Manager software.

--Purchase and install plug-in smart power strips wherever electrical equipment is in use to reduce phantom loads (at night and weekends). Research funding and bulk purchasing options for implementation to include NYSERDA's Existing Facilities cost share program. [$6,000 in funding approved for smart strips for 2009-10 FY.] Implement NYSERDA's recommended steps for the creation of Energy $mart Offices.

--Printers and copy machines by having default settings to duplex printing will help save paper automatically with little change in human behavior.

--A pre-feasibility study was conducted on the old site of the hydroelectric dam built by Paul Smith, but requires a more expensive engineering study to determine the feasibility of returning it to hydroelectric production. The council recommends that a Flex Tech grant be considered to fund 50% of the cost for the study.

--Apply for a technical assistance grant through NYSERDA to conduct an engineering study to evaluate the feasibility of renovating the old central boiler house and stack for a woodchip boiler and district energy plant for the entire campus and/or identify an alternative location.

--See Appendix R for a proposed partnership agreement with the Adirondack Energy $mart Park Initiative

--The Sustainability Council believes that it is the best interests of the college from both a financial and climate commitment perspective to transition the institution to

a biomass district energy plan potentially for both heat and power. A biomass cogeneration plant would not only dramatically reduce the college's carbon footprint, but it would position the college's forestry program to take advantage of the expected demand for biomass related jobs. Although this is an ambitious undertaking, it also would incorporate one of the college's greatest resources – its forested lands – and strategically use it towards long-term, energy independence while stabilizing the college's operating budget through a dramatic decrease in heating oil consumption. It is expected that such a bold decision would also result in strong alumni and other donor support, along with being of interest in attracting external grant sources to fund the considerable infrastructure related costs.

Further, it is recommended that the college partner with an Energy Services Company in realizing a biomass CHP plant on campus. NYSERDA and the DOE provide grant opportunities in support of technical and financial assistance for large scale infrastructure projects. Such opportunities should be explored by the Office of Institutional Advancement with assistance from the Vice President of Capital Projects, proposed Energy Management Consultant, and Facilities Department.

--Current green power quotes received for the college (Next Era Energy and Renewable Choice Energy) have averaged between $3-4 per REC or MWh, which is less than half of what the college is currently purchasing for certified wind power RECs. It might be wise to lock-in the next two-year contract as soon as possible at the 100% level (approximately 4,000 MWh).

--One last strategy that deserves consideration for lowering energy and operating costs and their related emissions is moving part of the college operations to a four-day work week. The Council recommends that the Executive Cabinet study the potential budget savings, and where a reduced work week could initially be implemented. Such a move is anticipated to reduce employee commuting costs and boost both productivity and morale.

<u>Transportation</u>

Strategic Goal: Increase carpooling 10% by 2011, 20% by 2014, 30% by 2019, and 35% by 2029.

--The Sustainability Council in collaboration with the Staff Advisory Council proposes the college contract with carpoolworld.com in support of a campus wide commuting program for staff, students, and faculty. [Approved by Dr. Mills – 4/2009] Further, the Council recommends that a host of incentives be considered in support of commuting to include flex time and other employee benefits.

--Diversify the college's fleet of vehicles to include one or more high mileage/hybrid vehicles to support travel by the Admissions staff.

--Consider establishing a café/transit center where the campus community can get information on local and regional transit, car-pools, car co-ops, ride-boards, van-pools, borrow bicycles (with deposit) and have a bike-pool for class outings.

--Take concrete steps to enhance the campus climate for cycle commuting. Incentives could include covered bike parking at all buildings and full access to the campus repair shop with frequent training in bike repair and commuting skills. The program can include cycle racing, recreation, touring, mountain biking with an emphasis on utility such as commuting and work bikes along with education about the health benefits. Well-built work cycles exist today that include large capacities for on-campus projects such composting, campus deliveries and other Facilities and Grounds jobs. The overall idea is to create an environment and contingent of cycle enthusiasts who are fluent and habituated to bicycles as a primary means of transportation.

--Develop an air travel accounting method for documenting annual air miles and a set of recommendations regarding the purchase of carbon offsets so that the institution has a uniform policy to guide budget managers for implementation by 2011.

Waste Management

Strategy: Reduce, Reuse, and Recycle at least 50% of the campus waste stream by 2014 with the goal of reaching zero-waste by 2029.

Waste Minimization

--Develop a zero-waste policy which bans recyclables and compostables from the waste stream, curtails procurement of packaged items, and requires vendors to reduce and reuse packaging in creating a campus culture truly committed to waste minimization.

--Track the costs on a monthly basis for waste disposal and recycling pick-up. A work study position could be utilized for this spreadsheet tracking.

--A large amount of paper junk mail is delivered to the college on a weekly basis. The Council recommends that someone at the institution be charged with researching how the college can be removed from many of these lists that regularly solicit and promote their products through the U.S. Postal Service.

--The council recommends that an assessment of current recycling of construction materials be conducted and related guidelines be established to insure that a high percentage of materials be recovered for reuse and recycling purposes.

--Review current hazardous waste management practices since Sodexo Education began facility management at the college. Make recommendations as needed.

Food Composting

--It is strongly urged that the college design and construct a community scale composting center on campus. Food waste from campus dining services and culinary labs along with wood waste from the forestry program and other local sources can be converted to a quality compost material. Additionally, some portion of the ash product from a future biomass heating could also be directed to the composting facility. In so doing, waste materials can be used as feed stocks for generating compost for the campus garden and in support of local community gardens.

--One learning activity to incorporate in the culinary labs is to assess the cost of throwing away or wasting prepared food. This would help determine the actual cost per pound of purchasing, preparing and serving food including overhead to help lower food waste. The savings could then help fund the use of a higher percentage of organic local food in the culinary labs and in Lakeside Dining.

--It is recommended that a small-scale pilot program of food composting be implemented in the spring and fall of 2009. The results of this pilot project will inform the proper scale of the institution's composting program over time. Future expansion of the program will be guided by the success of the methods employed, construction, labor and equipment costs, quantity of waste generated, legal aspects, and the calculated reduction in methane gas emissions.

<u>Purchasing & Procurement</u>

--Develop and implement a purchasing policy for the college guided by the following considerations:

--procurement of products which are durable, reusable and recyclable
--consist of post-consumer recycled materials
--non-toxic
--energy efficient
--sustainably harvested with proper external certification
--preference for materials and products made/derived closer to home
--adoption of EPEAT guidelines

--Develop an air travel accounting method for documenting annual air miles and a set of recommendations regarding the purchase of carbon offsets so that the institution has a uniform purchasing policy to guide budget managers. Implement air travel offset purchasing policy by 2011.

Given the wrath of power plant-created pollution in the Adirondack Park, it makes sense for the college when considering carbon offset purchasing to be receptive to RGGI-type offerings, which raise revenue for renewable energy projects through

reducing power plant emissions. Another avenue to pursue is a Northern New York farm-related carbon offset program coordinated through a consortium consisting of Northern New York Farmer's Partnership, Adirondack North Country Association, The International Heifer Project, Cornell Cooperative Extension of Franklin County, University of Vermont (Vermont Pasture Network), and the Northern New York Agricultural Development Program. Purchasing offsets in this way would be directly supporting the development of sustainable agriculture in the North Country.

Better yet perhaps would be the development of an on-campus offset program where offsets are accomplished on site keeping the money and improvements tangible and visible and the benefits local.

Food

--On Earth Day 2009, Sustainability Consultant Jim Merkel strongly urged the college to construct a root cellar food storage system, which would allow for bulk purchasing of local organic produce at an affordable price. The food items could then be planned for use over the academic year when such items are unavailable from regional distributors. Such a food storage system could also protect the college from rising food costs due to increased energy prices, food-related pathogen outbreaks, and other food supply vulnerabilities.

--Paul Smith's College should also consider the long-term goal of 100% local organic fair-trade food for multiple opportunities to provide educational programming, healthier diets, and to strengthen the local and regional food economy.

--Consideration should also be given to starting a campus organic farm using season extending high tunnels or hoop houses designed to supply the campus with a portion of its food needs. The farm could be centered on a Permaculture model (see Appendix K Gould's Gardens) and provide summer educational programming.

Investment

--The Council recommends that a task force be assembled to develop a policy to include:

Investment Transparency
Committee on Investor Responsibility
Screening for Negative Investments
Positive Sustainability Investments
Shareholder Engagement

Sustainability Programming & Administration

--Include the Campus Sustainability table at college open houses and other similar events next to student clubs and organizations to inform prospective students about our sustainability-related efforts and climate commitment.

--The sustainability matters webpage requires greater IT support to be fully operational as originally conceived. Once the full text and images have been loaded, a maintenance plan needs to be developed so that the page is continuously updated to reflect current sustainability events and projects.

--It is further recommended that a link be added on the webpage to the Campus Sustainability Blackboard site, which contains all the documents developed in support of sustainability initiatives at the college. The most recent draft of the college's climate action plan will be made available for full public viewing. In essence, it will serve as a "one-stop shop" for sustainability matters at PSC.

--Student-led sustainability initiatives require additional staffing and financial support to be better integrated into co-curricular offerings at the college. The Student Government Association in February 2009 voted in favor of a student-supported Sustainability Fund to be initiated in the fall of 2009. *SEA* developed a survey to solicit student input on the proposal (see Appendix E). 65% of students who participated in a campus referendum voted in support of the Sustainability Fund to include a $25 annual fee to their cost of attendance. [Approved by Executive Cabinet in May 2009].

--We recommend that a short informational session (10-15 minutes) on the college's sustainability accomplishments and current and future initiatives be included in the new student orientation for the summer of 2009.

--The Sustainability Council recommended to the president that Paul Smith's College take the next step to join the Eco-League of Colleges. The recommendation was forwarded to the Vice President for Enrollment Management, Kathy Fitzgerald to make contact with the league in the fall of 2008.

--Adopt the Sustainability Tracking, Assessment & Rating System (STARS, Version 0.5) for colleges and universities developed by AASHE to benchmark and measure sustainability related goals and accomplishments over time.

--An overview of the college's climate commitment should be included in the form of each new member reviewing the sustainability matters web page and the related documents posted to Blackboard.

--The Sustainability Council recommends that a sustainability intern be employed (using federal work study funds) for more comprehensive data updating of the Carbon Calculator.

--Hire a Sustainability Coordinator whose primary responsibility will be to oversee the implementation of the Sustainability and Climate Action Plan. $50 million in federal grant opportunities is expected in the 2010 FY budget in support of the Higher Education Sustainability Act (HESA) signed into law in 2008. If this fund is appropriated by Congress, it could provide a viable source of funding for a coordinator position. (See Appendix C for proposed job description.) Given the current budget constraints, it may be necessary to initially hire a half-time Sustainability Coordinator in 2010-11 and then make the position full-time based on available funding.

--The Sustainability Council strongly recommends the college move ahead with seeking state approval for the Sustainability Studies, Bachelor of Science degree program which was proposed (see Appendix H) in the fall of 2008 and approved by Educational Standards and Practices Committee (ESPC) and Faculty Council in Spring 2009. It is expected that the new degree program will be offered in fall 2010.

--We recommend the Space Allocation Committee determine a suitable location on campus for a Campus Sustainability Center equipped with sufficient office equipment and space for roundtable style meetings and gatherings. The Group Study Room 211 in the library should receive consideration as a temporary location for the CSC and as an office for the sustainability coordinator. (Room 109 may be the best location once the AWI moves to its new headquarters.)

--For the 2009-10 academic year, it is strongly recommended that the college's Deans and Executive Cabinet members be considered for appointment to the Council by the president so as to insure a successful "buy-in" and early phase of implementation of the climate action plan.

The level of collaboration on sustainability initiatives will need to be much more intentional and organized for the institution to make measurable progress in meeting its climate commitment. In particular, greater faculty involvement is needed in connecting co-curricular activities with curricular offerings.

--Opportunities exist at PSC in conjunction with existing programs and community organizations to secure AmeriCorps funding in support of sustainability-related work on campus.

--Lastly, given the experiential learning model of the college, it makes sense for PSC to consider becoming a working college where students are required to work on campus as part of their educational experience. An array of skills related to sustainability could be developed to include food production, processing and storage; energy weatherization, efficiency upgrades/retrofits and management; building assessment and installation of small-scale renewable energy systems and more.

Appendices

A – American College and University Presidents' Climate Commitment

B – 2008 Greenhouse Gas Report for Paul Smith's College

C – Job Description, Sustainability Coordinator

D – Recommendations for Growing a Sustainable Campus

E – Proposal for a Campus Sustainability Fund

F – Sustainability Course Review (SLAB Division)

G – Rideshare Initiative Survey

H – Proposed Sustainability Studies B.S. Degree

I – Sustainability Accomplishments of Dining Services

J – Proposal for a Community Composting Center

K – Gould's Garden --Proposal for a Sustainable Living Center

L – Campus Sustainability Manual: Policies, Practices, and Procedures (Table of Contents only)

M - The Clean Air-Cool Planet on-line Campus Climate Action Toolkit

N – NYSERDA Grant Opportunities & New York Energy $mart Offices Project

O – LEED-Certified Adirondack Watershed Institute

P – Green Power Purchase – Renewable Energy Credits

Q - Current Climate Research Projects @ PSC

R – The Adirondack Energy $mart Park Partnership Agreement

S – Strategic Plan Idea Generation Session

T - Biomass Feasibility Study Recommendations

U – Green Purchasing Policy

V – Sustainability & Integrated General Education Program

Appendix A – American College and University Presidents' Climate Commitment

American College & University Presidents' Climate Commitment

We, the undersigned presidents and chancellors of colleges and universities, 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. We recognize the scientific consensus that global warming is real and is largely being caused by humans. We further recognize the need to reduce the global emission of greenhouse gases by 80% by mid-century at the latest, in order to avert the worst impacts of global warming and to reestablish the more stable climatic conditions that have made human progress over the last 10,000 years possible.

While we understand that there might be short-term challenges associated with this effort, we believe that there will be great short-, medium-, and long-term economic, health, social and environmental benefits, including achieving energy independence for the U.S. as quickly as possible.

We believe colleges and universities must exercise leadership in their communities and throughout society by modeling ways to minimize global warming emissions, and by providing the knowledge and the educated graduates to achieve climate neutrality. Campuses that address the climate challenge by reducing global warming emissions and by integrating sustainability into their curriculum will better serve their students and meet their social mandate to help create a thriving, ethical and civil society. These colleges and universities will be providing students with the knowledge and skills needed to address the critical, systemic challenges faced by the world in this new century and enable them to benefit from the economic opportunities that will arise as a result of solutions they develop.

We further believe that colleges and universities that exert 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. **Accordingly, we commit our institutions to taking the following steps in pursuit of climate neutrality:**

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

a. Within two months of signing this document, create institutional structures to guide the development and implementation of the plan.

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.

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.

ii. Interim targets for goals and actions that will lead to climate neutrality.

iii. Actions to make climate neutrality and sustainability a part of the curriculum and other educational experience for all students.

iv. Actions to expand research or other efforts necessary to achieve climate neutrality.

v. Mechanisms for tracking progress on goals and actions.

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

a. 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.

b. Adopt an energy-efficient appliance purchasing policy requiring purchase of ENERGY STAR certified products in all areas for which such ratings exist.

c. Establish a policy of offsetting all greenhouse gas emissions generated by air travel paid for by our institution.

d. Encourage use of and provide access to public transportation for all faculty, staff, students and visitors at our institution

e. Within one year of signing this document, begin purchasing or producing at least 15% of our institution's electricity consumption from renewable sources.

f. Establish a policy or a committee that supports climate and sustainability shareholder proposals at companies where our institution's endowment is invested.

g. Participate in the Waste Minimization component of the national RecycleMania competition, and adopt 3 or more associated measures to reduce waste.

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.

In recognition of the need to build support for this effort among college and university administrations across America, we will encourage other presidents to join this effort and become signatories to this commitment.

Signed,

The Signatories of the American College & University Presidents' Climate Commitment

Appendix B – 2008 Greenhouse Gas Report for Paul Smith's College

Submitted on September 18, 2008; last updated on March 18, 2009

Summary Statistics

Making fair comparisons between higher education institutions is always challenging due to the rich diversity of higher education. The unverified nature of the information in this database and unavailability of unbiased normalization metrics means such comparisons are even more difficult. Users should therefore approach direct institution to institution comparisons with caution and recognize that all comparisons between institutions are inherently biased.

	Total	Per Full-Time Enrollment	Per 1000 Square Feet	% Offset
Gross emissions (Scopes 1 + 2)	5,319 metric tons of CO2e	5.8 metric tons of CO2e	11.6 metric tons of CO2e	999.9%
Gross emissions (Scopes 1 + 2 + 3)	6,285 metric tons of CO2e	6.9 metric tons of CO2e	13.7 metric tons of CO2e	999.9%
Net emissions	-518,499 metric tons of CO2e	-566.7 metric tons of CO2e	-1128.8 metric tons of CO2e	N/A

Emissions Inventory Methodology and Boundaries

Start date of the 12-month period covered in this report	July 1, 2007
Consolidation methodology used to determine organizational boundaries	Financial control approach
If any institution-owned, leased, or operated buildings or other holdings that should fall within the organizational boundaries are omitted, briefly explain why.	
not applicable	
Emissions calculation tool used	Clean Air-Cool Planet
Please describe why this tool was selected.	

Initially used School Neutral provided by subcontractor for Facilities (Sodexo), but then transitioned to Carbon Calculator (Clean Air-Cool Planet) which has a greater range, specificity, and overall better functionality.

Please describe the source(s) of the emissions coefficients used.

See attached inventory calculator with sources (School Neutral); now use Carbon Calculator.

Which version of IPCC's list of global warming potentials did you use?	*No information provided.*
Who primarily conducted this emissions inventory?	President-led team

Please describe the process of conducting the inventory.

Collaboration with various offices with data collection primarily compiled by Facilities Department with input from Campus Sustainability Council members.

Please describe any emissions sources that were classified as *de minimis* and explain how a determination of the significance of these emissions was made.

No information provided.

Please describe any data limitations related to this submission and any major assumptions made in response to these limitations.

Made estimates regarding commuting distances of staff, faculty, and off-campus students.

Emissions Data

Emissions from the following sources (in metric tons of CO2e)

Scope 1 Emissions	
Stationary Combustion	2,568 metric tons of CO2e
Mobile Combustion	272 metric tons of CO2e
Process Emissions	0 metric tons of CO2e

Fugitive Emissions	0 metric tons of CO2e
Total Scope 1 emissions	**2,839 metric tons of CO2e**
Scope 2 Emissions	
Purchased Electricity	2,480 metric tons of CO2e
Purchased Heating	0 metric tons of CO2e
Purchased Cooling	0 metric tons of CO2e
Purchased Steam	0 metric tons of CO2e
Total Scope 2 emissions	**2,480 metric tons of CO2e**
Scope 3 Emissions	
Commuting	719 metric tons of CO2e
Air Travel	68 metric tons of CO2e
Solid Waste	179 metric tons of CO2e
Total Scope 3 emissions	**966 metric tons of CO2e**
Biogenic Emissions	
Biogenic Emissions from Stationary Combustion	*No information provided.*

Biogenic Emissions from Mobile Combustion	*No information provided.*

Mitigation Data

Carbon Offsets	
Carbon offsets purchased	*No information provided.*
Offset verification program(s)	*No information provided.*
Description of offsets purchased (including vendor, project source, etc.)	
No information provided.	
Renewable Energy Certificates (RECs)	
Total RECs purchased	3,265,000 kWh
Percent of total electricity consumption mitigated through the purchase of RECs	91%
Emissions reductions due to the purchase of RECs	2,245 metric tons of CO2e
REC verification program(s)	Green-e
Description of RECs purchased (including vendor, project source, etc.)	
Community Energy - Wind Power contract	
Sequestration and Carbon Storage	
Sequestration due to land owned by the institution	522,539 metric tons of CO2e
Description of how sequestration was calculated	
This is currently being calculated to reflect the 8,000 acres of sustainably managed forest owned by PSC. Will revise numbers as we more carefully do the calculation. Currently, used a ball park value of 144,000 lbs CO2 sink per managed acre.	
Carbon storage due to composting	*No information provided.*

Normalization and Contextual Data

Building Space	
Gross square feet of building space	459,342 sq ft
Net assignable square feet of laboratory space	2,000 sq ft
Net assignable square feet of health care space	1,000 sq ft
Net assignable square feet of residential space	142,483 sq ft
Population	
Total Student Enrollment (FTE)	915
Residential Students	740
Full-time Commuter Students	183
Part-time Commuter Students	18
Non-Credit Students	*No information provided.*
Full-time Faculty	63
Part-time Faculty	30
Full-time Staff	90

Part-time Staff	10
Other Contextual Data	
Endowment Size	$18,000,000
Heating Degree Days	8,500
Cooling Degree Days	150

Please describe any circumstances specific to your institution that provide context for understanding your greenhouse gas emissions this year.

No information provided.

Appendix C - Job Description, Sustainability Coordinator

SUSTAINABILITY COORDINATOR

Department:
Reports To:

Basic Role: The Sustainability Coordinator with broad collaboration from the college community will further develop and coordinate a coherent, innovative campus-wide sustainability program in support of the institution's climate action commitment.

Primary Responsibilities:

--Provide primary coordination, implementation, and evaluation of the college's long-range sustainability and climate action plan to meet interim milestones resulting in carbon neutrality for the campus
--Coordinate and enhance the Campus Sustainability Center's educational programming
--Collaborate with student groups, faculty, staff and administrators in coordinating and implementing sustainability strategies and initiatives and drafting policies and procedures
--Oversee the college's recycling and energy conservation programs and facilitate best practices in college operations
--Provide outreach and foster relationships with the external community
--Supervise a team of work study students in conducting campus sustainability projects
--Serve as a member of the college's Sustainability Council
--Maintain and further develop the sustainability matters webpage
--Teach on a part-time basis, campus sustainability related courses and facilitate the integration of sustainability into the college's curriculum
--Assist with coordination of Sustainability Studies externships and sustainability projects such as energy-related initiatives and the college's garden project

Qualifications:

-Master's degree in an environmental or related field
-Experience with program management related to sustainability projects
-Ability to manage budgets and apply for and manage grants
-Ability to organize and manage multiple projects
-Strong organization and personnel management skills; ability to work as a team player
-Excellent interpersonal, communication and computer literacy skills

Appendix D – Recommendations for Growing a Sustainable Campus

Campus Sustainability: Students as Change Agents

For Paul Smith's College to be an effective leader among the already established, we must innovate and commit to providing sustainability programming equal to the growing list of other "green" colleges across the nation. As of today we have committed to the green power purchase for the campus, but where do we go from here? How will Paul Smith's College continue to fulfill its obligation to the Presidents' Climate Commitment and through its sustainability actions attract the next generation of young minds and leading faculty who are interested in doing the sustainability-related work of the 21st century? How does the college also become a regional leader as "The College of the Adirondacks?"

What follows is a categorized list of recommendations compiled by members of the Spring 2008 Campus Sustainability class and also includes a proposal for a campus sustainability fund at PSC. Many of these suggestions are intended to provide opportunities for the college to promote its sustainability-related actions while working toward its goal of carbon-neutrality and mitigating climate change.

Energy Matters

- The Campus Sustainability class applauds the Executive Cabinet's decision to purchase 100% wind power for the campus and its policy requiring all new campus infrastructure projects be LEED certified. Greater promotion of such decisions would go far in demonstrating to the external community how dedicated PSC is to lowering its CO2 emissions and overall climate commitment.
- The use of biomass for generating heat and power along with rebuilding the hydroelectric plant (Keese Mill Rd.) should be considered for the long term use of renewable energy for powering the campus. Consideration should be given to installing a solar array near a high traffic location on campus or to have a portable solar generator for point of use applications. It would not be the goal of such a solar installation to supply energy for a significant part of the campus, but rather to be used as an educational tool for our sustainability initiatives at Paul Smith's. NYSERDA grants could help fund such energy initiatives to include a campus-wide energy conservation program.
- Future purchasing of college fleet vehicles (Campus Safety and maintenance vehicles) should be considered with the use of bio-fuels in mind. By converting used frying oil from the college and local restaurants and schools into bio-fuels, we would be able to offset emissions that come from sources we are unable to control. (A new bio-fuels course is being considered where bio-diesel would be made and put to work.) Future purchasing or leasing of small hybrid vehicles should be considered for the Admissions Staff.
- It is hoped that the college can apply for energy conservation and weatherization grants to make energy upgrades to increase insulation in buildings and the

purchasing of Energy Star windows, doors, and perform other energy retrofits. This work would directly follow the Energy Audit that is currently taking place.

Campus Food Systems & Related Projects

- Gardening is America's number one hobby, so why not here? The college needs to consider providing greater access to students in working the campus gardens near the soccer field. This would give students another opportunity to relax from the sometimes stressful living on campus by doing good work within walking distance. Future summer programming could include the scheduling of permaculture classes at the "Gould Hoyt Demonstration Gardens."
- Expand the current garden to provide local organic produce on special occasions for the student body. The produce and its cultivation would provide educational programming for all the students attending Paul Smith's College. In the summer, surplus produce could be sold at the PSC Farmers' Market with the proceeds going to the college's proposed Sustainability Fund (see below). The college's draft horses could be used to prepare more land for garden use and their manure can be more actively used to increase the productivity of the soils.
- Design plans for building an integrated apprentice quarters/greenhouse/chicken coop with tree nursery and additional gardens have been developed within the new Renewable Homestead course (Spring 2008). Small campus building projects involving students would increase their ownership of campus sustainability and provide opportunities for more "hands on" learning activities.

Purchasing

- Another recommendation concerns the drafting of campus purchasing guidelines. It is hoped that local vendors can be considered whenever possible regarding campus-wide purchasing of goods for Facilities, Bookstore, Campus Dining Services, etc., and that the actual goods be derived from local materials versus imports from foreign lands. The point being that the college affirms its commitment to sustainability in all of its purchasing decisions. The college's decision to purchase 100% post-consumer recycled paper and increase its use of local food within Campus Dining Services are excellent examples of sustainability informed purchasing.

Sustainability Programming & Promotion

- Create a "Sustainability Matters" webpage to serve as a powerful tool for the college to present its ideas, initiatives, accomplishments and current and future projects to the PSC community, prospective students and external community.
- Some kind of campus-wide entity needs to be created to conduct collaborative and integrated sustainability-related planning and programming with wide representation from faculty, staff and students. The idea of a "Sustainability Council" which meets every semester and convenes regular forums with changing membership over time may be workable in this regard. It is expected that

representatives from Students for Environmental Action (SEA) will make up some part of the council's student membership.

- Open as soon as possible an Office of Campus Sustainability which would be coordinated by volunteers and work-study students with oversight from the Sustainability Council. The Office would report directly to the President. Meeting Room 211 in the library is one possible location. The office would require a phone, computer, and printer and one of its first orders of business would be to begin applying for grants so as to be self-funded. Operating costs could also be derived from the student supported sustainability fund.
- SEA in particular could continue to organize events and activities to help promote the "greening of the campus" in the form of additional t-shirt designs as was initiated through the Campus Sustainability course.
- Paul Smith's should focus more of its efforts toward attracting eco-minded prospective students. Promoting the green power purchase may be helpful in this respect. Instituting change will be easier if we have more students engaged in doing the work of sustainability.
- Integrate sustainability-related content in as many courses offered here at Paul Smith's as possible. We have to make sustainability relatable to every major and every person. This education could begin with the new First Year Seminar course that every new student takes.
- Become deeply involved with the college's commitment to the Earth Charter and its own goals. If the school signs a Charter than it needs to uphold its signature.
- As a way of decreasing the amount of cigarette butts on campus, more ashtrays and Adirondack-style chairs or benches are recommended to be installed at a distance greater than 25 feet from every campus building.
- Monthly campus clean-ups are recommended as a way of students taking ownership for campus beautification and as a way of preempting thoughtless littering. Students who are required to complete community service hours could be directed to assist with campus clean-up activities. Additionally, similar to the adopt-a-highway program, students could adopt an area of the campus (sidewalk, etc.) to keep clean throughout a designated time period.
- The college should make a greater effort in promoting the use of draft horses within our curriculum and our sustainable forestry practices. The following is a link to an article written by Madeline Ostrander from YES! Magazine, on one of the spring 2008 climate solutions; the use of horses in agriculture and logging. *http://www.yesmagazine.org/article.asp?ID=2284*
- We recommend more media coverage on the sustainability practices that PSC currently uses, or are planning to adopt. AASHE Bulletin is a campus sustainability weekly newsletter that showcases colleges that are making a difference in the world of sustainability. It would be easy to use this resource as well as local media, and the PSC website as avenues to promote the integrity of our greening efforts. The following link is to the submission guidelines for the AASHE Bulletin. http://www.aashe.org/publications/bulletin.php
- It is recommended that Paul Smith's College participate in the membership of AASHE's Sustainability Tracking, Assessment & Rating System (STARS). The purpose of this contribution would create an enhanced sustainable future for the

college. AASHE awards credits in categories such as buildings, dining services, energy and climate, grounds, materials, recycling, and waste minimization, purchasing and transportation. Paul Smith's College is already committed to making changes in the majority of these categories.

- Mark Darling, a recycling and campus sustainability consultant at Ithaca College was originally going to consult with PSC during the spring semester with funding provided by Sodexo Education Services. Because this was not coordinated as originally intended, it is recommended such consulting commence in early fall 2008.
- It is recommended that PSC have its own Office of Campus Sustainability and hire a Sustainability Coordinator to organize and coordinate sustainability programming and teach related courses, which would also support a new Sustainability Studies degree program. See "Sustainability Fund" for one way to help fund such a position.
- Make it socially unacceptable among faculty, staff, and students when printing multi-page documents to continue printing/copying on one side of the paper only. Community members need basic training on duplex copying and back-to-back page printing especially when it comes to printing very long documents such as written Capstone Projects.

Transportation Systems

- PSC should consider organizing a Rideshare program for its students, staff and faculty. We are a small campus with many members coming from similar geographic regions and local neighborhoods. Having the option to car pool would not just encourage a stronger community among students but would also cut down on parking issues on campus, promote healthier alternatives to automobiles, and reduce CO2 emissions on campus. Ripon College in Wisconsin has done just this. They will be giving free bikes to freshmen who pledge to leave their car at home. The following link is a press release on Ripon College's free bike program. *http://www.ripon.edu/velorution/index.html*
- Many concerns have been voiced regarding the potential "unsustainability" of the college van service to and from the Saranac Lake Residence Hall during the 2007-08 year. A review of this service regarding its costs and benefits and potential changes is recommended prior to the fall 2008 semester.
- It is hoped that the Yellow Bike program will be implemented on-campus and in the local village of Saranac Lake (see Campus Sustainability project organized by Melony-Ann Jones).

Recycling/Reducing/Reusing (R3)

- One improvement related to recycling on campus would be to hire Facilities workers with the clear focus from day one regarding their role in sustaining a comprehensive recycling system. Often after recycling bins are emptied, the container is not properly positioned so the sign can be seen. It is also recommended that facilities staff receive regular training on the recycling

program involving the use of the *Campus Sustainability – Policies, Practices, and Procedures* Manual. Additionally, improved communication of the R3 procedures would result if one employee was charged with oversight of the R3 program.

- Paul Smith's College should, like many other colleges (Berea College, Middlebury College, Washington College, College of the Atlantic, etc.) start reusing our food waste by starting a composting program. It would be a way for the students as well as the school to take responsibility for its waste, employ more work study students and produce useable compost. This compost could be used in existing programs, such as the greenhouse, as well as provide an opportunity for business students to package and sell the product to local farms and residents. The following link is an article on what Berea College in Kentucky campus composting program: *http://www.jgpress.com/inbusiness/archives/_free/000701.html*
- Set up a permanent food waste system whereby non-meat items can be collected for a food composting system and/or collected for Jim Tucker's Ponderosa Poultry Pharm.
- It is recommended that the Facilities staff on a regular basis transport cardboard from the Student Service building area to the compactor behind Buxton when the three-yard container capacity for cardboard is exceeded. This will prevent a recyclable material from being discarded unnecessarily.
- Strongly recommend continued participation in the national RecycleMania competition and keeping alive the inter-dormitory competition at PSC. Additionally, recycling should be more actively implemented at the Saranac Lake Residence Hall and include all the laundry facilities as well.
- Place more boxes around campus for ink cartridge and cell phone recycling.
- It is recommended that Paul Smith's College take a leading role in the community regarding the collection of old televisions that are likely to be "dumped" with the arrival of high definition digital technology for television broadcasting in February 2009. A willing partner would be the staff at Waste Stream and the Clinton County Recycling Facility.

Investment in Sustainability

Campus Sustainability Fund at Paul Smith's College *(Proposal – see Appendix E)*

Appendix E – Proposal for a Campus Sustainability Fund

To further the sustainability initiatives on campus, the members of the Campus Sustainability class and SEA propose the creation of a Campus Sustainability Fund. The purpose of the Campus Sustainability Fund is to provide the student body of Paul Smith's College with funding and guidance for campus sustainability projects. The money for this fund will come from an additional fee of $25.00 added to students' annual statement of tuition and fee charges. This fee would then be set aside in a fund to be used for various campus sustainability projects on campus. Such a fund could also take the form of a revolving loan program and be combined with other sources of revenue.

Based on the current number of students enrolled at PSC (Approx. 900), the fee would add up to $22,500 collected annually. According to initial surveys conducted by the campus sustainability class, there is significant student support for the fund. Over two hundred signatures in favor of the fee have been collected. The Sustainability Council with additional members from the Student Government Association would be charged with the responsibility of reviewing campus sustainability proposals and projects in managing the distribution of the campus sustainability fund.

With the creation of a campus sustainability fund new sustainability initiatives will gain the financial support they need. This will create a more environmentally friendly and sustainable campus for our students and community, and in turn enrich student's educational experience and Paul Smith's Colleges reputation as an environmental college grounded in experiential education.

Case Study:

Green Mountain College initiated a campus greening fund in their institution a few years ago. The brief description below outlines what they have accomplished with a similar fund. http://www.greenmtn.edu/about/environment/campus-initiatives.aspx

Green Mountain College's distinctive environmental mission program has attracted a student body particularly committed to sustainability. One example of this commitment is the Student Campus Greening Fund. Begun as part of a class project in 2004, the Greening Fund was created after 93% of all students polled voted to increase their activities fee by $30 per year for student-proposed, student-approved greening initiatives.

To date, the fund has allocated funding for the following projects:

- Biomass assessment
- 5 Farms/5Days local food project
- Withey Hall solar upgrade
- Farm Drying and Storage Area
- Purchase of double-sided printers
- Farm Hoop House extension
- 2007 Local Food Program
- Recycling equipment/bins

"Green Fund" Survey

Students For Environmental Action (SEA) wants your opinion on new initiatives that can help Paul Smith's College become a more sustainable community. In order to make the best decisions, we need to hear your voice. Thanks for your time.

1. **SEA defines Sustainability on the Paul Smith's College Campus as "creating the lightest carbon footprint possible by utilizing resources wisely while minimizing waste".**

	1	2	3	4	5	6
How important is this definition to you personally? (1=Not Important At All, 6=Very Important)	☐	☐	☐	☐	☐	☐

2. **Which 3 of these sustainablity initiatives are most important to you personally? (Please check 3 boxes only)**

- ☐ Using energy efficient lighting
- ☐ Installing water conserving toilets and fixtures
- ☐ Purchasing equipment made from recycled material
- ☐ Growing organic food on-campus
- ☐ Heating with alternative energy
- ☐ Measuring each building's energy consumption individually
- ☐ Use of biodiesel in PSC vehicles
- ☐ Improved composting programs

3. **Which of these methods is the best way for the campus to decide which initiatives would be completed first?**

- ☐ Campus-wide vote
- ☐ Representatives from each major
- ☐ Committee consisting of students, faculty & administrators
- ☐ Hiring an off-campus consultant to advise

4. **If you knew that you would have a voice in how it would be spent, would you support a $25 fee added to your annual tuition bill in order to fund any of the initiatives mentioned above?**

- ☐ Yes
- ☐ No

Appendix F – Sustainability Course Review (SLAB Division)

Course Review for Sustainability Content
Part A. SLAB Division
Prepared by Randall Swanson 1/25/08

Nine courses with completed Master Course Outlines were listed by SLAB Dean, Phillip Taylor as courses that may contain content pertaining to Economic or Environmental Sustainability.
I reviewed the MCOs and checked the course descriptions and course objectives for any indication that environmental sustainability was included in the course.
I also checked to see if the words "sustainable" or "sustainability" were used anyplace in the respective MCOs.

List of courses:

BIO 100 – Microbes and Society
BIO 210 – General Ecology
ECN 101 – Macroeconomics
ENV 110 – The Adirondack Environment
ENV 315 – Environmental Law and…
ENV 330 – Conservation Biology
ENV 420 – Environmental Impact Assessment
ENV 455 – Sustainable Development
HUM 205 – Introduction to Nature and Culture

The following courses were also listed but did not have MCOs available for review at the time of my review:

ECN 410 – Resource Economics
SOC 105 – Environmental Resources and Society 1
SOC 106 – Environmental Resources and Society 2
SOC 300 – Cultural Anthropology

Findings:

BIO 100 – Microbes and Society
There is some inclusion of the concepts of sustainability.
Objective #5 states that students will be able to, "explain why the diverse metabolic functions of the microorganisms are essential to the maintenance of balanced ecosystems."
There is no use of the word "sustainable".

BIO 210 – General Ecology
The course description includes elements related to environmental sustainability.
None of the listed objectives specifically address this.
There is no use of the word "sustainable".

ECN 101 – Macroeconomics
The MCO does not include any reference to issues of economic or environmental sustainability.
There is no use of the word "sustainable".

ENV 110 – The Adirondack Environment
The MCO does not include any reference to issues of economic or environmental sustainability.
There is no use of the word "sustainable".

ENV 315 – Environmental Law and Regulatory Process
The course description touches on aspects of environmental sustainability.
There is no use of the word "sustainable" in any form.

ENV 330 – Conservation Biology
The MCO definitely includes points to the inclusion of environmental sustainability issues including Objectives #3, #5, and #6.
There is no use of the word "sustainable" in any form.

ENV 420 – Environmental Impact Assessment
The MCO definitely addresses issues pertaining to environmental sustainability included in Objective #5.
There is no use of the word "sustainable" in any form.

ENV 455 – Sustainable Development
This MCO definitely includes references to economic and environmental sustainability in both the course description and in Objectives #1, #2, #3, #4, and #5.
The use of the word "sustainable" appears in all 5 Objectives.

HUM 205 – Into to Nature and Culture
There is a reference to sustainability issues in the course description, "study of interaction between human beings and the environment."
None of the objectives explicitly state that sustainability issues will be covered.
There is no use of the word "sustainable" in any form.

Summary of Findings:

Seven of the nine course MCOs that were reviewed did contain at least some reference to the inclusion of economic or environmental sustainability issues.
Three of the courses (ENV 330, ENV 420, and ENV 455) definitely seem to address these issues strongly and include reference to these concerns in the stated course objectives.
Only one of the nine courses (ENV 455) actually uses any form the word "sustainable" in the MCO.

Appendix G – Rideshare Initiative Survey

Paul Smith's College Rideshare Initiative

How can PSC encourage and facilitate ridesharing among staff and faculty?

The Sustainability Council and the Staff Council are working together to find ways to increase the rate of ridesharing (a.k.a. carpooling) here at Paul Smith's College. Transportation--including staff commutes--is one of the major sources of carbon emissions for the College. The College has committed to reducing our collective carbon footprint and is also looking for ways to document the effectiveness of our efforts. To that end, the College has created a Ride Share Board as well as a trial account with Carpoolworld.com for staff to test. We'd like to know more about staff attitudes and opinions related to carpooling. Please note: Your answers to the survey will be anonymous.

1. Would you be interested in carpooling with other staff members on a regular basis?

- ☐ Yes
- ☐ No

2. Are you currently carpooling with co-workers?

- ☐ Yes
- ☐ No

3. How long is your (one-way) commute to campus?

- ☐ Less than 5 miles
- ☐ 5 to 10 miles
- ☐ 10 to 15 miles
- ☐ 15 to 20 miles
- ☐ 20 to 30 miles
- ☐ More than 30 miles

4. How much effort would you be willing to put into making carpooling work?

- ☐ As much effort as necessary
- ☐ Some effort
- ☐ Not a lot of effort

5. If you have reservations about carpooling, please tell us what they are. (Please check all that apply.)

- ☐ Scheduling concerns
- ☐ Safety concerns
- ☐ Privacy concerns
- ☐ Need to be able to leave work at a moment's notice (e.g., to pick up sick children)
- ☐ Other: _____

6. Should PSC students be included in the PSC group on carpoolworld.com?

- ☐ Yes, but they should be limited to sharing rides with other students.
- ☐ Yes, and they should be able to share rides with staff and faculty.
- ☐ No.

7. If you are a supervisor, would you be willing to offer your staff a bit more flexibility in their schedules in order to make carpooling possible? (Employees would still be expected to work 40 hours a week, but would have some flexibility in starting and ending times.)

- ☐ Yes
- ☐ No

8. Which of the following possible incentives would most motivate you to rideshare? (Please check all that apply.)

- ☐ Saving money by saving gas and wear-and-tear on your vehicle
- ☐ Knowing that you're helping reduce the College's carbon footprint
- ☐ Flex-time scheduling
- ☐ Prize-drawings for participants
- ☐ Accruing perks based on how often you carpool

9. Please share with us any thoughts or suggestions you may have about ridesharing here at Paul Smith's College.

Appendix H – Proposed Sustainability Studies B.S. Degree

Submitted by:

Forestry, Natural Resources, and Recreation Division

BS in Sustainability Studies

Objectives

Develop a B. S. degree program that integrates the social, natural, and management sciences and that is consistent with the increasing societal and market-driven interest in and demand for: conservation and sustainable development, environmental planning and management, green building, sustainable agriculture and support of local agriculture, green business practices, conservation design, recycling and waste reduction, community green space, land use policy and regulation, and alternative energy and energy efficiency.

Program outcomes

Students graduating with a BS in Sustainability Studies will be able to:

- Articulate an awareness of concepts, issues, and practices related to natural resource sustainability and conservation at individual, family, community, regional, and global levels;
- Utilize their backgrounds in the social, natural, and management sciences to objectively assess and respond to issues related to the political, economic, and social pressures placed on communities in the context of the management and disposition of natural resources;
- Integrate the political, social, economic, technological, and ecological dimensions of conservation and resource sustainability;
- Apply practical knowledge and skills to solve problems related to resource sustainability; and
- Manage institutions (e.g., grass roots movements, businesses, educational institutions, agencies, governmental and non-governmental organizations, communities) related to aspects of sustainability, including: green building, recycling and waste reduction, alternative energy and energy efficiency, local and sustainable agriculture and forestry, community conservation, and ecological restoration.

This degree program focuses on the following areas of sustainability:

- Sustainable communities
- Sustainable food and fiber systems
- Sustainable energy
- Sustainable natural resource use
- Sustainability policy and management

BS in Sustainability Studies: Curriculum

Year 1

Natural Resources and Society (NRS 199) (3)	Introduction to Environmental Science (ENV 100) (3)
GE-Quantitative-F (3)	GE-Quantitative-S (3)
English Comp I (3)	**Ecol. Foundations of Sust. (SUS 1xx) (3)**
Dendrology (FOR 110) (3)	Intro to GIS (3)
GE-HC-F (HUM 100) (3)	GE-SC-F (3)
15 credits	**15**

Summer field term (4 weeks -- optional)

Sustainable agriculture and natural resources field experience (SUS 2xx) (2 weeks)

Sustainable communities field experience (SUS 2xx) (2 weeks)

4 credits

Year 2

Aerial Photographic Interpretation (GIS 220) (3)	Business Law (MGT 201) (3)
Sustainable Community Agriculture (SUS 2xx) (3)	GE-Written Communications-S (3)
Speech (COM 101) (3)	*Advanced GIS (GIS 335)* (3)
Microeconomics (ECN 102) (3)	**Conservation Design: Green Communities (SUS 2xx) (3)**
Introduction to Renewable Energy (3)	Principles of Management (MGT 2xx) (3)
15 credits	**15**

Year 3

GE-HC-F (3)	*Environmental Law (ENV 315)* (3)
Dispute Management (COM 300) (3)	*Natural Resources Policy (FOR 350) (3)*
Conservation Design: Green Building (SUS 3xx) (3)	Open elective (3)
Land Use Planning(NRS 331) (3)	***Alt. Energy and Energy Efficiency (SUS 3xx) (3)***
Open elective* (3)	Restricted elective* (3)
15 credits	**15**

Year 4

Principles and Practices of Community Conservation (SUS 4xx) (3)	*Sustainable Development (ENV 455) (3)*
GE-WC-S (3)	*Natural Resources Economics (FOR 410)* (3)
Restricted elective* (3)	***Sustainability Studies Capstone (SUS 4xx) (3)***
Restricted elective* (3)	Open elective (3)
Open elective (3)	Restricted elective* (3)
15 credits	**15**

TOTAL: 124 credits

Restricted electives:

Philosophy of Nature (HUM 300); Politics of the Environment; *Strategic Planning and Policy (MGT 400)*; Env. Resource and Society; Homesteading in the 21st Century; Campus Sustainability: Students as Change Agents; *Human Resource Management*; *Environmental History (HST 399); The Global Market (ECN 400)* (3); Ethics (HUM 270);

Ornamental Dendrology (FOR 370); GIS Applications (GIS 420); Landscape Fundamentals (FOR 130); *Understory and Ground Cover Flora (FOR 380); Sustainability Studies Externship; Forest Ecology (FOR 320); Forest Soils (FOR 330);* Measurement and Mapping (FOR 2xx; summer – proposed); and Forestry Field Ecology (FOR 2xx; summer – proposed).

Bold = new course; *italics* = UD course

New Courses in Sustainability Studies

Ecological Foundations of Sustainability (SUS 1xx) (3)

- Explores the ecological underpinnings of natural resource sustainability and the ecological theories and models that (1) help us to understand human impacts on the environment, (2) provide us with a basis for ecosystem and natural resource management and (3) steer us towards sustainable exploitation of natural populations. In addition, it prepares students (a) to understand concepts related to sustainable farm and forest management, and (b) for the summer camp course in Sustainable Agriculture and Natural Resource Field Experience, for which it is a prerequisite.

Sustainable agriculture and natural resources field experience (SUS 2xx) (2)

- The Adirondacks and the Champlain, Hudson, and St. Lawrence Valleys will form the backdrop for field experiences related to agriculture and forestry practices, including: organic farming and forestry; the culture of non-timber forest products; animal powered farming and forestry; forestry certification; small-scale farming and forestry practices; non-timber forest products; community forestry; and agroforestry. The course will rely heavily on field trips, including overnight stays in the St. Lawrence Valley on both sides of the US-Canada border.

Sustainable communities field experience (SUS 2xx) (2)

- Field experiences related to examples of and strategies for enhancing and maintaining "green" dimensions of communities, including: recycling, composting, renewable energy, green construction, community greenspace, and natural resource conservation. For the purposes of this course, community is defined broadly to include not only local municipalities, but also neighborhoods and college and business communities, for example.

Sustainable community agriculture (SUS 2xx) (3)

- Principles and practices related to agriculture, including: agroforestry; local agriculture; community gardens and community forestry; small-scale farming and forestry; organic farming and forestry; non-industrial private and farm woodlot management; and agricultural and forest landowner cooperatives. The emphasis is on both domestic and international perspectives on community agriculture and forestry, including institutions, marketing, and government and non-governmental organizations and policies. For the purposes of this course, agriculture is defined broadly, to include forestry and other sustainable land water use practices that produce food, fiber, and natural resource-derived benefits and commodities.

Conservation Design: Green Communities (SUS 2xx) (3)

- Principles and practices related to community greenscaping, including: greenspace planning; town forest development and management; conservation of community natural resources; population growth management

Conservation Design: Green Building (SUS 3xx) (3)

- Principles and practices of sustainable/green construction, including: design and construction; siting; renewable materials; costs; energy efficiencies; and certifications.

Alternative Energy and Energy Efficiency (SUS 3xx) (3)

- Explores the political, social, environmental, and economic dimensions of alternative energy and energy efficiency.

Principles and Practices of Community Conservation (SUS 4xx) (3)

- Principles and practices related to community conservation, including: recycling; waste reduction; composting; ecological restoration; alternative energy and energy efficiency. In addition, the latter part of this course prepares students for the Sustainable Studies Capstone course by helping them develop ideas and implementation strategies for capstone projects.

Sustainable Studies Capstone (SUS 4xx) (3)

- A culminating project or projects that integrate students' knowledge of community and natural resources conservation. In addition, students will be able to:
  - Articulate an appreciation for research, science, knowledge and creative processes;
  - Demonstrate proficiency with appropriate professional/scientific written and oral discourse; and
  - Demonstrate an ability to synthesize, analyze, and integrate complex information.

Program options

- Certificate in Sustainable Agriculture and Forestry (6-week summer program)
- Business minor
- Minor in Sustainability Studies
- GIS certificate
- Other certifications

Minor in Sustainability Studies (16 credits)

Required courses (10 credits):

- Natural Resources and Society (SUS 1xx) (3)
- Ecol. Foundations of Sust. (SUS 2xx) (3)
- Sustainability Studies summer field term (4 weeks – 4 credits)
  - Sustainable agriculture and natural resources field experience (SUS 2xx) (2 weeks)
  - Sustainable communities field experience (SUS 2xx) (2 weeks)

Two of the following courses (6 credits):

- Sustainable Community Agriculture (SUS 2xx) (3)
- Conservation Design: Green Communities (SUS 2xx) (3)
- Conservation Design: Green Building (SUS 3xx) (3)
- Introduction to Renewable Energy (3)
- Alt. Energy and Energy Efficiency (SUS 3xx) (3)
- Principles and Practices of Community Conservation (SUS 4xx) (3)

Career opportunities

- Institutional sustainability coordinator: businesses (corporate social responsibility), colleges/universities, public agencies
- Community development/urban planning
- Graduate school/law school
    - Environmental law
- Education, including extension education
- Manager of institutions (e.g., grass roots movements, businesses, educational institutions, agencies, governmental and non-governmental organizations, communities)

Available PSC resources

- PSC land
- Faculty gardens
- Proximity to sites for sustainable forestry
- Proximity to local agriculture and the Champlain and St. Lawrence valleys
- Proximity to various types of communities: academic, municipal, rural, urban, exurban
- Access to various types of land and natural resource management institutions (e.g., DEC, APA)

Required additional resources

- One full-time faculty with expertise in Sustainable Studies (recycling, renewable and alternative energy, land use, community development)
- Half-time faculty with expertise in green/sustainable construction

Desirable supporting resources

- Half-time Campus Sustainability Coordinator
- Campus Sustainability Center

Checklist of Curricular Requirements for Program Proposals: BS in Sustainability Studies

A. Graduation Requirements:

1. Minimum number of credits to graduate: **123-124**

a. NY State Associate degree minimum: 60

b. NY State Baccalaureate degree minimum: 120

2. Number of Liberal Arts and Science credits required: **62 (39 required in the curriculum; 23 needed from electives and/or transfer credit)**

a. NY State Requirements:

i. BPS: 1/4 of total credits

ii. AAS: 1/3 of total credits

iii. BS or AS: 1/2 of total credits

iv. BA or AA: 3/4 of total credits

3. Number of Upper Division credits (Baccalaureate degrees only): **45 (33 required in the curriculum; 12 needed from electives and/or transfer credit)**

a. While our degrees currently vary from 36-45. Our State representative has said that the State will not accept less than 45 upper division credits.

4. General Education Requirements are met by this curriculum: **YES**

a. Please fill out the Matrix below with the names of the specific course in the major (i.e. Dendro as a SR-F for Forestry majors) that fulfills the experience **OR** if the experience may be met with any approved General Education Experience please fill in box with, ex. Social Cultural Foundation experience.

	Written Communication	Quantitative Reasoning	Scientific Reasoning	Social Cultural	Human Condition
Foundational	**Eng comp I**	**GE-Quant-F**	**Dendrology**	**SC-F**	**FYS (1xx)**
Structural	**GE – Written Communications**	**GE-Quant-S**	**Forest Ecology**	**Microeconomics**	**Speech**

Structural (baccalaureate only)	**GE-Written Communications**	**Aerial Photo Interpretation**	**Introduction to Env. Sci.**	**Dispute management**	**Dispute Management**

B. Changes to courses

1. Have any courses been eliminated? **NO**

a. Is this course required or an elective in any other programs? **NO**

i. Have these programs been consulted? YES or NO

ii. List the programs affected:

2. Have any courses been added? **YES**

a. Is there an MCO for the course? **YES**

b. Will the course be sent to the Gen Ed/Assessment Council for approval as a general education course? **NO**

i. If yes, will this curriculum meet the general education requirements if this course is not approved? **NO**

3. Have any courses been modified? **NO**

a. Is this course required or an elective in any other programs? **NO**

i. Have these programs been consulted? YES or NO

ii. List the programs affected:

C. Minor

Minors do not require State approval. In general minors consist of between ___ and ____ credits and should consist of courses that non-majors can take with no or few pre-requisites.

1. Does this curricula propose a new minor? **NO**
2. Does the new minor have established learning objectives? YES or NO
3. How does the course selection help students achieve these objectives? YES or NO

D. New York State Approval

1. Does this curriculum need to be submitted for New York State approval? **YES**

a. Is it a new program? **YES**

i. If yes, must go to State.

b. Does this change alter the focus or design of an associate or baccalaureate degree program? **NO**

i. If yes, must go to State.

c. Does the change represent a CUMULATIVE curricular change of more than 14 credits since the last registered approval of the program content?

i. If yes, must go to State.

d. Does this change add an option or concentration?

i. If yes, must go to State.

e. Does this change eliminate the requirement for an internship, clinical, cooperative education or other work-based experience?

i. If yes, must go to State.

f. Does this change reflect a change in the liberal arts content to less than the percentages required for the degree?

i. If yes, must go to State.

g. Is this change a program title change?

i. If yes, must go to State.

h. Is this a discontinuance of a program?

i. If yes, must go to State. If students are still enrolled, a date must be indicated by which all students are expected to complete the program.

i. Does this change the degree (BS to BA) to which the program leads?

i. If yes, must go to State.

j. Is this a proposal to change any certificate, diploma, or advanced certificate program?

i. If yes, must go to State.

Appendix I – Sustainability Accomplishments of Dining Services

Dining Services "Green Initiatives"

- High Temp Dish Machine Booster Installed eliminates Chemical Sanitizer in our waste stream
- No More Styrofoam : Replaced with Compostables
- No More Trays …Everyday as of September 08: Eliminates Waste In Dish room by 40%, Eliminates about 60% Post Consumer Waste, Saves 40% Hot Water Use, 40% ware washing chemicals
- Local Foods Initiative… Showcasing Local vendors and supporting Bio-Regional Economy by purchasing items produced closer to our region we help "control" our carbon footprint with regards to emissions
- Supporter and Host of Adirondack Harvest "Local Foods" Events
- "Scrape the Waste" Student Initiative: Every Friday ….Heightened Awareness reduces wasted food from 6 – 55 gallon Garbage Cans to 1 – 55 Gallon Garbage Can in Dish room
- Enviro – Mugs 2008 : Distribute Mugs Celebrating Sustainability, reduce Paper to go Cups
- No To Go Cups in Cafeteria (see above)
- Fair Trade Coffee
- Recycle Fryer Oil with Local Farmer (Tucker Taters) for Bio-Diesel
- President's Committee for Sustainability -Active Members
- 100% Renewable Energy used in Dining Room
- "Day Part" Lighting Initiative : Installed dimmers on lights to Dim for Breakfast, Brighten for Lunch, Dim for Dinner, Dim Between Meal Periods….No Lights on Sunny Days!
- Recycle Program in place and Rated very effective by Waste Stream Mgmt.
- Sustainable decorations: use clippings from evergreens as "brand" of table decorations instead of having non -native flowers delivered
- Working with employees schedules/assist with carpooling initiative **(not to interrupt client expectations)**
- Total Transition to "Green Chemicals" from Ecolab for all detergents, cleaners and soaps…"APEX"
- By Using our Recycled Paper Products (napkins & paper towels) we have saved annually:
- 6,399 pounds of waste paper
- 17,229 gallons of water
- 7.38 cubic yards of landfill space
- 9,845 kilowatts of energy
- 4,336 Btu's of energy
- 935 gallons of oil
- 147 pounds of air pollutants
- 42 trees
- (source: product usage calculator "SCA")

Appendix J – Proposal for a Community Composting Center

In 1995 a PSC Composting Feasibility Study explored the following aspects related to a successful food composting program:

1. Characteristics of Compostable Waste Generated
    a. What types of waste?
    b. How much is being generated?
    c. Where is it being generated?

2. Markets/Institutional Use
    a. How much compost is produced?
    b. Where is the compost marketed/utilized?
    c. How are the markets going to use the compost?
    d. Are any additional processes needed (screening, drying, etc.)?

3. Collection
    a. What type and size of collection containers are needed?
    b. How often should material be collected?
    c. How is contamination prevented?
    d. How is material transported to the collection site?
    e. How will odors and other health problems be controlled?

4. Composting Method
    a. Where will it be located?
    b. Which method will be used?
    c. Where and how will raw material be stored?
    d. What structures need to be built?
    e. What pre-processing will need to be done?
    f. How will the composting piles be managed?
    g. Where will the compost be cured?
    h. Where will finished compost be stored?

5. Legal/Regulatory Issues
    a. APA
    b. Town of Brighton
    c. SWMA

6. Resources – Expertise/Technical; Facilities
    --Ruth Smith, DEC, Mark Schachner

7. Financial Feasibility
    a. What equipment will be needed?
    b. How much labor will be needed?
    c. Costs

8. Promotional Activities/Public Relations

9. Educational/Academic Applications

Any composting proposal begins with a strong commitment to food waste minimization

Assessment Phase:

Quantity of campus generated food waste during fall and spring semesters on weekly basis:

Culinary labs = 250 - 300 lbs.
Lakeside Dining= 1,000 - 1500 lbs.

Bulking agent/Brown material generated in the form of sawdust, woodchips, and sawdust/horse manure = 250 lbs/wk; shredded paper and cardboard can also be used as bulking agents.

Cost of tipping fees:

Reduction in tipping fees due to composting = 20%

Post-consumer waste reduction strategies:

Make available free of charge to local farmers & PSC employees; estimate weekly reduction to be between 300 – 500 lbs/week (Jim Tucker will take 250 lbs, Tom Huber will take 100 lbs, etc.)

This approach alone would take care of the food waste generated by the culinary labs.

Pros and Cons of Potential Composting Systems:

Aerated Windrow System

Positives: simple systems of piling food and wood waste over either perforated PVC pipe or wooden pallets for aeration; chips and sawdust used as bulking agent and for absorbing liquids; easy method of balancing carbon and nitrogen materials

Negatives: Labor in the form of hand turning or use of front end loader if deposited on gravel or concrete pad; backstop helpful when piles are small; potential odors require fence to keep out wildlife; need leach field or septic system to collect liquids which would require a permit from APA

Vessels

Positives: self-contained unit – no permit involved, ventilation system, speed of composting

Negatives: high cost, electricity consumption, auger freezes in cold weather (below 10 degrees)

3 Bins (mafia blocks or pallets on end)

Positives: simple

Negatives: hand labor for large quantity which could use front end loader; would require APA permit to cover potential run-off given lack of containment

Appendix K – Gould's Garden: Proposal for a Sustainable Living Center

In the spirit of Paul Smith's College's emphasis on "learning through doing" and in honor of faculty emeritus Gould Hoyt who in his teaching embodied this "hands on" philosophy, it is proposed that a small-scale sustainable living center be developed at the location of the soccer field garden. This is a historic and fitting, place-based site given that this is where a large portion of the food for Paul Smith's hotel was once grown.

Currently, a small garden is maintained mostly through the efforts of Gould Hoyt over the past several decades. Near the garden is also a small tree nursery begun by Aboriculture professor, Randall Swanson. It is also just a short walking distance from the main campus and where the college's draft horse manure is put to good use.

During the spring semester, the Renewable Homesteading course includes a group design project where the site is used in designing a small-scale demonstration of permaculture principles. Topics include an integration of perennial gardens and small livestock, use of human and animal power, renewable energy technology, natural building methods and greenhouse construction, composting of animal manure and the college's food waste, and other related ideas in constructing an apprenticed-styled residence for a small group of students. Currently, a Permaculture Design Course is being planned for late summer of 2009, which will continue the design work begun by the Renewable Homesteading course. The site would also lend itself for on-going demonstration workshops related to the subject of small-scale sustainable living systems and the growing Transition Town Initiative movement, of which both Saranac Lake and Potsdam have adopted.

A number of PSC students, staff and faculty have proposed ideas related to incorporating sustainability within a residential component – ranging from constructing a green dorm to a summer-based experiential Adirondack semester with group camping involving temporary structures such as tepees, yurts, and the like. Many of the institutions represented within the Eco-League of Colleges and other similar-minded organizations have some kind of integration of sustainability, experiential learning, with local service learning projects. There has been tremendous growth in the last few years of college-based farms, Community Supported Agriculture (CSA) programs, energy demonstration centers, community gardens, and various expressions of sustainable living centers.

The Student Government Association's approval for the student supported Campus Sustainability Fund could also generate a potential funding source for some of the small-scale building projects, and it expected that alumni and area residents will provide local support for such a center. Additionally, the development of a low-cost center provides a place for the ecologically-minded students that the college attracts an experiential learning opportunity for the acquisition of sustainability living skills that many expect from Paul Smith's College when they enroll. For a portion of our student body, providing real, hands-on learning will be important from a retention standpoint especially as the college prepares to offer the new Sustainability Studies, BS degree program.

Appendix L – Campus Sustainability Manual: Policies, Practices, and Procedures (Table of Contents only)

Table of Contents

Appendix M – Clean Air-Cool Planet Campus Climate Action Toolkit

The (CCAT) is a resource for educational institution to become more "climate friendly". It consists of short bits of guidance for every aspect of "campus climate action" along with hyperlinks to technical resources and examples/case studies that will help people understand, plan, and execute or implement a climate action plan's various elements.

Featured in the Toolkit is the latest version of the Campus Carbon Calculator.™ (Click the orange logo at the left to download.) Version 6 of the tool measures campus emissions and can be used to help create a climate action plan, analyzing viable long-term strategies to reduce a campus's carbon footprint.

The Campus Carbon Calculator™ is the leading tool for assessing campus greenhouse gas emissions. Currently in use at more than 1200 campuses across the country, the Calculator has already helped schools of all sizes and types, and in all regions to tackle global warming. The Calculator is the "tool of record" for most of the 600 signatories to the American Colleges and University Presidents' Climate Commitment, a voluntary agreement to move toward campus "climate neutrality."

Campus Carbon Calculator™ version 6 includes new Projection and Solutions Modules that will make it easier for administrators to plan for money-saving efficiencies on their campuses, make action plans easier to comprehend for trustees, and provide a powerful new educational tool for instructors and students.

Appendix N – NYSERDA Grant Opportunities &

1. FlexTech - Technical Assistance Program (http://www.nyserda.org/programs/Technical_Assistance/flextechoverview.asp)

Customers Targeted

New York State (NYS) industrial and commercial facilities, State and local governments, not-for-profit and private institutions, public and private K-12 schools, colleges and universities, and health care facilities.

What these Programs Offer

The overall goal is to increase productivity and economic competitiveness of participating facilities through implementation of cost-effective, energy efficiency measures, peak load curtailment and CHP & renewable generation projects.

These services are provided on a cost-shared basis, and include:

- Engineering feasibility and technical assistance studies
- Detailed analysis of specific energy efficiency projects
- Process improvement
- Peak-Load Reduction and Load Management
- Rate analysis, load shapes, and energy service aggregation
- Engineering in support of project-financing proposals
- Development of long term capital budget strategies for the upgrade or replacement of energy-consuming equipment
- Retro-Commissioning of energy-efficiency measures in existing buildings
- Combined Heat & Power
- Renewable Generation

2. Existing Facilities Program (http://www.nyserda.org/programs/Existing_facilities/default.html)

The performance-based incentives component of the Existing Facilities Program offers performance-based incentives to customers or ESCO's who are working on large-scale energy efficiency projects. Performance-based incentives are typically higher than pre-qualified incentives but are based on an engineering analysis and are potentially subject to measurement and verification (M&V) requirements.

Applicants can receive incentives ($/unit) for pre-qualified energy-efficiency and conservation measures. Projects can receive up to $30,000 through pre-qualified incentives. To apply for Pre-Qualified incentives, download and complete the Main Program Application and the appropriate Measure Application(s). **Pre-Qualified Applications can not be submitted online.**

Performance-Based Incentives

Electric Incentives are provided to customers or energy service companies (ESCos) that implement energy-efficiency projects that deliver verifiable annual electrical energy savings.

Industrial and Process Efficiency Incentives are provided to offset the costs of projects focused on increasing productivity, increasing process efficiency, reducing waste, and reducing electricity consumption on a per unit of production basis.

Gas Incentives are provided to customers or ESCos working on gas-efficiency projects that deliver verifiable annual gas savings.

Demand Response Incentives are provided to offset a portion of the technology costs that enable facilities to participate in Demand Response Programs.

Combined Heat and Power (CHP) Incentives are provided to offset the installation cost of clean, efficient, and commercially available CHP systems.

3. NY Energy $mart Loan Program (http://www.nyserda.org/loanfund/)

The **New York Energy $mart**[SM] Loan Fund program is offered for the purpose of providing an interest rate reduction off a participating lender's normal loan interest rate for a term up to 10 years on loans for certain energy-efficiency improvements and/or renewable technologies. The interest rate reduction for most of the state is up to 4.0% (400 basis points). Con Edison customers may be eligible to receive an interest rate reduction up to 6.5% (650 basis points) less than a Participating Lender's or Lessor's normal market rate.

4. PON 1050 Solar Electric Incentive Program
(http://www.powernaturally.org/programs/solar/incentives.asp)

WHAT IS THE SOLAR ELECTRIC INCENTIVE PROGRAM?

It's an innovative program from the New York State Energy Research and Development Authority (NYSERDA) that provides cash incentives for the installation of new Solar Electric or Photovoltaic (PV) systems by Eligible Installers. Funding of approximately $13.8 million in incentives, through 2009, for the Solar Electric Incentive Program ("Program") has been allocated by the New York State Renewable Portfolio Standard. Additional funding may be made available based on customer demand and program success. Incentives are granted on a first-come, first-served basis. Applications will be accepted through September 30, 2009, or until funds are fully committed, whichever comes first.

Other NYSERDA resources

- NY Energy $mart Offices Project (http://www.nyserda.org/programs/Offices/default.asp)
- NYSERDA's CHP page (http://www.nyserda.org/programs/dgchp.asp)

New York Energy $mart[SM] Offices Project
(http://www.nyserda.org/programs/offices/default.asp)

Step One: Build Support for Your Project

The first step is to obtain buy-in from the key decision-makers. NYSERDA's outreach and education materials can help you build support from various target audiences by emphasizing

possible benefits of interest to each group or key decision-maker. Fact sheets are available for policy makers, IT staff, procurement staff, finance staff and equipment vendors. There is also a Smart Office Calculator, PowerPoint Presentation, and various case studies to assist you in building support for your **New York Energy $mart**[SM] Offices project.

Step Two: Develop Preliminary Estimates of Savings

The outreach materials provide typical estimates of savings that may be used to spark interest in the program. The next step is to conduct an equipment inventory and to calculate your kWh electric costs to develop a preliminary estimate of potential energy bill savings for your facility.

Step Three: Gather Detailed Equipment Data

As Step Two indicates, there are increasing levels of analysis that can be completed as more detailed data are collected on the types and numbers of equipment, status of enabling or power management, hours of use, and opportunities for shutdown of equipment at night. In Step Three, you should conduct an after hours walk through audit, and in a networked setting, use software tools to poll the current status of monitors and determine power management opportunities. The resulting information will help you refine savings estimates and set a realistic energy savings goal.

Step Four: Calculate Savings Using Equipment Data

At the point, you should have collected specific data on office equipment in your facilities to develop a more comprehensive and more accurate estimate of energy savings using Smart Office Calculator. There are also other Analysis Tools that have been developed by Lawrence Berkeley National Laboratory, U.S. EPA, and U. S. Department of Energy (DOE) to estimate potential energy savings from procurement and power management of office equipment. For example, there are various spreadsheet-based calculators on the www.energystar.gov site that can be used to calculate savings for compact refrigerators and clothes washers.

Step Five: Implement Measures

Once your energy savings analyses in Step Four are complete, you should meet with the key decision-maker groups and facilitators to discuss your results and establish a plan for implementing measures. The implementation will include establishing and enforcing policies for purchase, leasing, power management, and shutdown of equipment.

Step Six: Sustain Momentum

While an energy efficiency program begins with buy-in, continuing success depends on employees and other key audiences, including constituents. In that context, there must be ongoing reminders of the benefits of the program and recognition given to those who make the Program work.

Appendix O – LEED-Certified Adirondack Watershed Institute

Paul Smith's College
THE COLLEGE OF THE ADIRONDACKS

December 4, 2008

Dear Faculty, Students, and Staff,

We are writing to you today to update you on an important decision made recently by the Paul Smith's College Board of Trustees to modify the plans for the new home of the Adirondack Watershed Institute. Paul Smith's College has chosen to build the permanent home for the Adirondack Watershed Institute (AWI), the Countess Alicia Spaulding-Paolozzi Environmental Science and Education Center, as new, energy efficient construction with historic character, rather than follow our original plan to historically renovate the Harriman Cottage. This decision has been made in consideration of the current economy and the escalating cost of construction.

The cottage, built in 1894 as a guest house for a resort and later used as a fraternity house during the early years of the college, has fallen into grave disrepair. Age and Adirondack winters have taken their toll; the building has sustained heavy water damage through its leaky roof, and much of the second floor has fallen into the first. We decided to use green building techniques in the renovation of the Harriman Cottage, and had ambitiously looked into not only building a LEED certified home for AWI, but also had hoped to historically renovate this original resort building. When estimates were received for a LEED certified historic restoration, as specified by our architect Newt Wiley, the additional costs for historic preservation came in roughly $1.5 million more then originally budgeted and estimated. With some $500,000 left to be raised from the original budget, this new $1.5 million became an insurmountable hurdle and we were forced to look at alternatives.

As you know, Paul Smith's College is a historical landmark in and of itself. Prior to becoming a college, at the bequest of Phelps A. Smith in 1937, Paul Smith's was a resort run by our namesake, Apollos "Paul" Smith. The college has always had a strong association to its own past, as well as to the history of the Adirondack Park. That is why it is with full recognition of the significance of our history that we inform you of this difficult, but we feel wise, decision.

We are very pleased that we have an alternative plan that can be achieved within a reasonable budget and that the center will still be built as a permanent home for the AWI. The AWI contributes significantly to the Adirondack community through fresh water research, education, and conservation, yet the ability of the AWI to grow and offer more services is restricted by inadequate facilities. The lack of space hampers the ability to purchase and install specialized research equipment necessary for the evolvement of the AWI and has caused larger projects the AWI team is capable of completing, to be put on hold. The construction of the center is an important step to make for the college and the institute as it will energize the program and cement the AWI as *the* most important water quality management program in the Adirondacks.

OFFICE OF THE PRESIDENT
P.O. Box 265 Paul Smiths, NY 12970-0265 • (p) 518.327.6223 • (f) 518.327.6060
www.paulsmiths.edu

As we mentioned above, the center will be constructed using green building techniques, consistent with the college's environmental values, and is expected to qualify for LEED certification. LEED certified buildings use key components more efficiently than buildings built to regular code, and create a fundamental reduction in environmental impacts in addition to economic and occupant benefits; they are highly sustainable and energy, water, and heating efficient structures. The construction of the center will be new, but it will be modeled after the Harriman Cottage and will thus have the historic character of the original building with the environmental benefits of green building and LEED certification.

We assure you that deciding to forgo the historic restoration of the Harriman Cottage was a decision that the college did not take lightly, but it is the right decision. As an active member of the Paul Smith's College community, we hope you will understand this and continue to support us in this endeavor. If you have any questions, please feel free to contact us via email at jmills@paulsmiths.edu or dkelting@paulsmiths.edu or Hillarie Logan-Dechene via telephone at (518) 327-6317 or via email at hlogan-dechene@paulsmiths.edu. Thank you.

Sincerely yours,

John W. Mills, Ph.D.
President

Dan Kelting, Ph.D.
Executive Director, Adirondack Watershed Institute

Appendix P – Green Power Purchase – Renewable Energy Credits

2008 PROPOSAL FOR RENEWABLE ENERGY CERTIFICATES

Paul Smith's College

Supplier Overview

Community Energy, Inc. (CEI) is a developer, marketer, and supplier of clean energy. CEI provides commercial, small business, and residential customers with clean, renewable energy options to help achieve environmental goals and compliment the customer's traditional energy supply. Founded in 1999, Community Energy has established an innovative business model linking clean energy markets to the development of new wind power projects – the ultimate goal of customers, partners and the public.

In 2006, the largest wind energy developer in the world, IBERDROLA of Madrid, Spain acquired Community Energy. This has not only allowed Community Energy to expand their development efforts, but it has given its customers the opportunity to be part of America's clean energy future in a large way.

Our Mission: To ignite the market and supply the demand for fuel-free electricity.

Our Customers: Large commercial companies, utilities and energy services companies, educational institutions, non-profits, Fortune 500 companies, religious organizations, LEED projects, and over 75,000 residential customers.

Our Products: Wind energy and other renewable energy products that are flexible and affordable. Customers can purchase 100 percent wind power, or a blend of wind with other renewables.

Our Track Record:

Key Figures:

Community Energy, Inc. (CEI) is headquartered in Wayne, Pennsylvania and has offices in NY, CT, NJ, IL and CO. CEI has more than 3 billion kilowatt-hours of wind energy sales, thousands of residential customers, and marketing arrangements with 18 investor-owned and municipal utilities. CEI cites its utility partners and customers, which include many of the largest retail purchases of wind energy in the country, as the reason for its success in bringing wind energy to market in new regions of the country.

- Responsible for many of the largest wind purchases in the nation
- Developed New Jersey's first wind farm - the country's first coastal wind farm
- Marketer and supplier of some of fastest growing utility green power programs in the natio
- First company to erect 2.0 megawatt turbines in the United States
- More than 2,000 MW of wind energy under development in 12 states
- Only developer to complete a wind power project in the Mid-Atlantic in 2005
- Supply wind power to 11 of the top 25 EPA Green Power Partners
- Recipient of 2003 AWEA Market Maker Award
- Supply wind power to more than 60 municipalities and over 50 college and universities

Product Description

New York Wind Energy Certificates:

NewWind Energy® from Community Energy is Green-e eligible and meets or exceeds Green-e standards. It is generated by NY wind farms, and delivered to the New York power grid. The environmental benefit associated with NY Wind is a direct result of reducing the amount of energy generated by conventional sources into the NY Independent System Operator (NYISO) spot market. The purchase of NewWind Energy® will support existing wind energy generation and promote the development of new projects in the region.

According to the NYS Comptrollers office, wind energy and other renewable energy technologies will: spur job growth in a high-skilled, high-wage sector; increase income for farmers and ranchers; stimulate in-state investments; reduce public health care costs; retain energy expenditures that currently leave New York and reduce our dependence on foreign oil.

What is a Renewable Energy Credit?

When electricity is produced from clean, emission-free resources, Renewable Energy Credits are established. Renewable Energy Credits, also known as RECs, Green Tags and Renewable Energy Certificates, represent the environmental and economic value of producing energy from resources that will never be depleted, and are safe for our environment. These attributes of renewable energy generation have real and quantifiable economic value, which can be priced and conveyed separately from the electrical commodity.

While it is impossible to direct the flow of electricity from a specific renewable energy facility to your home or business, Renewable Energy Credits make it easy for energy consumers to support clean energy generation. Each Renewable Energy Credit represents an actual unit of clean energy production, and is tracked accordingly.

Renewable energy generation is presently more costly than traditional forms of energy generation. Selling RECs enables renewable energy to be competitive in the energy marketplace. The price you pay for a Renewable Energy Credit makes up the cost difference between the lower cost of traditional electricity generation, such as coal and oil, and the higher cost of clean, emission-free electricity generation.

Renewable Energy Credits enable consumers all across the country to support renewable energy generation; RECs contribute to the growth of the renewable energy sector, and with consumer support will continue to help make renewable energy even more cost competitive.

Environmental Benefits

Environmental Benefits A 100% Wind Energy purchase for Paul Smith's College, is equivalent to:

Planting 2,010 acres of trees or Removing 467 cars from the road

- Based upon the average generation mix in the spot market New York power pool, the environmental benefits from this purchase are equivalent to a reduction of 2,230 metric tons per year, etc.

Appendix Q - Current Climate Research Projects

Principal Investigator: J. Curt Stager
Fall 2008

ADIRONDACKS

Primary questions: How did long-term temperature changes of the past affect precipitation in the Adirondack Region, and what do they reveal about local conditions to come in a warmer future?

1. The nature and effects of 20th century climate change in the Adirondack Park
Project Focus: Producing the first comprehensive record of Adirondack temperature and precipitation changes during the last century, to help explain local environmental responses to those changes and to evaluate the accuracy of climate model projections for the 21st century.
Other Participants: SUNY-ESF and St. Lawrence University
Funding Source: Personal funds

2. Ancient climatic origins of Adirondack wetlands
Project Focus: Determining the ages of Adirondack bogs shows that increasingly wetter climates after a long-term warm period allowed local bogs to form 8000-7000 years ago.
Other Participants: PSC Paleoecology class students
Funding Source: Paul Smith's College Faculty Research Grant (^{14}C dating)

3. Recent climatic warming and rainfall in the Adirondack region
Project Focus: Reconstructing the lake level history of Lake George reveals the occurrence of a severe but hitherto unrecognized (and unexplained) drought that struck the North Country at the close of a global cooling period about 200 years ago.
Other Participants: PSC student Brendan Wiltse (now at Queen's University)
Funding Source: Personal funds, and Paul Smith's Faculty Research Grant (^{210}Pb dating)

4. Reconstructing Adirondack precipitation from an 8000-year old meadow-pond
Project Focus: A seasonally flooded meadow near campus overlies lake deposits that contain fossil diatom records of Adirondack precipitation changes dating back 8000 years.
Other Participants: PSC Paleoecology class students
Funding Source: Personal funds, and Paul Smith's Faculty Research Grant (^{14}C dating)

5. Lake depth and diatoms: new tools for Adirondack climate analysis
Project Focus: Sampling local lake sediments at different water depths in order to test the feasibility of using fossil diatoms to reconstruct lake level fluctuations in planned studies of the effects of climatic warming on Adirondack precipitation.
Other Participants: PSC Paleoecology class students
Funding Source: Paul Smith's College course budget

PERU

Primary questions: how long has El Niño operated, how stable is the modern El Niño system, how has natural climate change affected past cultures and climates in the tropics, and how might it be affected by future global warming?

1. A history of El Niño from ancient flood deposits in the Sechura Desert
Project Focus: Reconstructing past El Niño flood events from sedimentary deposits in hyper-arid north coastal Peru, and relating them to cultural history in the region.

Other Participants: Climate Change Institute, Orono, ME.
Funding Source: National Geographic Society

PERU (cont'd.)

2. Deglaciation and the peopling of the Peruvian Andes
Project Focus: Dating the retreat of ice from the Andean high country at the close of the last Ice Age and determining how this affected high-altitude settlement by early human cultures.
Other Participants: Faculty and graduate students at Climate Change Institute (Orono, ME).
Funding Sources: Comer Foundation, University of Maine

AFRICA

1. Solar cycles and rainfall prediction in East Africa
Project Focus: Documenting and explaining the relationship between 11-year sunspot cycles and heavy rainfall (with lake level rises & disease outbreaks) in East Africa.
Other Participants: Jet Propulsion Laboratory (CA), U. of Georgia, U. of East Anglia (U.K.)
Funding Source: National Science Foundation

2. Climatic links between equator, Antarctica, and South Africa: the last 3000 years
Project Focus: Using the timing of past rainfall changes in southern Africa to help identify causal mechanisms, including climatic links to Antarctica and the equatorial rain belt.
Other Participants: Two PSC students, researchers at U. Cape Town (S.A.) and Loughborough University (U.K.)
Funding Source: National Science Foundation, Paul Smith's College

3. A 4000 year climate record from Lake Tanganyika, East Africa
Project Focus: Using sediment cores to produce the first high-resolution reconstruction of rainfall from the world's second deepest lake, covering the last 4000 years.
Other Participants: Former PSC student, researchers at CEREGE (France), Loughborough University (U.K.), and Ghent University (Belgium)
Funding Source: National Science Foundation

4. Long-term effects of El Niño on East African rainfall
Project Focus: Comparing paleoclimate records from Ecuador and East Africa in order to determine the stability of El Niño's influences on tropical rainfall patterns during natural global warming and cooling phases of the past.
Other Participants: CEREGE (France), Loughborough University (U.K.), and Ghent University (Belgium)
Funding Source: National Science Foundation

5. The worst drought in the world: what caused tropical megadroughts 17-15,000 years ago
Project Focus: Compiling paleoclimate records distributed over the entire planet in order to document the intensity and distribution of as yet little recognized massive droughts that struck the Afro-Asian monsoon system 17-15,000 years ago, and to help identify their causes.
Other Participants: Loughborough University (U.K.), Climate Change Institute (Orono, ME)
Funding Source: National Science Foundation

GLOBAL

1. After the Meltdown: CO2 and Global Climate Change Beyond 2100 AD
Book manuscript, currently with Sandy Dijkstra Agency

Appendix R – The Adk Energy $mart Park Partnership Agreement

The Adirondack Energy $mart Park Partnership Agreement

THE ENERGY $MART PARK INITIATIVE (E$PI) promotes reliable, affordable, environmentally sound energy options that benefit all Adirondack residents and visitors. E$PI will help make the Park and its communities a working example of what the world must do to achieve energy independence and transition to a clean, green, climate-friendly energy future. E$PI was conceived through a process of meetings and consultations with over 20 agencies, non-governmental organizations, municipalities, academic institutions, and businesses to address energy issues in New York's Adirondack Park region.

E$PI and its Partners support:
The promotion of energy efficiency and sustainable energy options in the region to increase affordability, spur economic and community development, and build on the Park's unique attributes. E$PI provides a forum for regional Partners to assist in this work.

To fulfill this partnership and process, E$PI agrees to:
- Include the Partner in E$PI activities.
- Recognize the Partner as an active participant.
- Promote exchanges of information among Partners.
- Support Partners by seeking organizational, technical and financial resources to assist Partners in efforts to address energy issues in their organizations and communities.

In return, the Partner agrees to support the E$PI Partnership by:
- Assisting in identifying energy efficiency and renewable energy projects within the region.
- Communicating with E$PI on the best approach to meeting the energy needs of the region.
- Sharing resources with the E$PI Partnership as the Partner and/or their organization sees fit.

Partners who sign this agreement will be identified as E$PI Partners in E$PI publications, promotional materials and on the E$PI website.

Contact Name: _____ Title: _____

Organization: _____ Tel: _____

Address: _____Fax: _____

City: _____ State: _____ Zip: _____

Email:_____

Partner Signature: _____Date: _____

Signature of E$PI Representative: _____ Date: _____

Sign and send to:
Jennifer Monroe, PO Box 46, Olmstedville, NY 12857. Fax 518-251-2524. Email: jlmonroe@capital.net

Appendix S – Strategic Plan Idea Generation Session

Leader: B. McLeod

We are committed to meeting the expectations of the Presidents' Climate Commitment:

Strategies:
Paul Smith's College is unique in that it offers programs which have important and relevant connections to regional and global sustainability issues. Group discussion focused on three broad categories of concern which address the Presidents' Climate Commitment.

Creation of biomass power and/or heat generation:

- From both a financial and climate commitment perspective, it may make sense to transition the institution to a biomass district energy plan potentially for both heat and power.

- The adoption of a biomass heating facility would have the single greatest impact on our institution's carbon footprint.

- Such a change would position the college forestry program to take advantage of the expected demand for biomass related jobs and further promote our image as an institution of experiential education.

- From a climate commitment and financial perspective, the use of chips over manufactured pellets seems preferable

- Although this is an ambitious undertaking, it also would incorporate one of the college's greatest resources – its forested lands – and strategically use it towards long-term, energy independence while stabilizing the college's operating budget through a dramatic decrease in heating oil consumption.

- It is expected that such a bold decision would also result in strong alumni and other donor support, along with being of interest in attracting external grant sources to fund the considerable infrastructure related costs.

- NYSERDA provides grant opportunities in support of technical and financial assistance for large scale infrastructure projects. Such opportunities should be explored by the Office of Institutional Advancement with assistance from the Vice President of Capital Projects, proposed Energy Management Consultant, proposed Sustainability Coordinator, and Facilities Department.

- Students should be integrated in the project process- this is a unique opportunity which ties in nicely with programmatic objectives and our broader institutional mission.

Adoption of energy efficient technology coupled with significant conservation efforts made by the entire college community:

- Budget should be constructed in such a way that energy-saving repairs are earmarked as priorities (e.g. replacement of faulty thermostats and heat valves)

- Student life should work to develop an incentive program which creates *significant* energy reduction in residence halls- both in terms of heat and electricity consumption

- New Employee Orientation should include a conservation code of ethics

- Facilities Capital Action Plan includes proactive recommendations in addressing capital improvement, capital renewal and deferred maintenance projects at the college.

- PSC should make an effort to purchase Energy Star appliances whenever possible- especially in culinary labs

- Facilities Capital Action Plan completed by Sodexo includes a number of recommendations related to water consumption such as the replacement of old shower heads with water conserving units.

- Hire a Sustainability Coordinator whose primary responsibility will be to oversee the implementation of the Sustainability and Climate Action Plan.

Transportation:

- Commute Modal Split (% of community members who travel to and from campus by means other than single occupancy vehicle transportation)

- Develop creative commuter options

- Consider hybrid vehicles for Admissions

- Establish a pilot program with carpoolworld.com to try out the logistical support services they offer for carpooling

- Develop contracts with motor coach providers who opt for bio diesel (sport team travel)

Additional Group Comments:

- *One guiding question asks what role do we want to play in climate activism?*
    - *Many responded that as an academic institution our role is not to promote activism- we are to promote science and objectivity toward all sides of any given argument.*
- *How can we demonstrate our climate commitment to the public?*
    - *It was voiced by many that we wouldn't need to demonstrate our climate commitment to the public if we were making real and substantial efforts to address these issues.*
    - *In the words of one participant "we would have no need to "green wash" things if we actually practiced what we preached."*
    - *Others felt it was our job to make conservation "sexy"*
- *Just as FNRR has a role in developing biomass energy potential at PSC, HRCM should play a role in developing initiatives and action items such as:*
    - *Food waste/Composting*
    - *Local food production*
    - *Opportunities to collaborate with community organizations (soup kitchens, food bank, etc.)*

Appendix T- Biomass Feasibility Study Recommendations

EXECUTIVE SUMMARY

This preliminary biomass heating analysis was prepared by Richmond Energy Associates, LLC. The project was funded through a grant from the US Forest Service and supported by the New York Department of Environmental Conservation Division of Lands and Forests.

Paul Smith's College in Paul Smith's, New York, is a small technical college located in the Adirondack Park region of New York near Saranac Lake. It has approximately 40 buildings on its campus which total nearly 500,000 square feet of heated space. Each building has its own heating plant.

From 2004 through the 2008 heating season, the Buxton Gym/Cafeteria complex used 28,909 gallons of #2 fuel oil to heat those buildings. The Phelps Smith Administration building used 4,927 gallons over the same period. At current fuel oil pricing of $3.23 per gallon, the college will spend $93,376 and $15,914 respectively to heat these buildings this coming year.

Two different scenarios were analyzed for this study. One scenario involved connecting both the Buxton Gym/Cafeteria complex with the Phelps Smith Administration building using underground insulated piping to form a small district energy system heated from a single woodchip boiler plant. The other scenario involved placing a pellet boiler system in a containerized boiler room outside of the Buxton Gym/Cafeteria and heating only that complex. From the analysis provided in this report, it appears that the pellet option would cost considerably less in up front capital costs and it had a much better return on investment. The analysis indicates that Paul Smith's College could save more than one million dollars in operating costs over 30 years in today's dollars even including the cost of financing equipment and installation. The analysis shows nearly $30,000 in fuel savings in the first year alone. The college should obtain a positive cumulative cash flow from the first year of operation.

Paul Smith's College appears to be an excellent site for a fully automated pellet fuel heating system. There is a good location to place a containerized pellet boiler house and storage bin in the parking lot area next to the Buxton Gym. The existing boiler systems could work well to provide back-up and supplemental heat in combination with a pellet fuel boiler. It appears that the existing heating distribution systems could be readily adapted to accommodate an additional heating source such as a pellet boiler. The college has good access to pellet fuel.

Richmond Energy recommends Paul Smith's College take the following steps to investigate this opportunity further:

1. Hire an engineering or architectural firm to help refine the project concept and to obtain firm local estimates on project costs. A list of A&E firms with biomass experience is included in the appendices to this report.
2. The college should identify any heating system improvements it planned to undertake in the foreseeable future in the Buxton Gym/Cafeteria complex and consider including those

projects with the biomass project. It will be more cost effective to implement boiler room upgrades and heating distribution improvements at the same time a new boiler system is installed than it would be to postpone those improvements for a later time.
3. Concurrently with the design of the project, the college should cultivate potential biomass fuel suppliers. College staff should work with the New York State Department of Environmental Conservation Division of Lands and Forests to identify potential biomass fuel suppliers. A list of potential pellet fuel suppliers is included in the appendices at the end of this report.

ADDITIONAL ISSUES TO CONSIDER

1. The college should consider energy efficiency improvements simultaneously with boiler upgrades. The efficiency of the building envelope and ventilation equipment need to be considered when sizing new boiler equipment. The New York State Energy Research and Development Authority (NYSERDA) and/or the New York Power Authority (NYPA) should be engaged to develop comprehensive energy efficiency recommendations and proposals for incentives for efficiency upgrades before undertaking any major building project. Information on energy efficiency programs is included in the ***Biomass and Green Building Resources*** binder accompanying this report.
2. In order to effectively measure progress toward energy efficiency goals and reductions in greenhouse gas emissions, historical energy consumption data must be collected and updated frequently. The college should develop a system for tracking energy consumption for every building starting with several years of historical data and continuing with frequent updates. There are many tools to help the college accomplish this. One such tool is the EPA Energy Star ***Portfolio Manager*** software. It is free public domain software that helps facility managers track energy and water use over a portfolio of buildings. By compiling this information in one place it becomes possible to compare efficiency opportunities and target resources toward the buildings with the best potential for energy savings. This software can be downloaded at: http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager
3. The college may want to consider studying a district energy scenario for the entire campus. Often with woodchip heating projects, the larger the project, the better the return on investment. At current pricing, woodchip fuel is about 1/3 the cost of fuel oil on a cost per Btu basis and the college is currently spending well over a half million dollars on fuel oil each year. The college may be able to take advantage of the old central boiler house and stack and create a new district energy system that could serve the entire campus. To study a district energy scenario would require a fairly detailed engineering study which could be expensive. However, the potential environmental gains from implementing a biomass fueled district energy system on campus could be compelling and would likely be attractive to grant sources interested in reducing greenhouse gas emissions.
4. Paul Smith's has the potential to produce at least some of its heating fuel directly. If the college moves ahead with a biomass heating alternative, it should consider how the college forestry program might support the use of biomass fuels on campus. Woodchips derived from wood waste from campus forest management practices could conceivably be burned directly in a woodchip fired boiler or they could be used as feedstock for pellet fuel. There may also be opportunities to incorporate wood utilization for biomass fuels into the curriculum.
5. The college should consider incorporating a biomass heating project into a larger campus greening initiative that seeks to reduce the college's environmental footprint. This type of initiative could create momentum to raise money from alumni and raise the school's profile while making a positive environmental impact.

Appendix U – Green Purchasing Policy (proposed)

A. Goal

Paul Smith's College is committed to the use and purchase of environmentally and socially responsible materials and products as reflected in the college's strategic plan. Departmental purchasing decisions are guided by multiple factors, which include cost, budgeted resources, concern for environmental protection, and the well-being of the people who make and use materials, durable goods, and manufactured products. The goal of this proposal is to establish guidelines and procedures for a Green Purchasing Policy in support of the college's commitment to sustainable development and climate protection.

B. Priorities and Opportunities

The Paul Smith's College Purchasing Department is responsible for the procurement of goods and services for the entire Paul Smith's College community as directed by budget managers. As the college develops a written purchasing policy multiple opportunities exist for lowering costs while conserving and protecting natural resources. Priorities include the purchasing of local, renewable, and sustainably-certified products; the elimination of toxic materials; and total life-cycle and end-of-life management and regeneration costs. Moving forward, previously externalized costs related to greenhouse gas emissions and other forms of pollution are now included in formulating purchasing decisions for the college.

Opportunities:

- To develop and maintain a consistent "cradle to cradle" supply chain and purchasing process which considers economic, ethical, social and environmental impacts for all contracts and purchases; where all waste should first be eliminated, avoided, or minimized and where any remaining waste is considered and captured as feedstock for new product development.
- To utilize environmentally responsible biodegradable solvents and citrus-based, rather than oil-based, cleaning products in all college operations.
- To utilize toxic-free, bio-based products, fuels and solvents (e.g. soy-based inks and lubricants) where available.
- To purchase Energy Star certified electrical equipment and appliances and EPEAT (Electronic Product Environmental Assessment Tool) certified products where available.
- To procure and/or produce renewably-derived electricity and other fuels for campus operations.
- To purchase energy-efficient equipment and fleets which utilize renewable fuels and/or environmentally responsible energy methods.
- To make use of 100% post-consumer content recycled paper and turn used paper into scratch pads for distribution on campus.
- To procure recycled content office supplies.

- To procure environmentally responsible and ergonomically designed furniture and furnishings including floor coverings and window treatments.
- To reuse, return or negotiate with suppliers the reduction or elimination of all packing materials.
- To comply with NYS recycling policies and regulations.
- To integrate green purchasing concepts and products into architectural designs.
- To ensure that PSC contracted and sub-contracted suppliers maintain and practice global standards of environmentally and socially responsible stewardship demonstrated by annual business reports.
- To recycle ink and toner cartridges, fluorescent bulbs and ballasts, and batteries.
- In short, to support the 3R's of waste management – Reduce, Reuse, Recycle - and to conserve energy and water when purchasing supplies, equipment, and services.

C. Action Recommendation/Implementation

1. Share proposal with college budget managers, receive input for final draft, and submit to the President and Executive Cabinet for review and acceptance.

2. Initiate the following toward the establishment of a Vendor Code of Conduct:

    a. Review contracts for goods and services to ensure that whenever possible and economical, they are amended to provide for expanded use of products and services that contain the maximum level of post-consumer reusable or recyclable waste/or recyclable content, without significantly affecting the intended use of the product or service.
    b. Purchase from suppliers that provide environmentally friendly products and services.
    c. Encourage existing suppliers to review the manner in which their goods are packaged.
    d. Make suppliers aware of PSC's Green Purchasing Policy. Send a clear message that the college will favor those suppliers whose products meet the sustainability objectives of the college.

3. Evaluate the opportunities for purchasing recycled materials and environmentally sound products in the college's bookstore.

4. Evaluate the purchasing of chemicals in the science department.

5. Include environmentally responsible purchasing information in new employee and student orientation.

6. Maintain a master inventory of campus vendors and recommended purchasing specification list for departments.

7. Conduct a pilot study of the proposed Green Purchasing Policy within TRiO

Student Support Service, a federally-funded program with its own independent budget (and sustainability initiative) at PSC.

8. Collaborate with the Sustainability Council to determine other areas where green purchasing may help the college fulfill its sustainability goals.

9. Establish measurable goals on an annual basis.

D. Tracking

Manually track green purchases using simple codes in a computerized spreadsheet within the Purchasing Department.

E. Continual Improvement

Determine if measurable goal was met or not met.

If goal was successfully met:

Publicize success to the PSC community.
Expand pilot.
Hold a campus-wide celebration.
Issue press release regarding college's progress in meeting green purchasing goals.

If goal was not met:

Determine cause of not meeting opportunity.
Brainstorm on how to correct the shortcoming and move forward.

Develop a PSC awards/incentive program for faculty, staff and students who contribute successful ideas regarding the college's green purchasing program.

Appendix V – Sustainability & Integrated General Education Program

On March 25th the General Education Assessment Council joined with the Sustainability Council and the Deans Council to discuss the role sustainability should play in the Paul Smith's College Integrated General Education program.

The questions posed to the group were:
1) What role, if any, should the concept of sustainability play in the IGE program?
2) Should Sustainability be its own thread or an integrated thread much like information literacy?
3) Should PSC students have the opportunity to earn a sustainability certificate as part of the IGE experience?
4) If such an opportunity were to be created should it involved a level of choice on the part of the students to opt into the program by choosing to participate in a co-curricular experience?
5) If a sustainability program was adopted should it meet external assessment expectations as defined by AASHE STARS program?

The impetus for this conversation came from the suggestion made in ESPC that if we are to market ourselves to connect with the idea of sustainability than we should take advantage of a looming deadline for new marketing materials. But this conversation also has roots in the original IGE proposal amended by the faculty forum in 12/21/05 which charged the Gen Ed council to:

> *Investigate and propose to ESPC a way to integrate environmental/sustainable development literacy into the outcomes matrix similar to the way informational and technological literacies have been integrated. [The General Education Council will seek input and work with the Environmental Resource Management Committee.] – Faculty Council 12/21/05.*

Additionally, the Environmental Resource Management Committee (reconstituted as the Climate Commitment Committee) in the fall of 2007 recommended that Paul Smith's College should:

> *Integrate sustainability-related content in as many courses offered here at Paul Smith's as possible. We have to make sustainability relatable to every major and every person. This education could begin with the new First Year Seminar course that every new student takes.*

In March 2009, a working draft of the Campus Sustainability and Climate Action Plan (S-CAP) included the recommendation by the Sustainability Council that PSC:

> *Develop an interdisciplinary, integrated sustainability literacy graduation requirement to take effect for the fall 2010 cohort of entering associate and baccalaureate-seeking students.*

Finally the campus strategic planning process has suggested that a core organizing idea of our planning process is to focus Paul Smith's College as an institution that *"cares about the environment and serves people who care about the environment with an eye on sustainability, service and stewardship of our natural environment."*

Discussion
Concerns were raised that the term sustainability may be too vague or too easily manipulated into a variety of different meanings thus making the idea of sustainability certificate as part of IGE little more than marketing.

There was also concern that having a sustainability certificate as part of IGE would dilute the curriculum offerings designed to meet similar objectives. It was suggested that the Environmental Studies minor, proposed Sustainability BS, and an associated opportunity to develop a stand alone Sustainability certificate would be more appropriate than housing something as part of IGE.

Being environmental is a strong part of our legacy already connected with our experience specifically as environmentalists | preservationists | conservationists. It was suggested that sustainability is a new buzz word, just as stewardship was a few years before, and that as a college we should be careful about linking ourselves to any one trend.

Moreover, it was suggested that it is not enough to just talk about sustainability; we would need to be actively practicing what we teach. This would mean taking a critical approach to the three legs of sustainability economic, social, and environmental. The question was raised if taking a position in the curriculum is appropriate. The role of the college academic experience should be to develop in our students the ability to critically analyze and discuss issues not to advocate for a single point of view. As an example, it was suggested that it isn't enough to bring someone like Bill McKibben to campus to talk about an issue, but to also hold a forum for other perspectives or way to address the concerns. The campus should be a forum for respectful, informative debate. Within the co-curriculum students may choose to develop actions based on conclusions they have drawn from those debates, but the curriculum itself should not mandate any one kind of action or point of view from the students.

It was suggested that the First Year Seminar is becoming a forum to house this kind of debate. The overall core theme of FYS could revolve around sustainability topics but the function is to provide students with the opportunity to develop a perspective based on critical listening, reading, and participation in informed debate on a topic. The co-curriculum could then provide opportunities for students to go further and develop action.

What all of the Paul Smith's College programs offers (both through their programs and IGE) to all students is the opportunity to engage in critical discussions that form the foundation for awareness and respect for environmental and sustainability issues.

What is special about Paul Smith's College should be community involvement, green decision making, awareness and respect for the natural world that comes from this foundation. What we have to avoid is the perception of indoctrination or inculcation into one way of thinking about sustainability or any issue. Paul Smith's College should be a forum for democracy, dialog and debate, foster participatory decision making not advocacy for any one issue. This comes from providing a forum for multiple perspectives and developing in our student the process for critical review. In this way sustainability is linked to diversity issues on campus.

The action that may come from this awareness, through opportunities for service learning or other community projects should be a choice for the students in the co-curriculum.

The emphasis in the curriculum should be in engaging dialog the foundation comes in FYS but should be supported through campus activities, seminars, lecture series (such as a Conversations on sustainability series), debate, film series. Other courses that emphasize this kind of debate and dialog should be identified as possible places for reinforcement in the curriculum.

Synthesis of discussion developed by,
Gail Gibson Sheffield and submitted on 4/6/09