

Centre College

Climate Action Plan

2009

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Appendix 1. The Need for Action

The Climate Change Perspective

In the early 21st century, we find ourselves with an unenviable responsibility to take quick and decisive action. In the past two decades, strong scientific consensus has emerged that the fossil fuel energy sources that have driven the technological and economic advances of the past two centuries are leading to world-wide climate changes. The magnitude of the challenge is now clear and the urgency of action to avoid the worst possible levels of climate change is now evident. Centre has responsibility for significant action to dramatically curb greenhouse gas emissions.

The current best understanding of anthropogenic warming and cooling influences on climate lead to very high confidence that the global average net effect of human activities since 1750 has been one of warming and its rate of increase during the industrial era is very likely to have been unprecedented in more than 10,000 years. [24] Ironically, the factor that “insulates” modern society from weather and climatic disruptions is energy use, precisely the factor responsible for greenhouse gas emissions that are altering future climate.

Human activities - primarily burning fossil fuels and land use change - have led to the increase in atmospheric levels of carbon dioxide from a pre-industrial value of 280 parts per million to 379 parts per million in 2005. The current atmospheric level of CO₂ exceeds by far the natural range over the last 650,000 years (180 to 300ppm). This increase is driving global warming and causing changes in the climate system with potentially devastating effects on social and natural systems. [25]

Carbon dioxide is one of four anthropogenic gases the IPCC recognizes as principle greenhouse gases: carbon dioxide, methane, nitrous oxide, and the halocarbon gases. Each of these has unique spectroscopic properties and atmospheric residence times that range from decades to centuries. For simplicity, the climate impact of each gas is recalculated in terms of equivalent amount of carbon dioxide, CO₂e.

Overall changes in global temperature, though dramatic on a geological time scale, are not immediately obvious in our everyday lives. What has greater significance for individuals and societies are the changes in the regional climate patterns that will result from the increased global atmospheric temperature. Anticipated regional changes include wind patterns, changes in precipitation patterns leading to droughts and periods of heavy precipitation, changes in arctic temperatures and ice [26]. Changes in seasonal temperature and rainfall patterns lead to economic and cultural impacts to agriculture, energy, transportation, and building systems.

In a position paper issued in August, 2008, the Pew Charitable Trusts reviews available information, including IPCC Fourth Assessment Report, and concludes:

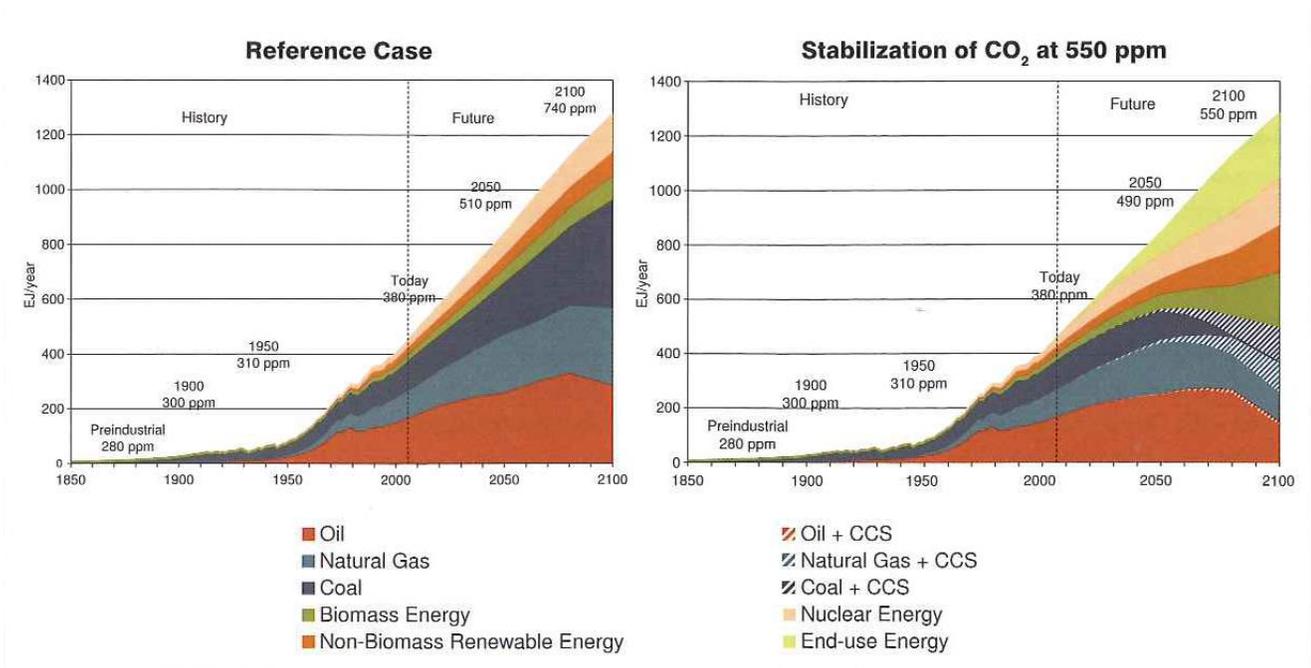
Most of the observed increase in globally averaged temperatures since the mid-20th century is very likely [i.e. greater than 90% certainty] due to the observed increase in anthropogenic greenhouse gas concentrations. Discernable human influences now extend to other aspects of climate, including ocean warming, continental average temperatures, temperature extremes, and wind patterns. [27]

A recent review of anticipated climate change for Kentucky suggests that temperatures in our state may increase by up to 8° F by the end of this century (best case, 5.9 °F). Terry Cook, director of the Kentucky chapter of The Nature Conservancy lists as potential effects, “increased illness and death due to greater summer heat stress, decline in forests' growth and agricultural production, increased disease and insect attacks on the state's forests, fish kills and decreased aquatic species diversity because of declines in dissolved oxygen in streams, lakes and wetlands” [28].

Stabilizing the atmospheric concentration of greenhouse gases is fundamentally different from stabilizing their emissions. Because greenhouse gases all are persistent in the atmosphere, if we immediately stabilized their emissions at today’s levels, the atmospheric concentrations would continue to rise for a century. [29]. In order to avoid the worst forecasts of climate change, our future rates of GHG emissions must be *less than* our current rates.

James Hansen, head of the NASA Goddard Institute for Space Studies, has been an early and vocal advocate for action. In his most recent work, he concludes that long-term atmospheric concentrations exceeding 350 ppm CO₂e will lead to serious economic and social disruption. A number of highly visible figures, including Bill McKibben, Vandana Shiva, and David Suzuki now support a 350 ppm target.

The “sector” approach is an effective way to illustrate the contributions of various sources of CO₂ and possible alternative abatement strategies [30]. Models developed by Battelle Memorial Institute use this approach to show the eventual levels of atmospheric CO₂ that will result if a business-as-usual pattern for energy sources is followed for the coming century. The BAU trend is compared with deployment of new technologies and efficiencies that have potential to reduce carbon emissions sufficiently to yield stabilization of CO₂ at 550 ppm, and still deliver the energy services needed to raise standards of living around the world and power a growing global economy.



impact of actions that can be taken in ten strategy areas to yield stabilization at 550 ppm. The authors assume immediate action to increase end-use energy efficiency, development of nuclear energy, and vigorous pursuit of geological carbon sequestration. [31]

The perspective of energy supply and costs

We have discussed institutional responsibility to mitigate the negative human impacts on global climate. The irony is the actions we must take to mitigate climate change are also the appropriate response to the political economics of energy supply.

The U.S. domestic oil production depends upon a variety of factors including; exploration investment, production costs, international price trends, and government policy. Domestic production has generally fallen from the high of 8-9 bbl/day between late 1960's to mid-1980. Information from the U.S. Energy Information Association suggests that domestic oil production declined from 5.61 bbl/day in 2003 to 4.95 bbl/day in 2008. Anticipated production for 2009 is 5.24 and 2010 is 5.30 bbl/day [32].

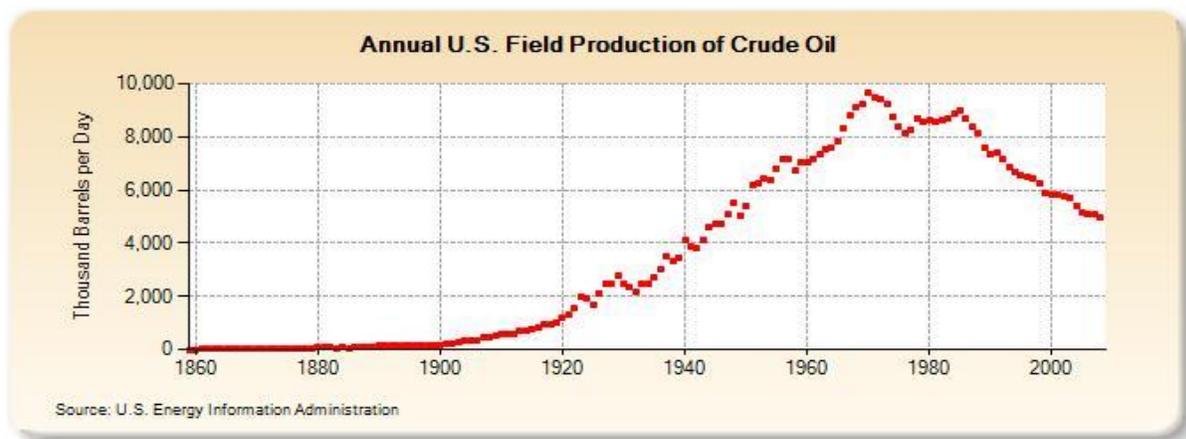


Figure A.2 Domestic Oil Production. Source: U.S. Energy Information Administration [33]

The reliability of sources of oil and natural gas beyond North America are subject to political uncertainties. Many leaders consider our nation's dependence on foreign oil to be a national security issue. New exploration and extraction techniques have the potential to provide additional reserves of oil, but costs of production may increase. In the past several months, there has been positive news about domestic sources of natural gas, the fossil fuel resource with the least greenhouse gas impact. The United States enjoys abundant, but not infinite, coal reserves. Questions arise, particularly for our region, because of the economic and environmental impact of coal extraction. Large scale surface mining techniques, including practices of mountain-top removal and valley-fill, influence the lives and homes of much of central Appalachia.

For Centre College, energy costs represent about 3% of all expenses. Should gas and electricity rates increase, these essential expenses will compete strongly with other segments of the College budget.

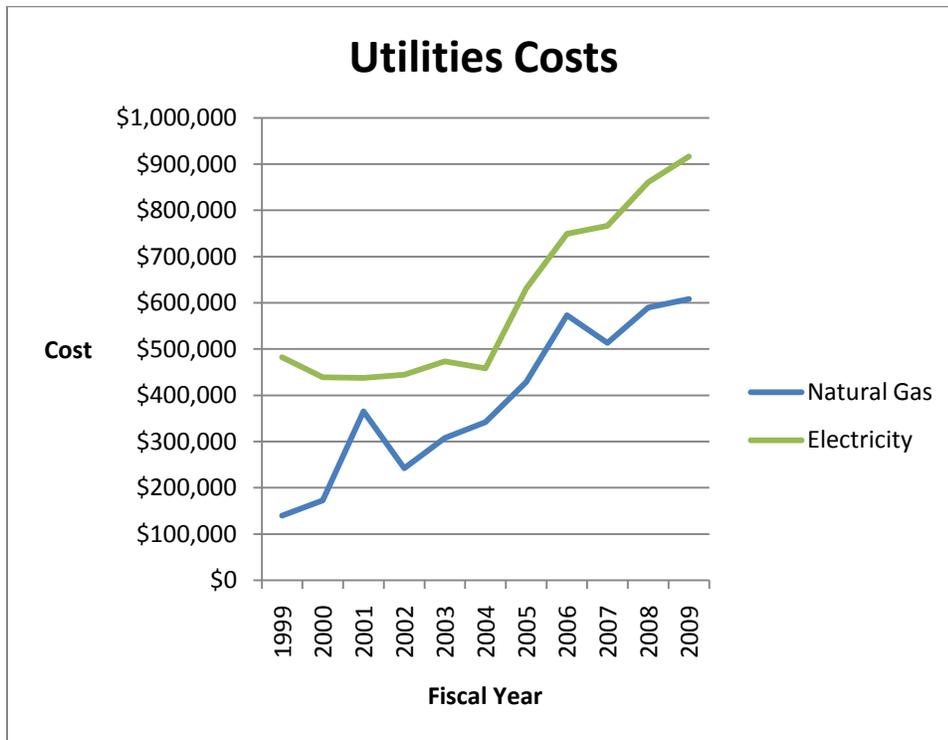


Figure A.3 Utility Costs. Centre’s expenses for electricity and natural gas have increased in recent years. These are actual costs, without adjustment for inflation.

We avoid the controversy surrounding “peak oil” and the speculation about when each of the fossil fuel resources will be depleted and how rapidly supplies will diminish. It is clear however that on a global level, we may be approaching a “perfect storm” of population growth, rising expectations for standard of living, and uncertain supplies and increased costs for energy. How rapidly and in what ways, the developed world responds to these changes has implications for continued prosperity.

We cannot ascribe a timeline to these trends, and certainly we can anticipate technological innovations that minimize the severity of the possible crisis. But within the generational aspect of this plan, costs for fossil fuels will increase, possibly in dramatic fashion. For human societies to be truly sustainable, alternatives to fossil fuel energy supplies must be commercially viable. Improving energy efficiency and incorporating alternative energy will serve to buffer that economic impact.

From the sustainability perspective

For an institution, sustainable operations achieve the goals of the College in ways that advance the social, economic, and environmental justice for all. Quite frankly, this is not a new approach for Centre College. An organization that has thrived for nearly two centuries clearly has demonstrated an ability to meet the needs of the current generation and provide the strength to meet the new opportunities of future generations.

The classic definition of sustainability was provided by the Brundtland Commission Report, *Our Common Future*, in 1987 [34], “Development that meets the needs and aspirations of the present without compromising the ability to meet those of the future.” As understood today, sustainability calls for us to examine the economic, social, and environmental dimensions of any actions. Sustainable organizations value the health of individuals, the working relationships among groups, the attitudes and cohesiveness of organizations.

We do not have to choose between good jobs, vital communities and a healthy environment. When decisions are made holistically, the growth vs. environment dichotomy can be avoided. Advancing technology moderates the depletion of natural capital, but only in societies with access to education and social equity.

Centre attaches great importance to our relationship to the local community. Our institutional success is linked to a viable Danville, Boyle county and central Kentucky as homes of our employees, careers of their spouses, and the schools and neighborhoods for their children.

Appendix 2. FY 2008 GHG Inventory

Summary

The greenhouse gas inventory for FY 07/08 was prepared using the Clean Air/Cool Planet Calculator version 4.0.

By common convention, an institution’s contributions to greenhouse gas emissions are classified according to the level of control the institution has over the activity. **Scope One** emissions are those directly associated with institutional operations. Examples of **Scope One** activities are natural gas consumed in heating buildings and providing domestic hot water. The emissions from cars owned by the College, by equipment used in lawn maintenance, and refrigerant gases that are released are under the direct control of the institution and are also considered **Scope One** emissions. **Scope Two** emissions are indirect emissions that come from purchased energy. We have no control over the means used to generate electrical power purchased from our regional grid. **Scope Three** emissions are those activities over which the institution has little control. Some schools do not include this category in computing their greenhouse gas emissions or only include some activities in this area. Examples of **scope three** emissions are the daily commuting of staff and students, the directly-financed but outsourced travel that is paid for by the college (air and ground travel for business, athletic, and study abroad reasons), and methane emitted during the decomposition of land-filled solid waste.

Through common agreement the embedded emission associated with manufacture of purchased goods (books, furniture, and the buildings themselves) are not considered. Version 4 of CA/CP does not include contributions from dining services.

Input Data on Activities						
Scope One						
Natural Gas	Fleet		Agriculture		Refrigerants	
54,880 MMBTU	Gasoline 8,746 gal	Diesel 150 gal	Fertilizer 500 lbs	% N 34	HFC-134a 315 lbs	HCFC-21 210 lbs
Scope Two						
Electricity 13,390,000 kWh						
Scope Three						
Fac/Staff	Student Programs	Fac/Staff	Student	Solid Waste		
Business Air Travel	Air Travel	Commuting	Commuting			
783, 643 mi	3, 593,995 mi	77,169 gal	4,046 gal	367 tons		

Sources and Limitations of the Data

The overall reliability of the information upon which this inventory is based is satisfactory to support general conclusions. The biggest portion of our GHG impact comes from purchased electricity and natural gas. We were given access to the actual utility bills for each meter for electricity, gas, and water. All of that data, both units (kWh, CCF, gal) were entered into a spreadsheet and totals were calculated. The only likely error source here is data entry.

Fleet mileage could be obtained from travel records in some cases, but was estimated by area managers in other situations. Refrigerant gases used were taken from purchase records. Solid waste was taken from the actual vendor bills.

We used reports from Athletics and Study Abroad programs on all flights and number of students involved.

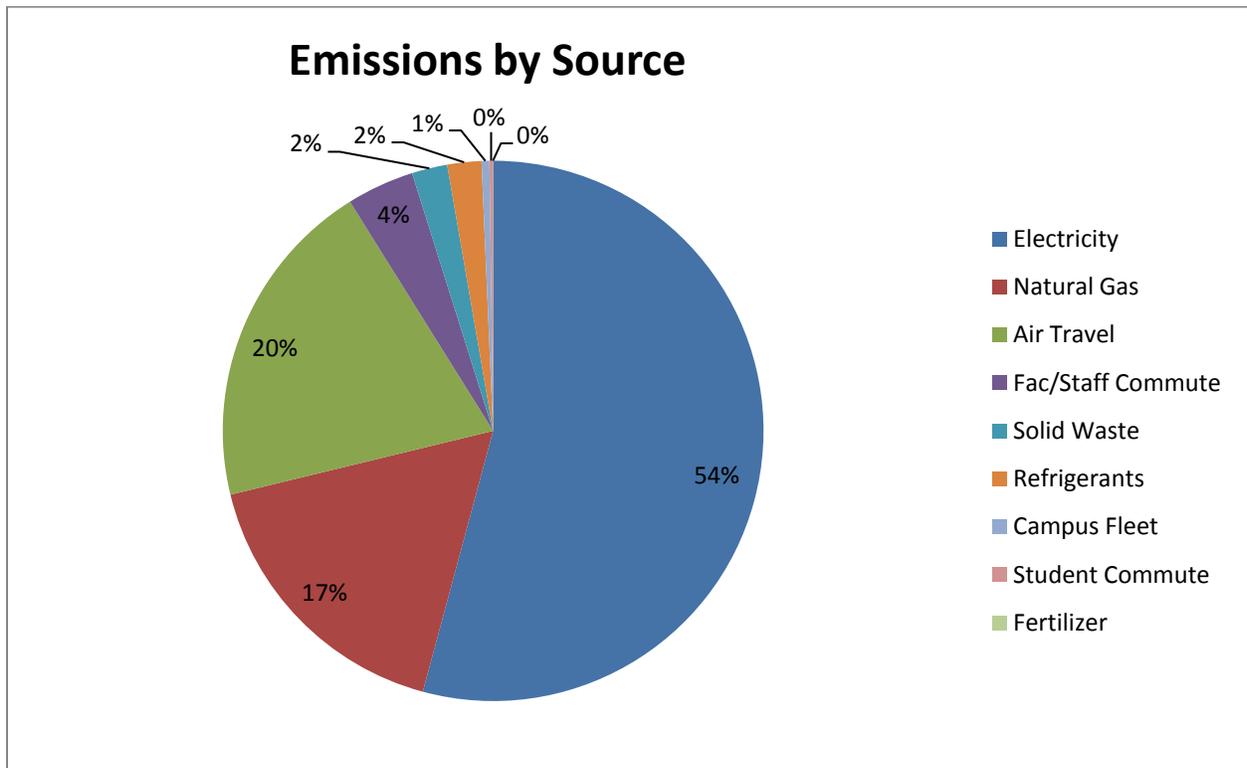
Our data for faculty and staff business travel, both air and auto, is probably the area with greatest uncertainty. In the absence of an accounting system that allows convenient access to these records, we used a survey of all faculty and staff asking them to self-report their business travel.

For the 2009 year we received almost a 25% response rate. This approach is susceptible to under-reporting. It is more likely that someone would forget to include a trip than is likely to report a trip that did not occur.

Employee and student commuting were estimated based on individual addresses. Electronic resources were used for distances, for students 5 trips per week for 32 weeks. For staff, 5 trips per week for 50 weeks. For faculty we assumed 5 trips per week for 34 weeks and 2 trips per week for 18 weeks. No carpooling was assumed.

Emissions Results					
metric tons, carbon dioxide equivalent					
Scope One					
	Natural Gas	Campus Fleet	Agriculture	Refrigerants	Total Scope One
	2,906	80	1	348	3,334
Scope Two					
	Electricity				Total Scope Two
	9,255				9,255
Scope Three					
	Student Commuting	Fac/Staff Commuting	Air Travel	Solid Waste	Total Scope Three
	36	689	3,401	363	3,881
					Total Emissions
					17,079

FY 2008 GHG Inventory	
Total for all college operations	17,070 mtCO ₂ e
Relative to enrollment	14.4 mtCO ₂ e per student
Relative to building space	18.1 mtCO ₂ e per 1000 ft ² of building space



Appendix 3. First Year Report of Advisory Committee, FY 2008

This ad-hoc committee was nominated by President Roush in late May 2007, and began meeting in earnest with the beginning of the fall academic term. We met nine times through the year (Sept 11, Oct 1, Oct 22, Nov 5, Nov 26, Jan 21, Feb 18, Mar 13, and May 5) and enjoyed consistent attendance and high enthusiasm. Our first meeting began with a charge from President Roush and a free-ranging discussion of topics and issues that deserve exploration. Our last meeting concluded with a review of the year’s actions. Comparison of those lists revealed both gratifying progress and important future challenges.

Three Tangible Actions The first target date of the Presidents Climate Commitment called for participating institutions to “create institutional structure to guide development and implementation of the plan” and to initiate at least two tangible actions from a list of seven possible strategies. The committee recommended and the President endorsed that Centre would set three actions:

(1) All new buildings and major renovations will be designed and built to conserve energy and enhance the human environment as evaluated by LEED silver standards or equivalent. Certification through U.S.G.B.C. will be pursued as appropriate,

(2) Energy consumption and life-cycle costs will be considered in purchases of all equipment and appliances. The intention will be to purchase E.P.A. Energy Star® products in all areas for which such ratings exist.

(3) Waste minimization will be promoted and pursued by policy and practice. Specific activities will depend upon technical and economic opportunities.

Current efforts include: a. a vigorous recycling program with collection in all major buildings of paper, cardboard, etc. b. Participation in the waste minimization component of the RecycleMania competition. c. A vigorous program of conservation of paper and other materials through a centralized mail and copying service. d. Incorporation of materials management information into new employee and new student orientation programs. e. Encourage use of re-useable drink containers by providing re-useable mugs to students and price discounts in café and grill.

Campus Recycling Efforts in recycling continue to be strength on our campus. We collect and process eight different waste streams. Our total amount recycled has increased steadily (04/05, 31 tons; 05/06, 46 tons; 06/07, 52 tons). Results to date suggest that we may exceed the 07/08 goal of 55 tons of total recycling. This year [07/08] we participated in the RecycleMania program, and received a letter of congratulations from the Office of Solid Waste of the U.S. Environmental Protection Agency for that effort. During that 10-week period we recycled 18 pounds per person, a rate that ranked in the top third of all participating colleges and universities. For several years, the Student Life Office has organized a move-out day yard sale held in cooperation with the Presbyterian Church. This year [07/08] the proceeds of over \$4,000 were the highest ever. An important part of a recycling program on any college campus is continuing process of engaging each new cohort of entering students. We look to establish a student recycling committee this year to increase awareness of the value of the program.

Student Involvement We are pleased by the excitement our students bring to sustainability issues. The student organization Environmentally Conscious Centre Organization (ECCO) has been particularly active this year. ECCO has met frequently for educational and service programs, has sponsored a green tips table in the library, and has brought speakers to campus to address urban sprawl and mountain-top removal. Members of ECCO have conducted projects on worm composting, bagasse as a Styrofoam alternative, and explored opportunities for green roofs. Dana Kuhnline, a representative of Southern Energy Network visited our campus and spoke with student leaders on Oct 9, 2008. Dana shared background on student green fee initiatives at other schools. Justin Roush and Elizabeth MacNabb attended the Virginia Energy Summit in November at Washington & Lee. They brought back several good ideas for projects at Centre, especially the value of residence hall advocates. Both ECCO and Student Life organized Earth Day events that included planting an overcup oak in front of Sutcliffe and cleanup activities along Clarks Run. There were three student internships sponsored by ACS-Environmental Initiative (Roush, Saad, & Pratt) this year.

Local Food & Alternatives to Styrofoam This is a topic of continuing interest. Individuals and informal groups have explored opportunities for “farm to cafeteria” relationships with local

producers. An ACS student intern (Saad) investigated these questions during fall 2007. From Sodexo's standpoint, concerns include product liability, reliability of local sources, and consumer acceptance. We should continue to explore these opportunities. A cost neutral compostable alternative was identified but has not been consistently adopted.

Curriculum Our Strategic Plan calls for us to establish a sustainability component to Centre's curriculum and to explore extending the Environmental Studies minor to a major. A key provision of the Presidents Climate Commitment sets a goal for incorporation of sustainability into our curriculum (1.c.iii. Within two years . . . actions to make climate neutrality and sustainability a part of the curriculum and other educational experience for all students.) As President Roush shared with us in September, "...the most important impact of this initiative will be how we influence the attitudes and understandings of our graduates." This important challenge must be addressed in AY 08/09.

New Construction The period 2005 through 2011 has and will continue to be one of major investment in campus facilities at Centre. The major renovation and expansions of the College Center project was completed in fall 2007, Pearl Hall in fall 2008, new Student Center fall 2009, new science center and remodeling of Norton Center in 2010. The College Center project (Sutcliffe and Crouse) incorporates many "best practices" for energy conservation and sustainable design. Features of these buildings include: site selection, storm water control, water use reduction, energy performance, construction waste management, recycled materials, low-emitting paints, sealants, and carpets, daylighting, and advanced lighting and ventilation controls. Though LEED certification was not pursued on this project, it is reasonable judgment the standard could have been met. Pearl Hall construction has been highly visible this past year. From the beginning LEED certification has been a major objective for this project. Final evaluation does not occur until months after project completion, but conversations with our consultant, Heapy Engineering, indicate that silver level certification is likely [*Gold certification received spring 2009*]. Partly through the discussions of the PCC committee but primarily through the increasing public awareness arising from the Pearl Hall project, interest in USGBC certification for future buildings has increased on campus. The two advisory committees helping to plan the Student Center and the new science building have included LEED certification as one of the objectives for those buildings. As before, Hastings & Chivetta assures us that best practices incorporates most, if not all, of those features. As reflected in the wording of our tangible actions commitment (. . . as evaluated by LEED silver standards or equivalent. Certification through U.S.G.B.C. will be pursued as appropriate), it remains an open question on our campus whether or not the additional expenses necessary for USGBC certification are justified relative to other important institutional objectives.

Green e Initiative This spring our Student Government led a student initiative for the purchase of Renewable Energy Credits through the E.ON green energy plan. Through this program an 80-year old low-fall dam and generator on the Kentucky River, now named Mother Ann Lee Hydro, will be refurbished to produce an eventual 8.3 million kWh per year. The student initiative specified that each student be assessed \$5 per semester to purchase the REC's. Based on assumptions of enrollment and future energy use, these funds will offset approximately 10% of

Centre's electricity consumption. The measure will be submitted for Board approval in fall 2008. What is remarkable about this action is the support it received from students. The initiative passed with an 82% to 18% approval ratio and the proportion of students voting was the highest in memory. Additionally, a Faculty resolution asked that a faculty/staff donation program be established to support the student green-e initiative. That program is in place and payments will be coordinated with the beginning of the tuition increase (anticipated fall '09).

Public Awareness An objective of our committee's work has been to increase campus awareness of environmental and energy consumption issues. This academic year there have been nine web articles (Aug 23, Sept 20, Nov 21, Dec 6, Dec 13, Jan 24, Feb 7, Feb 28, Apr 17), three concerned PCC, and four concerned recycling efforts. There were three convocations (Nov 1, Feb 28, and Mar 6) that concerned sustainable development and energy issues and one that discussed biological conservation. Eight feature articles and two editorials/letters appeared in the CENTO, two relating to the student green-e initiative, two on the bike program, and two covered dining hall concerns.

Progress toward Green House Gas Inventory A preliminary version of GHG inventory was presented at our May meeting. This preliminary data suggested that our total impact is approximately 11,000 tons of CO₂ equivalents. Of this total 14% is natural gas, 44% is electricity, 33% is transportation, and 3% each for solid waste and refrigerants. Our discussion revealed some uncertainties in some of the data sources. Work continues during summer 2008 to answer those questions. If we are to meet the target dates set by our PCC it is important that we have a reliable GHG inventory by this fall term. Our discussion also clarified the relative importance of scope 1 (direct emissions), scope 2 (indirect emissions from purchased sources) and scope 3 (other indirect emissions). A reliable GHG inventory is essential for the major task of your second year task -- developing an institutional action plan.

Faculty & Staff Business Travel We have found that collection of information on faculty and staff business travel is particularly problematic. With our current General Ledger system and all of our various mechanisms for reimbursement (travel expense report, departmental charge cards, and reimbursement memos from all the special grant accounts) there is simply no central system that collects data on ground and air travel. One approach would be to manually audit as many travel expense reports and credit card receipts as could be found. (There are some potential privacy issues with this approach.) Since that information would be in terms of dollars, assumptions would still be necessary to convert dollars into miles or gallons. Another suggestion is that our current travel expense form could be modified to require individuals report actual ground and air miles. Since these forms are electronic, presumably a method to totalize the data could be developed. A strength of this approach is the potential educational/behavioral impact. The process of recording the information would make all of us aware of the financial and environmental impact of our travel decisions. Anticipated disadvantages include compliance resistance and the point that a significant fraction of travel (credit card and travel supported by FDC) would still not be captured. Finally, we recognized that this is a Scope 3 category. Though none of us are completely satisfied, we essentially tabled this discussion and will not include this category in our first year green house gas inventory. [A survey was performed, 25% response rate]

Appendix 4. Year Two Report of Advisory Committee, FY 2009

For many years, Centre College has been attentive to issues of environmental impact, and energy and resource conservation. Now, our involvement with the American College & University Presidents Climate Commitment serves as a focal point through which many dimensions of the organization can collaborate.

In its institutional operations, Centre College has long been concerned with the challenges of energy and resource conservation and has been an early adopter of innovations to reduce operational costs. Our frequent “best value” rankings are dramatic evidence of a high level of productivity. Simultaneously, our students, staff and faculty have been concerned about environmental issues for many years. They have taken actions as individuals to reduce environmental impacts, have made them part of courses, and have advocated for these important issues. Centre’s leadership in ACUPCC now serves to pull together the institutional and individual perspectives. The PCC advisory committee functions to inform the campus about important sustainability questions, identify opportunities to reduce the environmental impact of the institution, and ultimately, and bring Centre College to a position of climate neutrality. This account is submitted to report the accomplishments and activities of the past year and to articulate challenges and opportunities that members of this committee anticipate for the future.

This Advisory Committee was appointed on an ad hoc basis by President Roush to advise the President on issues relating to sustainability and energy and resource conservation and to lead the College’s participation in the American College and University Presidents Climate Commitment. The committee is composed of staff, faculty, and students and represents most of the major operational functions of the College. (Mike Fabritius, Michael Hamm, Steve Jamison, Anne Lubbers, Elizabeth MacNabb, Scott Messer, Preston Miles (chair), Jennifer Muzyka (winter & spring) Endre Nyerges, Patrick Noltemeyer, Jamison Norwood, ’09, Elizabeth Perkins (fall) Sami Sweis, ’10). We met eight times through the year (Sept 9, Nov 13, Dec 5, Jan 7, Feb 19, Mar 10, May 11, and June 9) and enjoyed consistent attendance and high enthusiasm. Notes were prepared from each meeting and are available electronically <http://web.centre.edu/presidentsclimatecommitment/>

Infrastructure Development Part of the work of guiding Centre toward climate neutrality involves setting up permanent systems that will execute recommendations from the Climate Action Plan and evaluate results from those actions. This year, Scott Messer brought us a long way toward that goal by setting up the SchoolDude utility direct software system. This involved verifying the meter and bill identifiers for every building on campus and setting up the program files to accept data entry. Facilities Management will take responsibility for entering each month’s gas, electric, and water bills into the SchoolDude program. This is approximately 110 electric bills, 105 natural gas bills, and 60 water meter bills each month! The SchoolDude program will allow analysis of utilities use in several ways - by building, by sq ft, and by occupant. In addition to being absolutely essential for preparing the greenhouse gas inventory, the utility direct program will facilitate efficiency analyses and guide our decisions about building renovation. Our group has discussed whether our first priority should be to

retrofit/remodel the least efficient buildings or whether we should first give attention to improving the efficiency of those buildings which use the most energy and resources.

The 2007/2008 greenhouse gas inventory was completed and reported to ACUPCC on Oct 17, 2008, one month beyond the requested target date. Last year we were concerned about obtaining reliable information about staff and faculty business travel. We addressed this challenge by distributing a survey to all faculty and staff. Though there was some confusion among faculty respondents, the 25% response rate we received suggests the information is adequately reliable for this purpose. Other institutions have also reported difficulty collecting business travel data and most have used either a survey approach or a limited sampling of expense reports. One institution (Northern Kentucky University) used student workers to review all expense reports for an entire year and then compiled actual costs and miles traveled. The 07/08 GHG inventory was useful to the committee in its discussion this year, but we were unsuccessful in communicating that information widely across campus.

Work on the 2008/2009 GHG is proceeding on schedule. The 2008/2009 report will be submitted under the newest version of the Clear Air/Cool Planet Campus Carbon Calculator (version 6.0). These documents will be important guidance as we begin development of the institutional climate action plan.

Student Activities The involvement of students as members of the Advisory Committee and the enthusiasm and commitment that students bring to our work, both as individuals and through campus student organizations, continues to be a major source of inspiration and leadership. Bethany Pratt, '10, of the Environmentally Conscious Centre Organization (ECCO) and Conner Egan, '10, from Centre Outdoor Recreation and Education (CORE) jointly organized a field trip and picnic at the Mother Ann Lee hydrostation on October 26. David Brown Kinloch and associates from Soft Energy gave an in-depth tour of the dam and generator facility to about 25 participants.

A waste stream inventory conducted by ECCO in November showed that of the sampled waste; about 40% was bottles and cans, 40% was paper and cardboard, 10% was compostable, and only 10% was trash appropriate for landfill disposal. These results show a lower recycling rate than a study led by Professor Nyerges in 2000 and suggest that we have great potential to increase recycling.

The major ECCO event of the spring was a two-week dormitory energy competition. Jamison Norwood, '09, worked with Sarah Hall in the Student Life Office to promote the event through the Resident Assistants. A Dark-Dodge ball tournament was held shortly after spring break to kick off the competition. The north side dorms (Acheson, Caldwell, Cheek, Evans, and Yerkes) were pitted against the old Quad dorms (Cooper, Ganfield, LaMotte, Tyler, Stevenson, and Vinson). The competition generated considerable attention and enthusiasm, particularly in Yerkes. Cody Buell, '09, provided the technical assistance for the competition as one of the projects in his spring-term internship.

Campus Involvement and Collaboration Our group was consulted by the special committee for Campus Cost Containment appointed to identify cost containment strategies. We met with

Richard Trollinger, V.P. Development, and conveyed suggestions through him. The committee has encouraged adoption of policies on campus that will encourage sustainability. We worked with the Study Abroad committee suggesting an addition to that committee's guidelines for selection of proposals for off-campus programs. We communicated to the Planning and Priorities Committee of the College Council suggestions for energy and resource conservation policies that should be included in our Strategic Plan. Members of the PCC have served on the planning committee for the Campus Center and the Science Center.

Recycling Centre's recycling efforts continue to be an area of success. This year Scott Messer negotiated a partial mixed-stream recycling policy with Danville/Boyle County Solid Waste. This allows us to mix plastics, aluminum and steel cans and save campus man-power. We anticipate a significant increase in tons recycled, but possibly not as much as the 10% annual increases we enjoyed the last few years. We continue to monitor total tonnage of solid waste and anticipate a modest increase. Though we have accomplished a lot in the area of recycling, there remains potential to do much more.

The PCC and ECCO cooperated in purchasing and posting small placards in classrooms that promote material conservation. The placards are 4 in x 3 in with the green rotating arrows and the legend, "Please Recycle".

Though it was one of our original three tangible commitments to the PCC, our committee chose not to participate in the RecycleMania program this year. The concern was the balance between staff time needed to record and report data relative to the informational and educational benefits of the program.

Campus and Community Awareness A major task of the Advisory Committee is to bring awareness of climate and energy issues to the campus community. This effort is aided by articles on the College's website. This year there were eight web articles (7/17, 8/14, 9/25, 10/30, 12/11, 12/18, 4/8, 5/14), and three convocations (FLOW, 10/1; Tom Fitzgerald, 11/19; Sergio Palleroni, 1/14) that addressed issues of sustainability. The PCC committee participated in the community Earth Day event sponsored by Clarks Run Environmental Education Corporation (CREEC) with a booth describing Pearl Hall and Mother Ann Lee. Representatives of the PCC also made presentations to groups both on-campus and around the state (Alumni College program, Oct 26; Energizing Kentucky conference, Lexington, Apr 16; Campus-Community Partnership for Sustainability conference, Bowling Green, Apr 25; campus Managers Institute, May27). The committee thinks that developing a strong WEB presence is an important format to communicate to all stakeholders, especially to prospective students. This should be a web-link that reports accomplishments and connects to all the various activities and programs on campus.

Climate Action Plan The most important task of the committee for this year has been developing a Climate Action Plan (CAP) for the college. The CAP must set out the College's goal for achieving climate neutrality, establish interim targets, and develop a comprehensive plan for achieving those goals. The goals established by the Advisory Committee are:

2020 -- 25% reduction from 07/08 levels

2030 – 50% reduction from 07/08 levels

2040 – Climate neutrality

The plan will serve as both an internal planning document and as a means to communicate our goals and objectives to external stakeholders. The CAP must be sufficiently comprehensive to provide the reasoning behind the recommendations and at the same time be sufficiently brief that it will be widely read. Our intention is to prepare a draft CAP in late summer in order to allow time for internal review and adoption before the ACUPCC target date of Sept 15, 2009. It will be important that the Climate Action Plan be interlaced with the College’s Strategic Plan.

Sustainability Pledge Sami Sweis, ’10, and Patrick Noltemeyer developed and the committee adopted a brief statement that will guide our work. We anticipate transmitting this Sustainability Pledge to the Student Government Association, Faculty and Staff Congresses, and the College Council for their consideration and endorsement. The pledge is below:

Acknowledging Centre College’s Statement of Purpose “to prepare students for lives of learning, leadership, and service,” the College pledges an unwavering commitment to Environmental Sustainability as a requisite of purpose. We recognize fully the fragility of our delicate planet and the effects of irresponsible human behavior and wasteful consumption culminating in dramatic climate shifts, destruction of ecosystems, endangerment and extinction of species, and human loss of life through natural disasters. As an institution of higher learning, we will strive for climate neutrality through environmentally conscious behavior and decisions, and seek to actively fulfill our responsibility to the American College & University Presidents Climate Commitment. The College shall seek new ways to capitalize on the intelligence, wisdom and creativity within our community, and where necessary, seek outside help and resources. To accomplish these goals, the College will continue to prepare our faculty, staff, and students to be Global Stewards, promoting environmental responsibility and awareness through education and practice at Centre and beyond.

Appendix 5. Committee Membership

AY 07/08

Mike Fabritius
Mike Hamm
Steve Jamison
Anne Lubbers
Elizabeth MacNabb
Scott Messer
Preston Miles
Jennifer Muzyka
Patrick Noltemeyer
Endre Nyerges
Justin Roush
Christanna Schuman

AY 08/09

Mike Fabritius
Mike Hamm
Steve Jamison
Anne Lubbers
Elizabeth MacNabb
Scott Messer
Preston Miles
Jennifer Muzyka (spring)
Liz Perkins (fall)
Patrick Noltemeyer
Jamison Norwood
Endre Nyerges
Sami Sweis

AY 09/10

Terry Crowley
Mike Fabritius
Mike Hamm
Laura Hansen (fall)
Steve Jamison
Elizabeth MacNabb
Scott Messer
Preston Miles
Patrick Noltemeyer
Endre Nyerges
Liz Perkins
Bethany Pratt
Sami Sweis (spring)
Brett Werner

Appendix 6. Proposed Projects List

Project	Description	Benefits	Cost
Solar Thermal for Pool	Rooftop solar heat collector	Gas savings	medium
Lighting Retrofits	Replace incandescent and low efficiency fluorescent	Electricity savings	low
Building Commissioning	Review and reset of building systems	Improved operating efficiency	Modest cost, & short payback
Replace Boles Natatorium	Replace with more efficient facility	Electricity and gas savings	high
JVAC Renovation	Insulation & mechanical system upgrades	Natural gas savings	unknown
Occupancy sensors in Crouse & Sutcliffe	Install occupancy sensors in appropriate areas.	Electricity savings	Low cost, short payback
Carnegie HVAC Update	R & R fan coil units or heat pump/forced air	Improved comfort Energy efficiency	medium
Geothermal Breck/Nevin	Geothermal well field on Breck beach	Electricity savings	high
Air-lock doors on Old Centre	Front and rear entrance air locks	Energy efficiency, improved comfort	medium
Photovoltaic charging for golf carts	Install PV panels on shed to supply power to charge batteries for service carts (w battery switch-out)	Alternative energy	unknown
Pool cover	Floating pool cover to reduce heat & water use	Natural gas savings	low
Electronic conferencing	CTL and IT departments provide training in electronic meetings	Reduced travel costs	low
Old Quad	mechanical system upgrades	energy efficiency	unknown
Olin	mechanical system upgrades	energy efficiency	unknown
Sutcliffe/Crouse	mechanical system upgrades	energy efficiency	unknown
North Side Dorms	mechanical system upgrades	energy efficiency	unknown

Appendix 7. Facilities Management Green List

1. We use only green tip fluorescent tubes that do not require recycling because of the low mercury content.
2. We have replaced 85% of our 100, 75, 60, and 40 watt incandescent bulbs with 18 watt compact fluorescent bulbs.
3. Facilities management provides a compact fluorescent bulb to each incoming freshman student to use in their personal lamp.
4. We provide toilet tissue and paper towels that are made from 100% recycled paper and are green certified.
5. We use only high density trash bags made from recycled materials.
6. We are now purchasing new door mats that are made from recycled materials and are green certified.
7. We have replaced all of the exterior 150 watt can lights around the Norton Center with 14 watt LED fixtures.
8. We have replaced all of the 70 watt high pressure sodium bulbs in the bollard lights around Norton Center with 18 watt compact fluorescent bulbs.
9. We have installed low flow aerators on all of the sink faucets on campus.
10. Eighty four 150 watt incandescent can lights in Wiesiger Theater have been replaced with 14 watt LED fixtures.
11. All of our air conditioner chillers have been replaced with more efficient units in the last 12 years.
12. The chiller at the Norton Center was replaced using a turbo compressor that is 20-30% more energy efficient and use no oil.
13. We are replacing over-sized water heaters with smaller more efficient units.
14. We have replaced most of our aerosol cleaning products with concentrated liquids.
15. We have 19 of our large buildings on campus on an energy management system to control the HVAC systems.
16. All buildings that are on the energy management system have the HVAC systems cut back at night and on weekends.
17. We are in the process of replacing every fan coil unit on campus with more efficient units.
18. We are systematically replacing all of the older T-12 fluorescent bulbs and ballast with more efficient T-8 bulbs and electronic ballast.
19. The Ruby Cheek House water heaters were replaced with new on-demand system during recent renovation.
20. Breck Hall conversion to water sourced heat pump allowed elimination of one large gas-fired boiler.
21. Bingham Hall upgrade eliminated one large gas-fired boiler and replaced it with three smaller electric units, only one or two used in most periods.
22. In Norton Center one 400 gallon water heater has been replaced with two 100 gallon units, with one unit alone serving for all but high demand occasions.
23. Norton Center renovation includes replacement of all thermopane windows in Norton Center, installation of a separate HVAC system for office portion of Newlin Hall, motion sensors in public spaces and dual flush toilets.

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