



Environment and Natural Resources Trust Fund

2021 Request for Proposal

General Information

Proposal ID: 2021-202

Proposal Title: Studying Solar Panels' Impact On Wetland Quality

Project Manager Information

Name: David Shaffer

Organization: Minnesota Solar Energy Industries Project

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Project Basic Information

Project Summary: Little is empirically known about the impact of solar panels installed above wetlands. We propose studying how the installation of solar panels in wetlands will impact wetland quality over time.

Funds Requested: \$199,000

Proposed Project Completion: 2024-10-31

LCCMR Funding Category: Small Projects (H)

Secondary Category: Air Quality, Climate Change, and Renewable 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?

In the Future

Narrative

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

The regulatory process for approving solar farms can be challenging for local and state agencies, especially those who act as the local government unit (LGU) for the Wetland Conservation Act (WCA). Developers must work collaboratively with LGUs to demonstrate a sequencing process that shows how their projects are avoiding, minimizing, and if necessary, replacing unavoidable wetland impacts. Under the WCA rule, the installation of posts and pilings from solar panels has traditionally not been considered a wetland impact if they do not significantly alter the wetland function and value. But as the solar industry grows, LGUs have had questions about whether the installation of solar panels may lead to loss in wetland quality over time which would be a violation of WCA. A strong measure of wetland quality comes from the diversity of the plants within the wetland and factors like shading from panels and disturbance from construction may lead to conversion of the wetland vegetative community, and subsequently, the wetland quality. Loss of wetlands and wetland quality has overlapping effects on drinking water, lake and stream health, native wildlife, soil health, and pollinators, all of which are important to our Minnesota ecosystems.

What is your proposed solution to the problem or opportunity discussed above? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and Milestones.

This project will document changes in vegetative cover, diversity and species conservatism under solar panels within wetland habitats at community solar sites. Field surveys will be conducted during the growing season at solar sites throughout Minnesota to document changes to vegetation over time. An initial pilot study was completed by WSB during the 2018 and 2019 growing seasons at sites in Hugo, Sauk Rapids, Stacy, and Forest Lake, MN. Data collection and analysis methodology was developed during this pilot study and is explained in the attached flyer. To expand this research to a regional level, Clearway Energy, US Solar, and other partners have provided an additional 15 sites that may be used for this study throughout Minnesota. We will choose 7 of these sites to add to the current 4 totaling 11 sites. The Board of Water and Soil Resources has also agreed to advise this project as it relates to their wetland regulations and Habitat-Friendly Solar Program.

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?

Regulators will have a data-driven basis for making wetland impact determinations within their jurisdictions and developers will see more consistency across municipalities during the permitting and site planning processes. We may see that wetland quality improves under solar panels in certain circumstances through the planting of native vegetation upon completion of development. In other scenarios, wetland quality may decrease if the existing wetland was of higher quality prior to development. In addition to wetland quality, we plan to evaluate whether sites are achieving metrics that would make them beneficial to pollinators.

Activities and Milestones

Activity 1: Coordinate Site Access and Share Study Results with Project Partners.

Activity Budget: \$43,000

Activity Description:

Coordinating site access and safety training with solar site owners and operators and updating project partners with progress, results and site outcomes. This activity includes project management, meetings with project partners, and coordination with landowners.

Activity Milestones:

Description	Completion Date
Site selection and access from site owners and operators.	2021-08-31
Update project partners with project status, data collected, and results.	2022-10-31
Update project partners with project status, data collected, and results.	2023-10-31
Update project partners with project status, data collected, and results.	2024-10-31

Activity 2: Collect Data on Vegetative Quality Under Solar Panels.

Activity Budget: \$98,000

Activity Description:

This activity includes collecting vegetation data from up to 11 solar sites throughout Minnesota. One macroplot will be established within a wetland under planned or constructed panels at each solar site. The macroplots will be surveyed two times per each growing season to gather vegetation cover, frequency, and forb flowering data. These surveys will be conducted for 3 years (2021-2024) to assess changes of vegetation at different stages of solar development.

Activity Milestones:

Description	Completion Date
Collect vegetation data at the solar sites for late growing season 2021.	2021-10-31
Collect vegetation data at the solar sites for 2022	2022-10-31
Collect vegetation data at the solar sites 2023.	2023-10-31
Collect vegetation data at the solar sites for early growing season 2024	2024-08-31

Activity 3: Data Analysis and Report/Recommendations of Results.

Activity Budget: \$58,000

Activity Description:

Enter data into analysis software to produce measurable results that can be compared over consecutive years of data collection and that will assess the changes in vegetative composition and quality.

Activity Milestones:

Description	Completion Date
Enter and analyze data into the Frames Feats/Firemon Integrated (FFI-Lite) interagency plot-level monitoring software.	2022-02-28
Summarize and report data each year of surveying. Compare to previous years of data.	2022-04-30

Enter and analyze data into the Frames Feats/Firemon Integrated (FFI-Lite) interagency plot-level monitoring software.	2023-02-28
Summarize and report data each year of surveying. Compare to previous years of data.	2023-04-30
Analyze data to determine if there was a significant change to vegetative quality.	2024-06-30
Enter and analyze data into the Frames Feats/Firemon Integrated (FFI-Lite) interagency plot-level monitoring software.	2024-08-31
Final Report	2024-10-31

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Rao Konidena	Rakon Energy LLC	Project supporter and data sharing. Possible solar site access.	No
City of Hugo	City of Hugo	Solar site access	No
Jesse Royer	US Solar	Solar site access	No
Will Carleton	Clearway Energy	Solar site access	No
Tom Warner	Chippewa SWCD	Project supporter and data sharing.	No
Joel Wurscher	Sibley SWCD	Project supporter and data sharing.	No
Shelley Buck	Prairie Island Indian Community	Project supporter and data sharing.	No
Rick Reimer	Kandiyohi SWCD	Project supporter and data sharing. In-kind staff time for data collection, landowner contact, plant identification, seed mix recommendations, and public outreach valued at \$1,800.	Yes
Beau Kennedy	Goodhue SWCD	Project supporter, data sharing, and \$2,000 in-kind support	Yes
Amanda Erickson	City of Elk River	Project supporter and data sharing	No
Jordan Wein	WSB	WSB will provide initial baseline data from 2018 and 2019 for future data analysis.	No

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 be funded?

We will investigate local government grant opportunities to expand and/or continue this study after the conclusion of the LCCMR funding cycle. We will also solicit local agencies to continue surveys and data collection that will expand the time scale of this project beyond the work in this proposal.

Project Manager and Organization Qualifications

Project Manager Name: David Shaffer

Job Title: Executive Director

Provide description of the project manager's qualifications to manage the proposed project.

David Shaffer is the Executive Director and manager of the Minnesota Solar Energy Industries Project and the Minnesota Solar Energy Industries Association. He has five years of experience overseeing the development and implementation of programmatic grant work that pertains to benefiting the solar industry in Minnesota. David is a graduate of Vermont Law School and is licensed to practice law in Minnesota. His work in the state has directly lead to hundreds of megawatts of solar in the state through creative policy development and strategic partnerships. David's role in this grant program will be to coordinate and facilitate the research and development of solar in wetlands in an unbiased fashion.

Organization: Minnesota Solar Energy Industries Project

Organization Description:

About MnSEIP:

Minnesota Solar Energy Industries Project (MnSEIP) is a 501(c)(3) nonprofit organization founded in 2015 that is

dedicated to educating the public and business community about Minnesota's solar industry. We partner with organizations across the state to help Minnesota remain a leader in solar energy.

MnSEIP's Mission:

To support a strong solar industry in Minnesota through education and regulatory work.

MnSEIP's Vision:

To promote, foster, and advance the public understanding of renewable energy resources through cooperative partnerships with those involved in Minnesota's solar industry and its customers.

To educate the public on the various applications of solar energy and its many benefits.

To engage in appropriate political activities to benefit renewable energy customers and ratepayers.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
David Shaffer		Project Manager			0%	0.3		\$5,000
							Sub Total	\$5,000
Contracts and Services								
To be determined	Professional or Technical Service Contract	Arranging for survey sites, collecting data, entering and analyzing data, Writing reports.				0		\$194,000
							Sub Total	\$194,000
Equipment, Tools, and Supplies								
							Sub Total	-
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
							Sub Total	-
Travel Outside Minnesota								
							Sub Total	-

Printing and Publication								
							Sub Total	-
Other Expenses								
							Sub Total	-
							Grand Total	\$199,000

Classified Staff or Generally Ineligible Expenses

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

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	-
Non-State				
Cash	Tribal internal budgets	Cash to pay for field surveys to be done on their land	Pending	\$2,000
In-Kind	Internal budgets	Field surveys completed locally	Secured	\$11,400
			Non State Sub Total	\$13,400
			Funds Total	\$13,400

Attachments

Required Attachments

Visual Component

File: [8d863ddc-0fe.pdf](#)

Alternate Text for Visual Component

A tentative list of sites where surveys will take place.

Financial Capacity

File: [c07aa2bc-775.pdf](#)

Board Resolution or Letter

Title	File
MnSEIP Resolution	9b65c243-169.pdf

Optional Attachments

Support Letter or Other

Title	File
Letters of support	44d1b564-a1e.pdf
990 Postcard	a7f52e21-f54.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Does your project have patent, royalties, or revenue potential?

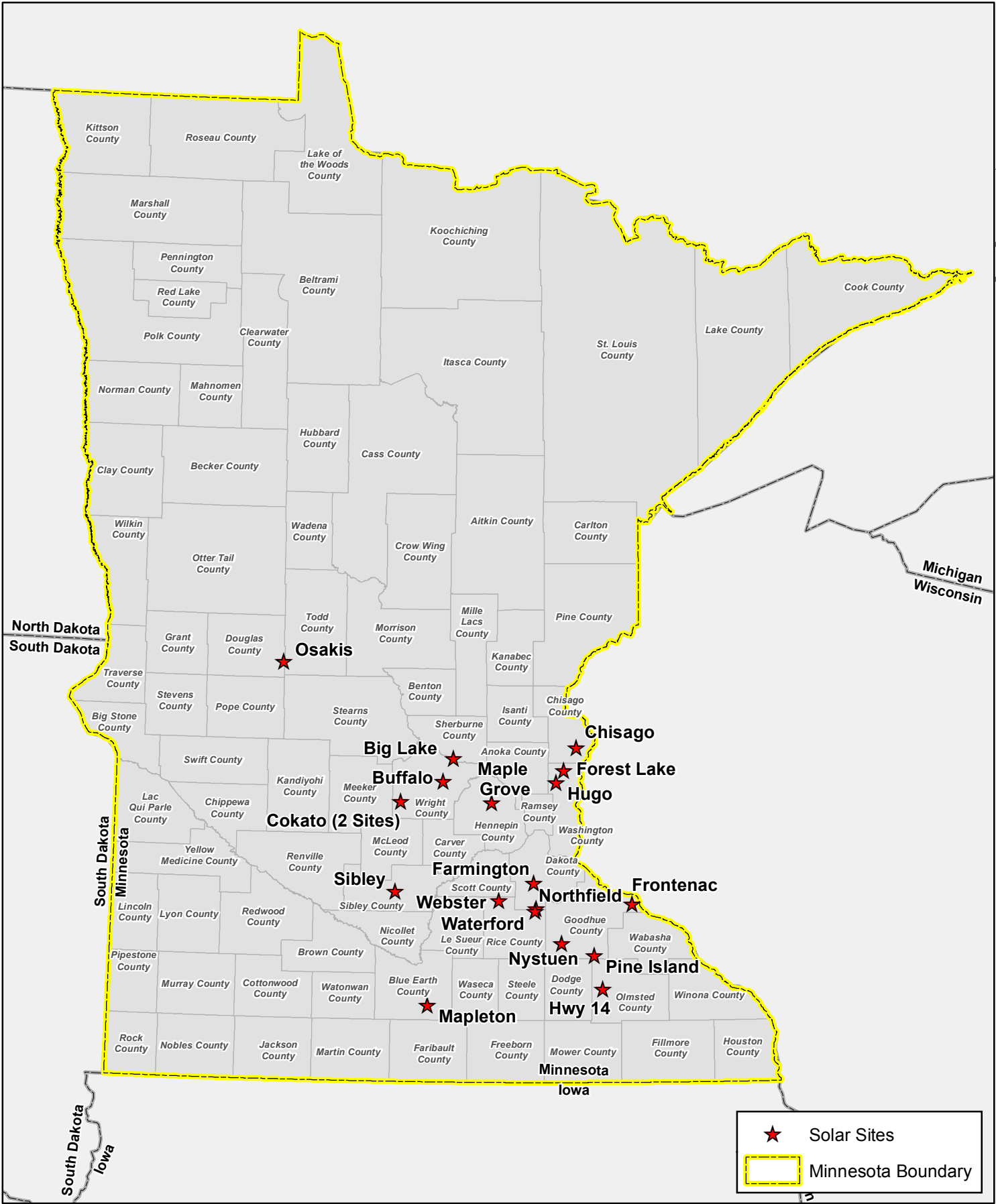
No

Does your project include research?

Yes

Does the organization have a fiscal agent for this project?

No



★ Solar Sites
 Minnesota Boundary

Solar Site Locations

Solar Panel Impact on Vegetation Quality
WSB

