I. Introduction
Since its founding in 1861, Luther College has remained true to its roots while preparing graduates to respond to a changing world. As we look ahead to the next century and beyond, global environmental problems, resource scarcity, and climate change will threaten the health of the planet. They will also present economic and operational challenges for Luther College. Our commitment to relevant and transformative experiences for students pushes us to seek sustainability through greater efficiencies and new policies in operations while preparing graduates with the skills, knowledge, and experience to lead society in a more sustainable direction.

As a college of the church, striving for sustainability is anchored in our call to be good stewards of God’s creation and responsible citizens in the global community. As a strategic imperative, sustainability pushes us to reduce our energy usage, revise consumption patterns, and explore renewable energy production strategies in order to mitigate greenhouse gas emissions.

Sustainability must be more than another program or task to accomplish; it must weave itself into all areas of college life, from curriculum to physical plant to choices made by faculty, staff, and students. By building upon Luther’s decision to be a charter signatory of the American College and University President’s Climate Commitment and the significant progress that has already been made, we must be bold in our efforts and become a leader within the educational community.

This Climate Action Plan is rooted in Luther’s Sesquicentennial Strategic Plan endorsed by the Board of Regents in May 2008. This plan guides all areas of college decision-making, including our efforts related to climate change. “Connecting Sustainability, Stewardship, and Global Citizenship” is one of three strategic imperatives in this plan that includes the following specific recommendations:

• Create a Center for Sustainable Communities to be a catalyst for change locally and regionally.
• Model stewardship and sustainability in all college operations to reduce Luther’s environmental impact and mitigate operational costs.
• Design and implement a campus land use plan that affirms land stewardship, sustainability, and landscape designer Jens Jensen’s original vision for the Luther campus in 1911.
• Reduce Luther’s carbon footprint by 50 percent and develop a plan to achieve carbon neutrality.
• Nurture connection to place in all stakeholders.
• Continue sustainable and strategic enhancements of the plant and facilities with a focus on student learning, energy payback, campus needs, and economic return.

The following pages outline Luther’s specific plans for the next few years under the President’s Climate Commitment. Beginning with greenhouse gas emission inventories, this document lays out Luther’s current plan to achieve the short-term target of reducing the College’s carbon footprint by 50%. Equally important with this bold operational goal are Luther’s commitments to integrate sustainability into the learning experience of every student and to find ways to enhance our work on sustainability related research and community outreach.
II. Greenhouse Gas Inventories
Luther College has calculated its carbon footprint for each year from 2003 through 2009 using the Clean Air, Cool Planet Carbon Calculator. All data is publicly available online through the ACUPCC website. Initial carbon footprint calculations were completed by environmental studies students as part of a class project. Subsequent, more detailed calculations have been completed by student workers under the supervision of Richard Tenneson, Luther’s director of facilities. All calculations are referenced to budgets as a way to ensure accuracy in results.

The following table shows Luther’s total greenhouse gas emissions from 2003 through 2009. These calculations come from the latest version (6.4) of the Clean Air, Cool Planet Carbon Calculator using custom fuel mix data provided by our electrical utility, Alliant Energy.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Emissions (metric tons eCO2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>20,091</td>
</tr>
<tr>
<td>2004</td>
<td>21,384</td>
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<tr>
<td>2005</td>
<td>19,718</td>
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<tr>
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<td>17,631</td>
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<tr>
<td>2008</td>
<td>18,288</td>
</tr>
<tr>
<td>2009</td>
<td>16,858</td>
</tr>
</tbody>
</table>

From a peak of 21,384 metric tons in 2004, Luther has achieved a 21% reduction in total emissions to a low of 16,858 metric tons in fiscal year 2009. Figure 1 shows total emissions by source for the past seven years.

Figure 1: Total Emissions by Source 2003-2009
III. Greenhouse Gas Mitigation Strategies
Luther’s five-year strategic plan includes a goal to reduce the campus carbon footprint by 50 percent. The College has developed an Integrated Renewable Energy and Campus Sustainability Initiative to achieve this strategic goal that relies on efficiency upgrades, renewable energy generation, limited use of local carbon offsets, and energy conservation education. Some elements of this initiative are already in implementation while others are planned for the next few years. What follows is our current plan for achieving the 50% reduction target.

Efficiency Upgrades: In 2004 Luther invested $1.5 million in various energy efficiency measures through a contract with our utility partner, Alliant Energy. This investment has reduced the College's peak emissions by 15.5 percent. Luther has also committed to all major construction projections meeting LEED standards. This includes a new science building that is LEED gold and two major renovations built to LEED standards. Additional efficiency retrofits are planned in the near future.

Renewable Energy Generation:
Wind: Luther plans to install a 1.65 megawatt wind turbine on a highly visible bluff one mile from campus. The turbine will generate 4.935 million kilowatt hours (kWh) of net production per year, which is equivalent to almost 33 percent of Luther's consumption of 14.9 million kWh in fiscal year 2009. The turbine will generate renewable energy certificates that will offset an additional 2,798 MT of greenhouse gas emissions. When these reductions are combined with reduced transmission and distribution losses, the wind turbine project will reduce a total of 3,094 MT of emissions, which represents an additional 14.5 percent reduction from our peak emissions in FY2004. Luther hopes to complete this turbine project by summer 2010.

Biomass: Luther plans to address emissions from campus heating and domestic hot water through installation of a biomass boiler (or similar gasification system) that will work in tandem with Luther's existing heating plant. One 400 horsepower wood fired boiler would supply approximately 59,502 MMBtu of steam heat and displace approximately 62 percent of the college's natural gas consumption. This biomass heating plant would offset another 3,185 MT of greenhouse gas emissions, enabling Luther to reduce its peak campus carbon footprint by an additional 14.2 percent.

Carbon Offsets: Luther’s strategic plan called for limited use of carbon offsets with a clear preference for regional projects with known entities. Luther College has contracted to purchase the entire production of renewable energy certificates (RECs) from a community wind project in St. Ansgar, IA that was recently commissioned in November 2008. The turbine is projected to produce at least 2.5 million kilowatt hours of electricity per year. The related RECs will offset an additional 1,418 MT of greenhouse gas emissions, enabling Luther to reduce its peak campus carbon footprint by an additional 7.4 percent.

Energy Conservation Education: Recognizing that a meaningful and lasting reduction in Luther’s carbon footprint needs to include both technological and behavioral change, Luther has hired a team of consultants to help us create an energy conservation program for the college. The program will aim to nurture a campus-wide culture of conservation. Luther recently hired two full time sustainability coordinators who are helping with this work and secured a $45,000 grant from the Rocky Mountain Institute for its energy conservation campaign. Our goal is to have a revised program in hand by the end of January 2010 so we can begin implementing a comprehensive energy conservation program at Luther. Luther hopes to demonstrate an annual reduction of 1-2% in greenhouse gas emissions as a result of this conservation campaign.
**Additional Strategies:** With over 80% of Luther’s carbon footprint coming from electricity and heating, the above measures are the cornerstones of our strategy for emission reductions. At the same time, however, Luther is committed to taking all available steps to reduce energy usage and emissions, including the following:

- **Fleet vehicles:** The College’s fleet now includes eight hybrid vehicles, seven all electric vehicles, and one compressed natural gas truck. All diesel vehicles, including lawn mowers, run on biodiesel made on campus from waste vegetable oil collected from the college cafeteria. Luther is committed to continuing to shift its fleet to alternative fuel and ultra low emission vehicles.

- **Solar:** While investments in efficiency and wind energy are primary strategies for reducing emissions from electricity, the College commissioned a feasibility study for a small scale solar photovoltaic (PV) system. In addition, Luther is studying solar hot water as an option for heating the college swimming pool in the near future.

- **Carbon sequestration:** Luther College owns approximately 1,000 acres of land, roughly two thirds of which are natural lands in forest, prairie, wetland, and savanna. Luther students and faculty are studying options for maximizing carbon sequestration on college lands and the college is updating land management plans through its Land Use Committee. The College recently placed roughly 130 acres of river bottom land in a permanent conservation easement through the Natural Resources Conservation Service.

- **Waste reduction:** The strategic plan calls for a reduction in solid waste of 25% and Luther is pursuing multiple strategies to meet this goal. The College’s Sustainability Program is researching ways to divert more material from the waste stream through improved recycling and composting, increased education, and waste reduction events.

- **Local foods:** Luther has been working on sustainability in food service for many years with a particular emphasis on local foods. These efforts were formalized with a strategic plan goal that 35% of all food purchases would be local within five years. The College should pass the halfway mark this year with nearly 20% local purchases. Supporting our local food system has many benefits including reduced carbon emissions.

Added together, these mitigation strategies will dramatically reduce Luther’s carbon footprint. Specifically, the investments in energy efficiency (15.5%), biomass energy (14.2%), wind energy (14.5%), and renewable energy certificates (7.4%) will enable Luther College to cut its peak greenhouse gas emissions by more than 50%. Figure 2 shows Luther’s projected emission reductions from these mitigation strategies.

**Carbon Neutrality:** At this time, Luther College has chosen to focus all its efforts on the short term goal of reducing our carbon footprint by 50%. This is an ambitious, yet achievable goal that recognizes the need for immediate action, not simply planning for the distant future. After reaching this short term target, Luther will then look ahead to next steps including further reductions. We have not set a date for carbon neutrality and believe that it is premature for Luther College to do so at this time.
IV. Education
Luther’s Sesquicentennial Strategic Plan includes a recommendation to “make sustainability a part of every student’s learning experience.” As a way of enacting this recommendation, one task group of the Campus Sustainability Council is focused on student learning. This section of the climate action plan outlines ongoing efforts and future goals intended to integrate sustainability and climate neutrality into the curriculum, co-curriculum, and research in as many ways as possible.

Why should sustainability be a part of every student’s learning experience? Sustainability education complements the goals of a liberal arts education and the mission of Luther College in many ways:

- Sustainability education emphasizes an interdisciplinary, systems approach to thinking about problems. It promotes an understanding of social and ecological systems, an awareness of their interdependence, and an appreciation for the complexity of our world.
- Sustainability education demands attention to the importance of place and community while simultaneously increasing students’ awareness of cross-cultural perspectives and global interconnectedness.
- Sustainability education helps students become informed, ethical citizens. The ability to assess empirical claims, engage in political discourse, advocate change, and commit to action leads students toward a life of service.

How will we accomplish the goal of reaching every Luther student with sustainability education? Rather than assuming that one strategy is best or sufficient to meet this goal, Luther is working on...
education for sustainability on many different fronts. The objective is to integrate sustainability into the learning experience of students in multiple places, not simply to add an additional activity, course, or requirement. The following areas of emphasis and accompanying goals help to guide Luther’s work on education for sustainability:

**Faculty Development:** Since the faculty own the curriculum and are the cornerstone of any educational initiative, faculty development opportunities are a key element. Luther will build upon current efforts including the Oneota Project with the goal of reaching at least 1/3 of the full time faculty and at least one faculty member in every academic department with an on-campus workshop or off-campus conference on sustainability education.

**Existing Curriculum:** Education for sustainability must be seen as a way to enhance and improve, not supplant, Luther’s existing liberal arts curriculum. Thus we must seek all available avenues to integrate sustainability into the curriculum. A survey in Spring 2009 found that faculty listed sustainability as “extremely important” or “very important” in 33 courses. Within two years, the College seeks to double the number of courses with this level of sustainability coverage. Specific opportunities that should be explored include:

- Promote sustainability education in the first year curriculum, especially Paideia I
- Expand sustainability related offerings in Paideia II
- Create more opportunities for sustainability education in the January term
- Work with the Academic Planning Committee to investigate the role of sustainability within Luther’s general education requirements, for example a sustainability perspective requirement

**Sustainability Major or Minor:** While always remaining true to our liberal arts core, Luther must always be open to new opportunities for dedicated courses of study in emerging areas. Led by the Environmental Studies Steering Committee, the College will explore the feasibility of a formal course of study in sustainability, including the options of a concentration in sustainability within the environmental studies major or a minor in sustainability.

**Co-Curricular Opportunities:** Luther must constantly seek to increase opportunities for student involvement in sustainability projects, activities and events on campus and in the larger community. Specifically, Luther should initiate or continue the following projects:

- Work with Student Life to enhance sustainability related programming including new student orientation
- Establish a sustainable living house where student residents are committed to outreach, research, or service projects related to sustainability
- Implement a campus sustainability fund to financially support student projects and activities
- Establish a “clearing house” that connects faculty and staff doing sustainability work with students who are interested in assisting that work
- Increase the annual number of work study positions related to sustainability
- Create an “eco-reps” program to provide targeted sustainability programming in all residence halls

**Connection to Place:** Since commitment to global issues such as climate change is usually grounded in connection to particular places, Luther is working to enhance opportunities for outdoor recreation and ecological restoration. An immersion program for incoming students has seen steady growth and provides a foundation for more outdoor programming. In addition, Luther has created a land intern program and is working to enhance trails and student engagement with Luther’s natural lands.
Regional Leadership: In addition to our work on education for sustainability on our campus, Luther College is committed to working with other schools and organizations on education for sustainability initiatives. Luther faculty must continue current efforts and look for new opportunities to take leadership roles in working on curriculum initiatives with organizations including the Upper Midwest Association for Campus Sustainability (UMACS), the Associated Colleges of the Midwest (ACM), and the Association for the Advancement of Sustainability in Higher Education (AASHE). Luther must also take a lead in working with its sister colleges within the ELCA to identify and build upon the special opportunities that exist within colleges of the church to educate all students about creation care and sustainability.

V. Research
As a residential liberal arts college, Luther places its primary emphasis on teaching, not research. Thus climate change and sustainability research has not been a primary emphasis in our climate action planning. We do, however, place significant emphasis on involving undergraduates in research and must work to increase opportunities for student and faculty research related to sustainability. What follows are several ways Luther College will promote more research related to sustainability and climate change:

Grants: The College must use internal and external resources to increase support for sustainability research. Specifically, Luther should support at least two summer research projects related to environmental sustainability, as was done in the past. Past research projects have contributed to at least two books and multiple articles, posters, and scholarly presentations. Luther will also aggressively seek external grants to support faculty pursuing research in this area.

Faculty Development: In addition to promoting greater integration of sustainability within the curriculum, faculty development should also stimulate interest in new research opportunities. For example, The Oneota Project, a summer faculty development program focused on place and sustainability, should serve as a catalyst for promoting sustainability research as well as new approaches to teaching.

Environmental Studies: More than 20 faculty from across the disciplines are affiliated with Luther’s interdisciplinary environmental studies program. Many of these faculty are actively engaged in research related to climate change and sustainability. The College will continue to investigate ways to encourage and support research in environmental studies, including following through on plans to fund an endowed chair in environmental studies.

Center for Sustainable Communities: This Center will promote opportunities for faculty in business, political science, economics, and other disciplines to engage in research focused on fostering a move toward sustainability within our region. The Center will nurture partnerships between students and faculty on campus and organizations in the region to encourage applied sustainability research with direct relevance to our region.

Natural Lands: Luther’s 1,000 acre campus includes hundreds of acres of natural lands that provide a plethora of research opportunities for students and faculty in biology, environmental studies, and other disciplines. The College recently placed 130 acres of floodplain land along the Upper Iowa River into a permanent conservation easement. This move not only preserves this key habitat but also provides unique opportunities for research on ecological restoration and carbon sequestration.
VI. Outreach
Luther College has long been committed to community outreach and education on issues related to sustainability and climate change. The College hosts lectures and conferences open to the community as well as working with the city, county, and local organizations on projects. More specifically the college will expand its community outreach in the following ways:

Center for Sustainable Communities: As the centerpiece of its community outreach work, Luther College is working to establish a Center for Sustainable Communities to catalyze change and be an educational resource for institutions and individuals in our region. A systems approach to sustainable community development will guide the creation of specific programs within the Center to focus on important elements of a just and sustainable community. Each program – renewable energy, sustainable food systems, environmental education, and sustainable business and entrepreneurship – will integrate into a larger whole. Strategic partnerships with local businesses, schools, churches, and community groups will be crucial to the work of the Center, and all programs will make extensive use of Luther student interns in order to prepare young people to be leaders in creating sustainable communities.

Environmental Outreach: Luther has an active Environmental Outreach program that conducts year-round programming for pre-K through middle school students. Roughly 500 young people are reached each year through these programs that also provide transformative experiences for the Luther students who do the teaching. The college is looking for ways to expand its Environmental Outreach programs through strategic partnerships and new programs.

Greening of the Churches: Coordinated through Luther’s Sense of Vocation Program, Luther conducted a Greening of the Churches conference and is planning another. Luther has also developed a student internship program that places students in regional congregations to help with the integration of sustainability into each parish.

Community Collaborations: Luther will continue to be an active partner in sustainability events for the community. Recent examples include a regional K-12 Farm to School conference, the weekend sustainable lifestyles Dig IN event, and an upcoming sustainability film festival.

VII. Conclusion
Luther College has a deep and lasting commitment to sustainability. This document has attempted to lay out some of the ways in which the College is meeting this commitment and plans to do more in the near future. Our goal is to integrate sustainability into all areas of campus life and to make it a central organizing principle for Luther College. While the specific initiatives outlined in this document represent our current plans, we will constantly seek new ways to reduce carbon emissions, increase opportunities for sustainability education, model stewardship and sustainability in college operations, and be a catalyst for change within our region. By achieving these goals, Luther College will improve the education of our students while also doing our part to address the challenges of climate change.