

ADVANCING THE MINNESOTA MODEL
Energy Transition Strategic Plan:
2018–2022

Prepared by the Institute on the Environment

INSTITUTE ON THE
ENVIRONMENT

UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

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Advancing the Minnesota Model

Energy Transition Strategic Plan: 2018–2022

VISION: Minnesota’s energy systems are a global model for developing a prosperous and equitable carbon-neutral economy that advances innovation and improves people’s lives and the environment.

This strategic plan describes the activities that the Institute on the Environment will advance on behalf of Minnesota, the University of Minnesota, and the University’s partners and stakeholders in the energy transition, toward achieving the vision statement above.

MISSION: The Institute on the Environment engages university and external experts to catalyze solutions to rapidly reduce carbon emissions and create Minnesota’s clean energy future.

University Context

The Institute on the Environment (IonE) has committed to championing carbon neutrality for Minnesota as one of three strategic sustainability goals IonE will pursue over three years. IonE is a university-wide unit dedicated to fostering interdisciplinarity, translational knowledge and leadership development to help build a future where people and the planet prosper together. The IonE community consists of more than 130 affiliated faculty, thousands of students, and dozens of external partners. In addition to guiding the work of IonE on behalf of energy transition across the University of Minnesota (UMN), this plan will guide other programming at IonE such as international programs and sustainability education that provide important contributions to energy transition in Minnesota.

Theory of Change and Approach

The science is clear that we need to decarbonize the economy on a global scale as soon as possible to prevent catastrophic effects of climate change on human health and the environment. The global Paris Agreement seeks to avoid warming exceeding 1.5 to 2 degrees. Minnesota adopted a similar science-based IPCC goal of reducing greenhouse gas emissions 80% by 2050. However, nations and states will likely need to exceed these goals in order to meet the increasing urgency of recent scientific findings on climate change. Advancing equitable strategies to achieve this level of reduction and address the causes of climate change is a global grand challenge. Given the scale of change required, there is no one institution, sector, discipline, or community that will “solve” climate change. Solutions will require multi-sector, multi-disciplinary action as well as shared understanding, collaboration, and broad commitment across the economy and society.

As a major research university and land-grant institution, UMN is well-positioned to be an independent, long-term center of global research and learning that seeks solutions for climate change mitigation, as well as a practical resource for disseminating information and advancing solutions to meet state and global goals. UMN is uniquely qualified to answer big, challenging questions and educate the next generation of problem solvers. As an institution with a broad and deep base of expertise and knowledge, a reputation for academic rigor and independent inquiry, and the ability to act as a neutral convener, UMN is poised to contribute unique value to Minnesota's multi-sector ecosystem of energy-focused organizations working on climate change.

Additionally, as a public institution, UMN has an obligation to serve and engage the entire public, including historically marginalized communities. An approach that assesses impacts through the lens of equity and works toward equitable solutions is necessary for a successful and sustainable energy transition and must be reflected in IonE's organization and programs.

Within and for UMN, IonE is responsible for connecting academics and external stakeholders, integrating the university's joint roles in scholarly research and practical solutions. IonE strives for rapid integration of world-class UMN research and interdisciplinary education into actionable sustainability solutions. IonE is advancing renewable energy and carbon neutrality through its Impact Goal strategy and is the key implementer and instigator of this energy transition plan. This work supports IonE's vision of a future where people and the planet prosper, with decarbonization solutions that create economic opportunity, improve people's lives and improve our environment. IonE's multidisciplinary strengths and complementary programs will help advance this work.

IonE can have meaningful impact by supporting research and engagement across the university, in partnership and collaboration with external experts and stakeholders, to develop and test the viability of replicable, scalable solutions to climate mitigation from local to global levels. Minnesota can be a laboratory for the Midwest, the U.S., and the world. Minnesota's progress on renewable energy and carbon reduction, both through governmental and private sector initiatives over the last decade, positions the state to demonstrate how to achieve a highly efficient, innovative, and prosperous economy while reducing greenhouse gas emissions. The benefits of clean energy in the electricity sector can ripple across the economy, creating new opportunities to drive down emissions for transportation, industry, and buildings.

DEFINING EQUITY

Equity is fair treatment, access, opportunity, and advancement for all people. The pursuit of equity involves identifying and eliminating barriers that have prevented the full participation of some groups—and tackling it requires understanding the root causes of disparities within our society. Improving equity requires increasing justice, fairness, and distribution of resources of institutions and systems.

BUILDING ON A STRONG STATE TRADITION OF ENERGY INNOVATION AND CREATING A REPLICABLE MODEL

Minnesota's continued progress in embracing renewable energy and accelerating carbon reduction in the electricity sector builds upon its strengths as a strong and diversified economy. The next big challenge for the state is accelerating technology and market trends in transportation, buildings, and other sectors that improve quality of life while reducing or eliminating use of fossil energy. It is in this context that we see Minnesota continuing to lead energy innovation and showing the rest of the country and the world how to turn the cutting-edge into common practice.

Minnesota has few fossil fuels and has relied heavily on energy imports, adding to the state's incentive to decarbonize. As a vertically integrated, traditionally regulated utility state, Minnesota can serve as an important model for the more than half of U.S. states that are similarly regulated. Finding the solutions to decarbonization in this context will provide repeatable solutions for much of the U.S. At the same time, IonE's work can help influence energy transition in Minnesota by translating insights and effective practices from other regions. A key strength of the state—and model for others—is the collaboration between academia, business, and government and the synergy between urban and rural parts of the state that can enable Minnesota to be a living laboratory for low-carbon solutions.

IonE is a “boundary organization” that plays a unique role in reaching beyond the university to bring together UMN experts from a broad range of disciplines with external experts and stakeholders, and is uniquely positioned to provide a highly complementary set of functions:

→ CONVENING

IonE will convene UMN experts, scholars from other academic institutions, and non-academic experts and stakeholders to seek solutions and share knowledge, filling a need in the energy field in Minnesota (and beyond) that is critical to addressing the grand challenge of climate change.

→ STRATEGIC COMMUNICATIONS

In coordination with IonE strategic communications, energy program scientists and staff will synthesize, curate, and communicate information to key external stakeholders and the public about a broad range of research at the university that informs low-carbon energy solutions. At the same time, communications to audiences within the university will advance understanding of key needs, trends, and opportunities in the region.

→ COLLABORATIVE RESEARCH, ANALYSIS, AND DEMONSTRATION PROJECTS

IonE will catalyze, conduct, and coordinate project-based, multi-disciplinary, collaborative, and engaged research and demonstration projects to inform policymakers and the public. As part of IonE's convening role, external stakeholders will play a key role in informing IonE's research aims.

➔ EDUCATION AND LEADERSHIP

IonE will engage students and other stakeholders, contributing to education of the energy leaders of tomorrow and cultivating informed leadership in key sectors and communities beyond the university. Global partnerships with leaders in decarbonization, such as Germany, will cultivate energy expertise among Midwest decision-makers and enhance UMN's global relevance. IonE leadership programming and UMN curricular programs will advance knowledge of the energy transition.

Key elements that will make this strategy successful include:

- **Robust awareness** of emerging energy transition opportunities and priorities through networks of university researchers and external partners.
- **Multi-disciplinary analysis** that integrates engineering, design, natural sciences, economics, law, policy analysis, public health and behavioral sciences.
- **Diversity, equity, and inclusion** integrated into all aspects of this energy transition work, including strategic direction, analysis, leadership development, and capacity building.
- **Strategic communications** to build a shared understanding and commitment to decarbonization solutions that support greater alignment of policy, research, diverse public interests, and businesses.

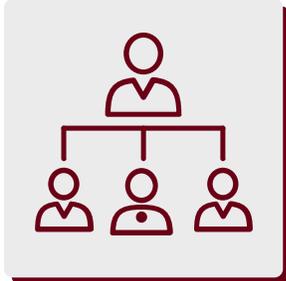
A FOCAL POINT OF COLLABORATION

The Institute on the Environment will be a focal point for convening and collaboration among energy experts within and beyond the university, decision-makers, and stakeholders across the spectrum of Minnesota's economy and society. Within the university, we will partner with and support multi-disciplinary energy-related work in academic departments and professional schools—spanning engineering, policy, design, natural and behavioral sciences, business, and more. Beyond the university, we will engage the rich ecosystem of organizations providing critical research and implementation support for Minnesota's energy transition. We will help connect legislators and other decision-makers with clear, actionable information from these internal and external experts. We will work with communities to help ensure that energy transitions are just. And, we will work with utilities, industry leaders, entrepreneurs, public health and other sectors to craft and adopt new systems, practices, and technologies for low-carbon energy.

2018–2022 Strategies

Over the next four academic years (AY 2018–2019 through 2021–2022), IonE will convene and support multi-disciplinary and collaborative efforts to build understanding about what it will take to decarbonize Minnesota's energy systems. This will involve an ongoing process of mapping existing efforts and research, as well as convening and strategic communications, to connect a broad range of partners within and beyond the university. We will help create new opportunities for collaboration and convergence across disciplines and organizations and support the development of specific solutions through multidisciplinary teams. We will synthesize the results of research from within and beyond the university into accessible formats for varied audiences. These efforts will strengthen UMN's reputation as a source of highly visible and credible information about energy system decarbonization, increase public understanding of decarbonization solutions, and catalyze supporting actions. At the same time, we will

strengthen energy transition work by attracting sustainable financial support, ensuring long-term commitment to a long-term challenge. We will achieve our mission by pursuing the strategies below.



STRATEGY 1: Cultivate organizational mapping and landscape assessment for Minnesota

IonE will reach out to its external network and university researchers to source information about organizational activities, reports, research and other relevant information to map and assess the landscape of decarbonization efforts in Minnesota and beyond. Then, we will convene, share this information, and support a multi-disciplinary and collaborative effort to identify gaps, barriers, and opportunities towards decarbonization. This ongoing iterative process will be used to identify and support high-priority energy transition research and communications and strengthen IonE's network of individuals and organizations contributing to future analysis and strategic communications.

Objective 1.1: Conduct a mapping analysis of university experts and public and private organizations outside the university who do decarbonization research and analysis, including key areas of focus and research questions.

Sub-Objective 1.15: The landscape assessment will include establishing a baseline for energy equity work, by conducting a landscape review of key energy-related equity issues of concern in Minnesota and the Midwest region, providing a summary of key concerns affecting low income communities and communities of color, and policy approaches from other states.

Objective 1.2: Initiate a process of holding a high-profile, multi-disciplinary annual conference of UMN experts, external partners, and stakeholders to assess the landscape of decarbonization needs and opportunities in Minnesota and identify key research questions, projects, and potential collaborations. The conference will:

- Create a shared understanding of the “state of the state” on decarbonization
- Create the opportunity for UMN and external partners to share information about their work and research and identify points of potential future collaboration and convergence
- Collectively generate a community-wide action, research opportunities, and needs list
- Highlight successes that are replicable and scalable, both inside and outside of Minnesota, and key implementation steps, challenges, and lessons learned
- Include IonE's diverse university and external stakeholders from cross-cutting energy sectors such as industry, agriculture, transportation, buildings, and electricity, and from diverse geographies and demographics
- Catalyze new business opportunities, projects, and partnerships

Objective 1.3: Informed by outcomes from the conference, develop high-profile reports on state decarbonization and related communications that are relevant and accessible for a variety of key audiences, including policymakers and decision-makers.

Objective 1.4: As part of IonE's carbon-neutral initiative and in collaboration with IonE's Energy Advisory Committee, prioritize specific areas for focused IonE contribution and develop an annual workplan. Ideally, IonE's energy portfolio will have three to five topic areas of key focus at any point in time. Annually revisit and refine the IonE's energy portfolio workplan.

Objective 1.5: Deepen engagement over time with key organizations and leaders in specific sectors and communities to identify decarbonization opportunities and strategies specific to them. Priority communities to

engage are communities of color, tribal communities, rural communities, low- and middle-income households, and communities of people disproportionately bearing the burden of a carbon-based energy system.



STRATEGY 2: Establish IonE’s energy program as a highly visible broker of information through strategic communications

In coordination with IonE’s strategic communications capabilities, IonE’s energy programs will strengthen UMN’s role as a visible and highly credible knowledge broker about critical energy transition topics by synthesizing and amplifying faculty, researcher, staff, and student energy-related research from across the university for policy and stakeholder audiences. Similarly, external expertise and activities will be synthesized and amplified in a way that aligns with the unique value of the university. Strategic communications will help forge partnerships between university researchers and practitioners and encourage uptake of university-generated knowledge in practice. It is also an important way to broadly engage UMN experts with IonE and provide value to them.

Objective 2.1: As a foundation for IonE’s energy program strategic communications, develop a strategic communications plan and branding, including a plan for performance metrics and evaluation. Communications planning will include an assessment of other sources of energy transition information and audience description and needs. This planning will ensure that new efforts serve a clear purpose and provide additional value.

Objective 2.2: Update the IonE website and establish new communications channels such as a newsletter and social media to build and regularly communicate with a broad audience.

Objective 2.3: Issue regular white papers, policy briefs, and similar documents to synthesize university energy research for a broad and diverse audience.



STRATEGY 3: Develop targeted decarbonization solutions through collaborative teams

IonE will convene and support targeted, multi-disciplinary solutions teams of UMN researchers and external partners to work on key decarbonization topics. This work may involve targeted research, demonstration projects, or communications. IonE’s Energy Advisory Committee, scientists and staff will assist with topic identification, participant identification and recruitment, process support, securing funding, strategic communications, and stakeholder engagement. IonE will engage students as research assistants and/or through capstone, Grand Challenge courses and other student-focused academic opportunities and will raise the profile of existing research and researchers. A key aspect of these efforts will be to examine topics from multiple disciplinary perspectives and through multiple lenses, including equity and social impacts. To provide multiple perspectives, teams may include a variety of UMN experts as well as external experts, community representatives, and others.

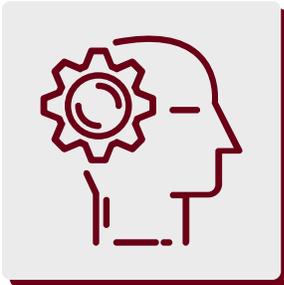
Objective 3.1: Create IonE energy program structure to convene and support collaborative solutions teams. As part of this effort, develop annual targets for the number of projects as well as an approach for assessing and selecting possible topics, with additional attention given to equity-focused projects. Test, evaluate, and refine the

solution team process over time. Promote student involvement at various levels in the work of the solutions teams.

Objective 3.2: In the first years of this plan, complete existing collaborative team projects (e.g., microgrids, energy storage, solar pollinators, inclusive finance, etc.).

Objective 3.3: In the first years of this plan, convene one or two new initial multidisciplinary solution teams on key topics for early action. Use these early efforts to test and refine the solution team model.

Objective 3.4: In the later years of this plan, regularly convene solution teams on high-value topics identified by the decarbonization analysis, IonE's Energy Advisory Committee, and partner networks.



STRATEGY 4: Advance education and leadership in energy transition

IonE will leverage resources across its own programs and other university education and leadership development programs to deepen engagement of students, key stakeholders and decision-makers in energy transition education, research, and leadership. This will include working with IonE's global partnerships to cultivate energy expertise among Midwest decision-makers and enhance UMN's global relevance.

IonE will continue and improve its student engagement, including integrating energy transition topics into university classes and curriculum, supporting student-engaged research and project work, hiring student interns and graduate students, and involving students in IonE's Energy Advisory Committee. IonE will build upon its existing student engagement across campuses, colleges and departments, including the Law School, Humphrey School of Public Affairs, Carlson School of Management, School of Design, College of Science and Engineering, College of Food, Agriculture and Natural Resources, UMN Morris, UMN Duluth, Natural Resources Research Institute, the College of Liberal Arts (Economics, Psychology, Sociology, Geography), and others.

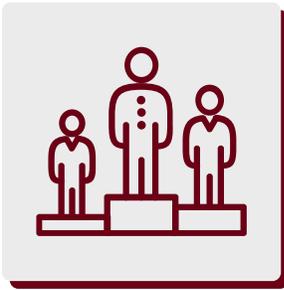
Objective 4.1: In the first year of this plan, work with UMN Law School on course offerings, the Energy & Environment Law Clinic, and independent research and writing opportunities, focusing on law and policy topics related to energy.

Objective 4.2: In the first year of this plan, work with Humphrey School on Capstone projects.

Objective 4.3: Enhance partnerships with students in other campuses colleges and disciplines.

Objective 4.4: Identify and connect with student environmental and energy organizations and clubs.

Objective 4.5: Identify and pursue other student engagement opportunities, including engaging students in solutions teams whenever possible. As part of this work, collaborate with current programs, such as Acara, Boreas, Spark-Y, Urban Scholar Program, Capitol Pathways Scholars, North Star STEM Alliance, and others—emphasizing programs that encourage students of color to enter the energy field.



STRATEGY 5: Create the institutional structure for leadership, advising, and collaboration

IonE will strengthen its leadership, advising, and collaboration arrangements to provide strategic direction and position itself as a hub of information and thought leadership on energy transition topics on behalf of the university. Additionally, IonE will lead initiatives that are supportive of diversity, equity and inclusion.

Objective 5.1: Create IonE energy programs leadership structure, including a small core “academic and others” leadership team. Define roles and responsibilities to ensure the leadership team has a key role in the energy program’s success. This group would include several faculty drawn from diverse disciplines and at least one external partner, with the charge of providing guidance and accountability to IonE’s leadership, which is led by Director and faculty member Jessica Hellmann.

Objective 5.2: Recruit and launch IonE’s Energy Advisory Committee of UMN faculty, extension and professional research staff as well as external partners to provide ongoing strategic insights and guidance about IonE’s work and organizational health. This committee would be comprised of university and external thought leaders, similar to the committee convened for this strategic planning process.

Objective 5.3: Support IonE’s Diversity, Equity, and Inclusion (DEI) efforts to develop DEI-focused leadership, advising, and collaboration goals and objectives. In the first year of this plan, develop specific goals and metrics for DEI.

Objective 5.4: Leveraging IonE’s affiliate structure, grow and sustain a network of UMN energy experts and students to engage in energy transition analysis. As part of this work, develop a database of UMN faculty and professional researchers and staff working on energy transition topics and their areas of expertise to help link them to key opportunities, information, and potential partners. Work closely with IonE energy-related programs, including international energy policy partnerships with Germany.

Objective 5.5: Build and sustain a network of external partners to engage in energy transition analysis, convening, demonstration projects, and communications efforts. This includes key utility and industry leaders and entrepreneurs who are critical for transforming sectors that produce and use energy. It also includes other academic institutions that can partner on research and communications.



STRATEGY 6: Strengthen leadership and management capacity

IonE will build its leadership and management capacity to conduct research and analysis, provide support for convenings and project teams, advance strategic communications, and effectively administer IonE’s energy program activities.

Objective 6.1: In the first year of this plan, develop an organizational structure and staffing plan based on an assessment of needs, available IonE capacity, and gaps. As part of this effort, support IonE’s development of human resource strategies for internal diversity, equity, and inclusion goals, including staff representative of Minnesota’s diverse population.

Objective 6.2: Recruit and onboard new staff, where needed, focusing in the near term on building capacity for strategic communications, convening, and analytical support.

Objective 6.3: Expand in-house energy transition expertise to build internal analytical capacity and ability to provide technical communications on energy transition research.



STRATEGY 7: Ensure long-term financial sustainability

IonE will ensure sufficient and sustainable funding for operational support and strategic activities in which IonE leads or participates with other energy transition partners.

Objective 7.1: Develop and submit proposals for core IonE operational support and strategic activities necessary to achieve the strategic goals and objectives outlined in this plan.

Objective 7.2: Ensure capacity for multi-disciplinary grant development (e.g., National Science Foundation, U.S. Department of Energy, ARPA-E, etc.). Work actively with multidisciplinary UMN partners in seeking research funding opportunities.

Objective 7.3: Explore new/innovative revenue strategies (e.g. industry affiliates, strategic affiliation with the state of Minnesota, private donors, etc.).

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