Environment and Natural Resources Trust Fund

2026 Request for Proposal

General Information

Proposal ID: 2026-529

Proposal Title: Minnesota Chiller Energy Efficiency and Onsite Energy Generation

Project Manager Information

Name: Kelsey Klucas

Organization: U of MN - School of Public Health

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Project Basic Information

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.

ENRTF Funds Requested: $298,000

Proposed Project Completion: June 30, 2029

LCCMR Funding Category: Small Projects (G)
Secondary Category: Energy (E)

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

Narrative

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_2e 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_2e 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?

10-20 organizations receive chiller energy efficiency assessments
5-10 organizations receive onsite energy assessments
2-3 intern projects focusing on complex chiller energy efficiency
At least 1,000,000 kWh of annual implemented energy use reduction
At least 375 tons of annual CO_2e emissions reduced
At least 1,500,000 kWh of annual energy use reduction identified through onsite energy solutions
At least 1,000 tons of annual CO_2e emissions savings identified through onsite energy solutions
At least 2 successful case studies published

At least 2 public presentations
1 webinar presented live and recorded for future viewing
1 webpage to share findings

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

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
Expanding Protection Of Minnesota Water Through Industrial Conservation	M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 04g	$178,000

Project Manager and Organization Qualifications

Project Manager Name: Kelsey Klucas

Job Title: Director

Provide description of the project manager's qualifications to manage the proposed project.
Kelsey joined MnTAP in 2022 after spending 10 years with a global manufacturing company where she helped create tools and systems to facilitate environmental compliance and stewardship on a global scale. Prior to her appointment as MnTAP Director in 2023, Kelsey was leading MnTAP's PFAS efforts by developing tools and methods for identifying sources of PFAS in industrial operations. Kelsey also co-led efforts to identify and recommend best practices for source reduction in the metal fabrication and metal finishing industries.

Kelsey manages the MnTAP organization providing technical leadership to staff which includes 12 staff members and 12-20 student interns and administratively manages a grant sponsored budget of $1.6 million per year primarily through an annual grant through the Minnesota Pollution Control Agency. Other grant funding comes from partners including Minnesota Department of Commerce, Division of Energy Resources, Metropolitan Council, counties and other local units of government, U.S. Environmental Protection Agency (EPA) Region 5, U.S. Department of Energy (DOE) and energy utilities. Kelsey has experience managing the technical and administrative activities of environmentally focused assistance projects that generate implemented results. Past history of MnTAP annual grant performance is summarized in our annual IMPACT environmental benefits reports posted on the MnTAP website - http://www.mntap.umn.edu/resources/publications/impact/.

Organization: U of MN - School of Public Health

Organization Description:

The Minnesota Technical Assistance Program (MnTAP) was established in 1984 as an outreach program at the University of Minnesota that has been helping Minnesota businesses develop and implement industry-tailored solutions that prevent pollution at the source, maximize efficient use of resources, and reduce energy use and costs to improve public health and the environment. MnTAP staff members provide no-cost, confidential, industry-tailored technical assistance. By increasing efficiency and reducing waste, clients can save on raw material and operating costs as well as create healthier and safer working conditions while reducing environmental impacts. As part of the University, MnTAP has no regulatory responsibilities or obligations allowing it to work closely and confidentially with a variety of businesses throughout the state. MnTAP typically provides technical assistance to over 200 companies per year. MnTAP actively seeks opportunities to provide service to all regions of Minnesota.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Senior Engineer		Technical assistance and training			36.6%	0.51		$69,000
Engineer		Technical assistance and training			32.3%	0.84		$84,000
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			27.1%	0.48		$24,000
							Sub Total	**$196,000**
Contracts and Services								
University of Illinois - Chicago, Energy Resources Center	Subaward	Activity 3: Conduct Onsite Energy Assessments with Organizations				0.96		$96,000
							Sub Total	**$96,000**
Equipment, Tools, and Supplies								
							Sub Total	**-**
Capital Expenditures								
							Sub Total	**-**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								

	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
							Sub Total	**$6,000**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$298,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request

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
UMN Sponsored Projects Administration Authorization to Submit	5b98bafe-440.pdf
ERC Letter of Commitment	8842300f-7bf.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

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 proposal:

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