

CONCORDIA'S JOURNEY TO A SUSTAINABLE FUTURE

CONCORDIA COLLEGE'S CLIMATE ACTION PLAN

March 30, 2023



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President's Office

March 30th, 2023

When Concordia College signed the [Integrated Climate Commitment](#) in 2017, our decision made formal the work of faculty, staff, and students across decades of devotion to learning and action for the sake of environmental health. When the college community adopted [Concordia Leads: The Plan for 2030](#) in May of 2019, we affirmed that commitment in the plan's third goal to foster the "wholeness and health of the community," exercising "bold leadership in responding to climate change, ecological decline, and environmental justice," with a pledge to "develop and implement a climate action plan." Here it is!

Journey to a Sustainable Future: The Concordia College Climate Action Plan is the work of students, faculty, and staff who serve on the President's Sustainability Council, chaired by Professor Ken Foster. Within the Council, we owe particular thanks for an extended study on achieving carbon neutrality led by Facilities Director Dallas Fossum and for overall coordination of the document by Sustainability Coordinator Gabrielle Lommel. Others from across campus contributed as well. The college cabinet reviewed the action plan in the fall of 2022 and affirmed it in January of 2023. Implementation begins with a campus launch event on March 30.

I take great pride and pleasure in the imagination, thoroughness, and dedication of my colleagues who have created this plan. This is heart, mind, and soul work. There is no more pressing global need than addressing the reality of climate change; there is no virtue, ancient or contemporary, higher than the love that leads us to care for all creation. It is a labor both urgent and joyful, a labor in full accord with liberal education's purpose of preparing us for responsible citizenship and with the call across faith traditions to love our neighbor as we love ourselves.

A handwritten signature in black ink, appearing to read "William Craft".

William Craft
President

COMPELLED TO ACT: OUR RESPONSIBILITY AMIDST THE CLIMATE CRISIS

"We learn, we lead, for the sake of the world. Rooted in the freedom of God's love and grace, we will educate resourceful 21st century learners to become accomplished professionals, courageous citizens, and transformational leaders who build a world more joyful and more just."

Concordia Leads: The Plan for 2030

"Most fundamentally, our concern for sustainability stems from the simple yet profound observation that the earth is our home. It arises from the conviction that we have a sacred duty to protect the earth's vitality, diversity, and beauty. In so doing, we work for the well-being of all of humanity, for the good of people living now as well as future generations."

Concordia College's Vision for Sustainability (2012)

Building on its longstanding strengths, Concordia is refashioning the educational experience it offers so that it may best meet the needs of today's students and our contemporary world. We want to enable our students to become accomplished professionals, but we also aim to equip them to make their mark on the world as courageous citizens and transformational leaders. Concordia has always focused on sending graduates out "to influence the affairs of the world." From the "Becoming Responsibly Engaged in the World" (BREW) core curriculum to the Pivotal Experience in Applied Knowledge (PEAK) requirement, the college has consistently tied the education it provides with its responsibility to make a positive difference in the world. Indeed, the new core curriculum has "engaged citizenship" as its organizing principle. "We learn, we lead, for the sake of the world."

What is this "world" that we care so much about? It's the world of people, to be sure – of human beings who often love each other, but who also struggle to live together peacefully and productively. This world needs dedicated, skilled, and compassionate people who use their talents to help "build a world more joyful and just."

Yet this "world" is also the Earth – the water, the soil, the air, and the complex abundance of life on this round ball moving through space. The Earth is our home. Our very lives depend on the Earth, on the health of its biological and physical systems. And the Earth's vitality, diversity, and beauty inspire us. We love our Earth, and we wish to protect it.

The health of the Earth and the well-being of people are intimately connected, intertwined. Thus our dual calling: to work to improve how people relate to each other while also working to improve how people relate to the Earth – and the realization that these two tasks are inseparable. With this in mind, since 2006 Concordia has embraced sustainability as a core value and initiative. The 2012 Concordia College Vision for Sustainability set out the college's understanding of sustainability:

"The challenge facing humanity is that of learning to live in ways that preserve the ecological integrity of the earth, enable all people to live in dignity, and facilitate the creation of just societies. Our challenge is to ensure that the ecological systems on which we depend remain healthy even as we seek to thrive economically and in community."

This is a vision based fundamentally on hope and a sense that we now have the opportunity to rethink current practices and to build a better world for ourselves, other people, and future generations.”

Concordia College’s Vision for Sustainability (2012)

The acceleration of ecological degradation, the increasing urgency of the climate crisis, and the connections between these trends and various inequities and injustices all call on Concordia to respond with boldness and creativity. As climate change and ecological degradation come to define the 21st century world, the college must equip its students – and staff and faculty – to wrestle with these realities and to be part of the historic effort to stabilize the climate and ensure the enduring health of the Earth, so that human beings can thrive into the future.

Justice-centered action is called for, both by the younger generations – who have the most to lose from inaction – and by the ethical commitments Concordia holds as a college of the Evangelical Lutheran Church in America. The ELCA social statement “Caring for Creation: Vision, Hope, and Justice,” calls on us to act as stewards of the Earth, acknowledging our interdependence with all living creatures and honoring God’s creation. As Presiding Bishop Elizabeth A. Eaton wrote in her 2018 Earth Day Statement, “as members of the ELCA, we share a deep love for all of God’s creation and a profound responsibility for it.” Concordia also draws inspiration from the work of other faith communities, such as the powerful *Laudato Si’* encyclical of Pope Francis on “Care for Our Common Home.”

In 2017, Concordia formalized its intention to act on climate change by signing the Climate Commitment, joining the national Climate Leadership Network run by the organization Second Nature. By signing, Concordia pledged to respond to climate change by doing the following:



Continually working to reduce carbon emissions – eventually reaching carbon neutrality.



Integrating climate change into the curriculum.



Working with community partners to increase the ability to manage changes generated by climate change – to become a more resilient college in a more resilient community.

Now, in the year 2023, Concordia is launching this comprehensive response to the crisis of climate change and ecological degradation. We do this with joy and with excitement at the opportunities that lie ahead. Yes, in recent years, the crisis has only deepened. Making progress will not be easy. Yet our commitment to act flows naturally from our educational mission and our status as a responsible social institution. As such, following through on the commitment will strengthen the college, benefit our neighbors, and make a positive impact on the world.

OUR VALUES

Our journey to sustainability will be grounded in a set of values that reflect Concordia's overall vision for the future. Everything in this plan, and our pursuit of the goals set out for the college, must always embody and reflect these values.

Education-Centered

Dedicated first and foremost to our core mission of providing an outstanding educational experience for students.

Equity-Minded

Ensuring that equity considerations are at the center of the work.

Action-Oriented

Focused on action and continuous improvement.

Adaptive and Flexible

Ready and willing to change tack and respond to new challenges and opportunities.

Integrative

Supportive of and integrated with other college goals and initiatives.

Courageous

Willing to embrace stretch goals and to be consistently aspirational within the constraints imposed by financial realities.

Community-Embedded

Working in collaboration with community partners to achieve progress for Moorhead and our region.

Place-based

Cultivating a deep attachment to the land, river, and ecological communities of our local bioregion.

Faithful

Devoted to fulfilling our sacred calling to serve God through wise stewardship of our earthly inheritance and the pursuit of justice.

A LIVING DOCUMENT

Although this document is Concordia's Climate Action Plan, it is designed to launch the journey rather than to set out in detail the path to carbon neutrality, community resilience, and high-impact climate education. It is conceived as a living document, one that will need to be re-evaluated and updated periodically.

Characteristics of our approach:

- The plan, the journey, is divided into stages.
- Each successive stage is longer than the previous one.
- Each successive stage has less detail about what we will do.
- Every three years, a thorough re-evaluation of the plan will take place.
- The re-evaluation will result in the addition of detail to the next stage, possible introduction of new stages, and any necessary revisions to any aspect of the plan.

Concordia's progress in achieving the goals set out in this plan will be dependent not only on the college's internal efforts and resources, but also on external developments. Government policies, technological advancements, and changes in the business and economic environment will all affect Concordia's pursuit of its climate and resilience goals. A periodic re-evaluation of the plan will enable the college to respond to changes and opportunities, proceeding on the journey in the most effective and expeditious manner possible.



FOCUS AREAS & GOALS

Focus Area	Goals
Carbon Emissions Reduction <u>Long-Term Target:</u> Achieve Carbon Neutrality by 2050	<p><u>Goal 1:</u> Encourage carbon reducing behaviors on campus.</p> <p><u>Goal 2:</u> Implement Energy Conservation Measures (ECMs).</p> <p><u>Goal 3:</u> Transition to renewable energy sources for heating and cooling.</p> <p><u>Goal 4:</u> Reduce carbon emissions from transportation.</p>
Resilience and Ecological Health	<p><u>Goal 1:</u> Forge collaborative partnerships with organizations in Fargo-Moorhead, facilitating community-wide work to increase resilience and ecological health.</p> <p><u>Goal 2:</u> Increase understanding of the connections among climate change, resilience, ecological health, and social justice.</p> <p><u>Goal 3:</u> Promote equity on campus and in the local community.</p> <p><u>Goal 4:</u> Create an ecologically healthy and diverse natural environment that supports human well-being.</p>
Climate, Resilience, and Sustainability Education	<p><u>Goal 1:</u> Ensure that all students increase their understanding of climate change, resilience, and sustainability, with a strong focus on equity and justice issues.</p> <p><u>Goal 2:</u> Equip students with the knowledge, tools, and skills needed to support and lead climate action in the community and in their life beyond Concordia.</p> <p><u>Goal 3:</u> Support the Environmental and Sustainability Studies (ESS) program.</p>
Finance	<p><u>Goal 1:</u> Build a plan for financing and funding carbon reduction actions.</p> <p><u>Goal 2:</u> Increase fundraising opportunities for sustainability.</p> <p><u>Goal 3:</u> Determine how best to ensure that the college's financial decisions support the goals of the Climate Action Plan.</p>

STRATEGIES

This table lays out the strategies we will pursue to achieve our goals. It will be updated every 3 years following the re-evaluation of this Climate Action Plan. This is why many action items do not go past 2025, the first stage of our journey.

	STRATEGY	LEAD	TIMEFRAME
CARBON EMISSIONS REDUCTION			
GOAL 1: ENCOURAGE CARBON REDUCING BEHAVIORS ON CAMPUS.			
C1.1	Support student organizing and action in support of carbon reduction.	SGA; Sustainability; URSCA	2023-2025
C1.2	Pursue a publicity and educational campaign around the goal of carbon neutrality.	Communications & Marketing; Sustainability	2023-2025
C1.3	Establish a behavior and culture change faculty-student research and action program.	URSCA; Sustainability	2023-2025
C1.4	Strengthen and broaden the reach of the Green Office program, with a specific focus on carbon reduction.	Sustainability	2023-2025
C1.5	Promote carbon-reducing behavior in residence halls through the EcoReps program.	Residence Life; Sustainability	2023-2025
C1.6	Propose and enact policies that promote carbon reducing behavior.	PSC	2023-2025
GOAL 2: IMPLEMENT ENERGY CONSERVATION MEASURES (ECMs).			
C2.1	Complete thermostat and lighting control upgrades.	Facilities Management	2023-2030
C2.2	Complete roof replacement projects as funding allows.	Facilities Management	2023-2050
C2.3	Complete window upgrades as repairs are needed and funding allows.	Facilities Management	2025-2050
GOAL 3: TRANSITION TO RENEWABLE ENERGY SOURCES FOR HEATING AND COOLING.			
C3.1	Work with community partners to forge pathways to greater use of renewable energy.	PSC; Facilities Management;	2023-2030

		Community Engagement	
C3.2	Support and advocate for local wind, solar, and geothermal installations and for policy to support renewable energy development.	PSC; Facilities Management; President	2023-2030
C3.3	Evaluate and decide whether a transition to geothermal is feasible.	Facilities Management; Sustainability	2025-2026
C3.4	Possible complete transition to geothermal energy.	Facilities Management; Sustainability	2027-2050
GOAL 4: REDUCE CARBON EMISSIONS FROM TRANSPORTATION.			
C4.1	Develop a set of travel policies to mitigate the impact of air travel, including possible use of carbon offsets.	Global Learning; Sustainability; PSC	2023-2025
C4.2	Educate the campus community on the carbon impacts of air travel.	Global Learning; Sustainability	2023-2025
C4.3	Implement travel policies to mitigate the impact of air travel.	PSC; Global Learning	2025-2030
C4.4	Transition gas and diesel vehicles to electric and install EV chargers on campus.	Facilities Management	2025-2035
RESILIENCE AND ECOLOGICAL HEALTH			
GOAL 1: Forge collaborative partnerships with organizations in Fargo-Moorhead, facilitating community-wide work to increase resilience and ecological health (Moorhead Community Resilience Task Force priority).			
R1.1	Continue to play a leading role in Moorhead in efforts to promote collaboration to achieve shared goals.	Community Engagement; President	2023-2030
R1.2	Strengthen or develop strategic partnerships between specific Concordia units and community partners.	Community Engagement; Career Center; Advancement	2023-2030
GOAL 2: Increase understanding of the connections among climate change, resilience, ecological health, and equity (Moorhead Community Resilience Task Force area of interest).			
R2.1	Curate a series of workshops and other events open to the campus and greater Fargo-Moorhead community.	PSC; Community Engagement; Sustainability;	2023-2030

		Diversity; Academic Departments		
R2.2	Pursue the strategies in the education section.	See below	See below	
GOAL 3: Promote equity on campus and in the local community (Moorhead Community Resilience Task Force priority).				
R3.1	Increase accessibility to campus and community basic needs resources to promote community resilience and collegiate success among low-income and minoritized students.	SDCL; Global Learning	2023-2026	
R3.2	Promote equitable student success by developing appropriate interventions to address discrepancies in retention and graduation rates.	Academic Affairs; SDCL	2023-2026	
R3.3	Encourage all units of the college and individual faculty/staff members to use an equity lens to review and adjust policies and practices to reduce systemic barriers.	Cabinet; Office of Diversity; Diversity Council	2023-2026	
R3.4	Collaborate with community partners to address inequities experienced by youth in our region while providing learning opportunities for our students.	Community Engagement	2023-2026	
GOAL 4: Create an ecologically healthy and diverse natural environment that supports human well-being (Moorhead Community Resilience Task Force priority).				
R4.1	Contribute to work by the City of Moorhead and others in this area, serving as an early implementer of initiatives in the city's comprehensive plan.	Facilities Management; Sustainability; ESS	2023-2025	
R4.2	Increase the number and size of eco-friendly plantings on campus.	PSC; Facilities Management	2023-2030	
CLIMATE, RESILIENCE, AND SUSTAINABILITY EDUCATION				
GOAL 1: Ensure that all students increase their understanding of climate change, resilience, and sustainability, with a strong focus on equity and justice issues.				
E1.1	Promote the inclusion of sustainability coursework in the core curriculum.	PSC	2023-2025	
E1.2	Provide faculty development opportunities on climate change and sustainability.	PSC; Sustainability	2023-2025	

E1.3	Encourage all departments and programs to include climate change in departmental/program learning outcomes.	PSC	2023-2025
E1.4	Create and regularly administer a climate literacy survey to use as an assessment for climate and sustainability education across the curriculum.	Sustainability	2023-2030
GOAL 2: Equip students with the knowledge, tools, and skills needed to support and lead climate action in the community and in their life beyond Concordia.			
E2.1	Develop and implement a “sustainability and community engagement program.”	Community Engagement	2023-2025
E2.2	Develop programming designed to enable students, faculty, and staff to move from anxiety about climate change to empowering actions to address climate change.	PSC; ESS	2023-2025
E2.3	Create and support student work and internship positions that support this goal.	Sustainability; Office of Student Engagement; ESS	2023-2025
E2.4	Support academic and co-curricular leadership and learning opportunities for students.	PSC; Sustainability; Office of Student Engagement; ESS	2023-2030
E2.5	Use actions taken in support of carbon reduction, resilience, and ecological health to create learning experiences for students.	PSC; Sustainability; Facilities; Community Engagement	2023-2030
GOAL 3: Support the Environmental and Sustainability Studies (ESS) Program.			
E3.1	Support ESS programming that equips students to play leadership roles in addressing climate change and sustainability challenges.	Sustainability; ESS	2023-2025
E3.2	Increase promotion of the ESS program to prospective and admitted students.	Enrollment; Sustainability; ESS	2023-2025
FINANCE			
GOAL 1: Build a plan for financing and funding carbon reduction actions.			
F1.1	Research financing options, such as climate bonds, for larger projects that will reduce carbon.	PSC; Finance	2023-2025
F1.3	Explore with President and Board of Regents the potential for Board-directed funding.	Sustainability; President's office	2023-2025
GOAL 2: Increase fundraising opportunities for sustainability.			

F2.1	Determine a method for including climate action plan goals in the Comprehensive Campaign Feasibility Study.	Sustainability; PSC; Advancement	2023-2024
F2.2	Seek grant funding for funding carbon-reduction projects.	PSC; Foundation Relations and Research Grants	2023-2025
F2.3	Develop and re-launch the Green Revolving Fund.	Sustainability; PSC; Advancement; Facilities Management	2023-2025
GOAL 3: Determine how best to ensure that the college's financial decisions support the goals of the Climate Action Plan.			
F3.1	Seek to incorporate climate and environmental sustainability considerations into all financial decisions.	Sustainability; Finance	2023-2030
F3.2	Support faculty and student projects that investigate connections between financial decisions and CAP goals.	Sustainability; PSC	2023-2030

TARGETS

To facilitate action and create accountability, a target will be established for each goal and strategy. Targets will set out specific outcomes that should be achieved by a specific date.

In order to ensure step-by step progress towards carbon neutrality, targets will also be set for the overall reduction in carbon emissions to be achieved by 2025 and 2030 (and, later, for future dates).

Targets and specific actions to be taken to implement the strategies set out in this Climate Action Plan will be established within three months after the official adoption of the plan by the college.

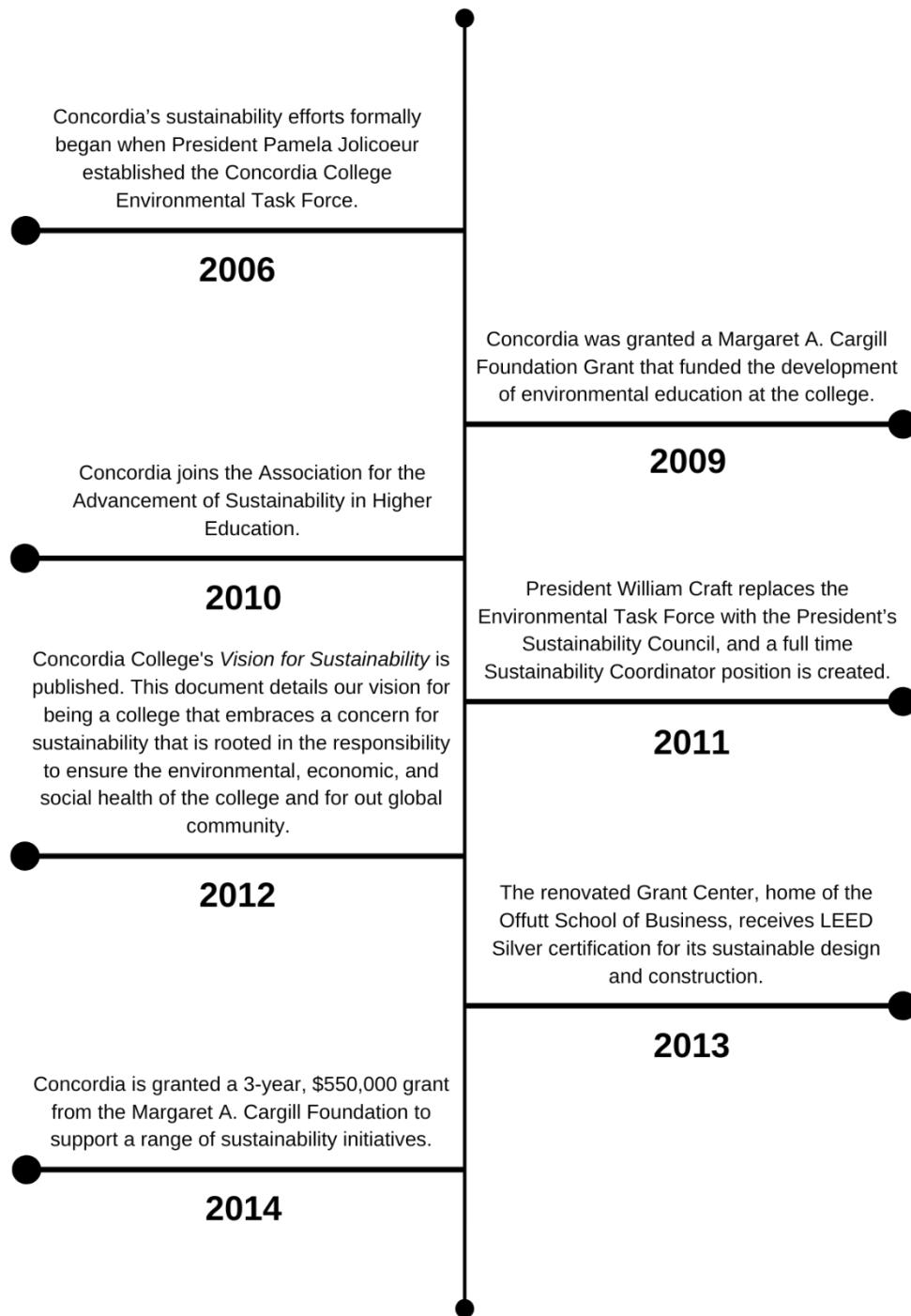
STAGES OF THE JOURNEY

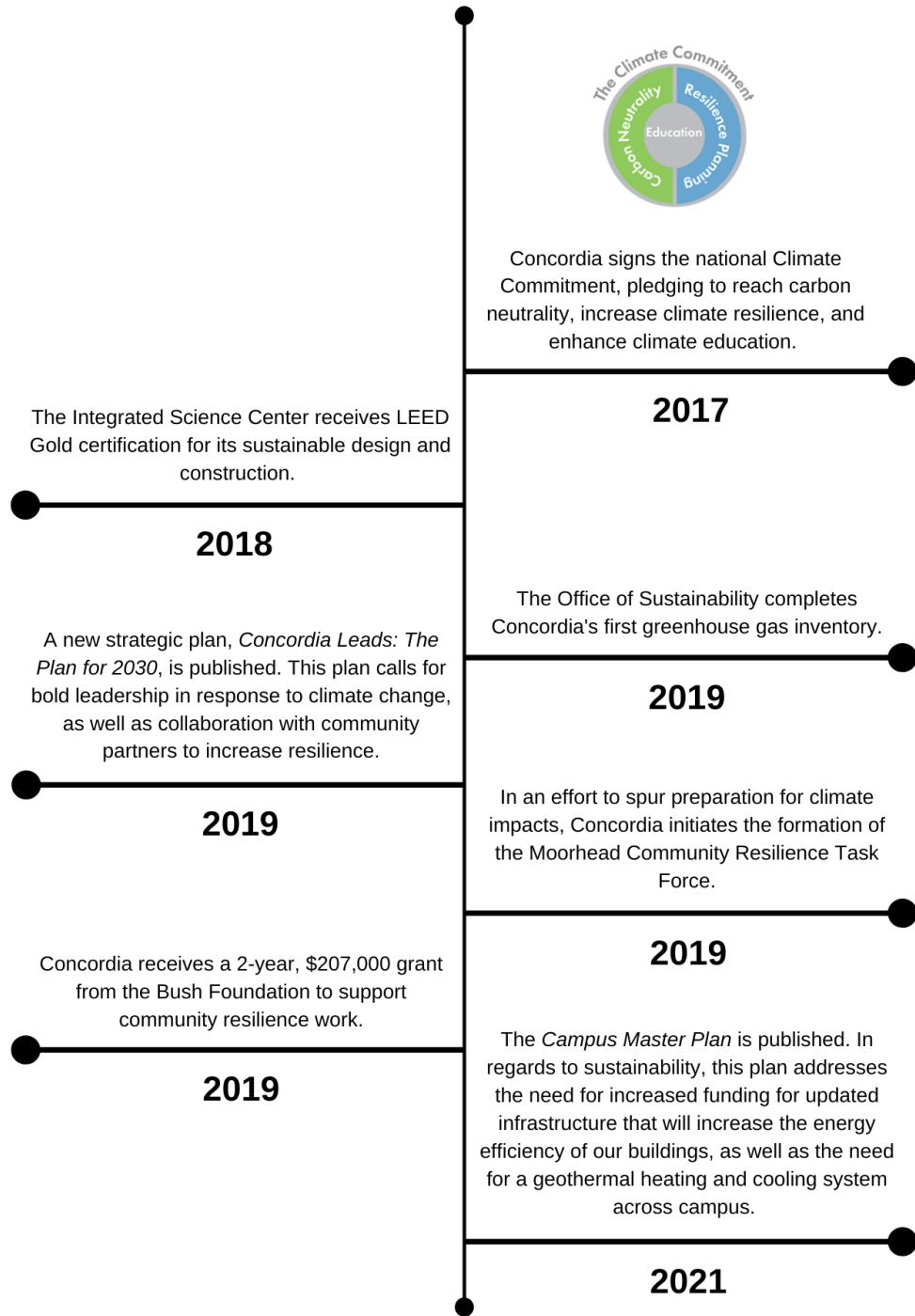
The further ahead we look, the murkier our possibilities become. With this in mind, stages 2 and 3 include less detail than stage 1. A thorough review of the CAP by the President's Sustainability Council (PSC) every three years will enable us to continually revise and update the plan so that we can build on successes and take advantage of new opportunities.

Stage 1	Education, Behavior and Systems Change, Community Engagement and Resilience	Cost
2023-2025 2 years	<p>The first stage of the journey laid out in this Climate Action Plan will include completing strategies which are low in cost and relatively quick to implement. These strategies include:</p> <ul style="list-style-type: none"> ➤ Implement selected Energy Conservation Measures. ➤ Encourage carbon-reducing behaviors and enacting policies aimed at reducing carbon emissions. ➤ Introduce policies on responsible air travel ➤ Include climate and sustainability issues in curriculum and co-curriculum. ➤ Advance understanding of, and skills to address, climate change at Concordia and in the community ➤ Work with community partners to advance equity and ecological health at Concordia and in the community. ➤ Develop a capital campaign to increase funding for later stages. ➤ PSC will review and update the CAP (2025) 	Budget-neutral: The initiatives to be pursued during this stage are designed so as not to require special additional budget allocations
Stage 2	Continue the Work + Transportation, Renewable Energy, Geothermal Decision, Finance Options	Cost
2025-2030 5 years	<p>The second stage will focus on higher cost strategies, while continuing to support the work from Stage 1.</p> <ul style="list-style-type: none"> ➤ By September 1, 2026, evaluate and decide whether a transition to geothermal is feasible. Undertake possible initial transition steps. ➤ Begin work on a plan for financing geothermal and other carbon reduction projects. ➤ Begin transition of gas and diesel vehicles to electric; begin to install EV chargers. ➤ PSC will review progress and update the CAP (2028). 	Additional funding needed: If plans for geothermal are approved, financing will be necessary beginning in 2027-28
Stage 3	Continue the Work + Heating	Cost
2030-2040 10 years	<p>The third stage will continue the work laid out in the earlier stages. This stage is more uncertain – plans will be determined during the latter part of Stage 2.</p> <ul style="list-style-type: none"> ➤ Continue possible geothermal installation. ➤ Complete transition to EV vehicles. ➤ PSC will review progress and update the CAP (2031, 2034, 2037, 2040). Envision Stage 4 (2040-50). 	Additional funding needed

OUR JOURNEY SO FAR

Since 2006, Concordia has deepened and formalized its commitment to sustainability through various internal actions and public commitments.





DETERMINING OPTIONS FOR CARBON EMISSIONS REDUCTION

In order to chart a path to carbon neutrality, four steps were taken:

- 1 In 2018, four working groups consisting of faculty, staff, and students were formed, focusing on:

 - Systems and Behavior Change
 - Education
 - Air Travel
 - Funding and Finance

These groups met throughout 2019 and up until the pandemic hit. Each group, except for the funding group, produced a set of recommendations.
- 2 The first-ever inventory of carbon emissions generated by college operations was completed in 2019 and submitted to Second Nature as part of the Climate Commitment reporting process. It was determined that Concordia would use 2018-19 as its baseline year from which to measure emissions reductions going forward. An inventory is now done each year.
- 3 In Spring 2019, the college contracted with KFI Engineering, a Minneapolis-based firm, to carry out a comprehensive assessment of options for reducing carbon emissions. A competitive, national search for a firm to do this work led us to KFI. Over nearly a year, KFI worked with Concordia's Facilities Management team, the Sustainability Coordinator, and a larger group consisting of faculty and staff to complete a thorough analysis of campus infrastructure and energy sources and identify carbon-reduction options. This included researching possible renewable energy alternatives, identifying pros and cons of different options, and developing several alternative scenarios. KFI's final report was submitted in April 2020. To read the executive summary of the KFI Report see the Appendix.
- 4 The President's Sustainability Council reviewed KFI's report and, in November 2020, submitted a memo with recommendations to President Craft. Following discussions with his cabinet, on March 25, 2021, President Craft sent a response, endorsed by cabinet as a whole. This document affirmed a commitment to target zero carbon emissions by 2050, affirmed a multi-dimensional strategy and the plan to focus first on energy conservation and behavior change, and affirmed the necessity of moving towards non-fossil fuel-based sources of heat energy. While affirming geothermal energy as the most promising option for heating, the document cautioned that "we cannot commit the college to the full \$43+ million plan until the means to meeting such a cost is clear." Lastly, the document directed that the plan be revisited no later than September 1, 2026 (and sooner if warranted) to re-examine feasibility in light of emerging technologies and governmental incentives.

ENGAGING COMMUNITY PARTNERS IN EXPLORING RESILIENCE

The Climate Commitment gave Concordia the opportunity (and obligation) to investigate how the concept of climate resilience, and the broader framework of community resilience, could assist the college in becoming stronger and better prepared for future disruptions that may arise. The focus on resilience also brought to the fore the value of working with partners in Fargo-Moorhead to increase resilience at the community level. After all, Concordia is not an island; it is embedded within its local community.

Resilience is defined as the ability of a system or community to survive disruption and to anticipate, adapt, and flourish in the face of change. This definition was developed by referencing resilience definitions used by other organizations such as the Rockefeller Foundation and the State of Minnesota. Resilience planning is forward-looking. Although climate change confronts communities with new threats, communities have an opportunity to go beyond a “threat response mode”, responding instead with a proactive approach focused on creating the conditions that will enable the community to flourish even as external changes occur. In the context of climate change and ecological degradation, becoming more resilient involves (1) increasing the ability of the community to adapt to the impacts of these negative trends and (2) enabling the community to play positive roles in promoting climate stability and ecological health.

Action on the climate and community resilience part of the Climate Commitment took two forms.

1. Concordia Resilience Assessment A team of faculty and staff was pulled together to provide guidance in the development of a Resilience Assessment for the college. This group met on several occasions in 2018-2019 to discuss what challenges may face the college as a result of the changing climate. They looked at a variety of themes including Social Equity and Governance, Health and Wellness, Ecosystem Services and Ecological Health, Infrastructure, and Economic Health and Preparedness. As they discussed these topics, they were informed by the college’s strategic plan as well as other college goals to determine areas of threat and opportunity that faced Concordia, as well as what indicators could be used to monitor Concordia’s resilience to climate change.

2. Moorhead Community Resilience Task Force (Resilient Moorhead) In the Fall of 2018, with the encouragement of President Craft, Ken Foster (as the chair of the President’s Sustainability Council) and Tim Hiller (as the then Coordinator of Community Engagement) explored the possibility of creating a Moorhead Community Resilience Task Force. This idea met with enthusiastic approval from a number of community leaders. The task force was officially launched in March 2019, sponsored by Concordia. In December 2019, the Concordia received a two-year Bush Foundation Community Innovation Grant to fund the work of the group. Now consisting of 21 organizations, the task force, now called Resilient Moorhead is facilitating community-wide thinking and action aimed at promoting community resilience. Concordia’s resilience planning has been undertaken in the context of this collaborative effort.

EXPLORING CURRICULAR REFORM POSSIBILITIES

Concordia already has experience experimenting with various ways of integrating sustainability and climate change into the curriculum. An external grant funded a multi-faceted faculty development program from 2014 to 2017. Avenues explored included the creation of new courses, the infusion of content and activities into existing courses, and the integration of sustainability into study away programming.

In 2018-2019, the Education Working Group (formed as part of the Climate Commitment implementation process) explored ideas for how to proceed on integrating climate education into the curriculum. During this period, discussions about reforming the college's core curriculum were underway. The working group turned its attention to providing input into this process. The report produced by the core reform Integration Working Group in 2020 proposed that a new core curriculum be titled "The Pursuit of Justice and Sustainability." The product of extensive consultation and work, the proposal set out a two-pronged focus: on "justice in human relations with each other and with planetary life," and on "the sustainability of the interdependent life humans share with each other and planet earth." This work, and the discussions about the report, were fruitful in helping faculty and (to a more limited extent) students to explore how sustainability issues could be given a more prominent place in the curriculum and why this might be a smart move.

In Fall 2021, the Core Reform Steering Committee proposed the adoption of Engaged Citizenship as an organizing principle for the core curriculum and recommended that the new curriculum require all students to take one course dedicated to addressing environmental sustainability.

The goals and action steps set out in this Climate Action Plan reflect and build on the curricular innovation and reform efforts described above, while also drawing upon ideas and practices promoted nationally in organizations such as the Association for the Advancement of Sustainability in Higher Education.

CONCORDIA'S STRATEGIC PLAN

Concordia Leads: The Plan for 2030 lays out the college's strategies in four key areas: Transformational Learning, Excellence Through Diversity, Wholeness and Health of the Community, and Financial Foundation.

The third area, *Wholeness and Health of the Community*, is defined by this vision:

“Concordia will cultivate the growth and well-being of students, faculty, and staff; demonstrate resilience in response to change; and practice transformational leadership to work collectively for the greater good of neighbors and the planet.”

This statement captures much of what is meant when we speak of pursuing sustainability.

Two of the four goals in this area call directly for a bold and aspirational sustainability and climate action plan:

“Exercise bold leadership in responding to climate change, ecological decline, and environmental injustice.” To realize this goal, Concordia will:

- Develop and implement a climate action plan that sets out strategies and timelines for reducing carbon emissions.
- Promote ecological health and reduce the negative ecological and environmental impacts of college operations.
- Make sustainability, climate change, and resilience key aspects of the curriculum and other educational experiences for all students.

“Deepen the college’s connections with the local region, working in collaboration with partners committed to building stronger communities.”

To realize this goal, Concordia will:

- Work with community partners to increase resilience to adapt and flourish in the face of climate change and ecological decline.
- Collaborate with Moorhead and Fargo partners on community development projects in arts, athletics, education, and sustainability.

This document, “Concordia’s Journey to a Sustainable Future,” sets out specific goals and action steps that will enable Concordia to achieve the aspirations set out in *Concordia Leads: The Plan for 2030*.

CONCORDIA'S CAMPUS MASTER PLAN

Published in 2021, the *Campus Master Plan* seeks to support the College's strategic initiatives, which were laid out in the 2019 strategic plan. One of the master plan goals is to "Support the College's Sustainability Commitments." The following action items were specified:

- Modify how the campus community functions from a day-to-day operational standpoint.
- Increase funding for the replacement of items such as windows, roofs, insulation, and HVAC improvements.
- Conduct a more detailed study into geothermal technology to include the evaluation of systems that could help the College avoid major retrofits and replacements of HVAC systems within all of the buildings.

Each of these action items laid out in the sustainability section of the master plan is incorporated into the Carbon Neutrality section of this Climate Action Plan.



FOCUS AREA #1: CARBON EMISSIONS REDUCTION

Long-Term Target: Achieve Carbon Neutrality by 2050

Goal 1: Encourage carbon reducing behaviors on campus.

Goal 2: Implement Energy Conservation Measures (ECMs).

Goal 3: Transition to renewable energy sources for heating and cooling.

Goal 4: Reduce carbon emissions from transportation.

INTRODUCTION

Concordia's long-term goal is to reach carbon neutrality by 2050. This is in harmony with the global effort to reach neutrality by 2050, a goal that many countries (such as Germany, as well as the European Union more broadly) and corporations have adopted. While an earlier target date would of course be preferable, the cost and complexity of transitioning to carbon neutral heating suggests that, given current and expected conditions, an earlier date would be unrealistic.

As Concordia seeks to meet its carbon reduction goal, technological advances, new government policies, and changes in the business/economic environment will be essential. Given Concordia's context, it will be necessary to rely on these external factors, even as the college does all it can within the constraints that it faces. This means that Concordia will need to actively monitor the technological and policy environment while also advocating for government and private sector initiatives that support carbon reduction.

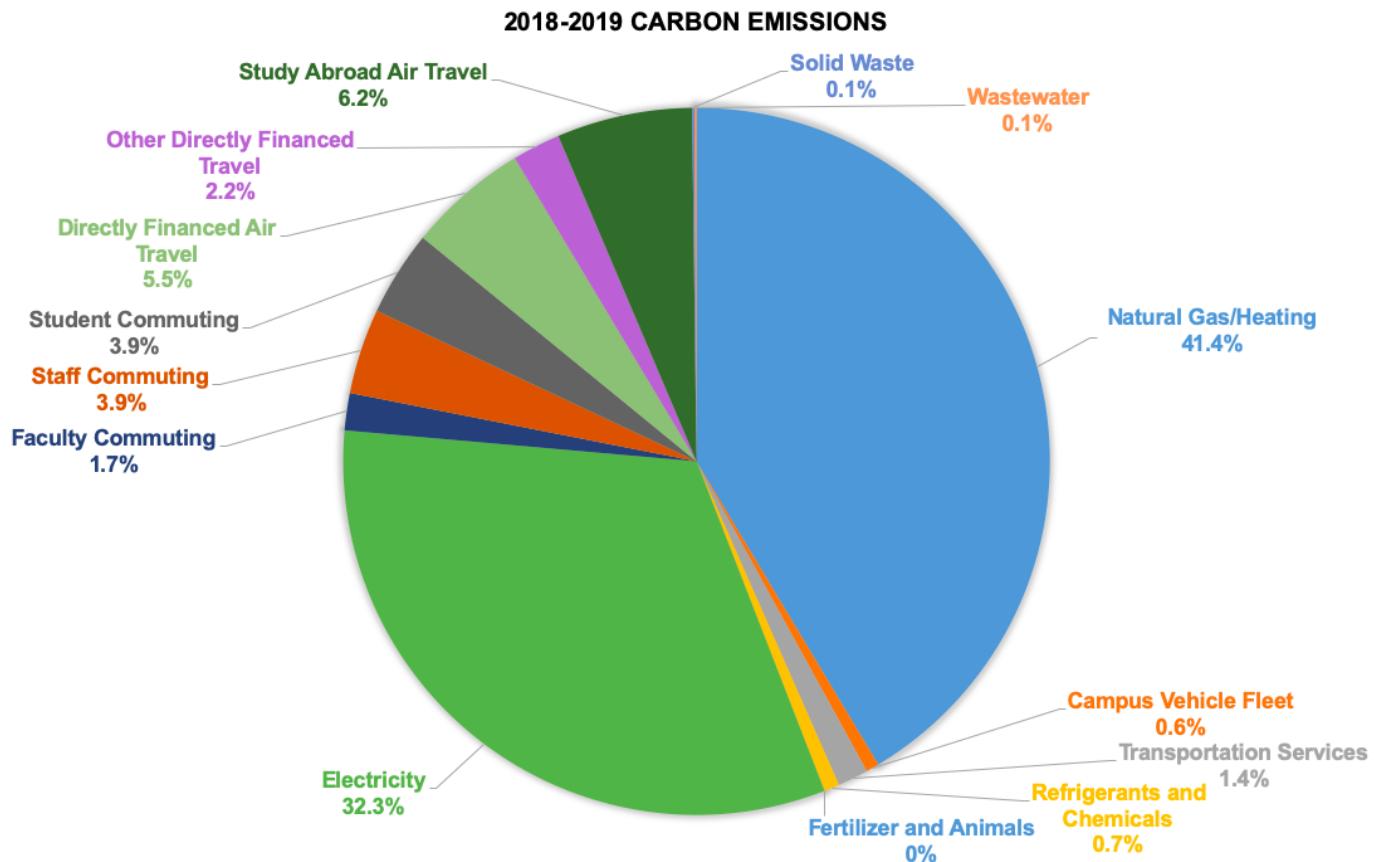
More important than the neutrality target date are the steps taken along the way and ensuring that the college makes steady, incremental progress. Specific carbon emission reduction targets, in the form of "reduce emissions by X% from the 2018-19 baseline by 20XX", will need to be set.

Even though the reduction of carbon emissions proceeds slowly during the first fifteen or so years of the plan, we can make a significant impact. Our largest impact will always be on our students. As we tie energy conservation measures, behavior change initiatives, and carbon-reducing college policies to education, we will be modeling the hard work that is needed to bring about change and preparing our students to be change agents in the world.

GREENHOUSE GAS INVENTORY

Concordia's first comprehensive greenhouse gas emissions inventory was completed in 2020 for the 2018-2019 academic year. Since 2018-2019 was the first year that Concordia's new Integrated Science Center (ISC) was fully operational, it was decided that this year would serve as the baseline for the college's carbon reduction targets.

The inventory revealed that most of Concordia's emissions are the result of heating (natural gas) and electricity usage. Other important sources of GHG emissions included air travel and commuting. The table and graph on the next page provide a detailed breakdown of the results of the inventory.

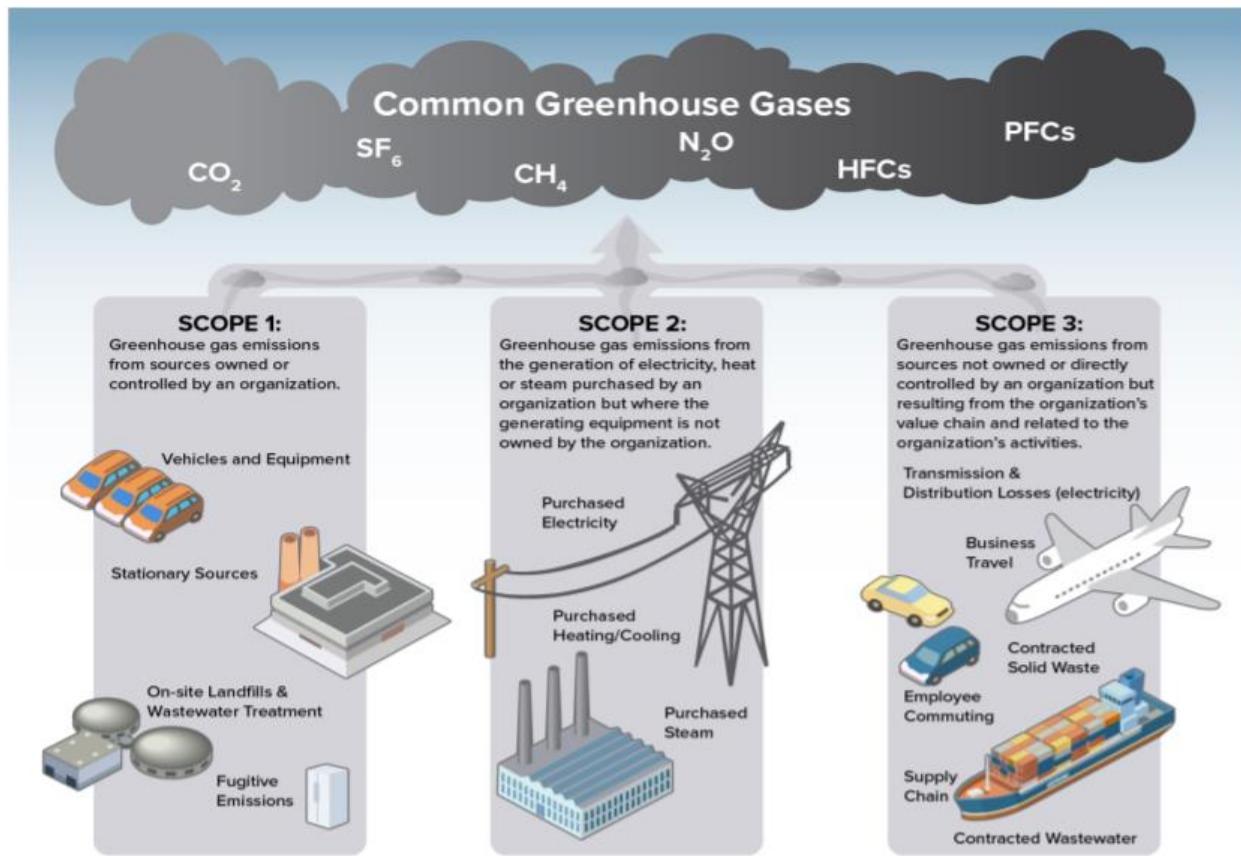


Category	Scope	MTCDE/Year	% of Emissions
Natural Gas/Heating	1	5285	41.4%
Campus Vehicle Fleet	1	79	0.6%
Transportation Services	1	179	1.4%
Refrigerants and Chemicals	1	95	0.7%
Fertilizer and Animals	1	3	0.0%
Electricity	2	4121	32.3%
Faculty Commuting	3	218	1.7%
Staff Commuting	3	503	3.9%
Student Commuting	3	503	3.9%
Directly Financed Air Travel	3	703	5.5%
Other Directly Financed Travel	3	275	2.2%
Study Abroad Air Travel	3	786	6.2%
Solid Waste	3	7	0.1%
Wastewater	3	8	0.1%
Total		12765	100

The international standard is to separate greenhouse gas emissions into three “scopes”. This framework is used to structure GHG-reducing action and reporting of GHG emissions and reductions. The graphic below explains what is covered by each category.

Most of Concordia's emissions are Scope 1 and Scope 2 emissions. Scope 3 emissions are the most difficult to reduce.

For reporting purposes, Concordia is obligated to include Scope 1 and 2 emissions and may choose which of Scope 3 emissions are included in its accounting of GHG emissions. Concordia has chosen to include transportation-derived emissions in its emissions-reduction plan.



Graphic from https://www.epa.gov/sites/default/files/2018-03/documents/gpp_guide_recs_offsets.pdf

RECOMMENDED GLIDEPATH AND PRIMARY STRATEGIES

A glidepath graph shows how carbon reductions will be achieved over a time period. KFI developed a variety of possible glidepaths. The one below was chosen as the most appropriate for Concordia.

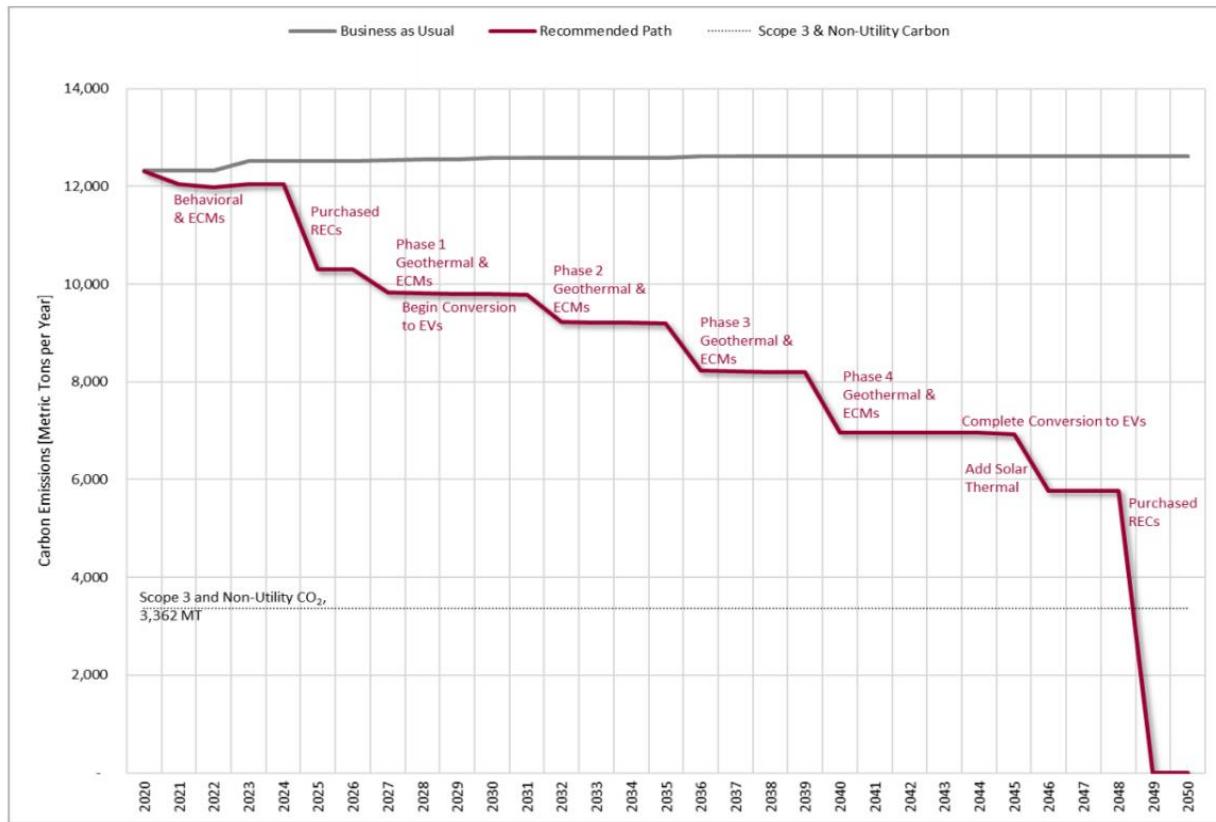


Figure #: KFI Recommended Implementation Plan

The top gray line on the graph depicts a projection of how Concordia's carbon emissions will grow over time under a business-as-usual scenario. The red line depicts how Concordia's carbon emissions can be reduced by employing a variety of reduction strategies over the next 30 years. Concordia is not committed to employing these strategies in this exact order, but having the timeline so clearly displayed helps keep the carbon neutrality goal in mind and draws attention to the importance and urgency of taking deliberate steps to get there. The glidepath can be updated along the way to reflect changes in Concordia's strategy, technological advances, and other external changes.

Near the bottom of the graph is a dotted line labeled "Scope 3 and Non-Utility CO₂" which represents the metric tons of Concordia's carbon emissions that come from Scope 3 sources. Scope 3 covers indirect emissions, which include emissions due to commuting, air travel, waste, wastewater, etc. Because these emissions are difficult to control, they are also difficult to eliminate. That is why reduction of these emissions comes from the purchase of what the graph labels as RECs. The labeling of this is incorrect. To compensate for emissions that cannot be eliminated, the college would purchase Carbon Offsets, not RECs (this is explained further later in this section.)

As the recommended glidepath suggests, KFI's primary recommendation to the college was that the single most important strategy is to invest in geothermal technology for heating and cooling. With most of the campus's carbon emissions coming from heating, switching to geothermal heating and cooling would make the biggest impact on Concordia's emissions.

To read the executive summary of the KFI Report see the appendix.

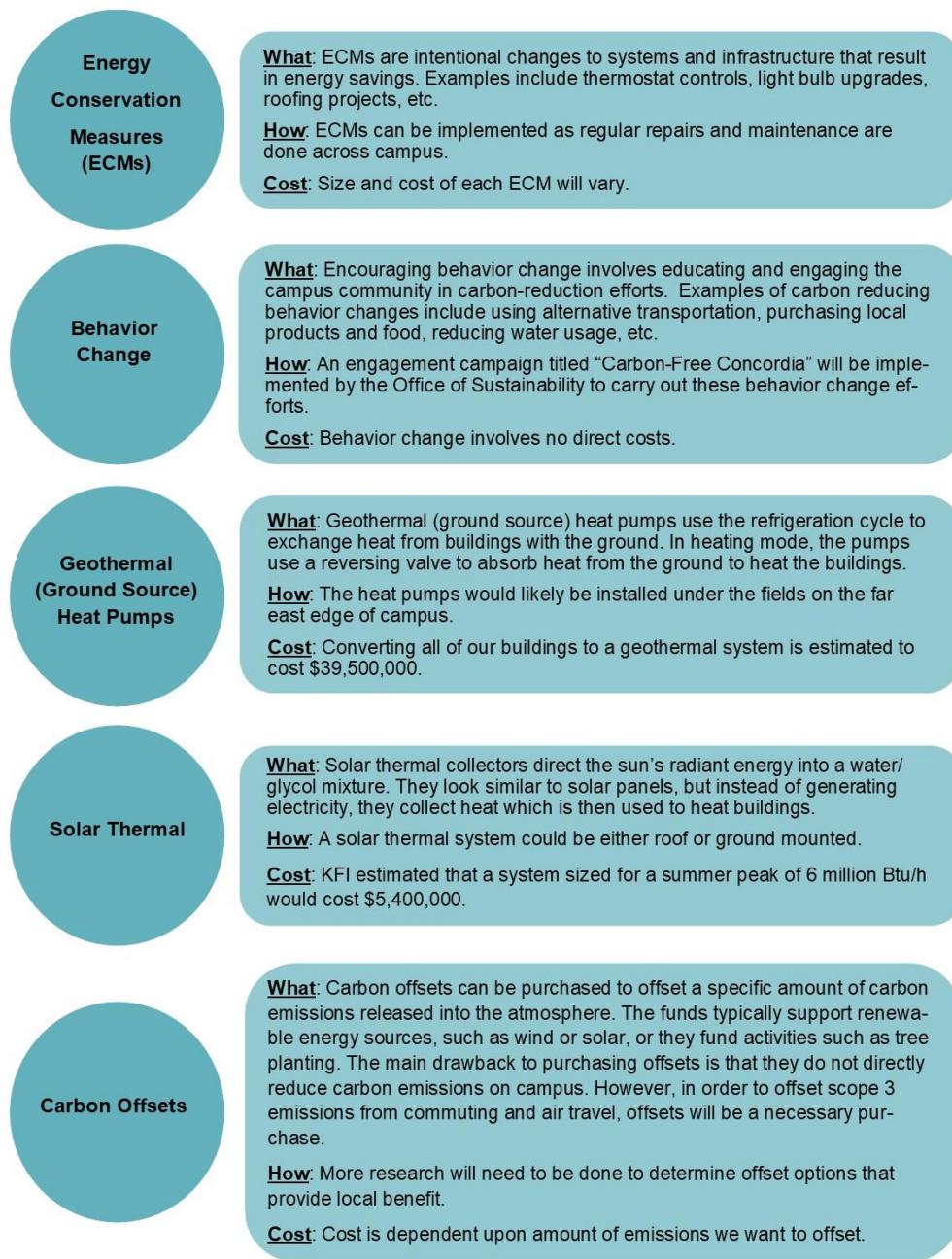
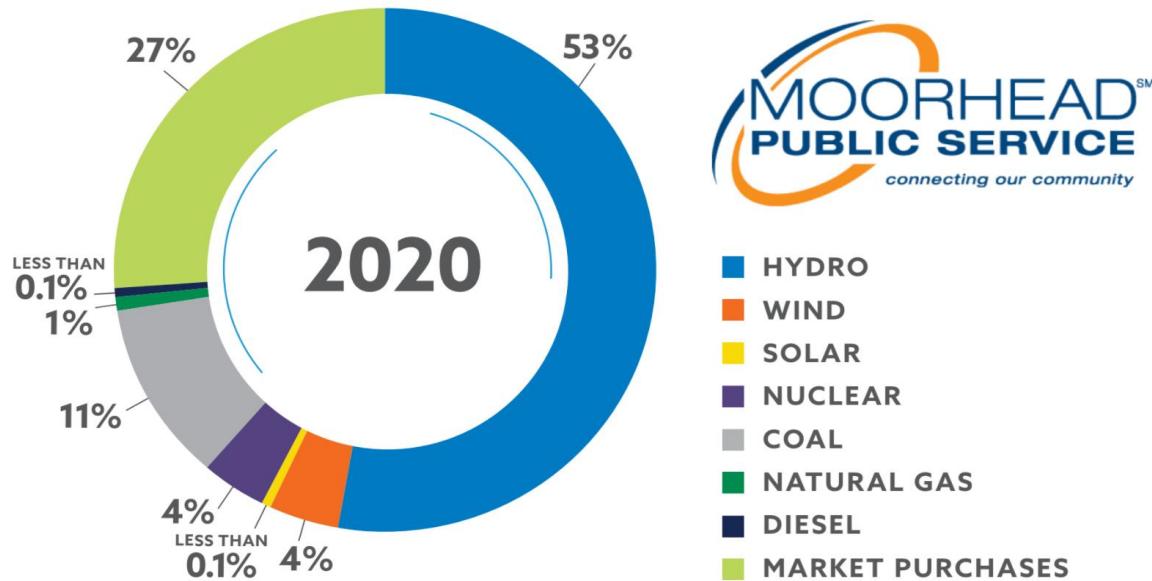


Figure 1.
Strategies
for
Carbon
Reduction
Proposed
by KFI.

ELECTRICITY

Based on the carbon study conducted by KFI, a majority of Concordia's energy financial costs are due to the use of electricity, and electricity contributes about 32.3% of Concordia's carbon emissions (second only to heating).

Concordia's electricity is supplied by Moorhead Public Service (MPS), which utilizes energy from a combination of both renewable and fossil fuel sources. The mix of electricity that Concordia receives from MPS currently contains about 57% of energy from renewable energy sources such as hydropower, wind, and solar.



The KFI investigation examined a variety of strategies for transitioning to carbon-free electricity. Wind energy, biofuels, and on-campus solar were found to be impractical for the college. Some of these sources didn't have a viable payback period, while others were not possible due to location restrictions (e.g. wind turbines). Since Concordia doesn't have a lot of opportunities to implement renewable energy sources directly on campus, advocating for and supporting local wind and solar development will be key.

In late 2020, Concordia's strategy for electricity emissions reduction was affected by Moorhead Public Service's (MPS) announcement that all electricity supplied to the city would be carbon-free starting in 2021. This is the result of their purchase of renewable energy credits. Renewable energy credits, or RECs, are purchasable certificates that represent the generation of renewable energy. When MPS purchases enough of these certificates, they can then claim that their electricity is carbon-free. Sources of electricity that emit carbon include coal, natural gas, and diesel fuel. Energy sources such as hydropower, wind, solar, and nuclear are considered carbon-free sources and do not need to be covered using the purchase of RECs.

Concordia College receives its electricity from MPS, so although the RECs do not physically change the energy the college receives, it does affect how we report our greenhouse gas (GHG) emissions. RECs are not Concordia's first choice as a means of reducing carbon, but they are an accepted form of carbon accounting and for reporting purposes will "neutralize" Concordia's GHG emissions.

Unfortunately, with Moorhead Public Service's purchase of RECs two challenges arise for Concordia. First, should the college accept that its electricity is carbon-free when there are legitimate questions about the quality and authenticity of the RECs? That is, since the RECs do not represent any actual reduction in carbon emissions, is it ethical to include them in our own accounting of carbon emissions?

The second challenge arises from the portion of the City's energy that comes from "Market Purchases." Market Purchases represents energy purchased from the national energy market when local energy sources cannot meet demand. The sources of energy included in market purchases are unknown to the user because the seller does not need to disclose them when selling the electricity. Currently, MPS is not purchasing RECs to cover the portion of their electricity that comes from market purchases. MPS has adopted the policy that GHG emissions resulting from market purchases are the responsibility of the producer, not the user. Using this logic for Concordia's greenhouse gas reporting could be misleading since we cannot confidently report these market purchases as carbon-free.

The issue, then, concerns whether or not Concordia accepts the carbon accounting standards currently in place despite outstanding questions about them. If we do, then the electricity we use can be counted as carbon-free as long as MPS continues to purchase RECs on a yearly basis.

This plan, however, proceeds on the assumption that reducing electricity use and supporting an increase in renewables in electricity production should continue to be goals of the college. Thus, Energy Conservation Measures (ECMs) and behavior change are prioritized in the plan. Although there is perennial interest in putting solar panels on campus, this is not a practical or cost-effective strategy for the college. Even if we cover 100% of Concordia's roof space with solar panels, this will only meet 18% of Concordia's total electricity needs. However, Concordia is very limited in the amount of viable roof space that could withstand solar panels, so this percentage would be much lower. Additionally, the cost of installation and maintenance for the solar panels would be substantial.

Additionally, MPS has voiced interest in continuing to invest in renewable energy sources, which if true, would lead to an increase in renewable electricity in Concordia's electricity mix, lowering our carbon emissions. It will be important for Concordia to support and advocate for any community solar efforts Moorhead Public Service may pursue.

HEATING

A majority of Concordia's carbon emissions come from heating our campus. Concordia currently heats most of its buildings using natural gas. The natural gas is supplied to the steam plant, where water is turned into steam, pumped to buildings across campus, and converted into heat. This process results in significant carbon emissions, which account for about 41.4% of the college's total emissions.

Through Concordia's work with KFI, it was clear that the college would need to make a significant change in its heating methods in order to become carbon neutral. After considering a variety of renewable energy options, we determined that a low-pressure steam (geothermal) system would offer the most realistic solution to Concordia's heating concerns. Concordia's current heating system is called a high-pressure steam system: hot steam is generated in the heating plant and sent out to buildings across campus at high pressures (greater than 15psi). When switching to geothermal we would need to convert our high-pressure system to a low-pressure steam system, which requires different mechanics. The transition to this low-pressure system would take place over time. While some buildings may need to be transitioned purely for the sake of the conversion to geothermal, others could be transitioned as old heating equipment ages out and needs to be replaced.

As might be imagined, the process for transitioning the college to an entirely new heating system would be costly, as well as labor and time intensive. The project, which would be completed in three phases, would take about 25 years to complete and requires both large capital investments and ongoing campus modifications. The total net capital cost of the project is estimated to be about \$39,500,000.

Before narrowing the search for heating alternatives to geothermal and solar thermal, KFI helped Concordia explore a variety of alternatives. Solutions such as biomass, or deep direct geothermal were eliminated due to their high cost, lag in technology, or potential disturbance to neighbors. With that being said, we will be keeping our eye on these technologies, as well as others, to determine if they might be viable in the future.

To supplement the geothermal, KFI has also recommended that Concordia install a number of solar thermal panels that capture solar heat for heating buildings. KFI estimated that installing the panels would reduce about 6% of Concordia's total carbon emissions. The full recommendation developed by KFI can be found in the Appendix.

A NOTE ON CARBON OFFSETS / RENEWABLE ENERGY CERTIFICATES

Today, and for the foreseeable future, any plan for reaching carbon neutrality necessarily includes reliance on the purchase of Carbon Offsets or use of Renewable Energy Certificates (RECs). Colleges and other organizations that have claimed carbon neutrality have included the purchase of carbon offsets as part of their toolkit for reaching neutrality.

These instruments (certificates, credits) enable a person, organization, or other entity to claim a reduction in carbon emissions while continuing to produce emissions or rely on an energy source that produces emissions. The emissions being produced are “offset” (compensated for) by funding for a renewable energy source (Offsets) or the purchase of the “renewable-ness” of an electricity mix (RECs). RECs or Offsets must be purchased each year in order to continue claiming their benefits.

The purchase of a REC enables the purchaser to treat a designated amount of electricity as renewable, or carbon-free. In 2021, Moorhead Public Service declared that the electricity it provided to Moorhead is carbon-free, due to its purchase of RECs at a cost of \$60,000 for the year.

The purchase of a Carbon Offset represents a monetary contribution to a project intended to reduce greenhouse gas (GHG) emissions, increase the storage of carbon, or enhance GHG removal from the atmosphere. For example, Concordia could offset its carbon emissions from study away air travel by purchases offsets that fund a project to plant trees in Tanzania or build a new solar array in Arizona.

RECs and Carbon Offsets are generally vastly inferior to other strategies because they may not result in any real emissions reductions. Currently, an organization is able to achieve carbon neutrality simply by purchasing RECs and Carbon Offsets on the market at very low prices. Due to incomplete regulation, it is often unclear whether or not emissions are being reduced in the desired amount. It is devilishly difficult to know for sure the actual impact of the offset project.

For a number of reasons, this plan treats RECs and Carbon Offsets as options of last resort, to be avoided if at all possible. Practically speaking, this means that, for the most part, the purchase of these instruments will be left to the end of our journey to carbon neutrality. This means that we will not be able to achieve significant reductions quickly, as we could easily do if we purchased a large number of offsets in the initial years of the plan. However, we will follow the more authentic and educational path rather than relying on the quick and easy fix of purchasing instruments of dubious quality at market prices.

For more information, see https://www.epa.gov/sites/default/files/2018-03/documents/gpp_guide_recs_offsets.pdf.

GOALS AND STRATEGIES

	STRATEGY	LEAD	TIMEFRAME
CARBON EMISSIONS REDUCTION			
GOAL 1: ENCOURAGE CARBON REDUCING BEHAVIORS ON CAMPUS.			
C1.1	Support student organizing and action in support of carbon reduction.	SGA; Sustainability; URSCA	2023-2025
C1.2	Pursue a publicity and educational campaign around the goal of carbon neutrality.	Communications & Marketing; Sustainability	2023-2025
C1.3	Establish a behavior and culture change faculty-student research and action program.	URSCA; Sustainability	2023-2025
C1.4	Strengthen and broaden the reach of the Green Office program, with a specific focus on carbon reduction.	Sustainability	2023-2025
C1.5	Promote carbon-reducing behavior in residence halls through the EcoReps program.	Residence Life; Sustainability	2023-2025
C1.6	Propose and enact policies that promote carbon reducing behavior.	PSC	2023-2025
GOAL 2: IMPLEMENT ENERGY CONSERVATION MEASURES (ECMs).			
C2.1	Complete thermostat and lighting control upgrades.	Facilities Management	2023-2030
C2.2	Complete roof replacement projects as funding allows.	Facilities Management	2023-2050
C2.3	Complete window upgrades as repairs are needed and funding allows.	Facilities Management	2025-2050
GOAL 3: TRANSITION TO RENEWABLE ENERGY SOURCES FOR HEATING AND COOLING.			
C3.1	Work with community partners to forge pathways to greater use of renewable energy.	PSC; Facilities Management; Community Engagement	2023-2030

C3.2	Support and advocate for local wind, solar, and geothermal installations and for policy to support renewable energy development.	PSC; Facilities Management; President	2023-2030
C3.3	Evaluate and decide whether a transition to geothermal is feasible.	Facilities Management; Sustainability	2025-2026
C3.4	Possible complete transition to geothermal energy.	Facilities Management; Sustainability	2027-2050
GOAL 4: REDUCE CARBON EMISSIONS FROM TRANSPORTATION.			
C4.1	Develop a set of travel policies to mitigate the impact of air travel, including possible use of carbon offsets.	Global Learning; Sustainability; PSC	2023-2025
C4.2	Educate the campus community on the carbon impacts of air travel.	Global Learning; Sustainability	2023-2025
C4.3	Implement travel policies to mitigate the impact of air travel.	PSC; Global Learning	2025-2030
C4.4	Transition gas and diesel vehicles to electric and install EV chargers on campus.	Facilities Management	2025-2035

GOAL #1: ENCOURAGE CARBON REDUCING BEHAVIORS ON CAMPUS

The initial carbon reduction strategy to be employed by Concordia will be encouraging carbon reducing behaviors and actions on campus. The low cost and quick implementation opportunities that this strategy provides makes it a clear first step.

Concordia will promote social and individual behavior change through a publicity and educational campaign, which will be centered around the goal of carbon neutrality. Using this campaign, the college will provide the Concordia community with tools, tips, and resources for changing habits and developing behaviors that emit less carbon.

Partnerships across campus and support from stakeholders in all departments and divisions will be vital to behavior change efforts. The Green Office Program will play an instrumental part in creating these partnerships and getting staff involved in behavior change efforts. The Green Office Program is currently undergoing a restructuring process in order to better align its goals with the Climate Action Plan.

The EcoReps program is another example of a partnership that will be vital to behavior change efforts. This program is a joint partnership between Sustainability and Residence Life that employs 6 student interns who work to promote sustainability in the dorms. Beginning in the fall of 2023, the EcoReps will work to promote specific actions that students can take in order to reduce their carbon emissions in the residence halls.

In the fall of 2022, a group of students reinvigorated the Student Environmental Alliance (SEA), which will now act as a think tank style group where students can collaborate on their ideas for making Concordia more sustainable. This group will work closely with the Sustainability Coordinator in order to align their work with this plan.

Strategic Plan Alignment

3D: Exercise bold leadership in responding to climate change, ecological decline, and environmental injustice.

Strategy #1:

Support student organizing and action in support of carbon reduction.

Timeframe: 2023-2025

Strategy #2:

Pursue a publicity and educational campaign around the goal of carbon neutrality.

Timeframe: 2023-2025

Strategy #3:

Establish a behavior and culture change faculty-student research and action program.

Timeframe: 2023-2025

Strategy #4:

Strengthen and broaden the reach of the Green Office program, with a specific focus on carbon reduction.

Timeframe: 2023-2025

Strategy #5:

Promote carbon-reducing behavior in residence halls through the EcoReps Program.

Timeframe: 2023-2025

Strategy #6:

Propose and enact policies that promote carbon reducing behavior.

Timeline: 2023-2025

GOAL #2: IMPLEMENT ENERGY CONSERVATION MEASURES

The second way that Concordia will reduce carbon use is through the implementation of Energy Conservation Measures or ECMs. ECMs are intentional changes to systems and infrastructure that result in energy savings. These measures tend to be compatible with current energy sources and can vary on scale and cost of implementation. Some examples of energy conservation measures include thermostat controls, lighting controls, light bulb upgrades, and improvements to HVAC systems.

The current implementation plan for ECMs is to implement them as regular repairs and maintenance are done on the campus facilities. The Facilities Management team will consider the carbon impact during the planning stages of these projects and can rely on assistance from the Sustainability Coordinator and President's Sustainability Council for input when needed. KFI has estimated that the intentional implementation of ECMS could result in a 12% reduction of overall campus emissions.

Potential ECMs

- Thermostat Controls
- Lighting Controls
- Lightbulb Upgrades
- HVAC Improvements
- Roofing Projects
- Window Installations

The intentional implementation of ECMs could result in a 12% reduction of overall campus emissions.

Strategy #1:

Complete thermostat and lighting control upgrades.

Timeframe: 2023-2030

Strategy #2:

Complete roof replacement projects as funding allows.

Timeframe: 2023-2050

Strategy #3:

Complete window upgrades as repairs are needed and funding allows.

Timeframe: 2025-2030

Strategic Plan Alignment

4B: Demonstrate responsible organizational stewardship to maximize Concordia's human and physical resources.

GOAL #3: TRANSITION TO RENEWABLE ENERGY SOURCES

Electricity

Electricity accounts for about 32.3% of the Concordia's total carbon emissions. The college's electricity is supplied by Moorhead Public Service, and we do not have many opportunities to implement renewable energy sources directly on campus. However, Concordia will continue to advocate for the development of local sources of renewable energy, such as wind and solar. MPS has voiced interest in continuing to invest in renewable energy sources, which if true, would lead to an increase in renewable electricity in Concordia's electricity mix, lowering our carbon emissions.

Geothermal

Heating accounts for approximately 41.4% of the college's total carbon emissions, as our current system relies primarily on the use of natural gas. With that being said, the college will need to make a significant change in its heating methods in order to reach the goal of carbon neutrality by 2050.

Through Concordia's work with KFI, it was determined that a geothermal system would offer the most realistic solution to Concordia's heating concerns. The transition to geothermal will be costly and time intensive. The total net capital cost of the project is estimated to be approximately \$39,500,000, which will need to be financed. The Office of Sustainability will continue to research external funding options, and in three years when the first review of this plan takes place, we will begin to determine the feasibility of a transition to geothermal heating.

Geothermal offers the most realistic strategy for reaching our goal of carbon neutrality by the year 2050.

Strategy #1:

Support and advocate for local wind, solar, and geothermal installations and for policy to support renewable energy development.

Timeframe: 2023-2030

Strategy #2:

Work with community partners to forge pathways to greater use of renewable energy.

Timeframe: 2023-2030

Strategy #3:

Evaluate and decide whether a transition to geothermal is feasible.

Timeframe: 2025-2026

Strategy #4:

Possible complete transition to geothermal energy.

Timeframe: 2027-2050

Strategic Plan Alignment

3D: Exercise bold leadership in responding to climate change, ecological decline, and environmental injustice.

GOAL #4: REDUCE CARBON EMISSIONS FROM TRANSPORTATION

Changing the Vehicle Fleet

Making the transition from gas and diesel vehicles to electric could result in a reduction in a portion of the emissions coming from utility emissions. KFI anticipates that transitioning the college fleet to electric would result in a 2% decrease of emissions coming from non-utility sources.

Responsible Air Travel and Carbon Offset Choices

Air travel accounts for about 50% of scope 3 carbon emissions. This percentage includes all faculty and staff business related travel as well as all study abroad air travel that is paid for by the college.

Air travel is one of the most carbon intensive forms of travel, however it is also a necessary form of travel in many instances, including study away which is a pillar of Concordia's globally focused educational strategy. This makes tackling the challenge of air travel emissions extremely difficult and is why we designed a working group to look specifically at the topic of air travel. The group, which consists of faculty, staff, and students who have interest and expertise in study away travel and business travel, contemplated strategies for both reducing and offsetting air travel emissions.



From the group's work, three main strategies emerged. The first is education. It is important that when people choose to travel, they understand the carbon impact of their choice and are making an informed

decision. This will be accomplished through more information on the Global Learning program pages about carbon emissions from flights, as well as educational web pages and print materials. Regarding educating Faculty and staff, the Air Travel Working

Strategy #1:

Develop a set of travel policies to mitigate the impact of air travel, including possible use of carbon offsets.

Timeframe: 2023-2025

Strategy #2:

Educate the campus community on the carbon impacts of air travel.

Timeframe: 2023-2025

Strategy #3:

Implement travel policies to mitigate the impact of air travel.

Timeframe: 2025-2030

Strategy #4:

Transition gas and diesel vehicles to electric and begin installing EV chargers on campus.

Timeframe: 2025-2035

Strategic Plan Alignment

3D: Exercise bold leadership in responding to climate change, ecological decline, and environmental injustice.

Group considered opportunities and strategies for successfully accomplishing this. The second strategy is through travel policy. This could include policies that do not allow particular funding sources to be used for air travel or institution-wide fees for air travel that would go toward purchasing carbon offsets. This leads to the third strategy, purchasing carbon offsets. This strategy, although not our strategy of choice, will be necessary for offsetting the travel that must happen by aircraft. The Air Travel Working Group discussed this topic extensively and prioritized offset options that provide local benefit and allow for direct involvement by the Concordia community. If we are to purchase offsets from a third party, care will be taken in choosing a company that funds new, community based, and just projects.

Transitioning the college fleet to electric would result in a 2% decrease of emissions coming from non-utility sources.

Air travel accounts for about 50% of scope 3 carbon emissions.

FOCUS AREA #2: RESILIENCE AND ECOLOGICAL HEALTH

Goal 1: Forge collaborative partnerships with organizations in Fargo-Moorhead, facilitating community-wide work to increase resilience and ecological health.

Goal 2: Increase understanding of the connections among climate change, resilience, ecological health, and equity.

Goal 3: Promote equity on campus and in the local community.

Goal 4: Create an ecologically healthy and diverse natural environment that supports human well-being.

INTRODUCTION

We are in an era marked by increasing climate instability, ecological degradation, and other civilizational-level challenges, such as severe political polarization and novel infectious diseases. These and other threats to individual and collective well-being are intimately tied to, and exacerbate, social inequities and injustices. Climate change is now acting as a master disruptor, putting increased stress on all aspects of 21st century civilization. Thus, while organizations and societies need to move decisively to reduce carbon emissions, they also need to become better prepared to adapt to the changing climate and be resilient to climate-related disruptions (both direct and indirect). A critically important part of this task is to work actively to promote the health of the land and ecological systems of which Concordia is a part. Healthier ecological systems are more resilient and contribute to human well-being and flourishing.

Given this context, it is essential that Concordia cultivate the characteristics that will enable it to be resilient in the face of disruptive change. Yet Concordia is not an island. It is embedded in the Fargo-Moorhead community. In working towards greater resilience, Concordia must work closely with community partners. As the organization Second Nature asserts, “it is critical that colleges and universities are working hand in hand with their community partners in examining resilience, increasing it, measuring progress towards shared goals, and leading smart and innovative solutions, even as we deal with climate disruptions and impacts along the way.” This work can help our entire community to build on its strengths and ensure it can thrive regardless of what challenges may come.

Thus, Concordia’s work to build resilience and ecological health is conceived as occurring as part of a community-wide push in this direction. Indeed, Concordia has already worked to catalyze action around community resilience in Moorhead, and we will continue to work towards *community resilience*, rather than focusing narrowly and inwardly.

EXAMPLES OF COMMUNITY RESILIENCE

- Connections and trust are created among various groups in a community, so that when challenges arise, they can be met in an inclusive and resourceful manner.
- Sources of energy are diversified, with more local energy production, making the community less vulnerable to a disruption or sudden cost increase in any one source of energy.
- More green spaces with native plantings are created along with more use of permeable pavement, making the community less vulnerable to flooding from heavy rain events while saving maintenance money and increasing pollinator habitat.
- Economic activity is diversified and focuses on improving the well-being of the community, ensuring continued economic thriving and new mutually supportive connections between business and residents.

CHARACTERISTICS OF RESILIENT ORGANIZATIONS AND COMMUNITIES		
ADAPTABLE	INCLUSIVE	FLEXIBLE
EQUITABLE	SELF-REFLECTIVE	HEALTHY
WELL-GOVERNED	DIVERSIFIED	RESOURCEFUL

CONCORDIA'S PRELIMINARY RESILIENCE ASSESSMENT

As part of the Climate Commitment, Concordia submitted a Resilience Assessment to Second Nature in 2019. Since engagement with community partners on the issue of resilience was still in the early stages, the assessment was completed by a group of Concordia faculty and staff. The aim was to put together a relatively comprehensive list of indicators of resilience and to sketch an initial understanding of where Concordia stands with respect to each of them. A second aim was to facilitate understanding of resilience among Concordia faculty and staff. The Resilience Assessment used the five categories set out by Second Nature: Social Equity and Governance, Health and Wellness, Ecosystem Services, Infrastructure, and Economic. For the complete assessment, see the Appendix.



This preliminary assessment then informed the community-wide work on resilience undertaken starting in March 2020. The goals and strategies for building resilience set out in this Climate Action Plan were then developed through interaction with the Moorhead Community Resilience Task Force, led by Concordia.

COMPREHENSIVE SET OF INDICATORS OF RESILIENCE

Concordia's resilience assessment enabled us to create a relatively comprehensive set of indicators of resilience. Of course, it would be far too ambitious to set out to act on all of these. Instead, they serve as a reference point to which we may return as we proceed on the journey to greater resilience. Moreover, only in collaboration with community partners can the college choose the goals and strategies that will promote *community resilience*, with Concordia as a member of the community.



THE MOORHEAD COMMUNITY RESILIENCE TASK FORCE

Founded and led by Concordia College, the Moorhead Community Resilience Task Force mobilized community partners to begin to chart a path to greater resilience. Since the initial gathering in 2019, representatives of the over twenty member organizations have met regularly to discuss aspects of resilience, build collaborative relationships, share information, and shepherd a series of projects. The task force is now known as Resilient Moorhead.

The formation of five working groups allowed the task force to explore resilience in discrete areas: Social Equity and Governance, Health and Wellness, Ecosystem Services, and Economic Health and Resilience. Out of these working groups came a series of projects to test out resilience-building ideas.

Using the resources provided the Bush Foundation Community Innovation grant (held by Concordia), the task force has sponsored trainings and a number of research projects.

Partly as a result of the interest in resilience generated by the task force, the City of Moorhead's new Comprehensive Plan includes "sustainability and resilience" as a key focus. This sets the stage for further and deeper collaboration among community partners as the implementation of the new plan gets under way.

In late 2021, the task force identified two overriding priorities: social equity and ecosystem health. The work in these areas that is ongoing will be important for Concordia as it seeks to contribute both through participation and by actions on its own campus.

As Concordia moves to enact the strategies set out in this Climate Action Plan, collaboration with community partners, through the vehicle of Resilient Moorhead, will be of central importance.

Task Force Members

Afro American Development Assoc.
 Cass-Clay Food Partners
 City of Moorhead
 Churches United
 Clay County Public Health
 Clay County Solid Waste
 Concordia College
 Downtown Moorhead, Inc.
 Immigrant Development Center FM
 The Indigenous Association
 Kurdish American Development Org.
 MSUM
 MState
 Moorhead Business Association
 Moorhead Police Department
 Moorhead Public Library
 Moorhead Public Housing
 Moorhead Public Service
 Moorhead Public Schools
 River Keepers
 South Sudanese Foundation
 YMCA of Cass Clay
 Youthworks



RESILIENT MOORHEAD

GOALS AND STRATEGIES

STRATEGY	LEAD	TIMEFRAME
RESILIENCE AND ECOLOGICAL HEALTH		
GOAL 1: Forge collaborative partnerships with organizations in Fargo-Moorhead, facilitating community-wide work to increase resilience and ecological health (Moorhead Community Resilience Task Force priority).		
R1.1	Continue to play a leading role in Moorhead in efforts to promote collaboration to achieve shared goals.	Community Engagement; President
R1.2	Strengthen or develop strategic partnerships between specific Concordia units and community partners.	Community Engagement; Career Center; Advancement
GOAL 2: Increase understanding of the connections among climate change, resilience, ecological health, and equity (Moorhead Community Resilience Task Force area of interest).		
R2.1	Curate a series of workshops and other events open to the campus and greater Fargo-Moorhead community.	PSC; Community Engagement; Sustainability; Diversity; Academic Departments
R2.2	Pursue the strategies in the education section.	See below
GOAL 3: Promote equity on campus and in the local community		
R3.1	Increase accessibility to campus and community basic needs resources to promote community resilience and collegiate success among low-income and minoritized students.	SDCL; Global Learning
R3.2	Promote equitable student success by developing appropriate interventions to address discrepancies in retention and graduation rates.	Academic Affairs; SDCL
R3.3	Encourage all units of the college and individual faculty/staff members to use an equity lens to review and adjust policies and practices to reduce systemic barriers.	Cabinet; Office of Diversity; Diversity Council
R3.4	Collaborate with community partners to address inequities experienced by youth in our region while providing learning opportunities for our students.	Community Engagement

GOAL 4: Create an ecologically healthy and diverse natural environment that supports human well-being (Moorhead Community Resilience Task Force priority).			
R4.1	Contribute to work by the City of Moorhead and others in this area, serving as an early implementer of initiatives in the city's comprehensive plan.	Facilities Management; Sustainability; ESS	2023-2025
R4.2	Increase the number and size of eco-friendly plantings on campus.	PSC; Facilities Management	2023-2030

GOAL #1: FORGE COLLABORATIVE PARTNERSHIPS WITH ORGANIZATIONS IN FARGO-MOORHEAD, FACILITATING COMMUNITY-WIDE WORK TO INCREASE RESILIENCE AND ECOLOGICAL HEALTH.

Concordia does not exist on an island. The work we do to increase resilience and ecological health affects the greater Fargo-Moorhead community, and vice versa. Collaborating with a variety of organizations and networks to generate a shared agenda and pursue shared goals is at the core of the promotion of resilience. As an institution, Concordia will be stronger and better able to withstand shocks wrought by climate change if it is enmeshed in deeply collaborative relationships with partners in the region.

Concordia has long endeavored to develop and maintain meaningful connections with those in the local community. Involvement in starting Downtown Moorhead, Inc. is one relatively recent example. In 2019, as part of the implementation of the Climate Commitment, Concordia led the formation of the Moorhead Community Resilience Task Force. This group has enabled the college to become central in conversations about cross-sectional collaboration in Moorhead. This structure sets the college up well to continue to lead in this area. A network mapping study done in 2021 generated a rich set of data that Concordia can use to identify new opportunities.

Along with relationships maintained at the college level, there are of course many relationships between specific units of the college and particular organizations in the community. Supporting departments and offices in strengthening and developing such relationships will be a key part of achieving the goal set out in the college's strategic plan.

Strategy #1:

Continue to play a leading role in Moorhead in efforts to promote collaboration to achieve shared goals.

Timeframe: 2023-2030

Strategy #2:

Strengthen or develop strategic partnerships between specific Concordia units and community partners.

Timeframe: 2023-2030

Strategic Plan Alignment

3C: Deepen the college's connections with the local region, working in collaboration with partners committed to building stronger communities.

GOAL #2: INCREASE UNDERSTANDING OF THE CONNECTIONS AMONG CLIMATE CHANGE, RESILIENCE, ECOLOGICAL HEALTH, AND EQUITY

Concordia can become a regional leader in equipping people with an understanding of the interconnected challenges that we face and with the tools needed to address the challenges. The college's work on climate change and ecological health, coupled with its active commitment to DEI, makes it well-placed to serve as a resource for those in our region. Moreover, the new core curriculum, with its focus on engaged citizenship and the themes of sustainability and justice, dovetails perfectly with the goals of this Climate Action Plan.

Students can be centrally involved in implementing this goal, learning alongside and from community partners, while also bringing their perspectives and knowledge to action-oriented workshops and events.

Achieving this goal depends on implementation of the goals in the education section of this plan and on support for ever-increasing community engagement. The point of having this goal in this section is to ensure that, as Concordia pursues educational goals on campus, consistent attention is paid to continuing to infuse integrative learning and community engagement into all that we do. In the end, this will not only benefit our students and our local communities, but it can also help recruitment efforts.

Strategy #1:

Curate a series of workshops and other events open to the campus and greater Fargo-Moorhead community.

Timeframe: 2023-2030

Strategy #2:

Pursue the strategies in the education section of this plan.

Timeframe: varied

Strategic Plan Alignment

3D: Exercise bold leadership in responding to climate change, ecological decline, and environmental injustice.

GOAL #3: PROMOTE EQUITY ON CAMPUS AND IN THE LOCAL COMMUNITY

Advancing equity is a foundational element of any effort to increase community resilience. Whether it be a college or a city, a community in which all are included and experience equity is more resilient, as people with diverse backgrounds and identities can develop and use their talents to strengthen the community and address issues that arise. As climate change and other forces challenge Concordia and its employees and students, achieving equity stands out as a necessary, urgent, and rewarding goal. The strategies set out here build on recent progress made by units across the college.

Basic Needs / Health and Wellness

The creation of the Center for Holistic Health marked a renewed commitment to student health and wellness, while a number of programs seek to meet students' basic needs: the food pantry, the free store, the emergency fund, and the hosting of an AmeriCorps member to work in this area. Of course, more work is needed. The time is right for deeper collaboration with community partners to ensure that all students' basic needs are met and that everything possible is done to promote student health and wellness.

Sense of Belonging and Retention/Graduation

Especially in recent years, considerable attention has been paid to increasing students' sense of belonging, a key part of the effort to increase the retention and graduation rate of minoritized and low-income students. Inclusion and belonging are a focal point of activities in the division of Student Development and Campus Life, with the notable creation of a Diversity Support Coordinator position in the Center for Student Success. The offices of Diversity and Global Learning promote belonging in multiple ways. A number of programs exist to support minoritized and low-income students: Community Achievement Scholars, ACT 6, the FOCUS project, and the Drive program for conditional admits. Most recently, changes to First-Year Experience programming reflect feedback from minoritized students and include the creation of a multicultural orientation club. The Pride Network is another example of ongoing efforts to support a sense of belonging. Identifying and putting into place additional resources and programming will yield benefits for students, the college, and the community.

Strategy #1:

Increase accessibility to campus and community basic needs resources to promote community resilience and collegiate success among low-income and minoritized students.

Timeframe: 2023-2026

Strategy #2:

Promote equitable student success by developing appropriate interventions to address discrepancies in retention and graduation rates.

Timeframe: 2023-2026

Strategy #3:

Encourage all units of the college and individual faculty/staff members to use an equity lens to review and adjust policies and practices to reduce systemic barriers.

Timeframe: 2023-2026

Strategy #4:

Collaborate with community partners to address inequities experienced by youth in our region, while providing learning opportunities for our students.

Timeframe: 2023-2026

Equity-Minded Policies and Practices

The Office of Diversity has spearheaded efforts to increase awareness of implicit biases and the role that policies and procedures play in perpetuating inequities. Divisions have begun to implement changes such as the Religious Accommodations Policy and special arrangements for Ramadan. National best practice is to use an anti-racist equity lens to examine policies and procedures with the aim of understanding changes that will increase equity. Equipping and empowering units and departments across the college to use an anti-racist lens will enable Concordia to move forward to create an environment marked by equity and universally shared opportunities to thrive.

Community Collaboration to Benefit Youth

As an undergraduate-centered college, Concordia is perfectly positioned to work with partners to engage in youth-centered equity work that spans the college and the local community. Across our metro region, a great deal of attention is paid to increasing the opportunities for young people, ensuring that they have the skills and mindsets needed to succeed. Yet achievement gaps in education by race, ethnic, and socioeconomic status persist in our region just as they do nationally. The Moorhead Community Resilience Task Force has determined that one of the best ways to improve equity is to focus on inequities experienced by youth. Concordia's focus on integrative learning – mixing academic learning with real-world experience – leads naturally to partnerships in which Concordia students and youth in the metro area work together to address equity issues. Moreover, Concordia's efforts to increase equity on campus can be linked with equity work off campus.

Strategic Plan Alignment

2A: Become a diverse and inclusive college community in which every member feels a sense of belonging.

3B: Build and implement practices that foster well-being and spiritual growth among all who learn and work at Concordia.

3C: Deepen the college's connections with the local region, working in collaboration with partners committed to building stronger communities.

GOAL #4: CREATE AN ECOLOGICALLY HEALTHY AND DIVERSE NATURAL ENVIRONMENT THAT SUPPORTS HUMAN WELL-BEING

Working to create an ecologically healthy and diverse landscape is an important part of bolstering resilience and providing an environment that supports human well-being. Traditional landscaping, with its reliance on Kentucky Bluegrass-style lawns and a small number of species of trees/shrubs, is poorly suited to weathering climate change. These lawns are not drought-tolerant, while heavy reliance on just a few species of trees leaves a community vulnerable to a disease wiping out a species (such as is happening with the Ash tree). Moreover, providing an environment in which birds, bees, and other types of species can thrive ensures that the community benefits from the many services they provide, such as pollination. A healthy natural environment supports human well-being in many other ways as well, including by providing a rich, aesthetically pleasing tableau of places in which to recharge and refresh.

The City of Moorhead's Comprehensive Plan, issued in March 2022, names Ecological Health as one of the key values underlying all parts of the plan. The plan, and the set of Sustainability and Resilience goals in particular, emphasizes the need to continue to improve ecological health to increase resilience and improve human well-being. Also, the Moorhead Community Resilience Task Force has named improving ecological health as one of its two priorities. In the coming years, there is abundant opportunity for Concordia to work with the city to model, pilot, and promote actions that address this goal.

Over the years, Concordia has expanded its use of eco-friendly landscaping. The Integrated Science Center built this into the design, Facilities has installed edible landscaping and a large rain garden area, and Sustainability has done pollinator plantings at the campus garden. Moorhead's Comprehensive Plan identifies "pursue strategies to increase the number of eco-friendly, pollinator-friendly plantings on public and private land" as something to be pursued in the very first years of plan implementation. Concordia is positioned to be the key partner in this, providing community-engaged learning opportunities for our students in the process.

Strategy #1:

Contribute to work by the City of Moorhead and others in this area, serving as an early implementer of initiatives in the city's comprehensive plan

Timeframe: 2023-2025

Strategy #2:

Increase the number and size of eco-friendly plantings on campus

Timeframe: 2023-2030

Strategic Plan Alignment

3C: Deepen the college's connections with the local region, working in collaboration with partners committed to building stronger communities.

3D: Exercise bold leadership in responding to climate change, ecological decline, and environmental injustice.

FOCUS AREA #3: CLIMATE, RESILIENCE, AND SUSTAINABILITY EDUCATION

Goal 1: Ensure that all students increase their understanding of climate change, resilience, and sustainability, with a strong focus on equity and justice issues.

Goal 2: Equip students with the knowledge, tools, and skills needed to support and lead climate action in their life beyond Concordia.

Goal 3: Support the Environmental and Sustainability Studies (ESS) Program.

INTRODUCTION

“We learn, we lead, for the sake of the world.” *Concordia Leads: The Plan for 2030* puts forth this vision, to “educate resourceful 21st-century learners to become accomplished professionals, courageous citizens, and transformational leaders who build a world more joyful and more just.” This plan pledges that “Concordia will offer a transformative education that shapes 21st-century learners ready to address complex challenges in their professional, public, and personal lives with agility, imagination, and moral insight.”

Climate change and the ecological crisis, both caused by unsustainable ways of living, are grand and complex challenges that call for action by people equipped with the skills and dispositions that Concordia aims to nurture in its students. Moreover, these challenges – with their many aspects, layers, and points of entry – provide an exceptional arena for the practice of integrative learning. By focusing on these challenges, in tandem with a focus on justice, Concordia has the opportunity to re-energize the liberal learning mission of the college over the next few decades. Through this, it is hoped that every student will be a citizen actor in moving toward climate justice so that the diversity of life will thrive. And it is hoped that every graduate will contribute to systemic redesign that prioritizes carbon neutrality, resilience, sustainability, and intersectional environmental justice.

An organizing strategy for climate education is to involve students, staff, and faculty in every aspect of institutional response to achieving carbon neutrality and community resilience. Participants will thereby be able to take the lessons they learn from their experience on campus and adapt them for further implementation in their future vocations and communities.

In order to navigate the challenge and the opportunity climate change affords, we will emphasize an approach that is interdisciplinary, intersectional, global, and local as we design and build an anticipatory community for the future.

THE APPROACH TO CLIMATE EDUCATION

Interdisciplinary

Climate change is an issue that touches on nearly every aspect of life. It is a problem that is civilizational in scope, involving environmental, social, cultural, and political actors and processes. Thus, every discipline is needed as we undertake the task of understanding and responding to climate change. Good climate science is essential, along with the broad array of physical and biological sciences, but we also need to understand the history, politics, and economics of climate change. The arts, literature, philosophy, and the environmental humanities help us work through future scenarios, cultivate empathy, imagine new possibilities, and weigh priorities. Sociology, psychology, and communication studies help us understand how transformational attitude and behavior change can happen.

To become responsibly engaged in the world requires that we work together with persistence, creativity, trust, respect, and courage, overcoming boundaries of all sorts, including those that

separate disciplines. While climate change has been called the biggest existential threat humanity now faces, we might better see it as an existential opportunity to reimagine a better world. To do so, we will need to work to take a longer view than the dominant “business as usual” mindset provides. When we begin to account for the externalized costs of environmental injustice affecting those who are economically and politically marginalized and of pushing of planetary limits, we see that “business as usual” is too costly to continue. Since all life is interconnected, our systems need to be redesigned with sustainability, justice, diversity, and resilience as priorities. The work will take courage, dedication, and collaboration. A thoroughly interdisciplinary approach anchored in experiential and integrative learning can enable us to persist and succeed in this work.

Indeed, climate change education extends well beyond the classroom into not just internships and integrative learning but also co-curricular programming and extra-curricular activity in the Concordia community. In this sense, it must not only be interdisciplinary but also transcend the traditional academic vs co/extra-curricular divide.

Intersectional

Climate justice will be central to how we approach climate change education across the curriculum because those who have contributed the least to the acceleration of environmental degradation and the climate emergency are bearing the most harmful effects of climate change. Predictions emphasize that the pattern will continue to be a wedge dividing the economically privileged from those most vulnerable to volatility and disaster.

Climate justice links de-carbonization to decolonization. An intersectional lens considers how the systems and institutions that align capitalism, patriarchy, and colonialism have not historically been kind to the environment, women, indigenous people, and communities of color. Indigenous ecological knowledge, postcolonial perspectives, marginalized perspectives, and grassroots resistance movements play important roles in promoting intersectional climate justice by drawing on traditions and practices that emphasize sustainability.

Climate justice picks up the banner of environmental justice that calls out environmental racism as the flipside of not-in-my-backyard syndrome. An intersectional lens fosters inquiry into how climate change and environmental degradation disproportionately affect human health. An intersectional lens on climate justice attends to how power and privilege layer race, gender, class, ability, sexual orientation, religion, and citizenship status onto our considerations.

Intersectional climate justice must also include the more-than-human world as we consider multispecies justice. The climate emergency leads to the acceleration of species extinction. As we grieve the loss of these species, we learn to appreciate our multispecies entanglement as the mammals most responsible for the emergency and the environmental injustices it brings for other species.

Global

The climate emergency does not recognize or respect national borders. Most of the great acceleration of anthropogenic climate change can be attributed to the industrial revolutions in the Global North though the effects of climate change are being experienced most dramatically in the Global South. Climate change education must attend to the impact of inequalities of wealth, income, political power, socioeconomic status, and access to education. An

intersectional justice lens attends not just to the spectacular destruction of property in disasters. Such a lens focuses on the slow violence in the uneven distribution of resources devoted to disaster recovery. Such a lens seeks to capture the devastating impact such intensifying disasters have on the deterioration of ecosystems people have for generations relied on for their livelihoods. An intersectional lens on climate justice can help us attend to how conflict is exacerbated by climate change. An intersectional climate justice lens can likewise help us attend to the extent to which immigration crises of the current century should be understood as climate refugee crises.

With an emphasis on global learning, Concordia has long championed the benefits of language learning and study abroad. Indeed, there is much that can be learned about how other cultures and communities are facing the challenges and opportunities of the climate emergency. We can be inspired by foreign models for redesigning our systems and institutions to promote intersectional climate justice. But we also need to reimagine how these benefits from study away can be measured against the externalized costs of travel rooted in systems reliant on “business as usual.” Our work will involve extensive research, analysis, and debate about the politics, economics, and social impact of purchasing “offsets” and implementing local “onsets.”

Local

The other sections on the climate commitment, focused on how we can achieve carbon neutrality and foster community resilience, already emphasize the local nature of this plan. The challenge and opportunity here is to connect those aspects to teaching, learning, and living in an intentional and sustainable community. Work on behavior change, energy savings, efficiency, and institutional design and priorities are topics that programs and curriculum can consider. Resilience planning connects the campus to the community and the community to the campus. Community engagement is emphasized through the curricular and co-curricular emphasis on connecting the theory of the classroom to the practice of engaged application through integrative learning.

Anticipatory Community

The residential college experience provides an intentional community that facilitates a deep learning experience for students. However, the amenities enjoyed by students mirror the rest of society – built around comfort based on the extravagant use of damaging fossil fuels (larger dorm rooms, dorm fridges and microwaves, more electronics, air conditioning, free parking available to every student, more food choices, etc.). As James Farrell argues in *The Nature of College*, college could be mindfully redesigned to make it easy for students to be sustainable rather than perpetuating a “business as usual” mindset and a structure that works against sustainable choices and practices. The college can be a site of social innovation for the sake of sustainability. Such social innovation provides inspiration to students that they carry with them beyond their time spent on campus. For many American college students, a residential campus experience is their first time living in a walkable community. But what if it were easy to make the most sustainable choice every time the student visits the cafeteria, attends an athletic event, or travels home for break?

What if Concordia could become a living model of an anticipatory community? An anticipatory community is one that is designed to be a model for the future of sustainable behavior and practices. An anticipatory community inspires others to make the transition to a more just and sustainable way of life. To be an anticipatory community, we will have to be on the forefront of

innovations in the transition to a sustainable future. This will require creativity, commitment, collaboration, leadership, and dedication. But the result will be that we are looked to as a regional model that inspires others to make similar transitions.

When students are inspired and equipped by this anticipatory community to influence the affairs of the world, they will be poised to lead the businesses, organizations, and institutions they join or create toward redesign that fosters sustainable behavior and action. Graduates of an anticipatory community can become beacons of transformational change in a wide variety of careers within every sector of the economy and within a variety of faith communities.

CURRICULAR REFORM

In recent years, curricular reform has moved Concordia in directions that strongly support the introduction of goals around climate, resilience, and sustainability education. Nationally, education in these areas emphasizes interdisciplinary and experiential learning that is tied firmly to developing skills needed for practical work in addressing problems. Several curricular innovations at Concordia embody these principles. They set the college up to excel in delivering an educational experience that prepares students to be engaged and effective citizens who contribute, in ways big and small, to tackling the climate crisis and the task of forging a sustainable and resilient path through the 21st century. These innovations include:

- The embrace of integrative learning as a foundation for teaching and learning at Concordia. As stated in the college catalog: “A philosophy of integration informs student learning at Concordia. Learning shaped by integration is interdisciplinary, tests theory and applies knowledge through practice, moves students beyond the classroom into the worlds of work, professional life, and civic engagement, and fosters real-world problem-solving in dialogue with multiple voices and diverse community interests. Integrative learning binds together study of majors, the Core Curriculum, and cocurricular involvement with the development and refinement of responsible engagement in the world to advance the college’s central mission.”
- The development of an array of PEAKs – Pivotal Experience in Applied Knowledge – that enable students to venture beyond the classroom and engage in real-world learning in the community. The requirement that all students complete two PEAKs has prompted innovation among faculty and staff alike, enabling integrative learning to take root across the college.
- The adoption by the division of Student Development and Campus Life of a curricular approach to work in areas such as Residence Life and Student Engagement. This method uses intentional and developmentally sequenced strategies and assessment to facilitate student learning, recognizing that powerful student learning occurs beyond the traditional academic realm. Taken together, reforms to the academic curriculum and the innovative work in SDCL has moved us towards a true “whole college” approach to student learning that values and measures the various types of learning that occur in varied sites, roles, and positions.

- The “Student Work, Student Learning” initiative that seeks to ensure that all student work positions at Concordia include student learning objectives. The goal is that students experience work as a learning experience that complements the other learning that they do while at Concordia.
- The ongoing common curriculum reform process has already resulted in changes that open the way for more extensive education around issues of climate, resilience, and sustainability. “Engaged Citizenship” has been designated as the theme of the new core curriculum. Senate also approved a requirement that starting in the 2023-24 year, students must complete “one course dedicated to addressing sustainability in both its domestic and global dimensions with a significant focus on environmental sustainability.”

The following goals and strategies are designed to build on Concordia’s curricular reforms and strategic initiatives. Pursuit of these goals will not only enable the college to meet its commitment to respond to the crisis of climate and ecological sustainability. It will also facilitate the achievement of the college’s broader goals for the curriculum and student learning experience.

GOALS AND STRATEGIES

	STRATEGY	LEAD	TIMEFRAME
CLIMATE, RESILIENCE, AND SUSTAINABILITY EDUCATION			
GOAL 1: Ensure that all students increase their understanding of climate change, resilience, and sustainability, with a strong focus on equity and justice issues.			
E1.1	Promote the inclusion of sustainability coursework in the core curriculum.	PSC	2023-2025
E1.2	Provide faculty development opportunities on climate change and sustainability.	PSC; Sustainability	2023-2025
E1.3	Encourage all departments and programs to include climate change in departmental/program learning outcomes.	PSC	2023-2025
E1.4	Create and regularly administer a climate literacy survey to use as an assessment for climate and sustainability education across the curriculum.	Sustainability	2023-2030
GOAL 2: Equip students with the knowledge, tools, and skills needed to support and lead climate action in the community and in their life beyond Concordia.			

E2.1	Develop and implement a “sustainability and community engagement program.”	Community Engagement	2023-2025
E2.2	Develop programming designed to enable students, faculty, and staff to move from anxiety about climate change to empowering actions to address climate change.	PSC; Sustainability; ESS	2023-2025
E2.3	Create and support student work and internship positions that support this goal.	Sustainability; Office of Student Engagement; ESS	2023-2025
E2.4	Support academic and co-curricular leadership and learning opportunities for students.	PSC; Sustainability; Office of Student Engagement; ESS	2023-2030
E2.5	Use actions taken in support of carbon reduction, resilience, and ecological health to create learning experiences for students.	PSC; Sustainability; Facilities; Community Engagement	2023-2030
GOAL 3: Support the Environmental and Sustainability Studies (ESS) Program.			
E3.1	Support ESS programming that equips students to play leadership roles in addressing climate change and sustainability challenges.	Sustainability; ESS	2023-2025
E3.2	Increase promotion of the ESS program to prospective and admitted students.	Enrollment; Sustainability; ESS	2023-2025

GOAL #1: ENSURE THAT ALL STUDENTS INCREASE THEIR UNDERSTANDING OF CLIMATE CHANGE, RESILIENCE, AND SUSTAINABILITY, WITH A STRONG FOCUS ON EQUITY AND JUSTICE ISSUES.

By signing the Climate Commitment, Concordia agreed “to make carbon neutrality and resilience a part of the curriculum and other educational experiences for all students.” The faculty have already decided to require that all students take a course dedicated to addressing sustainability. The important work going forward is to ensure that there are a robust set of courses in this area and that climate change issues are well-represented among these courses.

Experience at both Concordia and other institutions has shown that climate and sustainability can easily be integrated into the curriculum in nearly all majors. This integration may take the form of a dedicated course, a module of a course, an assignment, a class activity or case study, etc. Regularly offering faculty development opportunities will be helpful and necessary. Workshops and resource materials for departments can assist them in considering adding climate change to their departmental learning outcomes. A climate/environmental literacy survey will enable the college to track the effects of this goal. One of the nationally validated survey instruments may prove to be suitable, or the college may develop its own relatively simple instrument.

Strategic Plan Alignment

1A: Enact an interdisciplinary and issue-based approach to teaching and learning that embraces integrative learning as a defining characteristic of a Concordia education.

1B: Construct for all undergraduates a global Concordia education focused on engaging the compelling challenges that transcend cultural, ideological, and national borders.

3D: Exercise bold leadership in responding to climate change, ecological decline, and environmental injustice.

Strategy #1

Promote the inclusion of sustainability coursework in the core curriculum.

Timeframe: 2023-2025

Strategy #2:

Provide faculty development opportunities on climate change and sustainability.

Timeframe: 2023-2025

Strategy #3:

Encourage all departments and programs to include climate change in departmental/program learning outcomes.

Timeframe: 2023-2025

Strategy #4:

Create and regularly administer a climate literacy survey to use as an assessment for climate and sustainability education across the curriculum.

Timeframe: 2023-2030

GOAL #2: EQUIP STUDENTS WITH THE KNOWLEDGE, TOOLS, AND SKILLS NEEDED TO SUPPORT AND LEAD CLIMATE ACTION IN THE COMMUNITY AND IN THEIR LIFE BEYOND CONCORDIA

This goal supports the college's educational vision as stated in *The Plan for 2030*, the commitment to integrative learning, and the new focus on Engaged Citizenship. The college's Sustainability Coordinator already runs a student internship program that provides on-campus positions for 15 students per year. Similarly, through PEAKs and other vehicles, we are already doing quite a bit to provide climate and sustainability-focused learning opportunities for students, but there is scope for more.

In particular, the implementation of the goals and strategies in this plan can and should be done in ways that prioritize student learning opportunities. Through participating in this work, in our own living-learning laboratory, students can gain experience in implementing change in an organization and within a community. In the same way, creating new community engagement opportunities in the area of sustainability will give students more of the off-campus experience that they need.

Lastly, as the climate crisis has become more apparent and severe, anxiety about the climate and ecological decline has increased. Programming to address this will help members of the Concordia community to move from anxiety about climate change to empowering actions to address climate change.

Strategic Plan Alignment

1A: Enact an interdisciplinary and issue-based approach to teaching and learning that embraces integrative learning as a defining characteristic of a Concordia education.

1B: Construct for all undergraduates a global Concordia education focused on engaging the compelling challenges that transcend cultural, ideological, and national borders.

3D: Exercise bold leadership in responding to climate change, ecological decline, and environmental injustice.

Strategy #1:

Develop and implement a "sustainability and community engagement" program.

Timeframe: 2023-2025

Strategy #2:

Develop programming designed to enable students, faculty, and staff to move from anxiety about climate change to empowering actions to address climate change.

Timeframe: 2023-2025

Strategy #3:

Create and support "student work, student learning" positions that support this goal.

Timeframe: 2023-2025

Strategy #4:

Support academic and co-curricular leadership and learning opportunities for students.

Timeframe: 2023-2030

Strategy #5:

Use actions taken in support of carbon reduction, resilience, and ecological health to create learning experiences for students.

Timeframe: 2023-2030

GOAL #3: SUPPORT THE ENVIRONMENTAL AND SUSTAINABILITY STUDIES (ESS) PROGRAM

Although climate and sustainability education needs to be infused through the college curriculum, a strong Environmental and Sustainability Program acts as an anchor for teaching and learning in this area. Such a program provides a home for faculty and students with the most interest in climate and sustainability, while also providing intellectual leadership.

Concordia has a strong ESS Program that brings together faculty from a good variety of disciplines. The number of majors has grown in recent years. However, given the resources that Concordia has to offer and the pervasive concern that young people have about climate and environmental degradation, it seems likely that Concordia could attract a greater number of students to the major.

In 2022, an Environmental Leadership Cohort program was launched, designed for incoming students. The program is to serve both as a recruitment tool and as a way of assisting a set of new students to access some opportunities earlier than might otherwise be possible. Whether or not the current trial model is successful, some sort of similar program should become a signature offering for prospective students.

The promulgation of this Climate Action Plan provides an opportunity to develop new messaging and re-launch promotion of the ESS program to prospective and admitted students. Concordia can demonstrate to these students that it is on the forefront of positive change in response to the challenges we face, and that it can provide the skills and experience needed to be effective in climate and sustainability focused careers.

Strategy #1:

Support ESS programming that equips students to play leadership roles in addressing climate change and sustainability challenges.

Timeframe: 2023-2025

Strategy #2:

Increase promotion of the ESS program to prospective and admitted students.

Timeframe: 2023-2025

Strategic Plan Alignment

1A: Enact an interdisciplinary and issue-based approach to teaching and learning that embraces integrative learning as a defining characteristic of a Concordia education.

1B: Construct for all undergraduates a global Concordia education focused on engaging the compelling challenges that transcend cultural, ideological, and national borders.

3D: Exercise bold leadership in responding to climate change, ecological decline, and environmental injustice.

FOCUS AREA #4: FINANCE

Goal 1: Build a plan for financing and funding carbon reduction actions.

Goal 2: Increase fundraising opportunities for sustainability.

Goal 3: Determine how best to ensure that the college's financial decisions support the goals of the Climate Action Plan.

INTRODUCTION

There is no way around it, financing a project of this size is going to be challenging. As a part of their carbon reduction study, KFI developed a cost analysis of all the reduction methods employed in their final recommendation. A full cost analysis of each element can be found in their final report, but for the sake of being concise, we have included the graphic below (Table __) which provides an overview of the total costs of all strategies combined.

Recommended Path	ECMs, Geothermal, Offsets, Solar Thermal ¹
Average \$/year/SF, 2020 NPV (CAPEX NPV + Utility NPV)	\$2,34
Total Utility Cost ²	\$34,727,200
Total Utility NPV ²	22,815,900
Total CAPEX, 2020 Dollars ³	\$22,815,900
Total CAPEX, 2020 NPV ³	\$179,981,700
Total Carbon Emissions	\$77,198,400
Total Carbon Savings	258,721
CAPEX NPV ³ + Utility NPV ²	130,647
Difference from Business-as-usual NPV	\$43,478,000
Total \$/MT Carbon Mitigated (Aggregate)	\$766
\$/MT Carbon Mitigated (Annual)	\$8,130

¹Totals are summed over all 31 years of the study period, 2020 through 2050

²Utility costs are not adjusted for inflation

³CAPEX costs are adjusted for 3% annual inflation

To better understand the financial challenges and opportunities of this project, a Financial Working Group was created to explore funding options. The group included staff from the Advancement Office, Business Office, and Sustainability, faculty from the Offutt School of Business, and interested students. Although the group did not determine a magic bullet in terms of financing, the consensus was that it will likely require a bundling of a variety of options and sources as well as starting the funding conversations now to avoid surprises later on. For less financially burdensome projects, such as behavior change efforts and ECMS, funding may be able to come from operational budgets and college projects funding. However, larger initiatives, such as geothermal and solar thermal will likely require the combined efforts of advancement, sustainability, and the business office.

Like with any large financing project, there are many uncertainties that will need to be solidified over time to move forward. Budget complications resulting from the COVID-19 pandemic are also in play, so timing of some projects may need to be adjusted based on financial availability. All this ties back to the fact that we have given ourselves time to fund and complete these projects by our 2050 goal and know that this plan and its implementation will ebb and flow as circumstances, technologies, and knowledge advances.

GOALS AND STRATEGIES

	STRATEGY	LEAD	TIMEFRAME
FINANCE			
GOAL 1: Build a plan for financing and funding carbon reduction actions.			
F1.1	Research financing options, such as climate bonds, for larger projects that will reduce carbon.	PSC; Finance	2023-2025
F1.3	Explore with President and Board of Regents the potential for Board-directed funding.	Sustainability; President's office	2023-2025
GOAL 2: Increase fundraising opportunities for sustainability.			
F2.1	Determine a method for including climate action plan goals in the Comprehensive Campaign Feasibility Study.	Sustainability; PSC; Advancement	2023-2024
F2.2	Seek grant funding for funding carbon-reduction projects.	PSC; Foundation Relations and Research Grants	2023-2025
F2.3	Develop and re-launch the Green Revolving Fund.	Sustainability; PSC; Advancement; Facilities Management	2023-2025
GOAL 3: Determine how best to ensure that the college's financial decisions support the goals of the Climate Action Plan.			
F3.1	Seek to incorporate climate and environmental sustainability considerations into all financial decisions.	Sustainability; Finance	2023-2030
F3.2	Support faculty and student projects that investigate connections between financial decisions and CAP goals.	Sustainability; PSC	2023-2030

ACKNOWLEDGMENTS

A large number of individuals contributed to the development of this Climate Action Plan. With the work taking place over four years, interrupted by the pandemic, many different people were involved in the various stages of work and sections of the plan.

The CAP development process was led by the President's Sustainability Council.

Faculty members: Kenneth Foster (chair), Jonathan Steinwand, Jennifer Sweatman (from 2020), Michelle Marko (through 2020)

Sustainability Coordinator: Gabrielle Lommel (from 2021), Jaclynn Maahs (through 2021)

Staff: Mikal Kenfield, Mark Lillehaugen, Dallas Fossum (from 2019), Wayne Flack (through 2018), Nicole Crouch (through 2021), Tim Hiller (through 2020), Edward Antonio (through 2021)

Students who served during plan development: Amina Fathkulloeva, Kay Franzese, Evergrace George, Mya Hassebrock, Mary Jane Johnson, Anna Larson, Kelly Lorenz, Josie Perhus

Staff members in Facilities Management were instrumental in the effort to create the carbon reduction part of the plan, devoting many hours to the work.

The final Climate Action Plan was written primarily by Ken Foster and Gabrielle Lommel, with contributions from Jonathan Steinwand and building on earlier writing by Jaclynn Maahs.

APPENDICES

CONCORDIA COLLEGE VISION FOR SUSTAINABILITY

Concordia College's Vision for Sustainability

Issued on December 6, 2012

VISION

Concordia College will embrace a concern for sustainability that is rooted in the responsibility to ensure the environmental, economic, and social health of the college and of our global community. Concordia College's sustainability vision is interwoven with our commitment to global learning, with our faith tradition and abiding commitment to ethical deliberation, and with the values and practices of the liberal arts.

More specifically, we envision Concordia as a place where:

- The principles of sustainability – environmental, economic, and social – are fundamental in all decision-making processes.
- Conversations about sustainability are a regular part of community life.
- Insights into the sustainability challenge and ideas about creating sustainable ways of living are constantly generated and explored.
- Students, faculty, and staff develop the perspectives and skills needed to work for sustainability in the wider world.
- College operations have as little negative ecological impact as possible.

As a global liberal arts college of the church, Concordia can have a distinctive approach to fulfilling its commitment to sustainability. Most fundamentally, since we are an institution of higher education, everything that we do to advance sustainability should involve the promotion of learning and student success. Concordia College will thus work to advance sustainability in ways that harness and develop synergies between education and operations. Indeed, meeting the sustainability challenge presents an extraordinary opportunity to enrich and enhance the educational experience of students. Placing the intersection of ecological, economic, and social concerns front and center will invigorate the work of the College, making Concordia stronger, more relevant, and more vibrant. This vision of a sustainable Concordia is profoundly consistent with our established identity and will allow us to achieve a new level of scholarly excellence, global engagement, moral deliberation, and ongoing relevance.

GUIDING PRINCIPLES

The following fundamental principles guide us in this journey:

- We have a moral responsibility to preserve the integrity of the ecological systems on which life depends. This responsibility arises from love for people, love for all creation, and love for God. This responsibility is especially salient for a college of the ELCA.
- Responsible stewardship of the environment and natural resources is necessary to ensure the long-term economic health and vitality of Concordia College, both the residential liberal arts college and the language villages.
- Living more sustainably requires both that individuals change their behaviors and that organizations create an environment that facilitates and rewards positive changes.

- The pursuit of sustainability must be grounded in local communities and involve meaningful collaboration with partners in the Fargo-Moorhead and Bemidji regions.
- Sustainability must be approached from a global perspective. Attention should be paid to the global systems of which our actions are a part, the effects of our actions on people in other places, and how cultural traditions inform thinking about sustainability.
- Environmental sustainability is deeply connected to concerns for justice and the good of all humanity. Work on sustainability needs to involve critical reflection on systems that hinder movement towards more sustainable and fulfilling ways of life.

The challenge facing humanity is that of learning to live in ways that preserve the ecological integrity of the earth, enable all people to live in dignity, and facilitate the creation of just societies. Our challenge is to ensure that the ecological systems on which we depend remain healthy even as we seek to thrive economically and in community. This is the vision set out by the concept of sustainability, which recognizes the interdependence of ecological systems, economic systems, and social communities. It is a vision based fundamentally on hope and a sense that we now have the opportunity to rethink current practices and to build a better world for ourselves, other people, and future generations.

RATIONALE

Concordia's sustainability vision is built on our identity as a global liberal arts college of the church.

- Concordia College is focused on preparing students for their lives as professionals, citizens, and people of faith. Through the shared search for knowledge and understanding, deep conversation about fundamental questions, and careful attention to the pressing issues facing societies and our global community, members of the Concordia community work together to create positive change. Students emerge from the Concordia experience equipped to be responsibly engaged in the world, pursuing their interests and using their talents to live a meaningful life.
- Concordia College is concerned with and responsive to the needs of the world beyond the boundaries of the college and the language villages. Concordia engages collaboratively with local, national, and international partners of divergent views on issues of shared concern. The college endeavors to foster productive dialogue and research on both promising and disturbing developments around the world.
- Concordia College has an historic and enduring commitment to the responsible stewardship of resources and to long-term strategic planning. Concordia's unwavering attention to careful fiscal management and the prudent use of resources reflects the values of its founders. The commitment to the responsible use of natural resources so as to conserve the bounties of creation is rooted in our identity as a college of the ELCA, which has declared that "care for the earth [is] a profoundly spiritual matter."¹

Given who we are as an institution and a community, recent global trends compel us to articulate a vision for the future that embraces sustainability as a core principle and value. Most fundamentally, our concern for sustainability stems from the simple yet profound observation that the earth is our home. It arises from the conviction that we have a sacred duty to protect the earth's vitality, diversity, and beauty. In so doing, we work for the well-being of all of humanity, for the good of people living now as well as future generations.

¹ ELCA Social Statement on Caring for Creation: Vision, Hope, and Justice (August 28, 1993).

CONCORDIA COLLEGE CLIMATE COMMITMENT



Climate Leadership Statement

We, the undersigned presidents and chancellors of colleges and universities, believe firmly in the power, potential, and imperative of higher education's key role in shaping a sustainable society. Not only are we deeply concerned about the increasing pace and intensity of global climate change and the potential for unprecedented detrimental impacts, but we also understand that technology, infrastructure, global interconnectedness, and our greatest asset – engaged, committed, smart students – allow us to explore bold and innovative solutions and to lead in climate action and sustainable solutions.

We have begun to experience the effects of climate change in our communities and we understand that these effects are projected to become more severe and damaging. We recognize that mitigation and adaptation are complementary strategies for reducing the likelihood of unmanageable change, managing the risks, and taking advantage of new opportunities created by our changing climate.

We believe colleges and universities must exercise leadership in their communities and throughout society by providing the knowledge, research, practice, and informed graduates to create a positive and sustainable future. Along with other aspects of sustainability, campuses that address the climate challenge by reducing greenhouse gas emissions and by integrating resilience into their curriculum, research, and campus operations will better serve their students and meet their social mandate to help create a vital, ethical, and prosperous civil society.

We further believe that exerting leadership in addressing climate change will reduce our long-term energy costs and the costs of climate disturbance, increase our quality of life, attract excellent students and faculty, and build the support of alumni and local communities.

We have resolved to take action in one of the following Climate Leadership Commitments. We believe carbon neutrality and resilience are extremely high priority areas of action for all institutions and we aim to lead the nation in these efforts. We urge others to join us in transforming society towards a sustainable, healthy, and more prosperous future.





Climate Commitment:

An integrated climate commitment including carbon neutrality and resilience

1) Develop a comprehensive Climate Action Plan *

- a. Within two months of signing this document, create internal institutional structures to guide the development and implementation of the Plan
- b. Within one year of the implementation start date, actively support a joint campus-community task force (or equivalent) to ensure alignment of the Plan with community goals and to facilitate joint action, and complete a greenhouse gas emissions inventory, also identifying near term opportunities for greenhouse gas reduction. Report these in the first annual evaluation of progress
- c. Within two years of the implementation start date, lead and complete an initial campus-community resilience assessment including initial indicators and current vulnerability
- d. Within three years of the implementation start date complete the Plan, (also reflecting joint community-campus components), which will include:
 - A target date for achieving carbon neutrality as soon as possible
 - A target date by which defined thresholds of resilience will be met
 - Interim target dates for meeting milestones that will lead to carbon neutrality and increasing resilience**
 - Mechanisms and indicators for tracking progress (including those that cut across campus-community boundaries)
 - Actions to make carbon neutrality and resilience a part of the curriculum and other educational experiences for all students
 - Actions to expand research in carbon neutrality and resilience
- e. Review, revise if necessary, and resubmit the climate action plan not less frequently than every five years

2) Submit an annual evaluation of progress

- a. Within one year of the implementation start date, and every year thereafter, complete an annual evaluation of progress
- b. Make the action plan, annual evaluation of progress (including greenhouse gas inventory, resilience assessment etc.), publicly available by submitting them to Second Nature's reporting system for posting and dissemination



* The plan may be designed to augment an existing sustainability plan, written as part of a new sustainability plan, or as a standalone plan. An online guide is available that provides information on successful institutional structures, helpful templates on climate action plans, useful indicators of progress, guidance for reporting and much more.

** Assistance for developing interim milestones and a number of example tangible actions are available online and are regularly updated.

Signed,



President/Chancellor Signature



President/Chancellor Name



College or University Name



Date

Please send the signed commitment document to:

Second Nature,
18 Tremont St., Suite 930
Boston, MA 02108

Or scan & email to:
commitments@secondnature.org

18 Tremont Street, STE 930, Boston, MA 02108 | 617.722.0036 | commitments@secondnature.org



EXECUTIVE SUMMARY OF KFI REPORT



Concordia Carbon Reduction Study

Volume 1

Concordia College
Carbon Reduction Consulting
19-187.00

March 20, 2020

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VOLUME 2

Appendix A – Energy Model Calibration Results

Appendix B – Moorhead Public Services

Appendix C – Assumptions Used to Develop Options

Executive Summary

The Carbon Reduction Study for Concordia College was commissioned to provide input to the College's Climate Action Plan, a Plan which targets net zero carbon emissions by 2050. The goals of the project were to develop alternate strategies which guide the campus toward carbon neutrality as quickly as feasible for the College and to select the preferred path based on best fit for the campus.

This Study was conducted in three parts:

1. Assessment of existing energy use and carbon emissions – the establishment of the campus carbon footprint, the collection of operating data, and computerized modeling of representative buildings on campus to model behavior under various changes in operating strategies.
2. Development of options – the testing of technologies, systems, practices and off-site offsets for their individual and combined effects on carbon footprint reduction, and the cost impact of our choices
3. Selection of the final "Glide Path" - an iterative process which resulted in a consensus path forward which balances the competing forces of CO₂ reduction, capital cost (CAPEX), operating cost (OPEX) and the effects of time on all categories.

The campus consists of 1.37 million square feet of conditioned space and currently has an Energy Use Intensity (EUI) of 102.3 kBtu/sf/year. This is split into 31.1 kBtu/sf for electricity and 71.2 kBtu/sf for natural gas usage. From that we conclude two important things:

1. The campus is heating-dominated, meaning that the CO₂ footprint is more assignable to the use of natural gas to heat the campus than for electricity used for lights, motors and air-conditioning.
2. The energy performance of the campus (EUI) is relatively poor, speaking largely to the age of the buildings and the materials and systems available during their original construction.

Further compounding the impact of natural gas on CO₂ footprint is the unique nature of the College's electricity supply. Moorhead Public Service (MPS) has access to the Western Area Power Association (WAPA) grid, which has a high percentage of renewable electricity from hydro-electric power and from nuclear sources. The remaining sources are largely coal, which will either be replaced at end-of-life by natural gas or some form of carbon capture and storage (CCS) system will be added to comply with future environmental regulations. Such end-of-life considerations are within the time horizon of this study.

The CO₂ footprint from electricity consumption and generation is typically larger than the heating side footprint due to the cycle efficiency of traditional power generation cycles. In this case, the contribution of electricity is lower. A summary of the College's current CO₂ footprint is here:

Electricity:	4,121 MT/yr
Natural Gas:	5,285 MT/yr
<u>Non-utility:</u>	<u>3,564 MT/yr</u>
Total:	12,970 Metric tons per year (MT/yr) CO ₂

With the campus energy model calibrated and CO₂ contributions understood, the Concordia working group considered all practical tactics and systems for the reduction in carbon production. The following

are a list of the systems considered, with commentary. Items in **Blue** text were advanced for further consideration (Table 1).

Table 1: Summary of Technologies Considered, Technologies in Blue Type Considered Further

Technology	Notes & Observations
Renewable Natural Gas (RNG)	Little interest from utilities for partnership
Solar Photovoltaic (PV)	More expensive than buying MPS/MRES renewable energy credit, limited space on campus
Concentrated Solar Thermal	Seasonal balance problem, limited space on campus
Geothermal Heating and Cooling	Buildings will need to be converted to low temperature heating hot water (HHW), will need supplementary heat source
Deep Direct Use (DDU) Geothermal	Technology still developing
Biomass Boilers	Concerns with particle emissions, odor, fuel availability, fuel storage, fuel transportation, and neighborhood relationships
Biofuel	Costly operational expenses with high fuel cost
Separation/Sequestration of Flue Gases and CO ₂	Technology still developing, additional electricity usage required, geology in Moorhead not conducive to long term CO ₂ sequestration
Electric Vehicles	Will need to be part of plan, but offsets aren't potent
Combined Heat and Power (CHP)	Reduces electric CO ₂ emissions, gas usage likely to increase, buildings will need to be converted to low temperature heating hot water (HHW)
Energy Conservation Measures	Reduces campus load which reduces plant size requirements and carbon footprint. Typically, don't have attractive simple payback profiles when considered individually but are important to a carbon neutral campus
Off Campus Offsets	Not visible on campus, amount of carbon offset can vary with changes in carbon emissions of grid electricity that is offset. Will likely be required to offset scope 3 emissions

Next, the attributes and challenges of the campus were assessed to narrow the choices to the most practical for further study. That process included stress-testing the practical considerations of each technology or tactic, performing opinions of probable cost of combinations, and measuring the potency of each option to reduce CO₂ footprint. CO₂ mitigation was measured in two ways - aggregate and annual – to illustrate the effect of time on total CO₂ mitigated. Potency was measured in \$/MT (annual) and \$/MT (aggregate).

Financial Analysis

The financial impact of each option was weighted against a “business-as-usual” CAPEX and OPEX plan with a time horizon from 2020 to 2050. This method of using a discounted cash flow analysis provides a true net difference in strategies and takes into account the repair and maintenance budgets, end-of-life replacements and the effect of time extensions on net present value and total CO₂ mitigated.

The baseline total costs (in 2020 \$'s) for “business-as-usual” are shown in Table 2.

Table 2: Business-as-usual Capital Costs

Business-as-usual	Capital Costs from 2020 through 2050 (2020 Dollars adjusted for 3% inflation) ²	Capital Costs per campus SF per year ¹ (\$/SF/Year adjusted for 3% inflation)
Mechanical Deferred Maintenance	\$32,010,200	\$0.75
Roof Replacements	\$15,494,500	\$0.36
HVAC Replacement (Brown Hall)	\$4,655,900	\$0.11
Cooling Addition to Dorms	\$6,743,400	\$0.16
Boilers & Chillers End of Life Replacement	\$10,933,100	\$0.26
Standard Fleet Replacement	\$5,322,200	\$0.12
Vehicle Fuel Costs ²	\$2,027,100	\$0.05
Total	\$77,186,400	\$1.81

¹Total campus building SF: 1,378,638 SF

²Gasoline and Diesel costs are not adjusted for inflation

Concordia's current practice is to fund mechanical deferred maintenance at roughly a \$0.46/sf/year pace in 2020 dollars. This is substantially lower than we have seen elsewhere and is likely not sustainable without an episodic injection of capital. Concordia does periodically inject capital into larger projects. These investment costs have not been included in the Business-as-Usual case. We have typically seen numbers closer to \$2/s.f. as a means of consistently funding mechanical equipment depreciation and end of life replacements¹. We recommend that Concordia pursue discussions with peer institutions having the similar goal of maximizing equipment life.

Each technology and/or tactic had a comparable cost developed using the same categories as shown above, for comparison purposes. The end results were six distinct strategies, or glide paths, with an assigned net present value (NPV) for each path in 2020 dollars (Figure 1).

Observations

The College presents some unique challenges and opportunities in the selection of technical options. It is heating dominated, relatively small, and has no immediate plans for substantial growth. It does not generate electricity and does not have the thermal demands of a larger, research-dominated campus. Extensive cogeneration, for example, did not prove to be advantageous because more fuel is burned on-site to offset electricity, which is carbon-favorable. Further, geology and geography make it a poor candidate for carbon capture, biomass, or heavy reliance on solar energy. The roof area available for large-scale solar fields on campus is simply unavailable or expensive to fortify.

The campus has two important attributes which can be leveraged to achieve eventual carbon neutrality: 1) it has a favorable electricity CO₂ footprint and cost, and 2) it has available land. These attributes, coupled with considerations for some necessary solar PV and potential offsets, have the potential to guide the College to carbon neutrality over the course of time using geothermal energy as a primary heating and cooling source, if a specific course is set, funded and followed.

¹ See <https://www.chthealthcare.com/blog/deferred-maintenance>

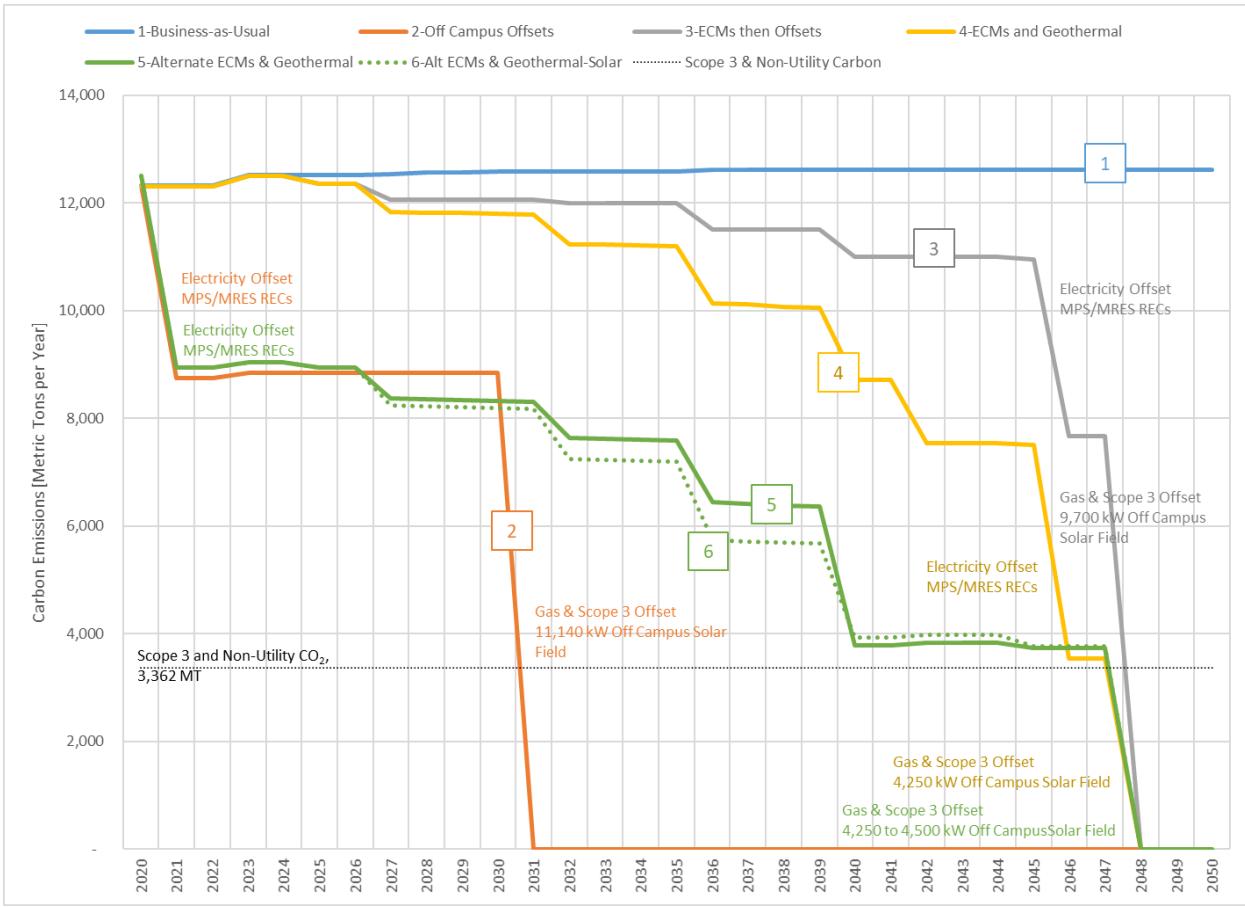


Figure 1: Glide Paths to Carbon Neutrality

The Recommended Glide Path

The Team met, weighed project timelines and the financial realities, and came to a consensus on a path which achieves the project Mission. In the end, the following glide path was recommended (see Figure 2).

The recommended path combines ECMs and a campus-wide conversion to a geothermal system

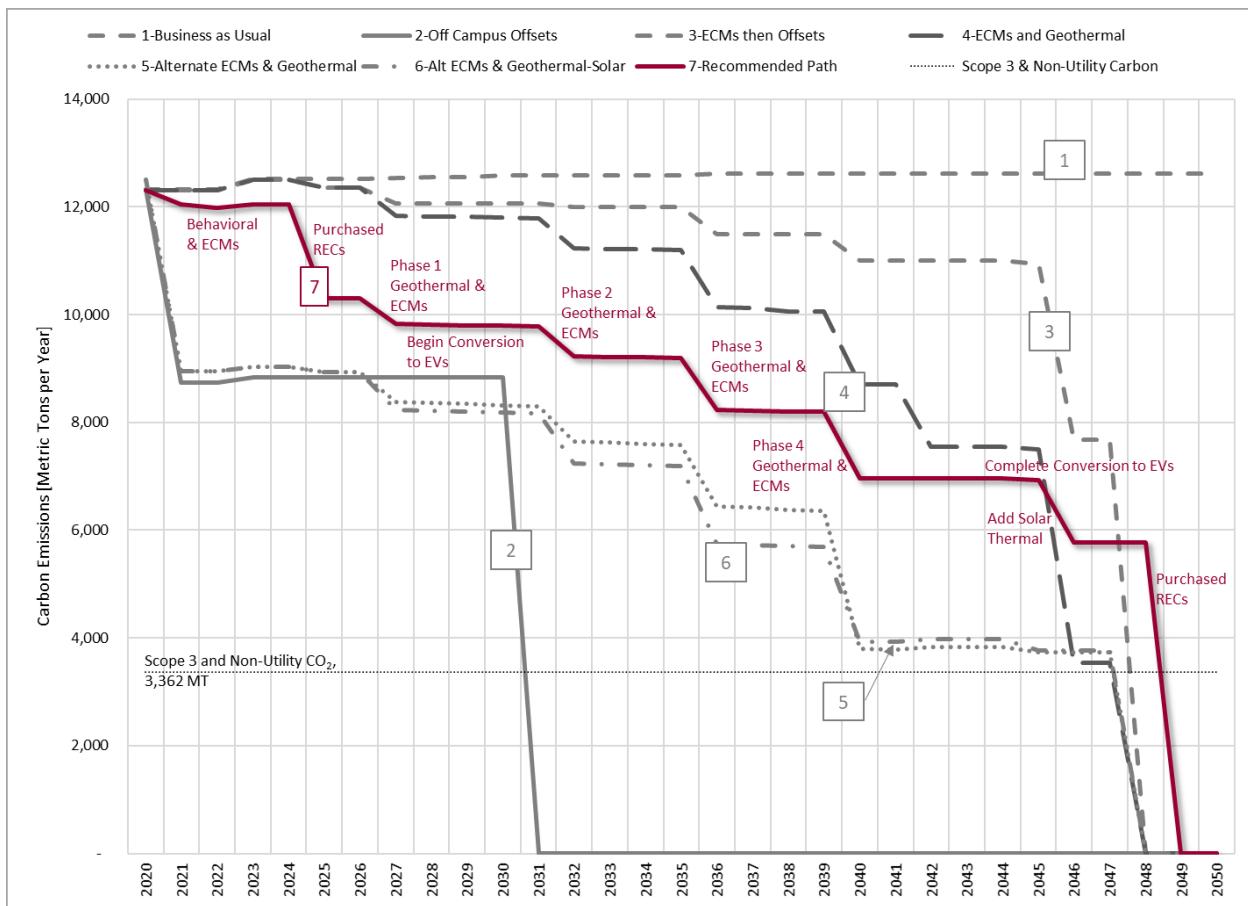


Figure 2: Selected Glide Path

The financial implications of the recommended plan are shown in Table 3.

Table 3: Cost, NPV, and CO₂ Emissions of Recommended Glide Path

Shaded Rows utilize NPV in Calculations

Recommended Path	Recommended Glide Path Capital costs adjusted for 3% inflation
Average \$/year/SF, 2020 NPV (CAPEX + Utility)	\$2.34
Average \$/year/SF CAPEX + Utility	\$5.02
Total Utility Cost ^{1,2}	\$34,727,200
Total Utility NPV ^{1,2}	\$22,815,900
Total CAPEX, 2020 Dollars ¹	\$179,981,700
Total CAPEX, 2020 NPV ¹	\$77,198,400
Total Carbon Emissions ¹	258,721
Total Carbon Savings ¹	130,647
CAPEX NPV+ Utility NPV ^{1,2}	\$100,014,300
Difference from Business-as-usual NPV ^{1,2}	\$43,478,000
Total \$/MT Carbon Mitigated (Aggregate)*	\$766
\$/MT Carbon Mitigated (Annual)	\$8,130

¹Totals are sum over 31 years of the study period, 2020 through 2050

²Utility costs are not adjusted for inflation

There are several features of the plan worth mentioning:

1. This glide path represents the College's desire for a tangible, rather than offset-dominated, reduction in self-generated and consumed utilities.
2. The plan would commit the College to a conversion to geothermal heating and cooling using the ground under the athletic fields as the earth-exchange location, and the distribution and use of low-temperature heating hot water (HHW) and chilled water to the campus.
3. The location of the heat pumps will be precinct-based, not one large central location, to reduce piping costs and allow phasing.
4. The system will replace the existing boiler and central chilled water plant as the demand for air-conditioning rises from students and as equipment nears end-of-life replacement.
5. The plan uses available offsets temporarily, and then replaces them as funds become available for tangible assets.
6. The plan allows for some potential future technology to place-hold as technology becomes mature enough to approach practical levels. It is our opinion that the price of deep direct-use (DDU) geothermal will decrease as systems are deployed, much in the same way as solar PV did.
7. If the electric utility were to reduce emissions, this plan puts the campus in a good position to take advantage of emissions reductions by the utility. Figure 3 shows the potential impact of the utility company steadily reducing its carbon emissions to zero by 2050.

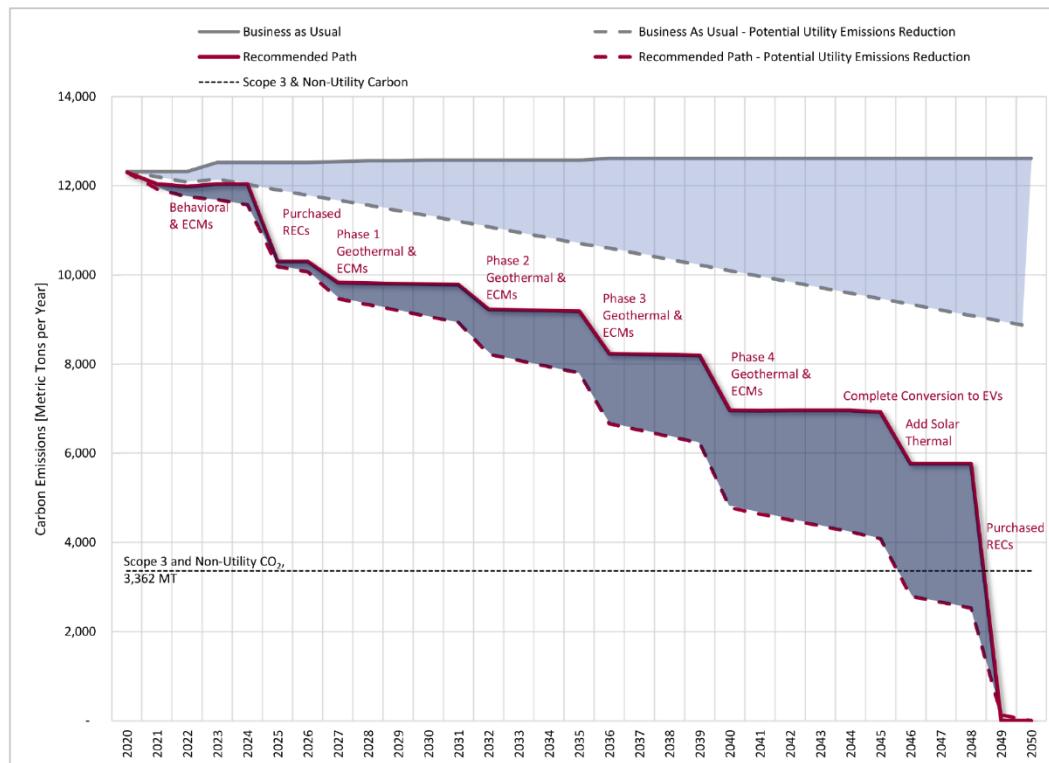


Figure 3: Recommended Glide Path with Effect of Potential Utility Emissions Reduction

Closing Comments

The plan as developed and adopted by the Team, accomplishes the mission and goals of the Carbon Reduction Study. It is designed to allow for annual tracking and adjustment as opportunities present themselves and as fiscal discipline dictates change.

The recommended path puts Concordia in position to take advantage of carbon emissions reductions by the utility