



# Environment and Natural Resources Trust Fund

M.L. 2026 Final Work Plan

## General Information

**ID Number:** 2026-529

**Staff Lead:** Erin Barton

**Date this document submitted to LCCMR:** May 26, 2026

**Project Title:** Minnesota Chiller Energy Efficiency and Onsite Energy Generation

**Project Budget:** \$298,000

## Project Manager Information

**Name:** Kelsey Klucas

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## Project Reporting

**Reporting Schedule:** April 1 / October 1 of each year.

**Project Completion:** June 30, 2029

**Final Report Due Date:** August 14, 2029

## Legal Information

**Legal Citation:** M.L. 2026, Chp. 104, Sec. 2, Subd. 07a

**Appropriation Language:** \$298,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the Minnesota Technical Assistance Program to decrease carbon emissions through technical assistance to reduce energy use in industrial and commercial chiller systems and identify onsite energy solutions that promote decarbonization and resilience.

**Appropriation End Date:** June 30, 2029

## Narrative

**Project Summary:** Project seeks to decrease carbon emissions through technical assistance aimed at cost-effective strategies to reduce energy use in chiller systems and identify onsite energy solutions that promote decarbonization and resilience.

**Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.**

Minnesota aims to achieve net-zero carbon emissions by 2050. However, industrial energy consumption has increased from the 2005 baseline. Many industries vital to Minnesota's economy utilize chiller systems to preserve food and cool critical equipment. Improving chiller efficiency decreases energy use and, consequently, greenhouse gas emissions and operational costs. This project will provide technical assistance to improve chiller efficiency and explore onsite energy generation solutions such as cogeneration, solar, wind, thermal batteries, heat pumps, and fuel cells. Combining energy efficiency with onsite energy solutions will maximize the potential for realized decarbonization while lowering life cycle costs and increasing energy resilience and economic competitiveness.

Minnesota industries that frequently utilize chillers include:

- Food processors
- Dairies
- Breweries
- Groceries
- Healthcare facilities
- Cosmetic manufacturers
- Ice arenas

The Minnesota Technical Assistance Program (MnTAP) has demonstrated source reduction strategies to reduce energy use while reducing costs. Recent examples include:

- An annual reduction of 400,000 kWh through improved chiller controls at a food manufacturer.
- An annual reduction 306,000 kWh through improved chiller controls at a meat products manufacturer.

In the University of Illinois Chicago – Energy Resources Center's (ERC) experience, the average onsite energy generation assessment will identify 300,000 kWh and 200 tons CO<sub>2</sub>e savings per

**What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.**

MnTAP will provide technical assistance to identify cost-effective ways to reduce the energy use of industrial and commercial chiller systems. MnTAP will identify target communities and organizations by analyzing state-wide data to identify the counties where energy generation is the most carbon intensive. Pre-analysis has shown there is at least one county in each region of Minnesota with an emissions rate higher than the state average of 0.75 lb CO<sub>2</sub>e per MWh produced, suggesting this project would be beneficial throughout the state. MnTAP will engage these communities and organizations by providing direct technical assistance and placing interns in facilities with high reduction opportunities to jumpstart implementation.

After the energy use and efficiency assessment is complete, MnTAP will connect interested businesses with ERC. ERC will provide these businesses with a thorough onsite energy assessment to identify beneficial decarbonization technologies.

**What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?**

This project is designed to protect Minnesota's natural resources through targeted activities that will cut energy consumption and reshape energy generation for industrial and commercial chiller systems. By targeting counties with the most carbon-intense generation, this project seeks to maximize CO<sub>2</sub>e emission reductions and minimize impacts on

resources from changing weather patterns. Such impacts avoided include worsened drought conditions, diminished water quality through eutrophication, and habitat loss due to changing soil and water temperatures.

## Project Location

**What is the best scale for describing where your work will take place?**

Statewide

**What is the best scale to describe the area impacted by your work?**

Statewide

**When will the work impact occur?**

During the Project and In the Future

## Activities and Milestones

### Activity 1: Identify/Engage Locations with Carbon-Intensive Energy and Large Chiller Systems

**Activity Budget:** \$26,000

**Activity Description:**

Determine counties with carbon-intensive energy generation based on Emissions & Generation Resource Integrated Database (eGRID) data provided by the Environmental Protection Agency (EPA). Cross-reference with EPA risk management plans, EPA mapping tools, and Mergent Intellect to identify organizations with high emissions reduction potential. Contact target organizations to generate interest in assessments.

**Activity Milestones:**

Description	Approximate Completion Date
20-50 organizations with high emissions reduction potential identified	March 31, 2027
10-50 organizations receive direct outreach for source reduction technical assistance	March 31, 2028
10-20 organizations agree to receive chiller energy efficiency assessments	March 31, 2028

### Activity 2: Conduct Chiller Energy Efficiency Assessments at Organizations

**Activity Budget:** \$163,000

**Activity Description:**

Conduct technical assistance assessments to identify energy efficiency opportunities that will decrease the energy use of chiller systems. Technical assistance activities will recommend system optimization strategies. Organizations with highly complex systems will be encouraged to apply to the MnTAP Intern Program for a summer intern to provide added engineering expertise to support identification, implementation, and outcome documentation of efficiency activities. MnTAP will provide follow up support for up to two years after technical assistance concludes. An annual energy use reduction of 1,000,000 kWh reduces emissions by an average of 375 tons per year.

**Activity Milestones:**

Description	Approximate Completion Date
2-3 intern projects focusing on complex chiller energy efficiency	September 30, 2028
10-20 organizations receive chiller energy efficiency site assessments	March 31, 2029
All participating sites receive follow up assistance from MnTAP	June 30, 2029
At least 1,000,000 kWh annual implemented energy use reduction	June 30, 2029
At least 375 tons of annual CO2e emissions reduced	June 30, 2029

### Activity 3: Conduct Onsite Energy Assessments with Organizations

**Activity Budget:** \$96,000

**Activity Description:**

Virtually meet and conduct a walk-through with organizations interested in pursuing onsite energy solutions. These assessments will identify site-specific decarbonization technologies best suited to meet client goals. Assessments will address electric and/or thermal demands and explore the utilization of onsite, unconventional fuels such as waste heat, biogas, off gases, etc. where available. These assessments will help determine whether a business should proceed to a design engineering study. Onsite energy technologies include but are not limited to cogeneration, solar, wind, electric

batteries, thermal batteries, heat pumps, and fuel cells.

In ERC’s experience, the average assessment will identify 300,000 kWh and 200 tons of CO2e savings per site.

**Activity Milestones:**

Description	Approximate Completion Date
5-10 organizations receive onsite energy assessments	March 31, 2029
All participating sites receive follow up assistance from ERC	June 30, 2029
At least 1,500,000 kWh of annual energy use reduction identified through onsite energy	June 30, 2029
At least 1,000 tons of annual CO2e emissions savings identified through onsite energy solutions	June 30, 2029

**Activity 4: Share Results and Replication Opportunity Throughout the State**

**Activity Budget:** \$13,000

**Activity Description:**

Develop a process for conducting similar analysis through case studies and lessons learned for broad dissemination to organizations across Minnesota for additional site engagement. Share information through publications, presentations, and a webinar targeting both organizations that have chillers and technical assistance providers that work on energy efficiency and onsite energy generation and utilization.

**Activity Milestones:**

Description	Approximate Completion Date
At least 2 successful case studies published	March 31, 2029
At least 2 public presentations	June 30, 2029
1 webinar presented live and recorded for future viewing	June 30, 2029
1 webpage to share findings and best management practices	June 30, 2029

## Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Cliff Haefke	University of Illinois - Chicago, Energy Resources Center	Director of ERC, PI for subaward	Yes

## Dissemination

**Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.**

General project information, general technical information, sign up mechanism to participate in the evaluation, publications and other project related information will be included in a series of web pages under the MnTAP Water pages <http://www.mntap.umn.edu/focusareas/energy/> as a new subpage dedicated to project activities. Periodic updates of project progress and publicly available results will be published in the MnTAP monthly electronic newsletter, Source, along with feature articles on the project web page. Access to these communication pieces will be through the current MnTAP publication web pages <http://www.mntap.umn.edu/resources/publications/>. All MnTAP resources are freely distributed for use in replicating and advancing the work.

Intern project information will be posted on the MnTAP Intern Program web pages for company solicitation, and student recruiting <http://www.mntap.umn.edu/interns/>. Intern project results will be posted under MnTAP Intern Past Projects <http://www.mntap.umn.edu/interns/pastprojects/> and in the annual print and electronic intern project summary publication, Solutions <http://www.mntap.umn.edu/resources/publications/solutions/>.

Webinar materials that are presented as part of the project will be posted under MnTAP Resources and Tools on the MnTAP Webinars pages <http://www.mntap.umn.edu/resources/webinars/> for future viewing and sharing.

The Minnesota Environment and Natural Resources Trust Fund (ENRTF) will be acknowledged through use of the trust fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the ENRTF Acknowledgement Guidelines.

## Long-Term Implementation and Funding

**Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?**

This project seeks to bring technical assistance to organizations throughout the state interested in energy efficiency and onsite energy generation technology. Once developed and documented, these strategies will be available to communities, businesses, and other technical assistance providers for replication beyond the program duration through online resources.

## Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
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Expanding Protection Of Minnesota Water Through Industrial Conservation	M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 04g	\$178,000
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## Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
<b>Personnel</b>								
Senior Engineer		Technical assistance and training			36.6%	0.51		\$69,000
Engineer		Technical assistance and training			32.3%	0.87		\$88,000
Associate Engineer		Technical assistance and training			32.3%	0.18		\$13,000
Principal Investigator		Program administration, reporting			36.6%	0.03		\$6,000
Intern		Execute site based projects			7.4%	0.47		\$20,000
							<b>Sub Total</b>	<b>\$196,000</b>
<b>Contracts and Services</b>								
University of Illinois - Chicago, Energy Resources Center	Subaward	<p>Activity 3: Conduct Onsite Energy Assessments with Organizations. ERC personnel will provide technical assistance, conceptual engineering and modelling analysis.</p> <p>Purpose: To analyze the feasibility of onsite energy systems at 5-10 facilities in Minnesota.</p> <p>General costs: \$96,000 for personnel, no travel</p>		X		0.96		\$96,000
							<b>Sub Total</b>	<b>\$96,000</b>
<b>Equipment, Tools, and Supplies</b>								
							<b>Sub Total</b>	-
<b>Capital Equipment</b>								
							<b>Sub Total</b>	-
<b>Acquisitions and Stewardship</b>								

							<b>Sub Total</b>	-
<b>Travel In Minnesota</b>								
	Miles/ Meals/ Lodging	15 site visits, 5 overnight visits, 2 people/trip, University of Minnesota mileage, lodging, and per diem rates	Provide on site visits to define energy efficiency opportunities.					\$6,000
							<b>Sub Total</b>	<b>\$6,000</b>
<b>Travel Outside Minnesota</b>								
							<b>Sub Total</b>	-
<b>Printing and Publication</b>								
							<b>Sub Total</b>	-
<b>Other Expenses</b>								
							<b>Sub Total</b>	-
							<b>Grand Total</b>	<b>\$298,000</b>

## Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
<b>Contracts and Services -</b> University of Illinois - Chicago, Energy Resources Center	Subaward	<p>Activity 3: Conduct Onsite Energy Assessments with Organizations. ERC personnel will provide technical assistance, conceptual engineering and modelling analysis.</p> <p>Purpose: To analyze the feasibility of onsite energy systems at 5-10 facilities in Minnesota.</p> <p>General costs: \$96,000 for personnel, no travel</p>	<p>UIC - ERC is home to the U.S. Department of Energy's (DOE) Midwest (DOE) Onsite Energy Technical Assistance Partnerships (TAP). Minnesota is part of the Midwest region and therefore this is the most local level that this service is provided. This DOE program is unique in its experience, capability, and focus in providing technical assistance and resources to industrial facilities and other large energy users interested in onsite energy. This grant allows ERC the funds to provide Minnesota additional technical assistance resources beyond that currently budgeted through the TAP program.</p>

Non ENRTF Funds

Category	Specific Source	Use	Status	\$ Amount
State				
			State Sub Total	-
Non-State				
			Non State Sub Total	-
			Funds Total	-

**Total Project Cost: \$298,000**

**This amount accurately reflects total project cost?**

Yes

## Attachments

### Required Attachments

#### *Visual Component*

File: [43aca203-d24.docx](#)

#### *Alternate Text for Visual Component*

A map of Minnesota showing the intensity of CO2e per MWh in each county....

### Supplemental Attachments

#### *Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other*

Title	File
ERC Letter of Commitment	<a href="#">8842300f-7bf.pdf</a>
UMN Sponsored Projects Administration Authorization to Submit	<a href="#">5b98bafe-440.pdf</a>

### Difference between Proposal and Work Plan

#### *Describe changes from Proposal to Work Plan Stage*

Corrected fringe rate for intern and minorly adjusted budget. Overall budget amount remains the same.

Revision requests 1, 2, and 4 were addressed.

## Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

**Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?**

N/A

**Do you understand that travel expenses are only approved if they follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?**

Yes, I understand the UMN Policy on travel applies.

**Does your project have potential for royalties, copyrights, patents, sale of products and assets, or revenue generation?**

No

**Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?**

N/A

**Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?**

N/A

**Does your project include original, hypothesis-driven research?**

No

**Does the organization have a fiscal agent for this project?**

No

**Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing \$10,000 or more or large-scale stream or wetland restoration?**

No

**Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services (as defined in Minnesota Statutes section 299C.61 Subd.7 as "the provision of care, treatment, education, training, instruction, or recreation to children")?**

No

**Provide the name(s) and organization(s) of additional individuals assisting in the completion of this project:**

Debb Grove, University of Minnesota - School of Public Health ; Cliff Haefke, University of Illinois Chicago - Energy Resources Center

**Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements**

N/A