

**Environment and Natural Resources Trust Fund
2020 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 057-AH

Studying Solar Panel Impact on Vegetation Quality

Category: H. Proposals seeking \$200,000 or less in funding

Sub-Category: A. Foundational Natural Resource Data and Information

Total Project Budget: \$ 160,083

Proposed Project Time Period for the Funding Requested: June 30, 2023 (3 yrs)

Summary:

This project will assess the potential effects of solar installations on vegetative communities and seek to determine the success of native plantings for pollinators and other wildlife.

Name: Tony Havranek

Sponsoring Organization: WSB & Associates

Job Title: Senior Ecologist

Department: _____

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St. Paul MN 55101

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Web Address: https://www.wsbenq.com/

Location:

Region: Statewide

County Name: Statewide

City / Township:

Alternate Text for Visual:

The map shows the sites for which we have granted access to for this project.

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____ %



PROJECT TITLE: Studying Solar Panel Impact on Vegetation Quality

I. PROJECT STATEMENT

Solar power production in Minnesota has seen dramatic increases in implementation. According to the Solar Energy Industries Association March 2019 report, Minnesota is ranked 13th nationally and is producing 1,093.8 megawatts. This equates to up to 11,000 acres of land used for solar installation in Minnesota. Panel installation often occurs over natural habitats like wetlands or native forbs, but little is known about how panels influence the vegetative quality after installation. Similarly, there is a lack of information about how well native seed mixes are establishing under panels. Solar panels may negatively impact vegetative quality and natural habitats, and with a projected growth of an additional 8,370 acres of solar in Minnesota over the next five years, the effects of solar on vegetative quality need to be quantified. This study will evaluate the influence of solar panels on existing and planted plant communities under solar installations of varying stages of development and will use the data to influence regulation of solar installation in Minnesota. The project is a 3.5-year study from 2020 through the end of the growing season in 2022.

In urban and suburban areas, solar sites are often placed on vacant lands that support diverse habitats of varying quality. One reoccurring question from local government units (LGUs) regarding solar development in wetlands is: Does shading and ground disturbance from solar panels alter wetland function and value, and reduce vegetative quality of a site after installation? To develop solar sites in wetland habitats, developers must work collaboratively with LGUs to adhere to state rules, specifically, the Wetland Conservation Act (WCA). WCA requires that all impacts to wetlands be avoided, minimized and replaced to achieve no net loss. Traditionally, posts and pilings from solar panels are not considered a wetland impact, but there is no supporting data to guide these LGU decisions. Shading from panels may lead to conversion of the vegetative community resulting in negative impacts to wildlife that rely on those lost communities.

After construction, many solar installations are also planted with native seed mixes under panels to develop a natural habitat that will benefit pollinators. The Board of Water and Soil Resources (BWSR) has developed a series of metrics for solar developers to achieve the status of Habitat Friendly Solar on their sites. Like the questions that arose about wetland quality under panels, there are questions about whether sites planted with native seed are achieving the necessary growth and diversity needed to support pollinators.

This project will document changes in vegetative cover, diversity and species conservatism under solar panels within both the upland and the wetland habitats at community solar sites. Field surveys will be conducted at solar sites throughout Minnesota to document changes to vegetation over time. An initial pilot study of this project was completed by WSB during the 2018 growing season on a solar site in Hugo, MN. WSB has developed data collection and analysis methodology during this pilot study. To expand this research to a regional level, WSB has partnered with Clearway Energy to evaluate an additional 16 sites throughout Minnesota. Two sites in western Wisconsin have also given WSB site access which will provide data representative of plant communities in eastern Minnesota. WSB has also met with the Board of Water and Soil Resources (BWSR) staff to discuss the project and the benefits that the data will provide to both solar developers and regulatory agencies. BWSR has agreed to advise this project as it relates to their Habitat Friendly Solar Program and wetland programs.

II. PROJECT ACTIVITIES AND OUTCOMES

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

Description: Coordinating site access and safety training with solar site owners and operators and updating project partners with progress, results and site outcomes.

ENRTF BUDGET: \$ 39,294

Table with 2 columns: Outcome, Completion Date. Row 1: Site selection and access from site owners and operators, July 2020. Row 2: Update project partners with project status, data collected, and results, Annually.



**Environment and Natural Resources Trust Fund (ENRTF)
2020 Main Proposal Template**

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

Description: This activity includes collecting vegetation data from up to 19 solar sites throughout Minnesota. Two macroplots will be established at each solar site and one will be placed in wetland if available onsite. The macroplots will be surveyed two times per growing season to gather vegetation cover, frequency, and forb flowering data. These surveys will be conducted for 3.5 years (2020-2022) to assess changes of vegetation at different stages of solar panel installation.

ENRTF BUDGET: \$ 79,895

Outcome	Completion Date
1. <i>Collect early growing season vegetation data at the solar sites.</i>	<i>Annually</i>
2. <i>Collect late growing season vegetation data at the solar sites.</i>	<i>Annually</i>

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

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.

ENRTF BUDGET: \$ 48,894

Outcome	Completion Date
1. <i>Enter data into the Frames Feats/Firemon Integrated (FFI-Lite) interagency plot-level monitoring software application.</i>	<i>Annually</i>
2. <i>Analyze the data for cover/frequency, diversity, Coefficient of Conservatism, Floristic Quality Index, species richness, and other metrics.</i>	<i>Annually</i>
3. <i>Summarize the data in a report at the end of each year of data collection. Data will be compared year-to-year during subsequent years.</i>	<i>Annually</i>
4. <i>Analyze data to determine if there was a significant change to vegetative quality.</i>	<i>July 2022</i>

III. PROJECT PARTNERS AND COLLABORATORS:

WSB will be the fiscal agent receiving funds for the project. WSB has contributed \$10,000 to develop the pilot research project methodology and data analysis. The following local agencies will assist by providing monetary or in-kind assistance to the project: Shakopee Mdewakanton Sioux Community, Red Lake Band of Chippewa, Hindu Society of Minnesota, Goodhue SWCD, Renville SWCD, Sibley SWCD and Wright County SWCD. This project is also supported by Great Plains Institute, the City of Hugo, the City of Maple Grove, and Chippewa, Kandiyohi, McLeod, and Olmstead SWCDs. Clearway Energy is providing access to 16 solar sites throughout Minnesota and has provided all previous permitting, planting plans, and vegetation reports that have been produced during the development of the sites. ENGIE is providing access to two sites in western Wisconsin that will provide plant community data representative of eastern Minnesota.

IV. LONG-TERM IMPLEMENTATION AND FUNDING:

This proposal brings WSB’s initial pilot project to fruition at a larger scale, making it applicable to a range of stakeholders so that the data can be used at a local, state and regional level to guide collaboration and facilitate continued growth in alternative energy sources while improving ecological outcomes. The data will be a basis for regulator decisions, specifically, in protecting existing high-quality wetland or upland vegetative communities. It will also provide the knowledge base for understanding how particular sites may or may not provide suitable habitat for pollinator species based on planned site preparation, seeding, and maintenance activities.

V. SEE ADDITIONAL PROPOSAL COMPONENTS:

A. Proposal Budget Spreadsheet; **B.** Visual Component or Map; **C.** Parcel List Spreadsheet; **D.** Acquisition, Easements, and Restoration Requirements; **E.** Research Addendum (Not required at proposal submission stage. Required later in process, if proposal is recommended. Staff will provide further information at that time); **F.** Project Manager Qualifications and Organization Description; **G.** Letter or Resolution; **H.** Financial Capacity

Attachment A: Project Budget Spreadsheet
 Environment and Natural Resources Trust Fund
 M.L. 2020 Budget Spreadsheet



Legal Citation:

Project Manager: Tony Havranek

Project Title: Studying Solar Panel Impact on Vegetation Quality

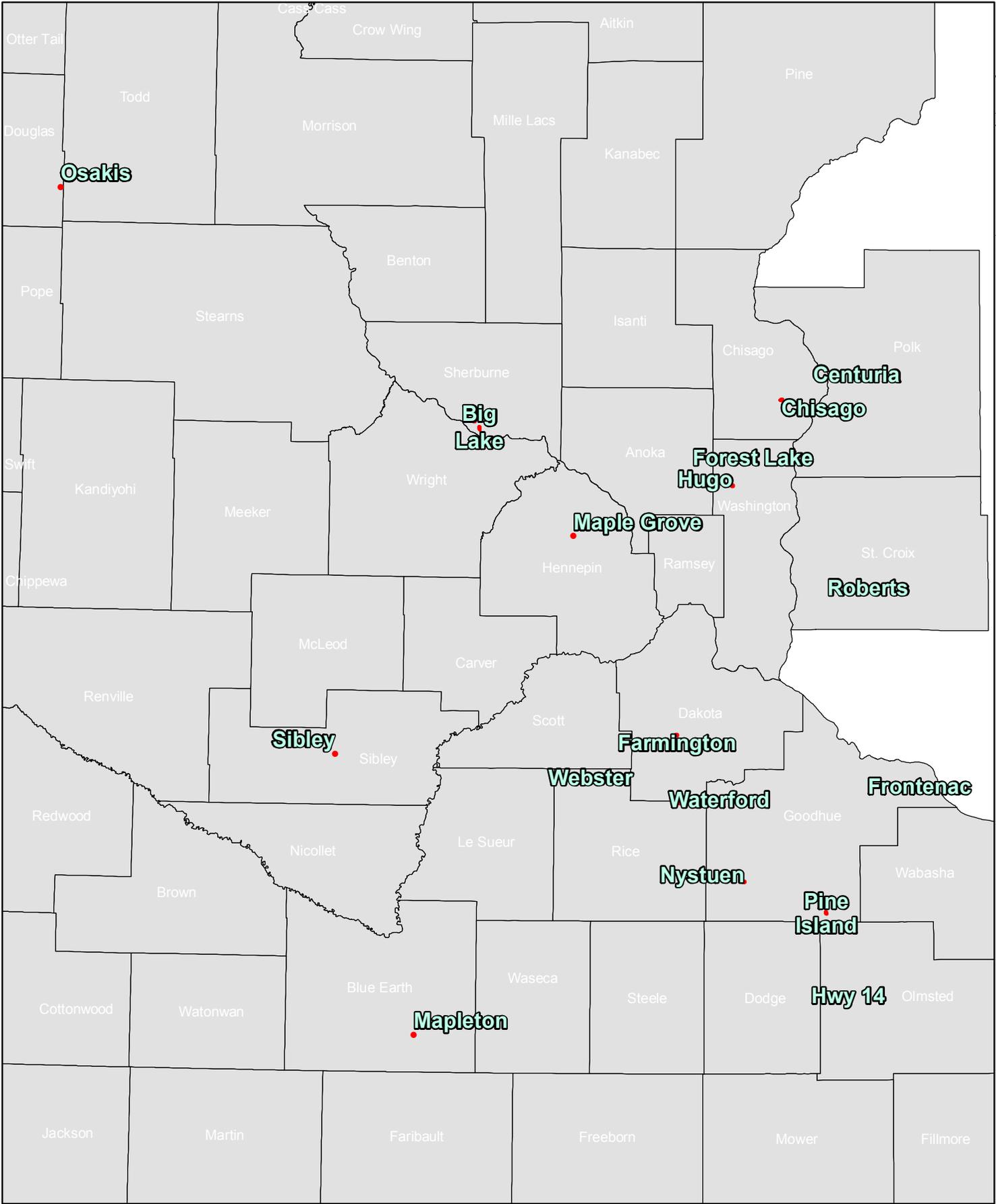
Organization: WSB & Associates

Project Budget: \$160,083

Project Length and Completion Date: 3.5 years/November 2022

Today's Date: April 15, 2019

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET		Budget	Amount Spent	Balance
BUDGET ITEM				
Personnel (Wages and Benefits)		\$ 32,940	\$ -	\$ 32,940
<i>Project Manager, WSB - 1 staff, \$15,000 (80% salary/20% benefits), %10 FTE/year for 3.5 years. Responsibilities include full oversight of the LCCMR grant and project management.</i>				
Professional/Technical/Service Contracts		\$ 135,143	\$ -	\$ 135,143
<i>Single-Source: WSB & Associates, Inc. is the fiscal agent and will provide all services to complete this project with help from in-kind partners. WSB has performed a pilot phase of this research project and has environmental scientists and project managers with professional expertise necessary to complete work described herein.</i>				
Equipment/Tools/Supplies				
		#REF!	\$ -	#REF!
Capital Expenditures Over \$5,000				
		\$ -	\$ -	\$ -
Fee Title Acquisition				
		\$ -	\$ -	\$ -
Easement Acquisition				
		\$ -	\$ -	\$ -
Professional Services for Acquisition				
		\$ -	\$ -	\$ -
Printing				
		\$ -	\$ -	\$ -
Travel expenses in Minnesota				
		\$ -	\$ -	\$ -
Other				
		\$ -	\$ -	\$ -
COLUMN TOTAL		\$ 160,083	\$ -	\$ 160,083
SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT				
	Status (secured or pending)	Budget	Spent	Balance
Non-State:		\$ 16,000	\$ -	\$ 16,000
Shakopee Mdewekanton Sioux Community		\$ 3,000		\$ 3,000
WSB		\$ 13,000	\$ 10,000	\$ 3,000
State:		\$ -	\$ -	\$ -
In kind:		\$ 11,000	\$ -	\$ 11,000
Wright County SWCD		\$ 3,000		\$ 3,000
Renville County SWCD		\$ 3,000		\$ 3,000
Goodhue County SWCD		\$ 2,000		\$ 2,000
Red Lake Band of Chippewa		\$ 3,000		\$ 3,000
Sibley County SWCD			solar site access	
Hindu Society of Minnesota			solar site access	
Clearway Energy			solar site access	
ENGIE			solar site access	
Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS		Budget	Spent	Balance
		\$ -	\$ -	\$ -



Solar Site Locations

Solar Significance Project



Project Manager Qualifications

Roxy Franta Filed Crew Lead and Project Manager

Roxy has X years of experience in nat resources

Roxy has completed a variety of floristic assessments in Minnesota which includes surveying upland and wetland habitats with a variety of assessment methodology, which includes the proposed cover frequency assessment method.

Roxy has completed research in Australia and X

Roxy is also the Wetland Conservation Act Local Government Unit representative for the City of Champlin.

Tony Havranek Deputy Project Manager

Tony has 18 years of experience in the natural resources field relating to water quality, fisheries, forestry, and terrestrial and aquatic restoration projects and is senior Ecologist at WSB.

Tony has implemented and led a variety of vegetation assessments used to develop baseline datasets and determine vegetation shift and restoration projects are implemented. Tony has worked extensively in Wisconsin and Minnesota. He also manages a number of ecologically based projects for clients and is responsible for reporting and budget tracking for each. Many of these projects are grant funded.

Tony is currently the Wetland Conservation Act administrator for the City of Hugo and is currently working on two LCCMR funded projects; City of Champlin Mill Pond Restoration and Minneapolis Parks and Recreation Board Nokomis Subwatershed Invasive Carp Management.

Dan Shaw Technical Consultant

Dan is the native vegetation specialist for the MN Board of Water and Soil Resources and is the author of a variety of a number of guidance documents and plans associated with MN native vegetation management and conservation.

Alison Harwood Deputy Project Manager