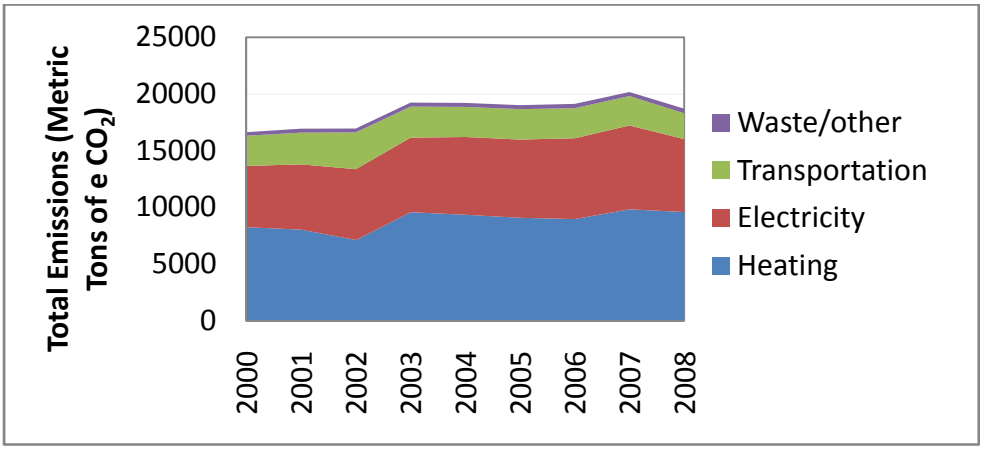
Planning for Climate Neutrality

Interim Report prepared by
St. Lawrence University Climate Commitment Working Group
May 2009

As a signatory to the American College and University Presidents Climate Commitment (ACUPCC), St. Lawrence has agreed to put forth a plan by September 15, 2009 for achieving eventual climate neutrality. Climate neutrality has been defined by the ACUPCC as zero-net greenhouse gas emissions[1]. We report here our recent efforts toward meeting the Presidents Climate Commitment.

Led by the Climate Commitment Working Group, our University's challenge is to develop a plan for the elimination of approximately 19,000 tons of greenhouse gas (GHG) emissions, generated as follows:

- Heating 9,000 tons
- Electricity 6,000 tons
- Transportation 3,000 tons
- Waste and Other 1,000 tons



Organizing Our Efforts

The Climate Commitment Working Group is an extension of the preexisting tripartite Conservation Council with additional members added to ensure broader input from relevant departments and/or employees. With the understanding that the efforts of this committee are important to both the campus and local communities our working group was guided by a select set of principles. The solutions we prescribe will be central in updating the Campus Master Plan and also have impacts on shared resources within the Village and Town of Canton. Given the potential implications of this plan we will communicate clearly and regularly to the campus and local communities and have transparency throughout our work. Knowing that it is easier to mitigate greenhouse gas emissions that are a direct result of our on campus activities we will allocate our greenhouse gas mitigation efforts first to on campus operations, second to off campus operations (e.g. Canaras) and third to the greater North Country community. For the actual mitigation of our greenhouse gas emissions our working group plans four general actions, prioritized in the following order; elimination through behavioral conservation, efficiency through building and operational retrofits, resourcing to non-fossil fuel alternatives, and finally offsetting. While we will

[1] The term 'zero-net greenhouse gas emissions' refers to the fact that some emissions that are a direct result of SLU's activities will not be mitigated (e.g. emissions associated with air travel and study abroad) and need to be displaced by greenhouse gas reducing efforts not directly associated with SLU (e.g. an offset).

always prioritize in the above order it is likely that at any given time there will be individual projects mitigating greenhouse gasses using each of the four general actions.

Our working group created a number of subcommittees to address a combination of the main sources of greenhouse gas emissions, integration of sustainability and climate neutrality into the curriculum and the four general actions we can take to mitigate emissions sources. The reports of those subcommittees to date are as follows:

Behavioral Conservation Subcommittee

While behavioral conservation measures seem to have great potential to reduce emissions, our early analysis reveals this approach to be a complex and therefore uncertain process. The behavior group began by quickly summarizing some of the key findings from the voluminous literature documenting ways to encourage environmentally responsible behavior. Antecedent strategies precede the target behavior, whereas consequent strategies react to it. Of the antecedent strategies (prompts, models, attitude change interventions), the attitude change literature is easily the most complex and a review makes it clear that simple educational campaigns are rarely useful. For instance, a survey we administered to two SLU classes showed poor penetration by the Les Power initiative. On the other hand, prompts (such as the presence of recycling containers and bike racks) and models (other community members who behave in responsible ways and seem the better for it) are often quite powerful. The literature demonstrates that (consequent strategies) rewards, and, less reliably, punishment can create remarkable short-term behavior change, but the effects are usually short-lived. However, feedback is generally regarded as more useful, serving simultaneously as a prompt, an incentive, and a behavioral guide. This review informs our subsequent work.

As discussed further in the transportation section, we see potential for behavioral conservation efforts with this source of greenhouse gases. Members of the behavioral group spent much of their time working on transportation issues to select and revise questions for the employee transportation survey. The survey aims primarily at documenting barriers to alternative forms of transportation that would eliminate or reduce greenhouse gas emissions. Other help for the transportation subcommittee included assessing the amount of travel by sports teams, the outdoor program, and classes.

The subcommittee also reviewed the First Year Student Guide's suggestions for "things to bring" and compared its suggestions to the availability of appropriate technology. There is currently a disparity between these suggestions and opportunities to follow them, for example, the selection of compact fluorescents in the bookstore is minimal and the display of incandescent fixtures is prominent. Given the success of communal drying racks in laundry rooms we also support a plan to sell inexpensive drying racks to incoming students. The group also addressed changing the rule (apparently enforced unevenly) that prevents faculty and staff from (legally) parking their bicycles in their offices. Although there may be fire code concerns (that can and should be addressed), allowing bike storage in offices would be an excellent model for students and encourages biking by faculty and staff who presently fear almost certain theft or damage for bicycles parked in exterior racks for long periods. Also related to building use, a checklist was created for new construction and renovation (which might be supplanted by the LEED guidelines).

Other topics of note are encouraging active conservation programs such as tree planting and integration of GHG discussions in outdoor guide training and Admissions tours. Much of the potential from behavioral conservation relies on investments in energy efficiency, covered separately as "Conservation by Investment Subcommittee." Particularly exciting is a proposal to acquire real time electricity metering devices and software that provide quick, understandable energy consumption feedback to campus.

Yet to be formulated, are a list of behavioral conservation steps, timeline for implementation and estimated tons of greenhouse gases to be mitigated from each action.

Conservation by Investment Subcommittee

An audit of 40 of our smaller, residential and office buildings is now complete. The potential energy conservation measures (ECMs) allow us to project savings in excess of $100,000 per year while eliminating 400 tons of annual GHG emissions at an investment cost of $1.2 million. Through its annual capital plan, the University is attempting to invest $200,000 per year in these projects until their completion, starting with an initial $200,000 of retrofits in summer and fall of 2009.

The University is currently working with an Energy Services Company to determine the depth and breadth of an energy audit of the main campus. This audit will identify and analyze ECMs. These measures will be assessed and prioritized with respect to their dollar savings capability and their greenhouse gas (GHG) emissions reduction capability per investment cost.
The campus energy audit will include some 1.4 million square feet of space with expected ECMs including the following:

- Campus-wide lighting retrofits
- Improvements in the insulating capabilities of building envelopes
- Replacement of inefficient boilers and steam handling equipment
- Investment in metering and energy management technology
- Water conservation
- Solar thermal water heating
- Photovoltaic panels, and
- Possible geothermal applications

A preliminary sampling of our campus leads us to believe that a campus-wide investment in ECMs of $7 to $10 million could produce annual savings of $650,000 to $900,000 per year and a reduction in our annual GHG emissions by 3,000 to 4,000 tons. Analysis of our preliminary data suggests that if we can secure the investment potential of up to $10 million, we can reduce our footprint by 20 to 25% through investment in energy conservation measures. The University expects to select ECMs that will have a very direct and visible payback enabling us to justify borrowing $10 million in the current economic climate.

Transportation Subcommittee

Transportation, which includes employee commuting, fleet vehicles, students travel to study abroad locations and employee business, conference and research travel, is approximately 16% of St. Lawrence University's GHG emissions. Our rural location provides beautiful scenery and quick access to the wild lands but also long drive times to many services and the University itself; data on the impact of students traveling to and from the University each semester are still being collected. Employees commuting to work, sports teams traveling to away games and class field trips accumulate thousands of driving hours, while faculty and staff attending conferences and students studying abroad create thousands of air miles. All of these activities are critical to our mission as a University but we must realize that these miles traveled produce significant greenhouse gasses which we have committed to mitigate.

The Transportation Subcommittee is developing a "behavioral conservation" set of recommendations designed to reduce our transportation-related greenhouse gas emissions through the promotion of active commuting and improvements to our fleet vehicles' efficiency. The group has developed a transportation survey designed to gather data regarding the current commuting habits of faculty and staff. Data from the survey will be used to establish goals (and means) to reduce "drive alone" commuting and to develop

a strategy to encourage “active commuting” at SLU. We are pleased that the University now owns five alternative-fueled/high-efficiency vehicles and we will be working toward a recommended goal for a set percentage of such vehicles in the fleet at some date in our future.

Though transportation does not contribute the huge proportions of GHG emissions attributable to heating and electrical use, it may well be more susceptible to immediate efforts toward conservation through behavioral change. Walking and/or biking versus driving can be a positive, healthy behavioral change and sustainable commuting habits could actually become a positive part of our culture. We would like to think that positive behavioral change in our transportation habits might be more easily attainable and positive gains might provide traction in other behavioral conservation changes down the road.

Another challenge for the Transportation Subcommittee is reducing the GHG emissions from University business travel by St. Lawrence employees. This includes but is not limited to recruitment travel by the admissions and athletics staff, business travel by the advancement office staff, and faculty travel to do research and attend professional conferences. Gathering data on the number of miles traveled and the means of travel in order to estimate GHG emissions is a necessary first step toward developing reduction strategies. However, such efforts are difficult because, while the University's accounting makes it easy to see how much is spent on employee travel, it is much harder to get a complete picture of where employees are going and how they are getting there both of which impact total GHG emissions. Gathering these data is one of the tasks the committee will need to work through in the future.

The recent recession and subsequent financial challenges have caused all travel budgets to be cut by 10%. While this was not done for GHG reductions reasons we see this as an opportunity for the University to explore ways in which to reduce both costs and emissions through more efficient employee travel rather than less travel. It is essential to the interests of the University as a whole that faculty and staff will be able to travel as they have in the past as it is necessary to advance their work. As one example of how we might increase travel efficiency, the committee has recently discussed the idea of setting up a program by which paid University drivers (who might include students seeking to earn additional money) could offer an airport transportation service to SLU employees using the University's hybrid vehicles. Such a program might help the students, save the University money, and reduce GHG emissions.

Alternative Fuels Re-sourcing Subcommittee

The purpose of the alternative fuels subcommittee is to explore the potential roles of biomass, geothermal, wind, and solar applications in reducing the University’s GHG emissions. We have engaged contractors in feasibility studies for two renewable energy options for St. Lawrence. The University is actively studying biomass (wood chip and pellets), steam generation for heating and electricity, and geothermal heating and cooling possibilities for the science complex renovation. We anticipate further investigation of alternative fuel sources to result from our campus wide energy audit, specifically solar thermal, solar photovoltaic and further geothermal options.

The principle prioritizing the four actions to reduce GHG emissions is important to consider in the conversation about alternative fuels re-sourcing. The extent to which energy conservation and building and operational efficiency can reduce GHGs will have a direct impact on the appropriateness, economic feasibility and application size of each of the alternative fuel sources mentioned above.

The University will also need to decide if it should become an energy producer as well as potential partners, possibly from the local community, if the decision is made to produce heat and/or electricity.

Offsets Subcommittee

After our best efforts at mitigating our own GHG emissions through behavioral conservation, investment in building and operational energy efficiencies, and re-sourcing with alternative energy options, there will still be an inevitable limit to the University's GHG emissions reduction. The ACUPCC recognizes the need for indirect means of mitigating campus emissions through activities or financial support of activities reducing GHG emissions separate from the campus environment. These extra campus activities are referred to as offsets. We consider offsets to include the purchase of Renewable Energy Credits (RECs). Offsets and RECs should be aimed at the residual emissions that cannot be mitigated though direct University efforts. Although offsets should never replace direct emissions reductions, the use of offsets does not have to be a sequentially final effort. Regardless of our on campus emission reductions activities we estimate that St. Lawrence will have as much as 2,000 to 3,000 tons of GHGs to mitigate through offsets. An example of such emissions are student travel to study abroad locations as it is unlikely we will find an alternative to the GHG intensive flight to send our students overseas.

As suggested by our principles we are searching for offset opportunities close to campus first. One particular offset activity that we hope to develop is the implementation of energy efficiency retrofits and weatherization for homes in the Canton area. We believe reasonably aggressive improvements to the typical Canton home might cost $6,000 and carry a 14 year average useful life, and reduce GHG emissions by 4 tons per year. Fifty energy efficient homes would therefore cost $300,000 with an annual GHG reduction of 200 tons per year for the fourteen years of useful life. Over that useful life, the $300,000 investment would provide for considerable dollar savings on utilities and the elimination of 2,800 tons of GHG emissions. These estimates are very uncertain but illustrate the kind of analysis that will be required as we begin to investigate and develop our offset opportunities.

Three other local offset opportunities that show some promise are as follows: methane capture or use in energy production on Northern New York farms, reforestation programs on previously non-forested tracts in Northern New York, and financial support of alternative energy opportunities in Northern New York not directly replacing energy on our campus.

Curriculum Subcommittee

As part of our efforts to reach each St. Lawrence student with the principles of sustainability and climate neutrality, the Curriculum Subcommittee has begun to describe the environmental curriculum, both the long standing educational opportunities as well as newer initiatives including the Conservation Biology major and Outdoor Studies program and minor. We have also reviewed and highlighted the high level of student interest and engagement in issues concerning climate, energy, and food, especially through extra-curricular activities, theme cottages and floors, and advocacy. We have reviewed a number of recommendations for other subcommittees to consider. These recommendations include ways to support faculty-student research, revisions to the University's Aims and Objectives and its general education requirements, adding teaching units to existing courses and possibly to other courses, highlighting actions taken via the Green Pages, continuing to support student extra-curricular activities, and holding an annual public educational forum on progress toward climate neutrality.

Next Steps

The Climate Commitment Working Group is responding to an externally set deadline of September 15, 2009 for the completion of the first draft of our Climate Neutrality Action Plan. While most of the committee members will only be in contact via e-mail over the summer months a few members will be continuing to collect and analyze data, work with outside contractors and develop a reasonable timeframe for the complete mitigation of St. Lawrence's GHG emissions. Although we will attempt to

produce an aggressive yet practical plan we realize that there will be many changes during the years of our plan's implementation and thus we must prepare a way for the document to be edited and updated.

We are aware that obtaining the support of the entire campus community including the Board of Trustees will require openness to suggestions, a realistic analysis of our options and periodic communication of our efforts. If you have any questions, comments or suggestions regarding our plan or would like to become part of this critical effort please contact Louise Gava our Coordinator of Sustainability Projects and member of the Climate Commitment Working Group.

St. Lawrence University Climate Commitment Working Group

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