Environmental Assessment:

Northern Crescent Solar and Storage Project

The Human and Environmental Impacts of Constructing and Operating the Northern Crescent Solar and Storage Project

February 2025

COMMERCE DEPARTMENT

PUC Docket Nos. IP-7135/GS-22-57 and

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Northern Crescent Solar LLC (Northern Crescent Solar) proposes to construct, own, and operate a 150 megawatt (MW) solar energy generating system, a 50 MW battery storage system, and associated facilities in Faribault County, Minnesota. Northern Crescent Solar must obtain two site permits from the Minnesota Public Utilities Commission before it can construct the proposed Northern Crescent Solar Project.

Sources

Much of the information used to prepare this environmental assessment comes from the joint site permit application. Additional sources include information from relevant federal and state environmental review documents for similar projects, spatial data and site visits.

Project Mailing List

To place your name on the project mailing list contact docketing.puc@state.mn.us or (651) 201-2246 and provide the docket number (22-57 and 24-238), your name, email address, and mailing address. Please indicate whether you would like to receive notices by email or U.S. mail.

Alternative Formats

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Acronyms and Abbreviations

Acronym/Abbreviation	Description
AC	alternating current
AIMP	Agricultural Impact Mitigation Plan
ALJ	administrative law judge
applicant	Primergy Solar, LLC (Northern Crescent Solar)
BMP	best management practice
BWSR	Board of Water and Soil Resources
Commerce	Department of Commerce
Commission	Public Utilities Commission
CSW Permit	Construction Stormwater Permit
dBA	A-weighted sound level recorded in units of decibels
DC	direct current
DNR	Department of Natural Resources
DSP	draft site permit
EA	environmental assessment
EJ	Environmental justice
EMF	electromagnetic fields
USEPA	United States Environmental Protection Agency
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
GHG	Greenhouse gas
IEEE	International Electrical and Electronic Engineers
kV	kilovolt
MBS	Minnesota Biological Survey
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MW	megawatt
MWh	megawatt hour
mG	milligauss
MnDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
MWI	Minnesota Well Index
NAC	noise area classification
NHIS	Natural Heritage Information System
NLEB	Northern Long Eared Bat
NWI	National Wetland Inventory
project	Northern Crescent Solar and Storage Project
PV	photovoltaic
PWI	Public Waters Inventory
ROI	region of influence
ROW	right-of-way
SCADA	supervisory control and data acquisition
SHPO	State Historic Preservation Office
SNA	Scientific and Natural Area

SWPPP	Stormwater Pollution Prevention Plan
TCLP	Toxicity Characteristic Leaching Procedure
U.S.	United States
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
VMP	Vegetation Management Plan
WCA	Wetland Conservation Act
WHPA	Wellhead Protection Area
WMA	Wildlife Management Area

DEFINITIONS

Several terms used in this document have specific meaning in Minnesota law or regulation. Other terms are defined for clarity.

associated facilities means buildings, equipment, and other physical structures that are necessary to the operation of a large electric power generating plant or high voltage transmission line (Minnesota Rule 7850.1000, subpart 3).

construction means any clearing of land, excavation, or other action that would adversely affect the natural environment of the site or route but does not include changes needed for temporary use of sites or routes for nonutility purposes, or uses in securing survey or geological data, including necessary borings to ascertain foundation conditions (Minnesota Statute 216E.01, subdivision 3).

distribution line means power lines that operate below 69 kilovolts.

easement mean a grant of one or more of the property rights by the property owner to and /or for the use by the public, a corporation, or another person or entity.

energy storage system means equipment and associated facilities designed with a nameplate capacity of 10,000 kilowatts or more that is capable of storing generated electricity for a period of time and delivering the electricity for use after storage (Minnesota Statute 216E.01, subdivision 3a).

high voltage transmission line means a conductor of electric energy and associated facilities designed for and capable of operation at a nominal voltage of 100 kilovolts or more and is greater than 1,500 feet in length (Minnesota Statute 216E.01, subdivision 4).

land control area means the 1,179-acre area for which Northern Crescent Solar is assumed to have site control through ownership, a lease agreement, or an easement. The joint site permit application refers to this as the "Project Area." For this document, it applies to the area for the solar facility as well as area for collection corridors and substation. The term is used to bound a review area and should not be understood to imply the applicant has secured, or will definitely secure, the necessary land rights.

large electric power generating plant means electric power generating equipment and associated facilities designed for or capable of operation at a capacity of 50,000 kilowatts or more (Minnesota Statute 216E.01, subdivision 5).

local vicinity means 1,600 feet from the land control area and collection line corridor.

mitigation means to avoid, minimize, correct, or compensate for a potential impact.

power line means a distribution, transmission, or high voltage transmission line.

preliminary development area means the 929-acre area within the land control area where Northern Crescent Solar proposes to build the solar facilities. This area does not include the collection corridors or required setbacks. This area is also referred to as the project boundary. The joint site permit application refers to this as the "Buildable Area."

project area means one mile from the land control area and collection line corridor.

solar facility means ground-mounted photovoltaic equipment capable of operation at 50,000 kilowatts or more connected directly to the electrical grid and the associated facilities such as access roads and collector lines.

solar energy generation system means a set of devices whose primary purpose is to produce electricity by means of any combination of collecting, transferring, or converting solar-generated energy (Minnesota Statute 216E.01, subdivision 9a).

transmission line means power lines that operate at 69 kilovolts and above.

1 Introduction

Northern Crescent Solar, LLC (Northern Crescent Solar or applicant) is proposing to construct and operate the Northern Crescent Solar and Storage Project (project), a 150 megawatt (MW) solar farm and a 50 MW battery energy storage system (BESS) in Faribault County, Minnesota. Northern Crescent Solar must obtain two site permits from the Minnesota Public Utilities Commission (Commission) before it can construct and operate the project. The project will connect to the electric transmission grid by way of a less than 250 feet long 161 kV transmission line (Gen-Tie Line) to a proposed Xcel Energy switchyard that will then connect to an existing Xcel Energy 161 kV transmission line that transects the project site.

The applicant filed a joint solar and storage site permit application (joint site permit application) on August 14, 2024, and the Commission found the joint site permit application to be substantially complete on September 17, 2024.

The Minnesota Department of Commerce (Commerce) has prepared this environmental assessment (EA) for the proposed project. The EA describes the project, highlights resources affected by the project, and discusses potential human and environmental impacts to these resources. It also discusses ways to mitigate potential impacts. These mitigation strategies can become enforceable conditions of the Commission's site permit.

An EA is not a decision-making document, but rather an information document. The EA is intended to facilitate informed decisions by state agencies, particularly with respect to the goals of the Minnesota Power Plant Siting Act to "minimize adverse human and environmental impacts while insuring continuing electric power system reliability and integrity and ensuring that electric energy needs are met and fulfilled in an orderly and timely fashion".[1]

1.1 How is this document organized?

The EA addresses the matters identified in the scoping decision.

This EA is based on the applicant's joint site permit application and public scoping comments. It addresses the matters identified in the EA scoping decision (**Appendix A**).

- **Chapter 1** briefly describes the state of Minnesota's role; discusses how this EA is organized; and provides a summary of potential impacts and mitigation.
- **Chapter 2** describes the project—design, construction, operation, and decommissioning.
- **Chapter 3** summarizes the regulatory framework, including the site permit process, the environmental review process, other approvals that might be required for the project, and the criteria the Commission uses to make its decisions.
- **Chapter 4** describes the environmental setting; details potential human and environmental impacts from the project; and identifies measures to mitigate adverse impacts. It summarizes

[1] Minnesota Statutes 216E.02, subd. 1.

the cumulative potential effects of the project and other projects and lists unavoidable impacts and irreversible and irretrievable commitments of resources.

- **Chapter 5** identifies the sources used to prepare the document.

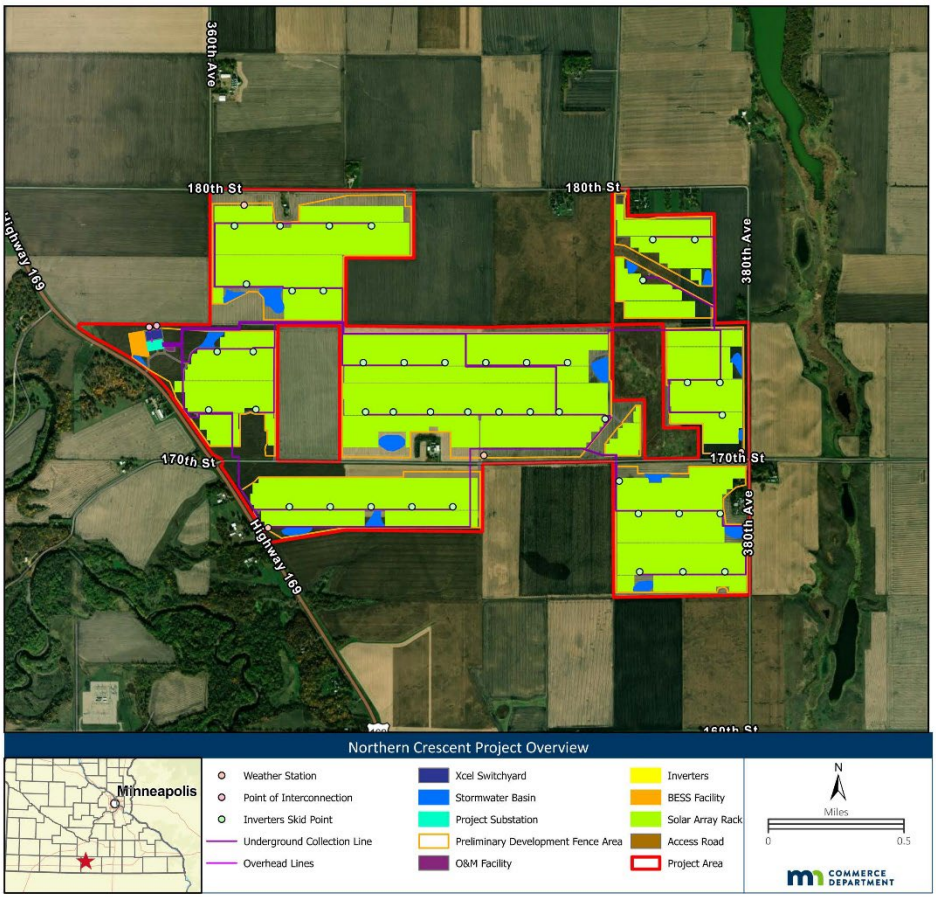
1.2 What does the applicant propose to construct?

Northern Crescent Solar proposes to construct a 150 MW solar energy generating system, a 50 MW battery storage system, and associated facilities on a site of approximately 1,179 acres in Verona and Prescott Townships in Faribault County, Minnesota.

The project will consist of photovoltaic (PV) panels, trackers, inverters, transformers, access roads, security fencing, above-ground and below-ground electric collection lines, a project substation, battery storage facilities, and associated facilities (**Figure 1**). Northern Crescent Solar proposes to locate the solar facilities in blocks within the 1,179 acres of land under contract or owned by the applicant. Based on preliminary design, Northern Crescent Solar anticipates approximately 929 acres within the 1,179-acre site will be developed for the solar and battery facilities. The solar and battery facilities will be connected to the project substation via 34.5 kilovolt (kV) electric collection lines, which will likely be underground, depending on final design. The collection corridor is estimated to comprise approximately 22 acres of the project area. A short aboveground 161 kV transmission line will run from the project substation to a new switching station on the existing 161 kV transmission line located adjacent to the project.

Construction is anticipated to begin in 2025 with completion and operation anticipated in late 2026.

Figure 1. Proposed Northern Crescent Solar and Storage Project



1.3 What is the state of Minnesota's role?

The applicant needs two site permits from the Commission to construct the project. Commerce prepared this EA. An administrative law judge will oversee a public hearing.

To build the project, the applicant needs two site permits from the Commission. The project may also require additional approvals from other federal and state agencies and local governments, for example, a driveway permit from Faribault County or a Construction Stormwater Permit from the Minnesota Pollution Control Agency (MPCA). A site permit supersedes local zoning, building, and land use rules.[2] The Commission's site permit decision must be guided, in part, however, by consideration of impacts to local zoning and land use in accordance with the legislative goal to "minimize human settlement and other land use conflicts."[3]

[2] Minnesota Statutes 216E.10, subd. 1.
[3] Minnesota Statutes 216E.03, subd. 7.

Northern Crescent Solar submitted a joint site permit application to the Commission for two site permits for the project on August 14, 2024.[4] The Commission must consider whether the record supports issuing site permits, and what conditions should be placed on the site permits.[5]

To ensure a fair and robust airing of the issues, the Minnesota Legislature set out a process for the Commission to follow when considering site permit applications.[6] In this instance, an EA has been prepared, and a public hearing will be held. The goal of the EA is to describe potential human and environmental impacts of the project (*the facts*), whereas the intent of the public hearing is to allow interested persons the opportunity to advocate, question, and debate what the Commission should decide about the project (*what the facts mean*). The record developed during this process—including all public input—will be considered by the Commission when it makes its decisions on the applicant's joint site permit application.

1.4 What is the public's role?

Minnesota needs your help to make informed decisions.

During scoping, you told us your concerns about the project so that we could collect the right facts. At the public hearing, which comes next, you can tell us what those facts mean, and if you think we have represented them correctly in this EA. Your help in pulling together the facts and determining what they mean will help the Commission make informed decisions regarding the project.

1.5 What is an Environmental Assessment?

This document is an Environmental Assessment. The Commission will use the information in this document to inform their decisions about issuing a site permit for the project.

This Environmental Assessment (EA) contains an overview of affected resources and discusses potential human and environmental impacts and mitigation measures. Energy Environmental Review and Analysis (EERA) staff within the Commerce Department (Commerce) prepared this document as part of the environmental review process. Scoping is the first step in the process. It provides opportunities to provide comments on the content of this environmental assessment, suggest alternatives, and to mitigate potential impacts.

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[4] Northern Crescent Solar and Storage Project, Joint Application to the Minnesota Public Utilities Commission for a Site Permit for a Large Electric Generating Facility and Battery Energy Storage Facility, August 14, 2024, eDockets Numbers 20248-209500-01 (through -20), 20248-209501-01 (through -20), 20248-209502-01 (through -16), and 20248-209503-01 (through -08).

[5] If the Commission grants a site or route permit, it chooses which of the studied locations is most appropriate. In this matter only one site location is studied.

[6] See generally Minnesota Statutes 216E.

1.6 Where do I get more information?

For additional information don't hesitate to contact Commission or Commerce staff.

If you would like more information or if you have questions, please contact Commerce staff: Logan Hicks (logan.m.hicks@state.mn.us), (651) 539-2712 or the Commission Staff: Sam Lobby (sam.lobby@state.mn.us) (651) 201-2205.

Information about the project, including the joint site permit application, notices, and public comments, can be found on eDockets: https://www.edockets.state.mn.us/documents by searching "22-57" or "24-238" under "Docket #'s". Information is also available on Commerce's webpage for the project: https://apps.commerce.state.mn.us/web/project/15706.

1.7 What permits are needed?

Two site permits, from the Commission are required. Federal, state, and local permits may also be necessary to construct the project.

The project requires two site permits from the Commission because it meets the definition of large electric power generating plant, which is any electric power generating equipment designed for or capable of operation at a capacity of 50 MW or more, and meets the definition of an energy storage system, which is any equipment and associated facilities designed with a nameplate capacity of 10 MW or more.

Various federal, state, and local approvals will be required for activities related to the construction and operation of the project. These permits are referred to as "downstream permits" and must be obtained by the applicant prior to constructing the project.

1.8 What are the potential impacts of the project?

The project will impact human and environmental resources. Impacts will occur during construction and operation.

A potential impact is the anticipated change to an existing condition caused directly or indirectly by the project. Potential impacts can be positive or negative, short- or long-term, and can accumulate incrementally. Impacts vary in duration and size, by resource, and across locations. The impacts of constructing and operating a project can be mitigated by avoiding, minimizing, or compensating for the adverse effects and environmental impacts of a project.

The context of an impact—in combination with its anticipated on-the-ground effect and mitigation measures—is used to determine an impact intensity level, which can range from highly beneficial to highly harmful. Impacts are grouped: human settlement, human health and safety, land-based economies, archaeological and historic resources, and natural resources.

Select resource topics received abbreviated study because they were deemed to be of minor importance to the Commission's site permit decision. Potential impacts are anticipated to be negligible for displacement, communication, implantable medical devices, forestry, and mining.

1.8.1 Human Settlement

Large energy projects can impact human settlement. Impacts range from short-term, such as increased local expenditures during construction, to long-term, such as changes to viewsheds.

Aesthetics The impact intensity level is expected to be moderate and long-term. Locations where visual impacts may potentially be the greatest are adjacent to residences and along public roadways. The solar arrays will be visible from nearby residences and adjacent roadways.

Cultural Values The impact intensity level is anticipated to be minimal. The project is not anticipated to impact or alter the work and leisure pursuits of residents in such a way as to impact the underlying culture of the area. Differences between cultural values related to renewable energy and rural character has the potential to create tradeoffs that cannot be addressed in the site permits.

Land Use and Zoning The impact intensity level is anticipated to be moderate due to the conversion of agricultural land to land used for energy generation. Land use impacts are anticipated to be long-term and localized. Constructing the project will change land use from agricultural to solar energy production for a minimum of 30 years. After the project's useful life, the land control area could be restored to agricultural or other planned land uses by implementing appropriate restoration measures. Impacts can be minimized by using best practices to protect land and water quality.

Noise Distinct noises are associated with the different phases of project construction. The impact intensity level during construction will range from negligible to significant depending on the activity. Potential impacts are anticipated to be intermittent and short-term. These localized impacts may affect nearby residences and might exceed state noise standards. Impacts are unavoidable but can be minimized. Operational impacts are anticipated to be negligible.

Property Values Impacts in the local vicinity are anticipated to be minimal to moderate and decrease with distance and over time. Impacts to the value of specific properties within the local vicinity are difficult to determine but could occur.

Tourism and Recreation The impact intensity level to tourism and recreation resources is anticipated to be minimal. Most impacts will be short-term and related to construction.

Public Services Potential impacts to the electrical grid, roads and railroads, and other utilities are anticipated to be short-term, intermittent, and localized during construction. Impacts to water (wells and septic systems) are not expected to occur. Overall, construction-related impacts are expected to be minimal, and are associated with possible traffic delays. During operation, negligible traffic increases would occur for maintenance. Impacts are unavoidable but can be minimized.

Socioeconomics The impact intensity level is anticipated to be minimal to significant and positive. Effects associated with construction will, overall, be short-term and minimal. Significant positive effects may occur for individuals. Impacts from operation will be long-term and significant. Adverse impacts are not anticipated.

Environmental Justice The project will not have disproportionately high and adverse human health or environmental effects on low-income, minority, or tribal populations.

1.8.2 Human Health and Safety

Large energy projects have potential to impact human health and safety. Most concerns are related to the construction phase.

Electronic and Magnetic Fields (EMF) Impacts to human health from possible exposure to EMFs are not anticipated. Potential impacts will be long-term and localized. These unavoidable impacts will be of a small size. Impacts can be mitigated.

Public Safety and Emergency Services Like any construction project, there are risks. These include potential injury from falls, equipment and vehicle use, electrical accidents, etc. Public risks involve electrocution. Electrocution risks could also result from unauthorized entry into the fenced area. There is the potential to encounter land that has previously been impacted by hazardous substances, and if this occurs, hazardous materials must be documented, monitored, and disposed in coordination with MPCA. Potential impacts are anticipated to be minimal. Impacts would be short- and long-term and can be minimized.

1.8.3 Land-based Economies

Large energy projects can impact land-based economies by limiting land use for other purposes.

Agriculture Potential impacts to agricultural producers are anticipated to be minimal—lost farming revenues will be offset by lease agreements. A negligible loss of farmland in Faribault County would occur for the life of the project. With respect to prime farmland, the applicant indicates that no feasible or prudent alternatives to the project exist. Potential impacts are localized and unavoidable but can be minimized.

Tourism Impact intensity is expected to be minimal, and short-term in duration. There may be potential for impacts to local recreational activities during construction, however impacts will be temporary.

1.8.4 Archeological and Historic Resources

The impact intensity level is anticipated to be negligible to minimal. Impacts would be localized. Impacts can be mitigated through siting and construction monitoring.

1.8.5 Natural Resources

Large energy projects can impact the natural environment. Impacts are dependent upon many factors, such as how the project is designed, constructed, maintained, and decommissioned. Other factors, such as the environmental setting, influence potential impacts. Impacts vary significantly within and across projects.

Air Quality Potential impacts to air quality during construction would be intermittent, localized, short-term, and minimal. Impacts are associated with fugitive dust and exhaust. Impacts can be mitigated. Once operational, the solar array will not generate criteria pollutants or carbon dioxide. Negligible fugitive dust and exhaust emissions would occur as part of routine maintenance activities. Impacts are unavoidable and do not affect a unique resource. Impacts can be minimized.

Geology and Groundwater Impacts to geology and domestic water supplies are not expected. Localized impacts to groundwater resources, should they occur, would be intermittent, but have the potential to occur over the long-term. Indirect impacts from surface waters might occur during

construction. Impacts can be mitigated through use of Best Management Practices (BMPs) for stormwater management.

Soils Impacts to soils will occur during construction and decommissioning of the project. The impact intensity level is expected to be minimal. Potential impacts will be both positive and negative, and short- and long-term. Isolated moderate to significant negative impacts associated with high rainfall events could occur. Because the soil at the solar facility will be covered with native perennial vegetation for the life of the project, soil health is likely to improve.

Surface Water The impact intensity level is anticipated to be minimal. Direct impacts to surface waters are not expected. Indirect impacts to surface waters may occur. These impacts will be short-term, of a small size, and localized. Impacts can be mitigated.

Wetlands The impact intensity level is anticipated to be minimal. Although there is a potential for wetland to be indirectly affected, direct impacts are not expected. These impacts will be short-term, of a small size, and localized. Impacts can be mitigated.

Vegetation The solar facility will convert row crop farmland to perennial vegetation for the life of the project. Potential impacts of the solar facility can be mitigated through development of a vegetative management plan (VMP).

Wildlife and Habitat Potential impacts may be positive or negative and are species dependent. Long-term, minimal positive impacts to small mammals, insects, snakes, etc. would occur. Impacts to large wildlife species, for example, deer, will be negligible. Significant negative impacts could occur to individuals during construction and operation of the project. Once restored, the land control area will provide native habitat for the life of the project. The project does not contribute to significant habitat loss or degradation or create new habitat edge effects. The introduction of PV panels and fencing, creates the potential for bird collisions. Potential impacts can be mitigated in part through design and BMPs. The impact intensity level is expected to be minimal.

Rare and Unique Resources The impact intensity level is anticipated to be minimal. Impacts could be both short and long term and could be positive (e.g., through introduction of habitat), or negative (e.g., by removing trees during breeding or migratory season). Impacts can be mitigated.

Climate Change Construction emissions will have a short- term negligible increase in greenhouse gases that contribute to climate change. Overall, the project will generate energy that can be used to displace energy otherwise generated by carbon-fueled sources. The total GHG emissions produced by construction and operation of the project will be minimal when compared to the reduction in GHG emissions long-term. The project's design incorporates design elements that minimize impacts from the increase in extreme weather events such as increase flooding, storms, and heat wave events that are expected to accompany a warming climate.

1.9 What factors guide the Commission's decision?

Minnesota statute and rule identify the factors the Commission must consider when determining whether to issue a site permit.

After reviewing the project record—including public comments—the Commission will determine whether to issue site permits and, if site permits are issued, where the solar facility and battery storage will be located and what permit conditions are appropriate.

Minnesota Statutes 216E.03 lists considerations that guide the study, evaluation, and designation of site permits. Minnesota Rule 7850.4100 lists the factors the Commission must consider when making a site permit decision.

A. Effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services.

B. Effects on public health and safety.

C. Effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining.

D. Effects on archaeological and historic resources.

E. Effects on the natural environment, including effects on air and water quality resources and flora and fauna.

F. Effects on rare and unique natural resources.

G. Application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity.

H. Use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries.

I. Use of existing large electric power generating plant sites.

J. Use of existing transportation, pipeline, and electrical transmission systems or rights-of-way.

K. Electrical system reliability.

L. Costs of constructing, operating, and maintaining the facility which are dependent on design and route.

M. Adverse human and natural environmental effects which cannot be avoided.

N. Irreversible and irretrievable commitments of resources.

The Commission is also guided by the "state's goals to conserve resources, minimize environmental impacts, minimize human settlement and other land use conflicts, and ensure the state's electric energy security through efficient, cost-effective power supply and electric transmission infrastructure."[7]

[7] Minnesota Statutes 216E.03, subd. 7(a).

1.10 Siting Factors – Analysis and Discussion

This analysis applies the siting factors to the project. Some factors are described in just a few words. Other factors are more descriptive and include a list of elements that, when grouped, make up the factor.

Factor G (application of design options) and **Factor L** (costs dependent on design) do not apply as the design of the proposed project is the only design under consideration. **Factor H** (use of parallel or existing right-of-way) and **Factor J** (use of existing transportation, pipeline and electrical transmission systems) do not apply as those factors are specifically for routing permit projects. **Factor K** (reliability) is not discussed further here as the project is anticipated to maintain or improve the reliability of the electrical system. **Factor M** (unavoidable impacts) and **Factor N** (irreversible and irretrievable resource commitments) are discussed in Section 4.8 and Section 4.9, respectively, of this EA.

Other factors are ranked as follows:

●	Impacts are anticipated to be negligible to minimal and able to be mitigated or consistent with factor
○	Impacts are anticipated to be minimal to moderate and able to be mitigated in part or less consistent with factor, but nonetheless consistent
⊘	Impacts are anticipated to be moderate to significant and unable to be mitigated fully or consistent in part or not consistent with factor

Table 1 Application of Siting Factors- Solar Facility

Factor A: Human Settlement		
Element	**Construction**	**Operation**
Aesthetics	○	○
Displacement	●	●
Cultural Values	○	○
Electric Interference	●	●
Environmental Justice	●	●
Floodplains	●	●
Land Use and Zoning	●	●
Noise	⊘	○
Property Values	○	○
Recreation	○	●
Socioeconomics	●	●
Airports	●	●
Roads	○	●
Utilities	●	●

Factor B: Public Health and Safety		
Element	**Construction**	**Operation**
EMF	●	●
Emergency Services	●	●
Medical Devices	●	●
Public Safety	●	●
Stray Voltage	●	●
Worker Safety	●	●
Factor C: Land-based Economies		
Element	**Construction**	**Operation**
Agriculture	○	○
Forestry	●	●
Mining	●	●
Tourism	●	●
Factor D: Archaeological and Historic Resources		
Element	**Construction**	**Operation**
Archeological	●	●
Historic	●	●
Factor E: Natural Resources		
Element	**Construction**	**Operation**
Air Quality	●	●
Climate Change	●	●
Geology and Groundwater	●	●
Soils	●	●
Surface Water	●	●
Topography	●	●
Vegetation	●	●
Wetlands	●	●
Wildlife	●	●
Wildlife Habitat	●	●
Factor F: Rare and Unique Resources		
Element	**Construction**	**Operation**
Fauna	●	●
Flora	●	●
Factor I: Use of Existing Generating Plants		
Element	**Construction**	**Operation**
Existing Plants	⊘	⊘

1.10.1 Discussion

The following discussion highlights potential impacts to factor elements that are anticipated to be moderate to significant, and factors determined less consistent, consistent in part, or not consistent.

FACTOR A: HUMAN SETTLEMENT

Aesthetics Visual impacts are subjective. Thus, potential impacts are unique to the individual and can vary widely. Because there are existing energy and infrastructure facilities nearby (**Figure 9**), the project will not be an entirely new type of feature on the landscape. For those with high viewer sensitivity, for example, neighboring landowners, visual impacts are anticipated to be moderate to significant, while for those that travel through the project area, visual impacts are likely to be minimal, although noticeable.

Cultural Values The project is not anticipated to impact or alter the work and leisure pursuits of residents in such a way as to impact the underlying culture of the area. Differences between cultural values related to renewable energy and rural character has the potential to create tradeoffs that cannot be addressed in the site permit.

Environmental Justice The project is not anticipated to have disproportionately high or adverse human health or environmental effects on low-income, minority, or tribal populations.

Land Use and Zoning Land use impacts are anticipated to be long-term and localized. The proposed solar facility is consistent with local land use ordinances and comprehensive land use plans. Constructing the project will change land use from agricultural to solar energy production for a minimum of 30 years. After the project's useful life, the land control area could be restored to agricultural or other planned land uses by implementing appropriate restoration measures. Impacts can be minimized.

Noise Distinct noises are associated with the different phases of project construction. These impacts will be temporary and intermittent and range from negligible to significant depending on the construction equipment used and the location of the listener. There is potential for noise during operation to be moderate and chronic. The potential impacts will be mitigated by implementing equipment and procedures, as well as conducting noise studies, to ensure the impacts will be minimal.

Property Values On whole, impacts to property values are anticipated to be minimal and to decrease with distance and over time. However, impacts to a specific property's value are difficult to determine. Because of this uncertainty, impacts to specific properties could be minimal to moderate.

Recreation Potential impacts to recreational resources associated with construction are anticipated to be short-term, intermittent, and localized. The impact intensity level is expected to be minimal to moderate, most likely occurring due to increased traffic and noise from construction. During operation, no impacts to recreation are anticipated; negligible traffic increases would occur for maintenance.

Roads Potential impacts to roads and highways associated with construction are anticipated to be short-term, intermittent, and localized. The impact intensity level is expected to be minimal to

moderate. During operation, no impacts to roads are anticipated; negligible traffic increases would occur for maintenance.

FACTOR C: LAND-BASED ECONOMICS

Agriculture Potential impacts to agricultural producers are anticipated to be minimal—lost farming revenues will be offset by lease agreements. A negligible loss of farmland in Faribault County would occur for the life of the project. The project will impact prime farmland. Potential impacts are localized and unavoidable but can be minimized.

FACTOR E: NATURAL RESOURCES

Geology and Groundwater Impacts to geology and domestic water supplies are not expected. Localized impacts to groundwater resources, should they occur, would be intermittent, but have the potential to occur over the long-term. Indirect impacts from surface waters might occur during construction. Impacts can be mitigated through use of BMPs for stormwater management.

Soils Impacts to soils will occur during construction and decommissioning of the project. The impact intensity level is expected to be minimal to moderate. Potential impacts will both positive and negative, and short- and long-term. Isolated moderate to significant negative impacts associated with high rainfall events could occur but can be mitigated with erosion prevention and sediment control BMPs. Because the soil at the solar facility will be covered with native perennial vegetation for the life of the project, soil health is likely to improve.

Wildlife and Habitat Impacts wildlife are anticipated to be minimal to moderate during construction and operation of the project. Additional BMPs can be implemented to avoid impacts to local and rare and unique wildlife (e.g., migratory birds.)

FACTOR I: POWER PLANTS

Because the solar facility is not constructed at an existing power plant, the solar facility is inconsistent with this siting factor.

1.11 What's next?

A public hearing will be held in the project area; you can provide comments at the hearing. The Commission will then review the record and decide whether to grant a site permit.

An administrative law judge (ALJ) from the Office of Administrative Hearings will hold a public hearing after the EA is complete and available. At the hearing you may ask questions and submit comments about the project. After the close of the comment period, the ALJ will provide a written report to the Commission with findings, conclusions, and recommendations for the Commission.

The Commission reviews all the information in the project record in determining whether to issue a site permit. Site permits define the location of the project and include conditions specifying mitigation measures. The Commission is expected to make a site permit decision in the first half of 2025.

2 Proposed Project

Northern Crescent Solar proposes to construct and operate an up to 150 MW solar farm and a 50 MW battery storage system in Verona and Prescott Townships, Faribault County, Minnesota. The project will occupy approximately 1,179 acres southeast of the city of Winnebago. The project will interconnect to the electrical grid through a project substation and an existing Xcel Energy 161 kV transmission line which transects the project site. This chapter describes the project and how it would be constructed, operated, and decommissioned.

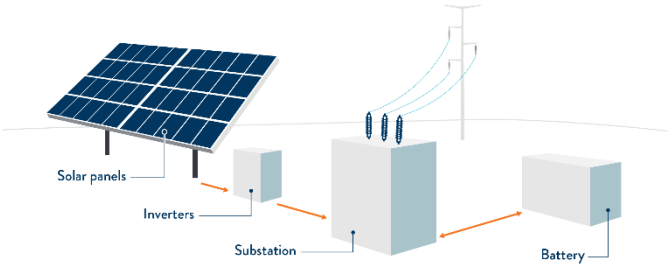
2.1 Solar Facility and BESS

2.1.1 How do solar and BESS facilities generate and store electricity?

The *photovoltaic effect* is the physical process through which a PV cell coverts sunlight directly into electricity by capitalizing on nature's inherent desire to keep electrical charges in balance. Batteries on site will store the unused energy for later use, as necessary.

When direct and indirect solar radiation (direct and scattered sunlight) strikes a PV cell, some radiation is absorbed, which excites electrons within the cell. This results in a continuous flow of electrons from the front to the back of the panel through electrical connections, which results in a continuous flow of electric current.

Figure 2. Solar Facility and BESS Schematic



Solar panels (sometimes referred to as solar modules) are made up of PV cells that generate direct current (DC) electricity, which must be converted to alternating current (AC) electricity before reaching the electrical grid. Solar panels are arranged into electrically connected blocks and connected to inverters. An inverter converts DC electricity to AC electricity. Transformers then step up the electrical voltage before the electrical power is collected through an above- or below-ground collection system. Collection systems combine the electricity from across the array and deliver it to a project substation. A BESS works in tandem with the solar facility using inverters and software to store power during non-peak times to deliver energy when peak times have higher demand for energy delivery. **Figure 2** shows a simplified schematic of the major components of the solar generating and storage facility.

2.1.2 Where is the project located?

The project is located in Verona and Prescott Townships in Faribault County, Minnesota (Figure 1).

As shown in **Figure 1**, the project is located in Verona and Prescott Townships in Faribault County, south and east of the city of Winnebago. US Highway 169 runs north-south to the west of the project area. **Table 2** summarizes the project location. The solar facility would be located on approximately 929 acres within an area of approximately 1,179 acres of land owned or leased by the applicant. The site is currently used mainly as cultivated farmland.

Northern Crescent Solar selected the site based on proximity to existing electric transmission infrastructure, sufficient solar resource, landowner participation, and available capacity on the grid to which the project will interconnect.[8]

Table 2: Project Location

Township	Range	Sections	Township	County
103N	28W	11, 12, 13	Verona	Faribault
103N	27W	7, 18	Prescott	Faribault

2.1.3 How is the project designed?

The project will consist of photovoltaic (PV) panels, trackers, inverters, transformers, access roads, security fencing, below-ground electric collection and communication lines, a project substation and interconnection facilities, conduit, metering and switchgear, step-up transformers, supervisory control and data acquisition (SCADA) system, an operation and maintenance facility, four weather stations, a BESS, laydown yards, and a short aboveground 161 kV transmission line.

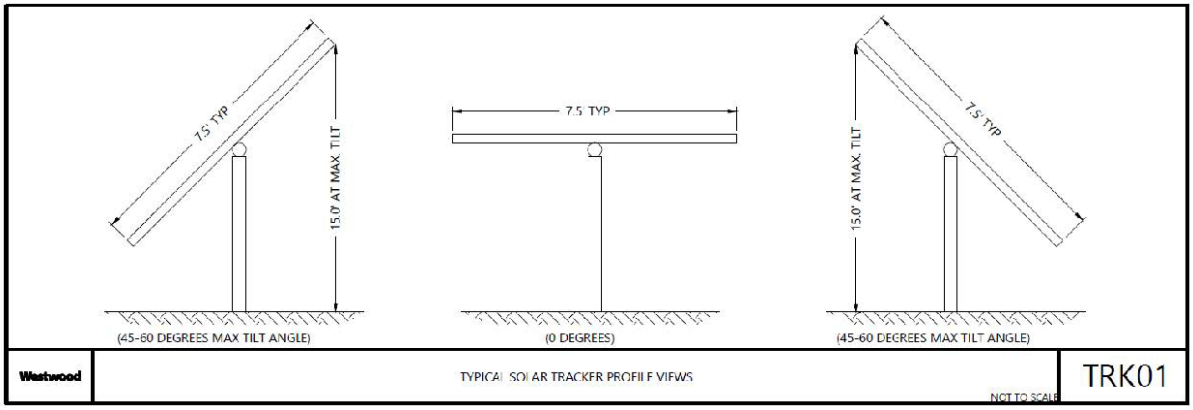
2.1.3.1 Solar Arrays

Northern Crescent Solar anticipates using panels affixed to tracking mechanisms that will allow the panels to track the sun from east to west. The arrays are arranged in rows oriented north and south. Small motors rotate the panels to follow the sun throughout the day, tilting east in the morning, paralleling the ground at zero degrees mid-day, and tilting west in the afternoon. This tracking of the sun maximizes the project's electrical production. When tilted to their highest position (early and late in the day), the top edge of the solar panels will be at a maximum 15 feet above the ground. A portion of arrays may be elevated in order to protect the panels in the event of flooding, and the impact of snow accumulation could also result in elevated arrays. The project will require approximately 843.5 acres of PV panels to establish the up to 150 MW AC capacity, although the acreage may be less depending on available wattage of solar panels at the time of purchase before construction.[9]

[8] Application, Section 3.0.
[9] Application, Section 4.0.

Figure 3. Typical Solar Array

Figure 4. Typical Solar Tracking Profile



2.1.3.2 Electrical Collection System

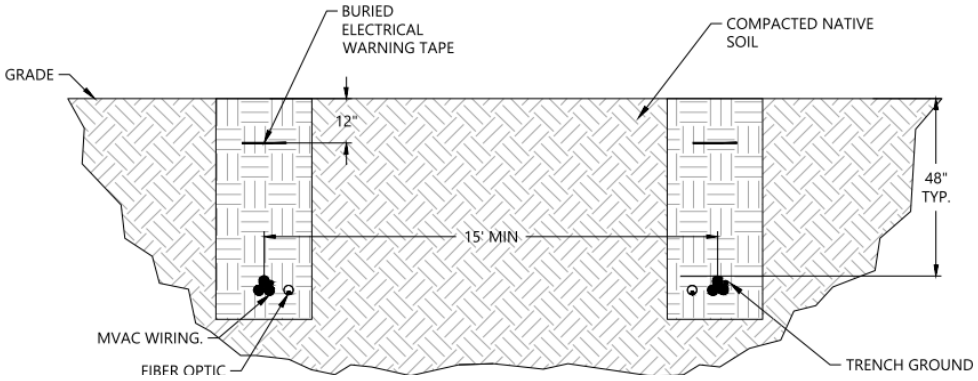
The direct current (DC) electrical energy generated by the solar panels (about 1,500 volts DC) will be delivered to approximately 43 inverters through either entirely underground or a combination of buried and aboveground cables. The inverters convert the electricity to beween 3,900 to 4,200 kilovolt-amperes (depending upon inverter specifications) alternating current (AC) and then a step-up transformer will convert the power to 34.5 kV for transmission through an underground collector system and transmit it to the project substation adjacent to the point of interconnection. Power inverters will be placed on inverter "skids" on top of concrete slab or pile foundations approximately 10 feet wide by 25 feet long. The height of the inverters placed upon these skids will range between 8 to 12 feet above grade. Typical pad mounted transformers that will be located on the inverter skids are approximately 9 feet

Figure 5. Inverter

above grade.[10] From a distance, inverters skids will look like one-half of a semi-trailer box (**Figure 5**). The skids will be placed on concrete slab or pier foundations. The final number of inverters will depend on the inverters selected for the project as well as the final solar panel configuration.

Electrical energy (34.5 kV AC) will be transmitted from inverter skids to the project substation through underground cables (**Figure 6**). Cabling will be trenched or plowed into place to a depth between 2 to 5 feet below grade.[11]

Figure 6. Underground Cabling



2.1.3.3 BESS FACILITY

The project BESS is proposed to be located in the western portion of the project site adjacent to the proposed project substation. Locating the BESS centrally as opposed to scattered throughout the site allows for better monitoring, maintenance, and efficiency.[12] The BESS is currently designed to occupy 3.2 acres consisting of many shipping containers that will be approximately 9.5 feet tall and 20 feet in length (**Figure 7**). Safety features such as remote monitoring, temperature control, heat and smoke detection, and fire suppressant systems will be utilized to mitigate any hazards that may be associated with the BESS.[13]

[10] Application, Section 4.1.
[11] Id.
[12] Id.
[13] Id.

Figure 7. Representative BESS

2.1.3.4 PROJECT SUBSTATION

The project substation is proposed to be located in the western portion of the project site adjacent to the proposed point of connection to the Xcel Energy transmission line (**Figure 9**). The substation will be located inside the project fence and is estimated to occupy approximately 1.3 acres of land. The project substation will include a 34.5/161 kV step-up substation with metering required for interconnection to the proposed new Xcel Energy switchyard. Other components of the substation include supporting structures for high voltage electrical structures, breakers, transformers, lightning protection, metering, and control equipment according to the specifications of the Interconnection Agreement with MISO. Underground 34.5 kV collector lines from the inverters will deliver energy to the project substation. The collector system voltage will be stepped up from 34.5 kV to 161 kV at the substation. The number of poles and length of the Gen-Tie Line are still pending final engineering and design, but the dead-end structure within the project substation is anticipated to be approximately 70 feet tall. The project substation will be graded and overlain with crushed rock. Secondary containment areas for the transformer will be installed as necessary. [14]

2.1.3.5 OPERATIONS AND MAINTENANCE FACILITY

The operations and maintenance (O&M) facility is proposed to be located near the project substation and BESS. The O&M facility is planned to cover approximately 0.4 acres which includes a building, a gravel parking lot, and separate fencing. The building will store O&M supplies, repair equipment, and the SCADA system for monitoring the project facilities. A domestic water well and septic tank will be constructed to provide water and sanitary service to the O&M building.[15]

2.1.3.6 FENCING

All solar arrays will be fenced for security. Permanent security fencing will be installed along the perimeter of the project. The perimeter fencing around the project will be up to 10 feet tall agricultural woven wire topped with 3 to 4 strands of smooth wire. Permanent 6 feet tall chain link fences, with one to two feet of barbed wire at the top, will be installed along the perimeter of the Project Substation, O&M Facilities, and BESS Facility, to comply with applicable electric codes. “High Voltage Keep Out” warning signs will be placed will be placed along both fences. The perimeter and interior fences will have locked gates at access points. Northern Crescent Solar has expressed that

[14] Application, Section 4.1.
[15] Id.

they will work with the Minnesota Department of Natural Resources (DNR) prior to finalizing the fence design.[16]

2.1.3.7 Access Roads

Although the total length of access roads will depend upon final site design, the preliminary layout anticipates approximately 12.1 miles of graveled access roads. These roads will be used for operations and maintenance activities. Roads will be approximately 24 feet wide. Access roads may be temporarily wider during construction, then reduced in width for long term site access upon completion.[17]

2.1.4 How would the project be constructed?

Northern Crescent Solar anticipates that construction of the solar facility will begin in 2025 with an in-service date of no later than 2026. This section summarizes construction activities. Unless otherwise noted, this summary has been adapted from Section 4.3 and Appendix E, the *Preliminary Agricultural Impact Mitigation Plan* (AIMP), of the joint site permit application.

Northern Crescent Solar anticipates that construction will begin in 2025 to meet an in-service goal of late 2026. The actual construction schedule is dependent upon permitting, final design, delivery of equipment, and workforce availability.

Construction will begin after all necessary permits and approvals have been received including a large generator interconnection agreement from MISO. Project construction will begin with workforce mobilization and the initial site preparation including vegetation removal, and grading, and any necessary tree removal. Construction will likely take place over two construction seasons. Northern Crescent Solar anticipates approximately nine laydown yards on 21.7 acres of the project area. The applicant anticipates grading approximately 14 percent, or 128 acres, of the preliminary development area. The applicant does not intend to complete grading all at once. Rather, they intend to construct the project in modules, in which grading and construction happen in each individual module block before continuing onto the next block. Multiple blocks may be constructed simultaneously.

Typical construction equipment will be used for the project – scrapers, bulldozers, dump trucks, motor graders, vibratory compactors, watering trucks, and backhoes. Additional specialty equipment could include a skid steer loader, pile driver, concreate truck and boom truck, a high reach bucket truck, a medium duty crane, all-terrain forklift, and a truck-mounted auger or drill rig. Upon completion of construction, heavy equipment will be removed from the project site.

The applicant estimates that for several weeks – during delivery of the trackers and solar panels – there will be between 10 and 20 semi-truck deliveries daily. Traffic will decrease once these components are delivered. Traffic volume during construction will predominantly come from worker travel to the construction site.

[16] Application, Section 4.1.
[17] Id.

The applicant estimates that the project will create approximately 200 temporary jobs for construction and installation phases, and three permanent full-time jobs for the project operation phase.

Access Roads

Construction of access roads will begin with soil scraping; topsoil and subsoil will be segregated and stockpiled. The subgrade will then be compacted, and 4 to 12 inches of gravel will be laid to best facilitate drainage. Once compacted, the applicant will then install drainage ditches as designed.

Solar Arrays

After grading is completed, racking system support installation will begin. The supports, typically galvanized steel piles, will be installed by using a pile driver, about the size of a tractor. Racking components will be distributed across the array using lightweight equipment, with crews walking across the array to secure the racking. After the racking is installed, PV modules will be distributed between tracker rows and installed by hand.

Project Substation

Construction of the project substation will begin with soil scraping; topsoil and subsoil will be segregated and stockpiled. The grounding grid and underground conduit will be installed in conjunction with the foundations for the transformer, control housing, and high voltage structures. After this is complete, the substation equipment will be installed on the prepared foundations. Final construction activities for the project substation will include stringing the electrical wires, installing the perimeter fence, and placing rock throughout the interior of the fenced area and between installed equipment.

The proposed Xcel switchyard is anticipated to be constructed simultaneously with the project substation.

BESS

Construction of the BESS will begin with soil scraping; topsoil and subsoil will be segregated and stockpiled. Construction will also involve installation of concrete foundations, substructures, and electrical equipment. The rest of the BESS equipment, such as containers, inverters, switchboards, etc., will be installed atop the foundation and linked to the substation via underground cabling.

Inverters and Step-Up Transformers

Construction of the inverter skids will begin with soil scraping; topsoil and subsoil will be segregated and stockpiled. Foundations will be frost-footed supported concrete pads or driven/helical screw pier foundations, depending on geotechnical conditions. Inverter skids (each containing an inverter, transformer, and SCADA equipment) will be installed on these foundations.

ELECTRICAL COLLECTOR SYSTEM

Northern Crescent Solar anticipates using either buried, or both underground and above-ground, DC collector cables within the arrays, depending upon final design. The electrical collection system will be installed below-ground for the AC electrical collection system at a depth between 2 to 5 five feet, using trenching. The electric collection system will need to cross 17th Street right-of-way in one location. At that location the AC collection system will be horizontally drilled beneath the street. Cabling will be done in accordance with the agricultural impact mitigation plan (AIMP); topsoil and subsoil will be segregated and stockpiled. Once cabling is installed in the trench, the trench will be backfilled with native subsoil followed by topsoil to return the surface to its finished grade.

STORMWATER DRAINAGE

Northern Crescent Solar indicates that it may include up to 15 stormwater basins as part of its stormwater treatment system. This stormwater system will be designed to capture, route, and treat stormwater runoff for volume control and water quality per Minnesota's Construction Stormwater General Permit. A construction stormwater permit and associated Stormwater Pollution Prevention Plan (SWPPP) will be developed prior to construction and implemented during construction.

FENCING

Northern Crescent Solar will install permanent security fencing around the perimeter of the project site. Perimeter fencing is anticipated to be agricultural woven wire fencing with a height of approximately ten feet from the ground with 3 to 4 strands of smooth wire at the top. The perimeter security fence will have locked gates as access points. The project will also include interior chain link fencing with a height of 6 feet from the ground with 1 to 2 feet of barbed wire at the top. These interior fences will surround the project substation, BESS and O&M facility.

RESTORATION

After construction, disturbed areas will be reseeded with native and non-native seed mixes in accordance with the project's AIMP and VMP.

Northern Crescent Solar has prepared a preliminary VMP (Appendix F of the joint site permit application) outlining how the site will be revegetated, maintained, and monitored over the life of the project to ensure restoration goals and objectives are met. Once vegetation at the site has been established, mowing will be done only when necessary to ensure safe operation of the facility. Mechanical removal and selective use of herbicides may be used to treat unwanted woody species that may shade out panels and noxious and perennial weeds. Northern Crescent Solar is also maintaining the option to utilize grazing as a management tool for the project.[18]

2.1.5 How would the solar facility be operated and maintained?

Northern Crescent Solar estimates the service life of the project to be 30 years.[19] Operational staff will be actively engaged during the construction phase of the project. Following commissioning,

[18] Application, Section 4.3.5.
[19] Application, Section 4.3.6.

control of the solar facility will transfer from the construction team to the operations staff. The operations team will be responsible for ensuring operations and maintenance are conducted in compliance with all applicable permits and regulatory requirements, industry practices, and manufacturer's recommendations. It is anticipated that three new full-time staff will operate and maintain the project.

The applicant indicates that a maintenance plan will be created for the project to ensure performance of the solar facility. All maintenance activities will be performed by qualified personnel. Maintenance activities will be performed during the day to the extent that they do not disrupt energy production, but some maintenance activities may be performed in the evenings to minimize lost generation. Maintenance activities that have the potential for substantial noise generation will be performed during the daytime to minimize impacts to residents.

Maintenance of the project will include inspection of electrical equipment, visual and noise inspections, vegetation management, and snow removal (as needed). The electrical performance of the project will be monitored in real-time by a SCADA system. The SCADA system allows for early notification of abnormal operations, which facilitates prompt maintenance and repair. On site personnel will have ready access to site operating data and will be notified of faults and alarms as well as abnormal operations on a real time basis.

Table 3. Regular Operations and Maintenance Tasks[20]

Equipment	Task
Solar Modules	Visual check of the panels, wiring and junction boxes, overview ariel thermal scan, advanced diagnostics, solar module strings and string boxes faults, solar module string measurement of the insulation, solar module washing, and vegetation management (if necessary)
BESS	System visual inspection, filter inspection, and fire safety system inspection and maintenance
Electric Boards	Case visual check, fuses check, surge arresters check, torque check, DV voltage and current check, and grounding check
Inverters	Case visual inspection, air intake and filters inspection, conversion stop for lack of voltage, AC voltage and current check, conversion efficiency inspection, data logger memory download, fuses check, grounding check, and torque check

[20] Application, Table 7.

2.1.6 What happens at the end of the solar facility's useful life?

As the project progresses through its service life, the applicant may seek to repower the project. The applicant's decision on whether to pursue repowering will consider the equipment performance, maintenance costs, extending the useful life of the project, or a desire to increase generation output. Any site permit issued by the Commission will specify the maximum generating capacity, so if the generation capacity increases, the existing site permit or permits must be amended. At the end of the project's useful life, Northern Crescent Solar will either take the necessary steps to continue operation of the project (re-permitting and retrofitting) or will decommission the project.

Commission-issued site permits require that the permittee be responsible for removing all project components and restore the site to pre-construction conditions at the end of a project's useful life and that the permittee is responsible for all costs associated with decommissioning the project. Northern Crescent Solar provided a draft decommissioning plan as Appendix G of its joint site permit application.

If the project is not repowered, Northern Crescent Solar will decommission the project and remove the project facilities. Decommissioning would include removal of the solar arrays (panels, racking, and steel posts), inverters, fencing, access roads, and lighting. Above-ground electrical and communications cabling would be removed; below-ground cabling would be removed to a depth of four feet.

Northern Crescent Solar anticipates that the total estimated cost to decommission the project is approximately $10,940,500. Estimated salvage/scrap value is approximately $18,984,300, offsetting the cost resulting in $8,043,800 in surplus. The decommissioning bond will be posted no earlier than the tenth anniversary of operation. The cost of decommissioning will be updated every five years after the tenth year of operation.

2.2 Project Costs

Northern Crescent Solar estimates the total cost to construct the project to be approximately $337 million (**Table 4**). Northern Crescent Solar indicates that this cost depends on various factors such as construction labor, project equipment and materials, electrical and communication systems, taxes/tariffs, and final design considerations. Actual costs will depend on final material and labor costs, and salvage value from decommissioning.

Table 4. Estimated Project Cost Ranges[21]

Project Component	Estimated Cost ($USD millions)
Solar Facility	
Engineering, Procurement and Construction Contractor	235
Development Expense	5
Interconnection	11.5
Financing	15
Project Gen-Tie Line	0.7
BESS Facility	
Engineering, Procurement and Construction Contractor	70
Total Installation Cost	**337.2**
Decommissioning	11
Salvage Value	(19)
Total Project Cost	**329**

2.3 Project Schedule

Northern Crescent Solar anticipates the project will begin commercial operation by the end of 2026. **Table 5** shows Northern Crescent Solar's estimated development and construction milestones.

Table 5. Anticipated Project Schedule[22]

Activity	Anticipated Timeframe
Land Acquisition	Completed prior to application
MISO Interconnection Application	Q1 2025
Commission Site Permit	Q2 2025
Downstream Permits	Prior to construction
Equipment Procurement and Contractor Selection	2025
Construction	Q2 2025 to Q4 2026
Testing and Commissioning	Q4 2026
Commercial Operation Date	Q4 2026

[21] Application, Table 3.
[22] Application, Section 1.3.

3 Regulatory Framework

Chapter 3 discusses the site permitting process used by the Commission. It describes the environmental review process and lists the factors the Commission considers when making a site permit decision. This chapter also discusses required approvals from federal and state agencies and local units of government with permitting authority for actions related to the project. Lastly, it lists topics outside the scope of this EA.

3.1 What Commission approvals are required?

The project requires site permits from the Commission before it can be constructed.

The project requires an energy generating site permit from the Commission because it meets the definition of a *large electric power generating plant*, which means any electric power generating equipment designed for or capable of operation at a capacity of 50 MW or more.[23] The project also requires an energy storage site permit because it meets the definition of an *energy storage system*, which means equipment and associated facilities designed with a nameplate capacity of 10 MW or more that is capable of storing generated electricity for a period of time and delivering the electricity for use after storage.[24] Because the project was selected through a competitive bidding process approved by the Commission under Minn. Stat. 216B.2422, the project is exempt from the certificate of need requirement in Minn. Stat. 216B.243.

3.2 What is environmental review?

Environmental review informs interested persons about potential impacts and possible mitigation measures associated with the project; environmental review informs Commission decisions.

Minnesota law requires that potential human and environmental impacts be analyzed before the Commission decides whether to grant a site permit. This analysis is called environmental review.

Minnesota law provides the Commission with two processes to review site permit applications. The alternative process, which applies to solar generating facilities and energy storage systems, requires preparation of an EA and a public hearing.[25]

3.3 What permitting steps have occurred to date?

The Commission accepted the joint site permit application as complete on September 17, 2024. Public information and scoping meetings were held in Blue Earth, Minnesota on December 8, 2024, and online on December 9, 2024.

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[23] Minnesota Statutes 216E.01, subd. 5.
[24] Minnesota Statutes 216E.01, subd. 3.
[25] Minnesota Statutes 216E.04, subd. 1 and 5; Minn. R. 7850.3700, subp. 1. Applicants are free to elect the alternative process if their project qualifies for it.

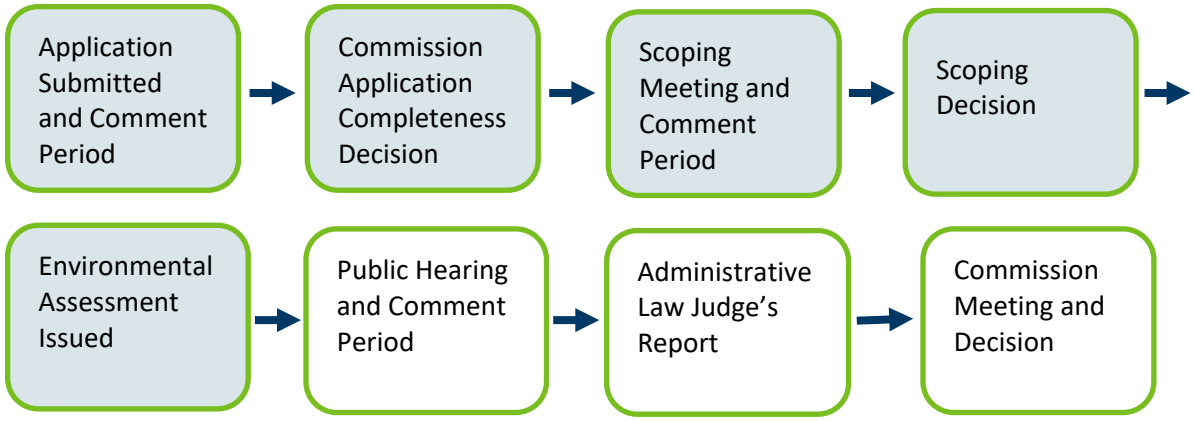
Application Filing and Acceptance

Northern Crescent Solar provided the required written notice of its intent to file a joint site permit application under the alternative process on January 28, 2022.[26]

Northern Crescent Solar filed a joint site permit application on August 14, 2024.[27] The Commission accepted the joint site permit application as substantially complete in its order dated September 17, 2024.[28] The order also referred the matter to the Office of Administrative Hearings for appointment of an administrative law judge (ALJ) to conduct a public hearing for the project. Commission staff provided a *Sample Site Permit for a Solar Energy Generating System* on October 22, 2024.[29]

Figure 8 outlines the permitting process as it has unfolded for this project.

Figure 8. Permitting Process Summary[30]



Scoping Process

[26] Northern Crescent Solar (then Winnebago Solar), Notice of Intent to Submit a Site Permit Application under the Alternative Permitting Process Docket No. IP-7135/GS-22-57, January 28, 2022, eDocket ID: 20221-182145-01

[27] Northern Crescent Solar, Joint Site Permit Application to the Minnesota Public Utilities Commission for a Site Permit for a Large Electric Generating Facility and a Site Permit for an Energy Storage System, August 14, 2024, eDocket ID: 20248-209500-01 (through -20), 20248-209501-01 (through -20), 20248-209502-01 (through -016), 20248-209503-01 (through -08).

[28] Commission, *Order*, September 17, 2024, eDocket ID: 20249-210259-01

[29] Commission Staff, Sample Solar Site Permit, October 22, 2024, eDockets No. 202410-211167-01

[30] Read from left to right; shaded steps are complete.

Scoping is the first step in the environmental review process. It helps focus the EA on the most relevant information needed by the Commission to make informed decisions.

Scoping includes a public meeting and comment period that provide opportunities for interested persons to help develop the scope (or contents) of the EA.[31] The purpose of the public information and scoping meetings is to provide information and answer questions about a proposed project and the permitting process. The meeting and associated comment period also provides an opportunity to gather input regarding potential impacts and mitigative measures that should be studied in the EA.

On September 20, 2024, the Commission and Commerce issued a joint *Notice of Public Information and Environmental Assessment Scoping Meeting* and associated public comment period.[32] The notice was sent to those individuals on the project contact list and was also available on Commerce's webpage for the project.

Commission and Commerce staff held public information and scoping meetings in Blue Earth, Minnesota on October 8, 2024, and an online meeting on October 9, 2024. The comment period closed on October 25, 2024. Approximately 11 people attended the Blue Earth meeting and one attendee provided public comment. There were no public comments at the online meeting.[33] Written comments were received from two state agencies.[34]

One public comment addressed support for the project as it would benefit local labor. Two state agency comments addressed several potential impacts and concerns related to the project including vegetation, protected species, access roads, water basins, fencing, erosion, and wildlife interaction with the solar panels.

Northern Crescent Solar had no reply comments for the public comments provided.

Scoping Decision

The scoping decision identifies the issues studied in this EA.

After considering public comments and recommendations by staff, Commerce issued a scoping decision on November 13, 2024 (**Appendix A**). The scoping decision identifies the issues to be evaluated in this EA.

3.4 Are other permits or approvals required?

Yes, other permits and approvals are required for the project.

A site permit from the Commission is the only state permit required for siting the project. However, various federal, state, and local approvals might be required for activities related to construction and

[31] Minn. R. 7850.3700, subp. 2.
[32] Commission and Commerce *Notice of Public Information and Environmental Review Scoping Meeting*, September 20, 2024, eDocket ID: 20249-210367-01.
[33] Oral Comments on the Scope of Environmental Assessment, Public Scoping and Information Meetings, Blue Earth, Minnesota, November 6, 2024 and virtual meeting, November 6, 2024, eDocket ID: 202411-211652-01.
[34] Written Comments on the Scope of Environmental Assessment, eDocket ID: 202411-211652-03.

operation of the project. These subsequent permits are referred to as "downstream" permits and must be obtained by the permittee prior to construction.[35] **Table 6** lists potential downstream permits that might be required, several of which are discussed below.

3.4.1 Federal

The United States (U.S.) Army Corps of Engineers (USACE) "regulates the discharge of dredged or fill material into waters of the United States, including wetlands."[36] Dredged or fill material, including material that moves from construction sites into these waters, could impact water quality. A permit is required from USACE if the potential for significant adverse impacts exists. The USACE is also charged with coordinating with Indian tribes regarding potential impacts to traditional cultural properties.

The U.S. Environmental Protection Agency (USEPA) enforces the Spill Prevention, Control and Countermeasures Plan (SPCCP). "The purpose of the Spill Prevention, Control, and Countermeasure (SPCC) rule is to help facilities prevent a discharge of oil into navigable waters or adjoining shorelines. The SPCC rule requires facilities to develop, maintain, and implement an oil spill prevention plan, called an SPCC Plan." If a plan is required for this project, it would prevent oil spill, as well as control a spill should one occur. This plan may be required for power transformers within the project substation.

A permit is required from the U.S. Fish and Wildlife Service (USFWS) for the incidental taking[37] of any threatened or endangered species. As a result, USFWS encourages project proposers to consult with the agency to determine if a project has the potential to impact federally listed threatened or endangered species. Additionally, consultation can lead to the identification of measures to mitigate potential impacts associated with the project.

Table 6. Potential Downstream Permits

Unit of Government	Type of Application	Purpose	Anticipated for project
Federal			
U.S. Army Corps of Engineers	Section 404 Clean Water Act – Dredge and Fill	Protects water quality by controlling discharges of dredged and fill material	Possible
U.S. Environmental Protection Agency	Spill Prevention, Control and Countermeasures Plan	Protect facilities with oil storage of more than 1,320 gallons	Possible
U.S. Fish and Wildlife Service	Threatened and Endangered Species Consultation	Consultation to mitigate impacts to federally listed species	Possible

[35] Appendix C, Section 4.5.2 (stating the permittee "shall obtain all required permits for the project and comply with the conditions of those permits").
[36] USEPA, *Section 404 Permit Program*, (2015), http://www.epa.gov/cwa-404/section-404-permit-program.
[37] 16 U.S. § 1532(19) (defining "take" to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in such conduct).

Unit of Government	Type of Application	Purpose	Anticipated for project
	Nest Removal Permit under Bald and Golden Eagle Protection Act	Required in the event of removal of a bald eagle nest	Possible
Department of Natural Resources	Section 10 Endangered Species Incidental Take Permit	Potential impacts on federally endangered or threatened species	Possible
State			
Department of Natural Resources	License to Cross Public Lands and Waters	Prevent impacts associated with crossing public lands and waters	No
	State Threatened and Endangered Species Consultation	Consultation to mitigate impacts to state-listed species	Possible
	Water Appropriation Permit	Balances competing management objectives; may be required for construction dewatering	Possible
	Utility Crossing License	Required to cross state land with utility infrastructure	Possible
Minnesota Pollution Control Agency	Construction Stormwater Permit	Minimizes temporary and permanent impacts from stormwater	Yes
	Section 401 Clean Water Act – Water Quality Certification	Ensures project will comply with state water quality standards	Possible
State Historic Preservation Office	National Historic Preservation Act Section 106 Consultation	Ensures adequate consideration of impacts to significant cultural resources	Yes
Department of Agriculture	Agricultural Impact Mitigation Plan	Establishes measures for protection of agricultural resources	Yes
Department of Labor and Industry	Electrical Inspection	Necessary to comply with electric code.	Yes
Department of Transportation	Utility Accommodation on Trunk Highway ROW Permit	Controls utilities being placed along or across highway rights-of-way (ROW)	Yes
	Oversize/Overweight Permit	Controls use of roads for oversize or overweight vehicles	Possible
Board of Water and Soil Resources	Wetland Conservation Act	Ensures conservation of wetlands	No
Local			
Faribault County	Transportation Permit	Required for transporting oversized and overweight loads on County roadways.	Possible
	Access Driveway/Entrance Permit	Required for moving, widening or creation a new	Possible

Unit of Government	Type of Application	Purpose	Anticipated for project
		driveway access to County roads	
	Drainage and Ditching Work Within County Highway Right-of-Way	Required to work within public roads rights-of-way	Possible
Faribault County	Grading and filling permit	Required for the movement of more than 10 cubic yards or material within shoreland	Possible
	Permit for Installation of Object/Structures Within County Highway Right-of-Way (Utility Permit)	Required for installation of a utility, tile inlet/outlet, or other object of any kind within the highway right-of-way	Possible
	Individual Sewage Treatment Systems Permit	Required prior to installation of any individual sewage treatment system in Red Lake County	Possible
Faribault County Soil and Water Conservation District (SWCD)	Minnesota Wetland Conservation Act Approval	Activities affecting water resources	Possible

3.4.2 State

Potential impacts to state lands and waters, as well as fish and wildlife resources, are regulated by the DNR. Licenses are required to cross state lands or waters.[38] Projects affecting the course, current, or cross-section of lakes, wetlands, and streams that are public waters may require a *Public Waters Work Permit*.[39] Utility infrastructure that will be crossing DNR managed lands require the agency to provide a Utility Crossing License.[40] Not unlike the USFWS, DNR encourages project proposers to consult with the agency to determine if a project has the potential to impact state-listed threatened or endangered species. Additionally, consultation can lead to the identification of measures to mitigate potential impacts associated with the project.

Construction projects that disturb one or more acres of land require a general *National Pollutant Discharge Elimination System / State Disposal System Construction Stormwater Permit* (CSW permit) from the MPCA. This permit is issued to "construction site owners and their operators to prevent stormwater pollution during and after construction."[41] The CSW permit requires use of best management practices; development of a Stormwater Pollution Prevention Plan; and adequate stormwater treatment capacity once the project is complete. Projects must be designed so that

[38] Minnesota Statutes 84.415.
[39] DNR, *Requirements for Projects Involving Public Waters Work Permits*, (n.d.), http://www.dnr.state.mn.us/waters/watermgmt_section/pwpermits/requirements.html.
[40] DNR, *Utility Crossing License,* (2023), https://www.dnr.state.mn.us/permits/utility_crossing/index.html.
[41] MPCA, *Construction Stormwater*, (2023), https://www.pca.state.mn.us/business-with-us/construction-stormwater.

stormwater discharged after construction does not violate state water quality standards. Specifically, projects with net increases of one acre or more to impervious surface must be designed to treat water volumes of one-inch times the net increase in impervious surface. PV panels are impervious, and are counted towards total impervious surface along with access roads, buildings, etc. The area beneath the panel, however, is pervious if properly vegetated. To account for this, MPCA developed a solar panel calculator that estimates the amount of stormwater retained by PV solar facilities. This amount can be applied as a credit towards the total amount of stormwater treatment needed for a project.[42]

A Clean Water Act Section 401 *Water Quality Certification* from MPCA might also be required. "Section 401 of the Clean Water Act requires any applicant for a federal license or permit to conduct an activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification from the State in which the discharge originates that the discharge complies the applicable water quality standards."[43] The certification becomes a condition of the federal permit.

Additionally, MPCA regulates generation, handling, and storage of hazardous wastes.

The State Historic Preservation Office (SHPO) is charged with preserving and protecting the state's historic resources. SHPO consults with project proposers and state agencies to identify historic resources to avoid and minimize impacts to these resources.

The Minnesota Department of Agriculture (MDA) ensures the integrity of Minnesota's food supply while protecting the health of its environment and the resources required for food production. MDA assists in the development of agricultural impact mitigation plans that outline necessary steps to avoid and mitigate impacts to agricultural lands.

The Minnesota Department of Labor and Industry requires an electrical inspection as a component of an electrical permit.[44]

A permit from the Minnesota Department of Transportation (MnDOT) is required for construction, placement, or maintenance of utility lines adjacent or across trunk highway rights-of-way.[45] Coordination would be required to construct access roads or driveways from trunk highways.[46] These permits are required to ensure that use of the right-of-way does not interfere with free and safe flow of traffic, among other reasons.[47]

The Board of Water and Soil Resources (BWSR) oversees implementation of Minnesota's *Wetland Conservation Act* (WCA). The WCA is implemented by local units of government.

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[42] MPCA, *Minnesota Stormwater Manual,* (2022), https://www.pca.state.mn.us/water/minnesotas-stormwater-manual.

[43] MPCA, *Clean Water Act Section 401 Water Quality Certifications*, (n.d.), https://www.pca.state.mn.us/water/clean-water-act-section-401-water-quality-certifications.

[44] Minnesota Department of Labor and Industry, *Electrical Permits, Contractors*, (n.d.), https://www.dli.mn.gov/business/electrical-contractors/electrical-permits-contractors.

[45] Minnesota Rules, Part 8810.3300, subp. 1.

[46] MnDOT, *Land Management*, (2022), https://www.dot.state.mn.us/utility/forms.html.

[47] MnDOT, *Utility Accommodation on Trunk Highway Right of Way: Policy OP002,* (2017), http://www.dot.state.mn.us/policy/operations/op002.html.

3.4.3 Local

Faribault County local permits may be required as a component of this project, including: [48]

- Transportation Permit to transport oversized and overweight loads on county roadways,
- Access Driveway/Entrance Permits in order to move, widen or create a new driveway access to county roads.
- Drainage and Ditching Work Within County Highway Right-of Way Permit in order to work within public road rights-of-way.
- Grading and Filling Permit for the movement of more than 10 cubic yards of material within shoreland.
- Installation of Object/Structures Within County Highway Right-of-Way (Utility Permit) in order to install a utility within the highway right-of-way.
- Individual Sewage Treatment Systems Permit which must be given prior to the installation of any individual sewage treatment system in the County.

Commission site permits preempt local zoning, building, and land use rules, regulations, or ordinances promulgated by regional, county, local, and special purpose government; however, coordination with local governments may be required for the issues listed below.

- Access/Driveway Coordination may be required to construct access roads or driveways from county or township roads.
- Oversize/Overweight Load Coordination may be required to move over-width or heavy loads on county or township roads.
- Road Crossing and Right-of-Way Coordination may be required to cross or occupy county or township road rights-of-way.

3.5 Do electrical codes apply?

Yes, if constructed the project must meet electrical safety code requirements.

The project must meet requirements of the National Electrical Safety Code.[49] These standards are designed to safeguard human health "from hazards arising from the installation, operation, or maintenance of conductors and equipment in electric supply stations and overhead and underground electric supply lines."[50] They also ensure that facilities and all associated structures are built from materials that will withstand the operational stresses placed upon them over the expected lifespan of the equipment, provided operational maintenance is performed.

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[48] Faribault County, *Public Works Permits and Policies*, (n.d.), https://www.co.faribault.mn.us/public-works/pages/permits.

[49] Minnesota Statutes 326B.35 and Minnesota Rules 7826.0300, subp. 1; requiring utilities to comply with the most recent edition of the National Electric Safety Code when constructing new facilities or reinvesting capital in existing facilities.

[50] IEEE Standards Association, *National Electrical Safety Code Brochure*, (2017), https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/nesc_2017_brochure.pdf.

3.6 Are any issues outside the scope of this EA?

Yes, the scoping decision identified several issues that will not be studied.

The EA will not address following topics:

- Any site other than the project site proposed by the applicant.
- The manner in which landowners are compensated for the project.

4 Project Impacts and Mitigation

Chapter 4 describes the environmental setting, affected resources, and potential impacts from the project. It also discusses mitigation of potential impacts.

4.1 How are potential impacts measured?

Potential impacts are measured on a qualitative scale based on an expected impact intensity level; the impact intensity level takes mitigation into account.

A potential impact is the anticipated change to an existing condition caused either directly or indirectly by the construction and operation of a proposed project. Potential impacts can be positive or negative, short- or long-term, and, in certain circumstances, can accumulate incrementally. Impacts vary in duration and size, by resource, and across locations.

Direct impacts are caused by the proposed action and occur at the same time and place. An indirect impact is caused by the proposed action but is further removed in distance or occurs later in time. This EA considers direct and indirect impacts that are reasonably foreseeable, which means a reasonable person would anticipate or predict the impact. Cumulative potential effects are the result of the incremental impacts of the proposed action in addition to other projects in the environmentally relevant area.

4.1.1 Potential Impacts and Mitigation

The following terms and concepts are used to describe and analyze potential impacts:

- Duration Impacts vary in length. Short-term impacts are generally associated with construction. Long-term impacts are associated with the operation and usually end with decommissioning and reclamation. Permanent impacts extend beyond the decommissioning stage.
- Size Impacts vary in size. To the extent possible, potential impacts are described quantitatively, for example, the number of impacted acres or the percentage of affected individuals in a population.
- Uniqueness Resources are different. Common resources occur frequently, while uncommon resources are not ordinarily encountered.
- Location Impacts are location dependent. For example, common resources in one location might be uncommon in another.

The context of an impact—in combination with its anticipated on-the-ground effect—is used to determine an impact intensity level, which can range from beneficial to harmful. Impact intensity levels are described using a qualitative scale, which is explained below. These terms are not intended as value judgments, but rather a means to ensure common understanding among readers and to compare potential impacts between alternatives.

- Negligible impacts do not alter an existing resource condition or function and are generally not noticeable to an average observer. These short-term impacts affect common resources.

- Minimal impacts do not considerably alter an existing resource condition or function. Minimal impacts might, for some resources and at some locations, be noticeable to an average observer. These impacts generally affect common resources over the short- or long-term.
- Moderate impacts alter an existing resource condition or function and are generally noticeable to the average observer. Impacts might be spread out over a large area making them difficult to observe but can be estimated by modeling. Moderate impacts might be long-term or permanent to common resources, but generally short- to long-term to uncommon resources.
- Significant impacts alter an existing resource condition or function to the extent that the resource is impaired or cannot function. Significant impacts are likely noticeable or predictable to the average observer. Impacts might be spread out over a large area making them difficult to observe but can be estimated by modeling. Significant impacts can be of any duration and affect common or uncommon resources.

Also discussed are opportunities to avoid, minimize, or compensate for potential impacts. Collectively, these actions are referred to as mitigation.

- To avoid an impact means to eliminate it altogether, for example, by not undertaking parts or all of a project, or relocating the project.
- To minimize an impact means to limit its intensity, for example, by reducing project size or moving a portion of the project.
- To correct an impact means to repair, rehabilitate, or restore the affected resource.
- To compensate for an impact means replacing it or providing a substitute resource elsewhere, or by fixing it by repairing, rehabilitating, or restoring the affected resource. Compensating an impact can be used when an impact cannot be avoided or further minimized.

Some impacts can be avoided or minimized; some might be unavoidable but can be minimized; others might be unavoidable and unable to be minimized, but compensation can be applied. The level at which an impact can be mitigated might change the impact intensity level.

4.1.2 Regions of Influence

Potential impacts to human and environmental resources are analyzed within specific geographic areas called regions of influence (ROI). This EA uses the following ROIs:

- Land control area (land control of the solar generating facility and collection corridors)
- Local vicinity (1,600 feet from the boundary of the solar generating facility)
- Project area (one mile from the boundary of the solar generating facility)
- Region (Faribault County)

Impacts to resources may extend beyond these distances but are expected to diminish quickly. ROIs vary between resources. **Table 7** summarizes the ROIs used in this EA.

Table 7. Regions of Influence for Human and Environmental Resources

Resource Type	Resource Element	Region of Influence
Human Settlement	Displacement, Land Use and Zoning	Land control area
	Noise, Property Values, Tourism	Local vicinity
	Aesthetics, Cultural Values, Recreation, Transportation and Public Services	Project area
	Socioeconomics, Environmental Justice	Region
Public Health and Safety	Electric and Magnetic Fields, Implantable Medical Devices, Public Safety and Emergency Services	Land control area
Land-based Economies	Agriculture, Forestry, Mining	Land control area
	Tourism	Project area
Archaeological and Historic Resources	—	Project area
Natural Environment	Geology and Groundwater, Soils, Surface Water and Floodplains, Wetlands, Vegetation, Wildlife and Habitat (except birds)	Land control area
	Wildlife and Habitat (birds), Rare and Unique Resources	Local vicinity
	Air Quality	Region

4.2 Project Setting

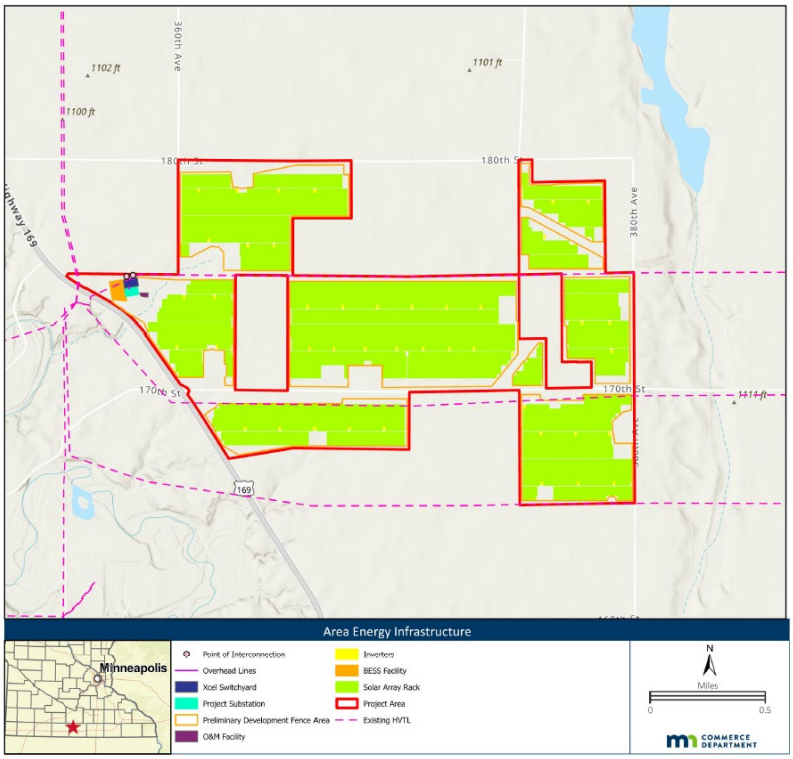
The project is in a rural area, east of US Highway 169, southeast of the city of Winnebago in Faribault County. Faribault has been slowly decreasing in population, compared to the rest of Minnesota. The project area is dominated by agricultural land uses and scattered farmsteads. There are several existing transmission lines within the project area, as well as two wind turbines to the north of the project.

The proposed solar facility is located in Verona and Prescott townships, southeast of the city of Winnebago in Faribault County, Minnesota. The solar facility is east of U.S. Highway 169 (**Figure 1**).

The topography of the project site is relatively flat with gentle slopes. Views are broad and uninterrupted except for small, scattered areas of trees. Residences in the area are sprinkled across the landscape. Most of the surrounding residences are at least partially surrounded by woodlands or shelterbelts.

The project is in the North Central Glaciated Plains, Minnesota River Prairie Subsection (251Ba) of the Prairie Parklands Province.[51] Pre-settlement vegetation consisted primarily of tallgrass prairie, with many islands of wetland prairie. Forests of silver maple, elm, cottonwood, and willow grew on floodplains along the Minnesota River and other streams in the area. The current land-use in the project area is predominately agricultural.

Figure 9. Area Energy Infrastructure[52]



Land use in the project area is predominantly agricultural but includes residential buildings and transportation corridors. Land use within the area of land control is dominated by agriculture; approximately 96.5 percent of the 1,179-acre land control area is currently used for cultivated agriculture (primarily corn, soybeans, and vegetables). Built features common to the area include residences and buildings, paved and gravel roads. There are several existing transmission lines in the

[51] DNR, *Ecological Classification System: Ecological Land Classification Hierarchy*, (n.d.), https://www.dnr.state.mn.us/ecs/251Ba/index.html.

[52] Minnesota Public Utilities Commission, *Electric Service Area Map*, (n.d.), https://minnesota.maps.arcgis.com/apps/webappviewer/index.html?id=95ae13000e0b4d53a793423df1176514/.

area, as well as two wind turbines to the north, near Winnebago. **Figure 9** shows the location of the existing powerlines in the immediate vicinity to the project area.

4.3 Human Settlement

Large energy projects can impact human settlements. Impacts might be short-term, such as increased local expenditures during construction, or long-term, such as changes to viewshed.

4.3.1 Aesthetics

The ROI for aesthetics is the project area. The project will introduce new manmade structures into the existing landscape. Portions of the project will be visible from local roads, and nearby residences. For most people who pass through the project area on US Highway 169 or local roads the impact intensity level is expected to be minimal. For individuals with greater viewer sensitivity, such as people who live in the project area, the impact intensity level is anticipated to be moderate to significant. Impacts will be short- and long-term and localized. Potential impacts are unavoidable but can be mitigated in part.

Aesthetics refers to the visual quality of an area as perceived by the viewer and forms the impression a viewer has of an area. Aesthetics are subjective, meaning their relative value depends upon the perception and philosophical or psychological responses unique to individuals. Impacts to aesthetics are equally subjective and depend upon the sensitivity and exposure of an individual. How an individual values aesthetics, as well as perceived impacts to a viewshed, can vary greatly.

A viewshed includes the natural landscape and built features visible from a specific location. Natural landscapes can include wetlands, surface waters, distinctive landforms, and vegetation patterns. Buildings, roads, bridges, and power lines are examples of built features.

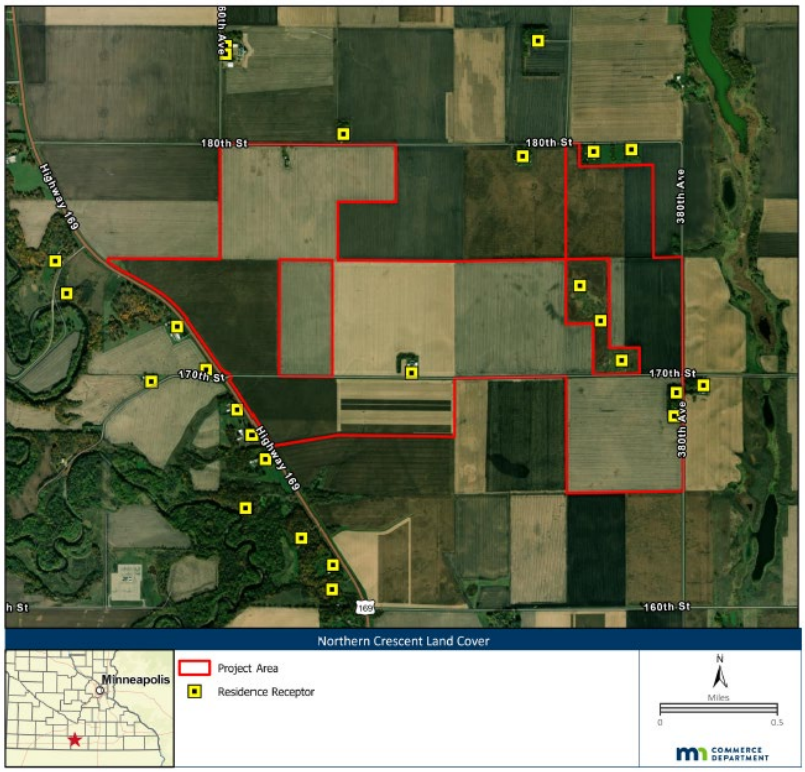
Viewer exposure refers to variables associated with observing a viewshed, and can include the number of viewers, frequency and duration of views, and view location. For example, a high exposure viewshed would be observed frequently by large numbers of people. These variables, as well as other factors such as viewing angle or time of day, affect the aesthetic impact.

The existing landscape in the project is area is rural and agricultural consisting of generally flat terrain, dominated by agricultural crop fields of corn, soybeans, and vegetables, with the surrounding area also supporting a variety of woodlands, wetlands, and drainages.

The built environment in the project area includes existing transmission lines. Residences and farmsteads are scattered around the nearby landscape. As shown in **Figure 10**, there are 23 residences and 3 conservation easements within one mile of the project site. There are 3 residences and 3 conservation easements within the project area. The three homes within the project area are located along 170th Street, and the distance from the project varies between approximately 0 and 306 feet from the preliminary development area, and between 47 and 409 feet from the nearest solar array.[53]

[53] Application, Table 8.

Figure 10. Residences within Local Area



4.3.1.1 POTENTIAL IMPACTS

The visible elements of the solar facility will consist of new PV panel arrays, transformers and inverters, a BESS, weather stations, an O&M facility, a new substation, a new Xcel switchyard, a short transmission line, and security fencing surrounding the project.

The project will be a noticeable change in the landscape, converting approximately 1,137.6 acres of agricultural fields into solar production. Although the change will be noticeable, there are other existing transmission lines already in the area. The project will be immediately adjacent to an existing transmission line. How an individual viewer perceives the change from a field of corn to a field of solar panels depends, in part, on how a viewer perceives solar panels. Will the viewer consider the harvesting of solar energy to be like harvesting crops or will the viewer see an agricultural use be replaced by an industrial use?

For residents outside the project vicinity and for others with low viewer sensitivity, such as travelers along U.S. Highway 169, aesthetic impacts are anticipated to be minimal. For these viewers, the solar panels would be relatively difficult to see due to fencing and vegetation or would be visible for a very short period. For residents in the project vicinity and for others with high viewer sensitivity living on or traveling on local roads in the project vicinity, such as 170th Street, aesthetic impacts are anticipated to be moderate to significant.

Current fields of corn, soybeans, and vegetables will be replaced with acres of solar panels. Panels will have a relatively low profile, with a maximum height of 15 feet off the ground at maximum tilt.[54] Construction of the new 1.3-acre project substation, the 1.3-acre Xcel switchyard, the associated transmission line, the 0.4-acre O&M facility, and the 3.2-acre BESS facility will also present new visual impacts. The collector pole and dead-end structure will support aboveground conductors within the substation and is expected to be approximately 70-75 feet tall, depending on final design. The project's 161 kV transmission line will be a short line, less than 250 feet in length. The nearest residence is approximately 1,000 feet from the project transmission line. In addition, an existing 161 kV transmission line is presently located through and adjacent to the project area.

PV panels are designed to absorb light to convert the light to electricity. Compared to clear glass, which typically reflects approximately eight percent of the sunlight, PV panels typically reflect approximately three percent of the sunlight when the panels are directly facing the sun.

Down-lit security lighting will be installed at the locked entrance to the facility as well as outside the O&M facility and project substation. Lighting will be motion-activated and down lit to minimize impacts and effects.[55] Impacts to light-sensitive land uses are not anticipated given the rural project location coupled with minimal required lighting for operations.

MITIGATION

Minimizing aesthetic impacts from solar generating facilities is primarily accomplished by locating the facilities so that they are not immediately adjacent to homes, ensuring that damage to natural landscapes during construction is minimized, and shielding the facilities from view by terrain or vegetation. Impacts from facility lighting can be minimized by using shielded and downward facing light fixtures and using lights that minimizes blue hue.

Impacts can be mitigated through standard or special permit conditions. Two draft site permits (DSPs) for the project are included in **Appendix C** and **Appendix D**. Sections 4.3.8 of the DSPs are a standard condition that requires the permittee to consider landowner input with respect to visual impacts and to use care to preserve the natural landscape.

Site-specific landscaping plans can minimize visual impacts to adjacent land uses and homes through vegetation screening, berms, or fencing. Northern Crescent Solar indicates that local feedback to date has not indicated aesthetic or visual concerns associated with the project.

Aesthetic impacts can also be mitigated through individual agreements with neighboring landowners (sometimes referred to as good neighbor agreements). Such agreements are not within the scope of this EA.

[54] Application, Image 2.
[55] Application, Section 5.2.1.1.

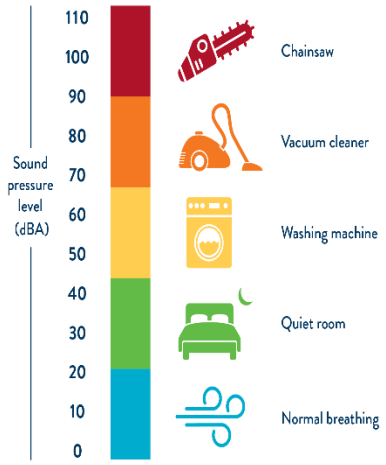
4.3.2 Noise

The ROI for noise is the local vicinity. Distinct noises are associated with the different phases of project construction. The impact intensity level during construction will range from negligible to significant depending on the activity. Potential impacts are anticipated to be intermittent and short-term. These localized impacts may affect nearby residences and might exceed state noise standards. Impacts are unavoidable but can be minimized. Operational impacts have the potential to be long-term, depending on mitigation techniques from the applicant.

Noise can be defined as any undesired sound. It is measured in units of decibels on a logarithmic scale. The A-weighted scale ("dBA") is used to duplicate the sensitivity of the human ear.[56] A three dBA change in sound is barely detectable to average human hearing, whereas a five dBA change is clearly noticeable. A 10 dBA change is perceived as a sound doubling in loudness. Noise perception is dependent on a number of factors, including wind speed, wind direction, humidity, and natural and built features between the noise source and the receptor.

Figure 10 provides decibel levels for common indoor and outdoor activities.

Figure 10. Common Noise Levels



In Minnesota, noise standards are based on *noise area classifications* (NAC) corresponding to the location of the listener, referred to as a receptor. NACs are assigned to areas based on the type of land use activity occurring at that location. Household units, designated camping and picnicking areas, resorts and group camps are assigned to NAC 1; recreational activities (except designated camping and picnicking areas) and parks are assigned to NAC 2; agricultural and related activities are assigned to NAC 3.

Noise standards are expressed as a range of permissible dBA over a one-hour period. L_{10} may be exceeded 10 percent of the time, or six minutes per hour, while L_{50} may be exceeded 50 percent of the time, or 30 minutes per hour. Standards vary between daytime and nighttime hours. There is no limit to the maximum loudness of a noise. **Table 8** provides current Minnesota noise standards.

[56] MPCA, *A Guide to Noise Control in Minnesota,* (2015), https://www.pca.state.mn.us/sites/default/files/p-gen6-01.pdf.

Table 8. Noise Area Classifications (dBA)

Noise Area Classification	Daytime (7:00 a.m. to 10:00 p.m.)		Nighttime (10:00 p.m. to 7:00 a.m.)	
	L_{10}	L_{50}	L_{10}	L_{50}
1	65	60	55	50
2	70	65	70	65
3	80	75	80	75

The MPCA noise standards are public health standards. That is, they protect people from noise generated by all sources at a specific time and place. The total sum of noise at a specific time and location cannot exceed the standards. The MPCA evaluates whether a specific noise source is in violation by determining if the source causes or significantly contributes to a violation of the standards.

Potential Impacts

The primary noise receptors are the local residences. There are 25 residences in local proximity (within one mile), including 3 residences within the project area.[57] There are also 3 conservation easements within the project area that the applicant included as a noise sensitive receptor. The proposed project is in a rural, agriculturally dominated area. Rural residential areas were assumed to have an ambient noise level of 45 dBA.[58] Residences are in NAC 1. The applicant also included the conservation easements in NAC 1. Noise receptors could also include individuals working outside in the project vicinity. Potential noise impacts from the project are associated with construction noise and operational noise.

Construction

Noise from construction will be temporary in duration, limited to daytime hours and potentially moderate to significant depending on location. Sound levels from grading equipment are not dissimilar from the typical tractors and larger trucks used in agricultural communities during harvest. Pile driving of the rack supports will be the most significant source of construction noise.

Construction noise would likely exceed state noise standards at select times and locations. Exceedances would be short-term and confined to daytime hours. Even without an exceedance, noise impacts will occur. Rhythmic pounding of foundation posts would be disruptive even if the noise associated with that activity is within state standards.

Other construction activities, for example, installation of solar panels, are anticipated to have minimal noise impacts. A forklift is typically used to place solar panels on the racking system. Construction activities will be sequenced, that is, site grading may occur at one location while posting driving occurs

[57] Application, Table 8.
[58] Application, Section 5.2.7.

at another location while racking and panel assembly might occur at another location, at the same time.

Operation

Noise levels during operation of the project have the potential to be moderate and long term. The primary source of noise from the solar facility will be from inverters and transformers, although some minor noise may be generated from the short transmission line. Noise levels are expected to be constant throughout the day and, although still constant, lower during non-daylight hours. For residential areas, there is an expected average level of 55.2 dBA during the day and 54.4 dBA at the nearest home to BESS facility. This is under the daytime L_{50} dBA noise standard of 60 dBA but exceeds the nighttime standard of 50 dBA.[59] Noise from the electrical collection system is not expected to be perceptible.

MITIGATION

Sound control devices on vehicles and equipment (e.g., mufflers), conducting construction activities during daylight hours, and running vehicles and equipment only when necessary are common ways to mitigate noise impacts.

Northern Crescent Solar will implement in its design of the project attenuation/silencer kits on each battery inverter and construction of a noise barrier wall at the south end of the BESS facility to help mitigate noise levels for the closest residence. Once the design is completed, Northern Crescent solar will conduct modeling and a comprehensive noise study to ensure that operations of the BESS facility do not exceed noise standards.[60]

Section 4.3.7 of the proposed DSPs (**Appendix C and Appendix D**) are a standard condition that requires the permittee to comply with noise standards established under Minnesota noise standards as defined under Minnesota Rule, part 7030.010 to 7030.0080, and to limit construction and maintenance activities to daytime hours to the extent practicable.

Section 5.1 of the proposed DSPs are special conditions that require the permittee to complete noise studies of the surrounding residential areas to ensure noise levels are below state standards. The special conditions also require the permittee to submit documentation of the noise studies for compliance.

4.3.3 Cultural Values

The ROI for cultural values is the project area. Development of the project will change the character of the area, potentially changing residents' sense of place. There are tradeoffs for rural communities between renewable energy projects and retaining the rural character of an area. Construction and operation of the project is not anticipated to impact or alter the work and leisure pursuits of residents in the project area in such a way as to impact the underlying culture of the area.

Cultural values can be defined as shared community beliefs or attitudes that define what is collectively important to the group. These values provide a framework for individuals and community thought and action. Infrastructure projects believed inconsistent with these values can deteriorate community

[59] Application, Section 5.7.2.1.
[60] Id.

character. Those found consistent with these values can strengthen it. projects often invoke varying reactions and can, at times, weaken community unity.

Individual and community-based renewable energy is becoming more valued across the nation. Utility scale renewable projects—generally located far from load centers in rural areas—are also valued, but, at times, opposed by residents. The highly visible, industrial look and feel of these projects can erode the rural feeling that is part of a residents' sense of place.

Cultural values can be informed by ethnic heritage. Residents of Faribault County derive primarily from European ancestry. Cultural values are also informed by work and leisure pursuits, for example, farming and snowmobiling, as well as land use, such as agricultural cropland. Community events in the project area are usually tied to seasonal/municipal events, and national holidays.

POTENTIAL IMPACTS

The project contributes to the growth of renewable energy and is likely to strengthen and reinforce this value in the area. At the same time, the development of the project will change the character of the area. The value residents put on the character of the landscape within which they live is subjective, meaning its relative value depends upon the perception and philosophical or psychological responses unique to individuals. Because of this, construction of the project might—for some residents—change their perception of the area's character thus potentially eroding their sense of place.

MITIGATION

There are no conditions included in the DSPs that directly address mitigation for impacts to cultural values. Section 4.3.24 addresses impacts to cultural properties. No additional mitigation is proposed.

4.3.4 Land Use and Zoning

The ROI for land use and zoning is the land control area. The impact intensity level is anticipated to be moderate due to the conversion of agricultural land to land used for energy generation. Land use impacts are anticipated to be long-term and localized. Constructing the project will change land use from agricultural to solar energy production for a minimum of 30 years. After the project's useful life, the land control area could be restored to agricultural or other planned land uses by implementing appropriate restoration measures. Impacts can be minimized by using best practices to protect land and water quality.

The National Land Cover Database provides "spatial reference and descriptive data for characteristics of the land surface" nationwide.[61] The solar facility is located in the North Central Glaciated Plains, Minnesota River Prairie subsection (251Nb) of the Prairie Parkland Province. Pre-settlement vegetation consisted primarily of tallgrass prairie, with many islands of wetland prairie. Forests of silver maple, elm, cottonwood, and willow grew on floodplains along the Minnesota River and other streams in the area. Fire was the most common natural disturbance before settlement and has allowed woodlands to develop from what was previously oak openings or brush prairies. Little of the

[61] United States Geological Survey, *The National Land Cover Database (NLDC) 2019 Products (version 3.0)*, (2024), https://www.usgs.gov/data/national-land-cover-database-nlcd-2019-products-ver-30-february-2024#publications.

natural vegetation from pre-European settlement is present today, as the current land-use in the project area is predominately agricultural.[62]

As shown in **Table 9**, the project land cover is dominated by cultivated agriculture, with scattered forested area and developed areas around farmsteads.

Land use is the characterization of land based on what can be built on it and how the land is used. Zoning is a regulatory tool used by local governments (cities, counties, and some townships) to guide specific land uses within specific geographic areas. Land cover documents how much of a region is covered by forests, wetlands, impervious surfaces, agriculture, and other land and water types, including wetlands. Construction of solar generating facilities and transmission line will alter current and future land use and land cover.

Table 9. Land Cover[63]

Category	Land Control Area (Acres)	Percentage
Developed, Open Space	32.6	2.8%
Developed, Low Density	3.6	0.3%
Developed, Medium Density	2.5	0.2%
Developed, High Density	0.9	<0.1%
Emergent Herbaceous Wetlands	0.1	<0.1%
Mixed Forest	1.3	0.1%
Grassland/Herbaceous	<0.1	<0.1%
Hay/Pasture	0.1	<0.1%
Cultivated Crops	1,137.6	96.5%
Total	**1,178.8**	100%

A site permit from the Commission supersedes local zoning, building, or land use rules.[64] Though zoning and land use rules are superseded, the Commission's site permit decision must be guided, in part, by consideration of impacts to local zoning and land use in accordance with the legislative goal to "minimize human settlement and other land use conflicts."[65]

The area of land control is located within Prescott and Verona Townships in Faribault County. Faribault County has a zoning ordinance through their Planning and Zoning Office.[66] The zoning ordinance is a

[62] DNR, *Ecological Classification System: Ecological Land Classification Hierarchy*, (n.d.), https://www.dnr.state.mn.us/ecs/251Ba/index.html.
[63] Application, Table 26.
[64] Minnesota Statutes 216E.10, subd. 1.
[65] Minnesota Statutes 216E.03, subd. 7.
[66] Faribault County, *Zoning Ordinances,* (n.d.), https://www.co.faribault.mn.us/planning-zoning/pages/zoning-ordinances.

comprehensive program that covers rural and general agriculture, residential districts, industrial districts and building permits.

Potential Impacts

Development of a solar farm in this area will temporarily change the land use from predominantly agricultural uses to energy generation for the life of the project. The change of land use will have a minimal to moderate impact on the rural character of the surrounding area, and a minimal impact on the county character as a whole. Although the land is being converted from primarily agricultural to be used for energy production, the land use is consistent with other infrastructure in the area such as existing transmission lines.

While there are three conservation easements within the project area, Northern Crescent plans to develop around these easements, while following all appropriate best practices from state or federal agencies, such as the Minnesota Wetland Conservation Act or Section 404 of the Federal Clean Water Act.[67]

Mitigation

The project would convert approximately 1,138 acres of cultivated cropland to solar energy production. Northern Crescent Solar intends to utilize best practices as feasible to reduce the impact on land use and water resources.

The DSPs (**Appendix C and Appendix D**) have several permit conditions related to the preservation and restoration of agricultural land:

- Section 4.3.17 of **Appendix C** and 4.3.15 of **Appendix D** requires the applicant to prepare a vegetation management plan to prevent soil erosion and invests in soil health by establishing a plan to protect soil resources by ensuring perennial cover. The applicant's draft VMP is found in Appendix F of the joint site permit application.
- Section 4.3.18 of **Appendix C** requires the applicant to prepare an AIMP that details methods to minimize soil compaction, preserve topsoil, and establish and maintain appropriate vegetation to ensure the project is designed, constructed, operated, and ultimately restored in a manner that would preserve soils to allow for the land to be returned to agricultural use. The applicant's draft AIMP is found in Appendix E of the joint site permit application.
- Section 9 of the DSPs require the applicant to prepare a decommissioning plan focused on returning the project site to agricultural use at the end of the project's useful life. The applicant's draft decommissioning plan is found in Appendix G of the joint site permit application.
- Section 9.2 of the DSPs require removal of all project-related infrastructure.

[67] Application, Section 5.4.5.2.

4.3.5 Property Values

The ROI for property values is the local vicinity. Impacts to property values within the local vicinity could occur; however, changes to a specific property's value are difficult to determine. Because of this uncertainty, impacts to specific properties in the project vicinity could be minimal to moderate and decrease with distance and over time.

Impacts to property values can be measured in three ways: sale price, sales volume, and marketing time. These measures are influenced by a complex interaction of factors. Many of these factors are parcel specific, and can include condition, size, acreage, improvements, and neighborhood characteristics; the proximity to schools, parks, and other amenities; and the presence of existing infrastructure, for example, highways or transmission lines. In addition to property-specific factors, local and national market trends, as well as interest rates, can affect all three measures. The presence of a solar facility becomes one of many interacting factors that could affect a specific property's value.

Because each landowner has a unique relationship and sense of value associated with their property a landowner's assessment of potential impacts to their property's value is often a deeply personal comparison of the property "before" and "after" a proposed project is constructed. The landowner's judgments, however, do not necessarily influence the market value of a property. Professional property appraisers assess a property's value by looking at the property "after" a project is constructed. Moreover, potential market participants are likely to see the property independent of the changes brought about by a project; therefore, they do not take the "before" and "after" into account the same way a current landowner might. Staff acknowledges this section does not and cannot consider or address the fear and anxiety felt by landowners when facing the potential for negative impacts to their property's value.[68]

Electrical generating facilities can impact property values. Often, negative effects result from impacts that extend beyond the project location. Examples include emissions, noise, and visual impacts. Unlike fossil-fueled electric generating facilities, the project would not generate emissions. Potential impacts from operational noise are to be mitigated. Aesthetic impacts will occur, but because the project is relatively low in height – as compared to a wind turbine or a smokestack – impacts would be localized.

Large solar facilities exist in Minnesota; however, limited sales information is available. A review of the literature identified one peer-reviewed journal article that addressed impacts to property values based on proximity to utility-scale, PV solar facilities. The Lawrence Berkeley National Lab studied over 1,500 large-scale PV solar facilities in six states (including Minnesota) to determine whether home sale prices were influenced within 0.5 miles (from over 1.8 million home sale transactions).[69] In

[68] Chalmers, James, *High Voltage Transmission Lines and Residential Property Values in New England PowerPoint Presentation*, (2019), https://www.nhmunicipal.org/sites/default/files/uploads/Annual_Conference/2019/Sessions/Wednesday/market_effects_of_utility_rows_presentation-1045am.pdf; Department of Commerce, *Rights-of-way and Easements for Energy Facility Construction and Operation*, (2022), https://apps.commerce.state.mn.us/eera/web/project-file/12227.

[69] Elmallah, Salma et al. *Shedding light on large-scale solar impacts: An Analysis of Property Values and Proximity to Photovoltaics Across Six U.S. States, Energy Policy*, Volume 175, (2023), https://www.sciencedirect.com/science/article/pii/S0301421523000101.

summary, the study found that effects, "on home sale prices depend on many factors that are not uniform across all solar developments or across all states."

In Minnesota in particular, the study found that homes within one-half mile of large-scale PV solar facilities had a 4 percent reduction in home sale prices compared to homes 2-4 miles away. This finding was considered statistically significant. Additionally, only large-scale PV solar facilities developed on previously agricultural land, near homes in rural areas, and larger facilities (roughly 12 acres or more) were found to be linked to adverse home sale price impacts within one-half mile. The analysis did not include consideration of site features or site design, for example setbacks or landscaping features, which could play a role in nearby property valuation. Another limitation of the study was the lack of examination of the broader economic impacts or benefits to host communities from large-scale PV solar facilities, which might positively impact home sale prices.

Other studies with smaller sample sizes did not find a consistent negative impact to the sales value of properties near large solar facilities. Chisago County Environmental Services and Zoning found that home sales exceeded assessed value near the 100 MW North Star solar facility at a rate comparable to the general real estate market in the area.[70] Additionally, a study prepared by CohnReznick examined compared sale prices of properties near six existing large solar facilities (including the North Star project) with comparable properties, and did not find a consistent negative impact to the sales value of properties near large solar facilities.[71]

Potential Impacts

Impacts to the value of specific properties within the project vicinity are difficult to determine but could occur. Considerations such as setbacks, benefits to the community, economic impact, and vegetative screening could have an unpredictable range of influence over property value. Several, but not all, of the closest residents have some screening from the project.

Based on analysis of other utility-scale solar projects, minimal to moderate property value impacts could occur, but significant negative impacts to property values in the project vicinity are not anticipated. To the extent that negative impacts do occur they are expected to be within one-half mile of the solar facility and to decrease with distance from the project and with time. Aesthetic impacts that might affect property values would be limited to residences and parcels in the project vicinity where the solar panels are easily visible.

Mitigation

Impacts to property values can be mitigated by reducing aesthetic impacts and impacts to future land use. Impacts can also be mitigated through individual agreements with neighboring landowners, such as creating a vegetation screening plan.

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[70] Kurt Schneider, Environmental Services Director, *Email to Commerce staff,* (2017).

[71] McGarr, Patricia L. et al. *Adjacent Property Value Impact Study A Study Of Six Existing Solar Facilities,* (2021), https://www.nexteraenergyresources.com/content/dam/neer/us/en/pdf/CohnReznick%20Solar%20Impact%20Study_7.26.21.pdf.

4.3.6 Tourism and Recreation

The ROI for tourism is the local vicinity and the ROI for recreation is the project area. Potential impacts to recreational opportunities and tourism are anticipated to be minimal. During construction, unavoidable short-term impacts will occur as construction equipment and vehicle traffic will create noise, dust, and visual impacts. These impacts will be intermittent and localized. There are no anticipated long term impacts from this project.

In 2022, the leisure and hospitality industry in Faribault County accounted for about $12,233,614 in gross sales, and 297 private sector jobs.[72] Tourism in the region is largely related to festivals, fairs, markets, celebrations, and outdoor recreational activities including camping, fishing, bicycling, and hiking.

Impacts to tourism and recreation can be direct or indirect. Direct impacts are impacts that directly impede the use of a recreational resource, for example, closing of a trail to facilitate project construction. Indirect impacts reduce the enjoyment of a recreational resources but do not prevent use, for example, aesthetic impacts visible from a scenic overlook.

There are no recreational resources located within the project area. The nearest waterfowl protection area is located 0.2 miles east of the project area and the nearest snowmobile trail is located one mile east of the project area.

Potential Impacts

Impacts to tourism and recreation are anticipated to be minimal and temporary. Due to construction, there will be short-term increases in traffic and noise that could potentially impact recreational activities in close proximity to the project area, however, impacts will be temporary. No significant long-term impacts to recreational activities are anticipated.

Mitigation

Because impacts to recreational activities are anticipated to be minimal and temporary, no additional mitigation measures are proposed.

4.3.7 Transportation and Public Services

The ROI for transportation and public services is the project area. Potential impacts to the electrical grid, roads and railroads, and other utilities are anticipated to be short-term, intermittent, and localized during construction. Impacts to water (wells and septic systems) are not expected to occur. Overall, construction-related impacts are expected to be minimal, and are associated with possible traffic delays. During operation, negligible traffic increases would occur for maintenance. Impacts are unavoidable but can be minimized.

Public services are services provided by a governmental entity or by a regulated private entity to provide for public health, safety, and welfare.

[72] Explore Minnesota, *2022 Leisure & Hospitality Industry Data*, (n.d.), https://mn.gov/tourism-industry/assets/24-suitcase-sheet-couty-data_8.5x11_tcm1135-607260.pdf.

Water and Wastewater Most residents in the surrounding area have private septic systems and domestic wells are also common in the area.

Electric Utilities The primary electric provider in the project area is Xcel Energy, which provides electricity to the surrounding area. As shown in **Figure 9**, there is an existing 161 kV transmission line intersecting the project area, where the project is intended to interconnect at the northwest boundary. To the south of this 161 kV transmission line, there is also an existing 69 kV transmission line and another 161 kV transmission line. To the west of the project area, there are two more 69 kV transmission lines.

Pipelines There are no pipelines within the project area or within a mile of the project area.

Roads The major roadways accessing the project area are U.S. Highway 169, which runs north-south to the west of the project area. On the northern border of the project is 180th Street and intersecting the southern portion of the project area is 170th Street, both running east-west.

Railroads There are no railroads located within the project area, however, an abandoned Union Pacific railroad corridor runs through the project area.

Airports There are no FAA-registered airports located in the project area. There are two FAA-registered airports within 10 nautical miles of the project area. The United Hospital has a helicopter pad located 6.3 miles south of the project in Blue Earth, and the Blue Earth Municipal airport is located approximately 8.7 miles south of the project area.

POTENTIAL IMPACTS

Large energy projects can impact public services, such as buried utilities or roads. These impacts are usually temporary, for example, road congestion associated with material deliveries. Impacts can be long-term if they change the area in a way that precludes or limits public services.

Water and Wastewater Northern Crescent Solar does not anticipate impacts to water and wastewater systems. One domestic well located within the project area will be located approximately 475 feet from the preliminary development area.[73] A single domestic-sized water well will be required for the O&M facility, and because of this a well construction permit will be required from the Minnesota Department of Health (MDH).

Roads During construction workers and trucks delivering construction material and equipment will use the existing state, county, and township road system to access the project. Traffic during construction is estimated to be approximately 130 – 200 pickup trucks, cars, and/or other types of employee vehicles onsite during active construction. Approximately 10 – 20 semi-trucks per day will be used for delivery of facility components. Construction traffic will be perceptible to area residents, but because the average daily traffic on the area is well below design capacity, this increased traffic is not expected to affect traffic function. Slow-moving construction vehicles may also cause delays on smaller roads, similar to the impact of farm equipment during planting or harvest. However, these delays should be minimal for the relatively short construction delivery period. If required, Northern

[73] Application, Section 5.4.4.1.

Crescent Solar will obtain appropriate approvals for any overweight or oversized loads prior to construction. [74]

No impacts to roads are anticipated during the operation; negligible traffic increases would occur for maintenance.

Railroads No impacts to railroads are anticipated as there are no railroads within the project area.

Electric Utilities No long-term impacts to utilities will occur because of the project. The project will not impact existing transmission lines, although Northern Crescent Solar indicates that there may be limited, temporary impacts to electrical service during interconnection. These impacts are expected to be short-term, and Northern Crescent Solar indicates that coordination of Xcel Energy with local individuals and utilities impacted would take place prior to shutdowns. [75]

Pipelines No impacts to pipelines are anticipated as there are no pipelines within the project area.

Air Safety There are no FAA-registered airports that will be affected by the project, as the nearest airport is approximately 10 miles away.

MITIGATION

Water and Wastewater Northern Crescent Solar indicates that underground utilities will be marked prior to construction start. A well construction permit from the MDH would be required if a well is installed at the facility.

Utilities Section 4.3.5 of the DSPs (**Appendix C and Appendix D**) are standard permit conditions that require the permittee to minimize disruptions to public utilities.

Impacts to electrical infrastructure that cross the project can be mitigated by appropriate coordination with the owners of the existing infrastructure and following industry best practices.

The location of underground utilities can be identified using the Gopher State One Call system during engineering surveys and marking the underground utility locations prior to construction. If a utility is identified, the project component or the utility itself might need to be relocated if it cannot be successfully crossed. Relocation, as well as any necessary crossing, would need to be coordinated with the affected utility.

Roads Changes or additions to driveways from county roads will require permits from MnDOT and the county.

Section 4.3.22 of **Appendix C** and Section 4.3.19 of **Appendix D** require permittees to inform road authorities of roads that will be used during construction and acquire necessary permits and approvals for oversize and overweight loads. Permitted fencing and vegetative screening cannot interfere with road maintenance activities, and the least number of access roads shall be constructed.

[74] Application, Section 5.2.9.1.
[75] Application, Section 5.2.8.1.

In addition to permit requirements for driveway access and the conditions of the draft site permit, the following practices can mitigate potential impacts:

- Pilot vehicles can accompany movement of heavy equipment.
- Deliveries can be timed to avoid traffic congestion and dangerous situations on the roadway.
- Traffic control barriers and warning devices can be used as necessary.
- Photographs can be taken prior to construction to identify pre-existing conditions. Permittees would be required to repair any damaged roads to preconstruction conditions.

4.3.8 Socioeconomics

The ROI for socioeconomics is the region. The impact intensity level is anticipated to be minimal to significant and positive. Effects associated with construction will, overall, be short-term and minimal. Significant positive effects may occur for individuals. Impacts from operation will be long-term and significant. Adverse impacts are not anticipated.

Faribault County is growing slower than Minnesota as a whole; between 2010 and 2020, the population in Faribault County decreased by 4.5 percent, compared to a growth of 7.6 percent for Minnesota as a whole. From 2010 to 2020 the population of the Prescott Township increased by 13.5 percent, however population of Verona Township decreased by 12.7 percent over the same period. Faribault County, Prescott Township, and Verona Township all have a lower minority population than the state. Faribault County and Verona Township have lower median household incomes than the state, however Prescott Township has a higher median household income compared to the state (**Table 10**).

In 2024, the sectors with the largest employment in Faribault County were educational services, and health care and social assistance (22.6 percent), manufacturing (14.8 percent) and agriculture, forestry fishing and hunting, and mining (11.2 percent).[76] Faribault County is part of the Minnesota Department of Economic Development Region 9, which is located in the Southwest Planning Region. Unemployment rates fluctuate with the economy, but the unemployment rate for Region 9 has typically been higher than Minnesota's unemployment rate.[77] In 2023, Faribault County had a slightly higher unemployment rate (3.1%) than the state average (2.8 %). In 2022, the county also had a lower labor force participation rate (63.9%) than Minnesota as a whole (68.7%).[78]

[76] United States Census Bureau, Explore Census Data, (n.d.), https://data.census.gov/

[77] Minnesota Department of Economic Employment and Development, *Economic Development Region Profile, Faribault County, 2023 Regional Profile*, (2022), https://mn.gov/deed/assets/101824_faribault_tcm1045-407655.pdf.

[78] Id.

Table 10. Population Characteristics

Area	Total Population				Population Characteristics***		
	2010 Census*	2020 Census*	% Change 2010 - 2020	2023 Estimate **	% Minority‡	Median Household Income ($)	% Below Poverty Level
Minnesota	5,303,925	5,706,494	7.6	5,800,386	23.7	87,556	9.2
Faribault County	14,553	13,921	-4.5	13,875	10.9	64,391	11.8
Prescott Township	163	185	13.5	184	8.1	114,375	6.3
Verona Township	364	323	-12.7	311	5.9	70,625	5.5

* U.S. Census Bureau, https://data.census.gov/

** 2023, Minnesota State Demographic Center, Population Data, Our Estimates, https://mn.gov/admin/demography/data-by-topic/population-data/our-estimates/

*** 2023 American Community Survey 5-year estimates

‡ Minority population includes all persons who do not self-identify as white alone.

Potential Impacts

The impact intensity level is anticipated to be positive. Potential impacts associated with construction will be positive, but minimal and short-term. Significant positive effects might occur for individuals. Impacts from operation will be long-term, positive, and moderate. The project will not disrupt local communities or businesses and does not disproportionately impact low-income or minority populations (see discussion of environmental justice in **Section 4.3.9**). Adverse impacts are not anticipated.

Construction of the project is likely to result in increased expenditures for lodging, food and fuel, transportation, and general supplies at local businesses during construction. Construction of the project will create local job opportunities for various trade professionals, and will also generate and circulate income throughout the community by investing in local business expenditures as well as state and local taxes.

The applicant indicates that procurement of construction resources will give preference to local, union construction craft employees. The applicant anticipates supporting an average of 130 union temporary construction and installation jobs for this project.

Once the project is operational, Northern Crescent Solar will pay property tax and production taxes on the land and energy production to local governments. Minnesota has adopted a production tax of

$1.20/MWh paid 80 percent to counties and 20 percent to the cities and townships.[79] Northern Crescent Solar estimates a local annual tax benefit of approximately $420,000 to Faribault County, $49,000 for Prescott Township, and $46,000 for Verona Township.[80]

The applicant anticipates the project will require an estimated 200 jobs during the construction and installation phases, and up to 3 long-term personnel during the operations phase. Indirect economic benefits will occur from additional local spending on lodging, goods and services and local sales tax. As an operating facility, the project will annually generate $2.5 million in economic output by distributing nearly $1.5 million in direct earnings.[81]

If the project is constructed, approximately 1,137.6 acres will be removed from agricultural production that are currently used to produce corn, soybeans, and vegetables. The removal of cultivated land is likely to result in an incremental decrease to agricultural-related businesses, such as farm dealerships, seed dealers, and dealers of agricultural inputs such as fertilizer and pesticides, in the area. The extent of any decrease in sales is difficult to determine, but the removal of approximately 0.3 percent of the approximately 366,048 acres of cropland in Faribault County is unlikely to have a significant impact.[82] Adverse impacts associated with the loss of agricultural land and agricultural production will be mitigated through lease payments to landowners.

MITIGATION

Socioeconomic impacts are anticipated to be positive. Section 8.5 of the DSPs require quarterly reports concerning efforts to hire Minnesota workers. Consistent with Minn. Stat. 216E.03, subd. 10 (c). Section 8.6 of the DSPs require the permittee, as well as its construction contractors and subcontractors, to pay no less than the prevailing wage rate. No additional mitigation is proposed.

4.3.9 Environmental Justice

The ROI for economic justice analysis is the region. The project will not have disproportionately high and adverse human health or environmental effects on low-income, minority, or tribal populations.

Environmental justice (EJ) is “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”[83] The goal of this "fair treatment" is not to shift risks among populations, but to identify potential disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.[84]

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[79] Minnesota Department of Revenue, *Solar Energy Production Tax,* (2023), https://www.revenue.state.mn.us/solar-energy-production-tax#:~:text=The%20Solar%20Energy%20Production%20Tax%20rate%20is%20%241.20%20per%20megawatt,nameplate%20capacity%20exceeding%201%20megawatt.

[80] Application, Section 5.2.13.4.

[81] Id.

[82] Application, Section 5.3.1.

[83] USEPA, *Environmental Justice*, (2024), https://www.epa.gov/environmentaljustice .

[84] USEPA, *Guidance for Incorporating Environmental Justice Concern in EPA's NEPA Compliance Analyses*, (1996), https://www.epa.gov/sites/default/files/2014-08/documents/ej_guidance_nepa_epa0498.pdf.

Potential Impacts

Utility infrastructure can adversely impact low-income, minority or tribal populations. To identify potential environmental justice concerns in the project area, the USEPA's EJ Screening Tool was used to consider the composition of the affected area to determine whether low-income, minority or tribal populations are present and whether there may be disproportionately high and adverse human health or environmental effects on these populations.[85] Low-income and minority populations are determined to be present in an area when the low-income percentage or minority group percentage exceeds 50 percent or is "meaningfully greater" than in the general population. In this analysis, a difference of 10 percentage points or more was used as the threshold to distinguish whether a "meaningfully greater" low-income or minority population resides in the ROI.

Staff conducted a demographic assessment of the affected community to identify low-income and minority populations using U.S. Census data. **Table 11** provides low-income and minority population data within Faribault County.

Table 11. Low-Income and Minority Population Characteristics

Area	% Below Poverty Level	Median Household Income ($)	% Minority Population‡
Region of Comparison			
Minnesota	9.2	$87,556	23.7
Faribault County	11.8	$64,391	10.9
Project Census Tract			
Census Tract 4602	9.5	$68,200	10.8

Source: U.S. Census Bureau, 2022 American Community Survey5-year Estimate

‡ Minority population includes all persons who do not self-identify as white alone.

Mitigation

The project will not create disproportionate or adverse impacts to low-income or minority populations because the percentage of low-income and minority residents in the project area is not meaningfully greater than Faribault County or the state of Minnesota. Additional mitigation is not proposed.

4.4 Human Health and Safety

Construction and operation of a solar facility has the potential to impact human health and safety.

4.4.1 Electric and Magnetic Fields

The ROI for EMF is the area of land control. Impacts to human health from possible exposure to EMFs are not anticipated.

Electric and magnetic fields (EMFs) are invisible forces that result from the presence of electricity. They occur naturally and are caused by weather or the geomagnetic field. They are also caused by all electrical devices and found wherever people use electricity. EMFs are characterized and

[85] USEPA, *EJ Screen: Environmental Screening and Mapping Tool*, (2024), https://www.epa.gov/ejscreen.

distinguished by their frequency, that is, the rate at which the field changes direction each second. Electrical lines in the United States have a frequency of 60 cycles per second or 60 hertz, which is extremely low frequency EMF ("ELF-EMF"). The strength of an electric field decreases rapidly as it travels from the conductor and is easily shielded or weakened by most objects and materials.

Voltage on a conductor creates an electric field that surrounds and extends from the wire. Using water moving through a pipe as an analogy, voltage is equivalent to the pressure of the water moving through the pipe. The strength of the electric field is measured in kilovolts per meter (kV/m). Electric fields decrease rapidly as they travel from the conductor and are easily shielded or weakened by most objects and materials.

Current moving through a conductor creates a magnetic field that surrounds and extends from the wire. Using the same analogy, current is equivalent to the amount of water moving through the pipe. The strength of a magnetic field is measured in milligauss (mG). Like electric fields, the strength of a magnetic field decreases rapidly as the distance from the source increases; however, unlike electric fields, magnetic fields are not easily shielded or weakened.

Table 12 provides examples of electric and magnetic fields associated with common household items. "The strongest electric fields that are ordinarily encountered in the environment exist beneath high voltage transmission lines. In contrast, the strongest magnetic fields are normally found very close to motors and other electrical appliances, as well as in specialized equipment such as magnetic resonance scanners used for medical imaging."[86]

Table 12. Electric and Magnetic Field Strength of Common Household Objects[87]

Electric Field*		Magnetic Field**			
Appliance	kV/m	Appliance	mG		
	1 foot		1 inch	1 foot	3 feet
Stereo	0.18	Circular saw	2,100 to 10,000	9 to 210	0.2 to 10
Iron	0.12	Drill	4,000 to 8,000	22 to 31	0.8 to 2
Refrigerator	0.12	Microwave	750 to 2,000	40 to 80	3 to 8
Mixer	0.10	Blender	200 to 1,200	5.2 to 17	0.3 to 1.1
Toaster	0.08	Toaster	70 to 150	0.6 to 7	< 0.1 to 0.11
Hair Dryer	0.08	Hair dryer	60 to 200	< 0.1 to 1.5	< 0.1
Television	0.06	Television	25 to 500	0.4 to 20	< 0.1 to 1.5
Vacuum	0.05	Coffee maker	15 to 250	0.9 to 1.2	< 0.1

* German Federal Office for Radiation Safety
** Long Island Power Institute

[86] World Health Organization, *Radiation: Electromagnetic Fields, What are typical exposure levels at home and in the environment?,* (2016), https://www.who.int/news-room/questions-and-answers/item/radiation-electromagnetic-fields.
[87] Id.

Health Studies In the late-1970s, epidemiological studies indicated a weak association between childhood leukemia and ELF-EMF levels. "Epidemiologists observe and compare groups of people who have had or have not had certain diseases and exposures to see if the risk of disease is different between the exposed and unexposed groups but does not control the exposure and cannot experimentally control all the factors that might affect the risk of disease."[88]

Ever since, researchers have examined possible links between ELF-EMF exposure and health effects through epidemiological, animal, clinical, and cellular studies. To date, "no mechanism by which ELF-EMFs or radiofrequency radiation could cause cancer has been identified. Unlike high-energy (ionizing) radiation, EMFs in the non-ionizing part of the electromagnetic spectrum cannot damage DNA or cells directly," that is, the ELF-EMF that is emitted from HVTLs does not have the energy to ionize molecules or to heat them.[89] Nevertheless, they are fields of energy and thus have the potential to produce effects.

> "The few studies that have been conducted on adults show no evidence of a link between EMF exposure and adult cancers, such as leukemia, brain cancer, and breast cancer."[90]
>
> "Overall there is no evidence that exposure to ELF magnetic fields alone causes tumors. The evidence that ELF magnetic field exposure can enhance tumor development in combination with carcinogens is inadequate."[91]
>
> "A number of scientific panels convened by national and international health agencies and the U.S. Congress have reviewed the research carried out to date. Most concluded that there is insufficient evidence to prove an association between EMF and health effects; however, many of them also concluded that there is insufficient evidence to prove that EMF exposure is safe."[92]

The Minnesota State Interagency Working Group on EMF Issues, comprised of staff from state agencies, boards, and Commission, was tasked to study issues related to EMF. In 2002, the group published *A White Paper on Electric and Magnetic Field Policy and Mitigation Options*, and concluded the following:

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[88] National Institute of Environmental Health Sciences, *EMF: Electric and Magnetic Fields Associated with the Use of Electric Power,* (2002), https://www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf.

[89] National Cancer Institute, *Magnetic Field Exposure and Cancer*, (2016), http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/magnetic-fields-fact-sheet.

[90] National Institute of Environmental Health Sciences, *Electric and Magnetic Fields*, (2018), http://www.niehs.nih.gov/health/topics/agents/emf/index.cfm.

[91] World Health Organization, *Extremely Low Frequency Fields,* (2007), https://www.who.int/publications/i/item/9789241572385.

[92] State of Minnesota, State Interagency Working Group on EMF Issues, *A White Paper on Electric and Magnetic Field (EMF) Policy and Mitigation Options*, (2002), https://apps.commerce.state.mn.us/eera/web/project-file?legacyPath=/opt/documents/EMF%20White%20Paper%20-%20MN%20Workgroup%20Sep%202002.pdf.

> "Some epidemiological results do show a weak but consistent association between childhood leukemia and increasing exposure to EMF…. However, epidemiological studies alone are considered insufficient for concluding that a cause and effect relationship exists, and the association must be supported by data from laboratory studies. Existing laboratory studies have not substantiated this relationship…, nor have scientists been able to understand the biological mechanism of how EMF could cause adverse effects. In addition, epidemiological studies of various other diseases, in both children and adults, have failed to show any consistent pattern of harm from EMF.
>
> The Department of Health concludes that the current body of evidence is insufficient to establish a cause and effect relationship between EMF and adverse health effects. However, as with many other environmental health issues, the possibility of a health risk cannot be dismissed.[93]"

Regulations and Guidelines Currently, there are no federal regulations regarding allowable ELF-EMF produced by power lines in the United States; however, state governments have developed state-specific regulations. For example, Florida limits electric fields to 2.0 kV/m and magnetic fields to 150 mG at the edge of the ROW for 161 kV transmission lines.[94] Additionally, international organizations have adopted standards for exposure to electric and magnetic fields (**Table 13**).

Table 13. International Electric and Magnetic Field Guidelines

Organization	Electric Field (kV/m)		Magnetic Field (mG)	
	Public	Occupational	Public	Occupational
Institute of Electrical and Electronics Engineers	5.0	20.0	9,040	27,100
International Commission on Non-Ionizing Radiation Protection	4.2	8.3	2,000	4,200
American Conference of Industrial Hygienists	—	25.0	—	10,000/ 1,000[a]
National Radiological Protection Board	4.2	—	830	4,200

[a] For persons with cardiac pacemakers or other medical electronic devices

POTENTIAL IMPACTS

Potential impacts are anticipated to be negligible and are not expected to negatively affect human health. Impacts will be long-term and localized but can be minimized. The primary sources of EMF from the generating facility will be from the solar arrays, buried electrical collection lines, and the transformers installed at each inverter. The EMF generated by solar arrays is at the level generally

[93] Id.
[94] Florida Department of State, *Rule 62-814.450 Electric and Magnetic Field Standards*, (2008), https://www.flrules.org/gateway/ruleNo.asp?id=62-814.450.

experienced near common household appliances. Measured magnetic fields at utility-scale PV projects drop to very low levels of 0.5 mG or less at distances of 150 feet from inverters.[95]

MITIGATION

No health impacts from EMF are anticipated. EMF diminishes with distance from a conductor or inverter. The nearest solar array is located approximately 50 feet from the nearest residence, the nearest underground collection line is located approximately 300 feet from the nearest residence, and the nearest inverter is located approximately 350 feet from the nearest residence. Additionally, the nearest resident to the proposed Gen-Tie Line is approximately 1,300 feet away. At this distance both electric and magnetic fields will dissipate to background levels. No additional mitigation is proposed.

4.4.2 Public Safety and Emergency Services

The ROI for public and work safety is the land control area. Like any construction project, there are risks. These include potential injury from falls, equipment and vehicle use, electrical accidents, etc. Public risks involve electrocution. Electrocution risks could also result from unauthorized entry into the fenced area. There is the potential for land has previously been impacted by hazardous substances to be encountered, and hazardous materials must be documented, monitored, and disposed in coordination with MPCA. Potential impacts are anticipated to be minimal. Impacts would be short- and long-term and can be minimized.

Like any construction project, there are risks. These include potential injury from falls, equipment and vehicle use, electrical accidents, etc. Construction might disturb existing environmental hazards on-site, for example, contaminated soils. During operation there are occupational risks similar to those associated with construction. Public risks would result from unauthorized entry into the facility.

Construction crews must comply with local, state, and federal regulations when installing the project. This includes standard construction-related health and safety practices. This generally includes safety orientation and training, as well as daily/weekly safety meetings.

Emergency services in the project area are provided by local law enforcement and emergency response agencies located in nearby communities. Law enforcement in the project area is provided by the Faribault County Sheriff and Winnebago Police. Fire service and search and rescue is provided by the Winnebago and Delavan Fire Departments. The nearest hospital offering emergency care is the United Hospital District, located in Blue Earth.[96]

POTENTIAL IMPACTS

Worker safety issues are primarily associated with construction. Public safety concerns would be most associated with unauthorized entry to the project.

The inflow of temporary construction personnel could increase demand for emergency and public health services. On the job injuries of construction workers requiring assistance due to slips, trips or

[95] Flowers, George and Cleveland, Tommy, North Carolina Clean Energy Technology Center, Health and Safety Impacts of Solar Photovoltaics, (2017), https://content.ces.ncsu.edu/health-and-safety-impacts-of-solar-photovoltaics.

[96] Application, Section 5.2.8.

falls, equipment use, or electrocution can create a demand for emergency, public health, or safety services that would not exist if the project were not to be built. Although no road closures are anticipated during construction,[97] any temporary closures could impede police, fire, and other rescue vehicles access to the site of an emergency.

In Minnesota, unless solar panels discarded by commercial entities are specifically evaluated as non-hazardous, the panels are assumed to be hazardous waste due to the probable presence of heavy metals. Heavy metals in solar panels can include arsenic, cadmium, lead, and selenium. If hazardous waste, they must be properly disposed of in a special facility or recycled if recyclers are available.[98]

MITIGATION

The project will be designed and constructed in compliance with applicable electric codes. Electrical inspections will ensure proper installation of all components, and the project will undergo routine inspection. Electrical work will be completed by trained technicians.

Construction is bound by federal and state Occupational Safety and Health Administration (OSHA) requirements for worker safety, and must comply with local, state, and federal regulations regarding installation of the facilities and qualifications of workers. Established industry safety procedures will be followed during and after construction of the project. Northern Crescent Solar indicates that the project will be fenced and locked to prevent unauthorized access, and signs will be posted to warn unauthorized persons not to enter fenced area due to the presence of electrical equipment.

Public safety is addressed in several sections of the DSPs (**Appendix C and Appendix D**):

- Sections 4.3.30 and 4.3.27 (respectively) require the permittee to take several public safety measures, including landowner educational materials, appropriate signs and gates, etc.
- Sections 8.12 and 8.11 require permittees file an *Emergency Response Plan* with the Commission and local first responders prior to operation.
- Sections 8.13 and 8.12 require disclosure of extraordinary events, such as fires, etc.
- Section 9.1 requires a decommissioning plan prior to construction and updated every five years. Periodic updates of the plan will address the developing information on end-of-life issues related to PV panels.

No additional mitigation is proposed.

4.5 Land-based Economies

Solar facilities impact land-based economies by precluding or limiting land use for other purposes.

[97] Application, Section 5.3.5.1.
[98] MPCA, *2017 Toxics and Pollution Prevention Evaluation Report*, (2018), https://www.lrl.mn.gov/docs/2018/mandated/180453.pdf.

4.5.1 Agriculture

The ROI for agriculture is the land control area. Potential impacts to agricultural producers are anticipated to be minimal to moderate — lost farming revenues will be offset by lease or easement agreements. A loss of farmland in Faribault County would occur for the life of the project. Potential impacts are localized and unavoidable but can be minimized.

Agricultural use dominates the area of land control, with approximately 96.5 percent (1,137.6 acres) of the area used for cultivated row crops (corn, soybeans, and vegetables are the dominant crops).

In 2015, there were approximately 383,231 acres of farmland in Faribault County, approximately 83 percent of the land coverage in the county. There are a total of 773 individual farms located in Faribault County, with an average farm size of 496 acres. Cropland, which includes grains, oilseeds, dry beans, dry peas, vegetables, and hay, make up 95.5 percent of the farmland, with livestock and poultry making up the remaining 4.5 percent. The market value of agricultural production in Faribault County in 2022 was approximately $588 million.

Prime farmland is defined by Federal regulation at 7 C.F.R.657.5(a)(1) as "land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses." Approximately 52.2 percent of the preliminary development area is designated as prime farmland if drained (485.4 acres), 47.6 percent is designated as prime farmland (442.8 acres) and 0.1 percent is designated as farmland of statewide importance (0.9 acres).[99] With respect to prime farmland, the applicant indicates that no feasible or prudent alternatives to the project exist.

POTENTIAL IMPACTS

The impact intensity level will range from minimal to moderate. The intensity of the impact is likely to be subjective. For example, conversion of farmland to solar energy production can be viewed as a conversion from one type of industrial use to another. Conversely, the conversion of farmland to solar energy production can be viewed as a negative impact to agricultural production. Restoring the site with native grasses and forbs will reduce soil erosion, provide pollinator and wildlife benefits, and improve soil health. This EA acknowledges that the perceived impacts to prime farmland are subjective and may be difficult to assess given the trade-offs associated with utility scale solar projects.

Rural areas, with large parcels of relatively flat, open land, are ideal for solar development, which require six to eight acres of land to generate one MW of electricity. The project will result in up to 1,137.6 acres of farmland being removed from agricultural production for the life of the project. This change in land use would take productive farmland out of production for the life of the project, representing approximately 0.3 percent of existing agricultural land in Faribault County. The applicant indicates that the land could be returned to agricultural uses after the project is decommissioned and the site is restored.

Construction of the project has the potential to damage agricultural soils through compaction or erosion if BMPs are not implemented to minimize damage.

[99] Application, Table 20.

MITIGATION

Several sections of the DSPs (**Appendix C and Appendix D**) address agricultural mitigation and soil-related impacts:

- Section 4.3.9 requires protection and segregation of topsoil.
- Section 4.3.10 requires measures to minimize soil compaction.
- Section 4.3.11 requires the permittee to "implement erosion prevention and sediment control practices recommended by the [MPCA]" and to "obtain a [CSW Permit]." A CSW Permit requires both temporary and permanent stormwater controls to ensure that stormwater does not become a problem on or off-site.
- Section 4.3.16 of **Appendix C** requires that "site restoration and management" practices enhance "soil water retention and reduces storm water runoff and erosion".
- Sections 4.3.17 and 4.3.15 (respectively) require the permittee to develop a VMP that defines how the land control area will be revegetated and monitored over the life of the project. Appropriate seeding rates and timing of revegetation will stabilize soils and improve overall soil health. Northern Crescent Solar has included a draft VMP as Appendix F of its joint site permit application.
- Section 4.3.18 of **Appendix C** requires the permittee to develop an AIMP with MDA. Northern Crescent Solar's draft AIMP (Appendix E of its joint site permit application) details methods to minimize soil compaction, preserve topsoil, control noxious weeds and invasive species, maintain the existing drainage conditions through appropriate maintenance and repair of existing drain tile, and establish and maintain appropriate vegetation to ensure the project is designed, constructed, operated and ultimately restored in a manner that would preserve soils to allow for the land to be returned to agricultural use.
- Sections 4.3.20 and 4.3.17 require the permittee to develop an Invasive Species Management Plan to prevent introduction and spread of invasive species during construction of the project.
- Sections 4.3.21 and 4.3.18 require the permittee to take reasonable precautions against the spread of noxious weeds.
- Sections 4.3.29 and 4.3.26 require the permittee to fairly restore or compensate landowners for damages to crops, fences, drain tile, etc. during construction.

Northern Crescent Solar indicates that BMPs would be implemented during construction in order to minimize and mitigate long-term impacts to agricultural lands, including project design that minimizes infrastructure to the degree practicable, preventing soil profile mixing, halting construction during wet weather conditions, ensuring proper site drainage and erosion control, and limiting the spread of noxious weeds and invasive species by cleaning construction equipment. Following construction, Northern Crescent Solar indicates that disturbed areas would be repaired and restored to pre-construction contours and characteristics to the extent possible.[100]

[100] Application, Section 5.3.2.1.

4.5.2 Tourism

The ROI for tourism is the project area. Impact intensity is expected to be minimal, and short-term in duration. There may be potential for impacts to local recreational activities during construction, however impacts will be temporary.

Tourism in the local area includes festivals, fairs, markets, celebrations, and outdoor recreation like camping, fishing, bicycling, and hiking.

POTENTIAL IMPACTS

All project facilities will be located on privately-owned land, therefore impacts to tourism and recreation are anticipated to be minimal. Short-term impacts to outdoor recreational activities could occur during construction due to noise and traffic increase, however these impacts will be temporary and short-term in duration.

MITIGATION

Because significant impacts are not anticipated, no additional mitigation measures are proposed.

4.6 Archeological, Cultural, and Historic Resources

The ROI for archeological and historic resources is the project area. The impact intensity level is anticipated to be negligible to minimal. Impacts would be localized. Impacts can be mitigated through prudent siting.

Archeological resources are locations where objects or other evidence of archaeological interest exist, and can include aboriginal mounds and earthworks, ancient burial grounds, prehistoric ruins, or historical remains.[101] Historic resources are sites, buildings, structures, or other antiquities of state or national significance.[102]

Construction and operation of project has the potential to impact resources that have importance to American Indian Tribes with ties to the region. Siting of large energy facilities in a manner that respects historic and cultural ties to the land requires coordination with tribes.

POTENTIAL IMPACTS

Northern Crescent Solar reports contacting the eleven federally recognized Tribal Nations in Minnesota and the Minnesota Indian Affairs Council for additional information or comment on the project.[103] Three tribes expressed interest in ongoing project updates, including the Shakopee Mdewakanton Sioux Community, White Earth Nation, and the Mille Lacs Band of Ojibwe .[104] Northern Crescent Solar received feedback from the White Earth Nation, stating concerns about the preservation of wild rice watersheds and cultural artifact discoveries. In the joint site permit application, Northern Cresscent Solar responded with discussion of the National Pollutant Discharge

[101] Minnesota Statutes, Section. 138.31, subd. 14.
[102] Minnesota. Statutes, Section 138.51.
[103] Application, Section 6.3.
[104] Id.

Elimination System (NPDES) and SWPPP that are needed to help prevent sedimentation and pollution of any local waterways as well as the development of an Unanticipated Discoveries Plan.[105]

MITIGATION

Prudent siting to avoid impacts to archaeological and historic resources is the preferred mitigation. The DSPs, Section 4.3.23 of **Appendix C** and Section 4.3.20 of **Appendix D,** address archeological resources and require the permittee to avoid impacts to archaeological and historic resources where possible and to mitigate impacts where avoidance is not possible. If previously unidentified archaeological sites are found during construction, the permit requires the permittee to stop construction and contact SHPO to determine how best to proceed. Ground disturbing activity will stop, and local law enforcement will be notified should human remains be discovered.

Additionally, Section 5.2 of the DSPs (**Appendix C and Appendix D**) require preparation of an Unanticipated Discoveries Plan outlining steps to be taken if previously unrecorded cultural resources or human remains are encountered during construction. Northern Crescent Solar indicated that before construction begins, an Unanticipated Discoveries Plan will be prepared, and should any previously unknown cultural resources or human remains be encountered, work will stop, and the discovery will be examined by an archaeologist. If the discovery is determined to be a significant cultural resource, SHPO and OSA will be notified. With regard to a discovery of potential human remains, procedures would be followed to verify if the remains are human and that the appropriate authorities would become involved quickly and in accordance with local and state guidelines.[106]

4.7 Natural Resources

Solar facilities impact the natural environment. Impacts are dependent upon many factors, such as how the project is designed, constructed, maintained, and decommissioned. Other factors, for example, the environmental setting, influence potential impacts. Impacts can and do vary significantly both within, and across, projects.

4.7.1 Air Quality

The ROI for air quality is the region. Potential impacts to air quality during construction would be intermittent, localized, short-term, and minimal. Impacts are associated with fugitive dust and exhaust. Impacts can be mitigated. Once operational, the solar array will not generate criteria pollutants or carbon dioxide. Negligible fugitive dust and exhaust emissions would occur as part of routine maintenance activities. Impacts are unavoidable and do not affect a unique resource. Impacts can be minimized.

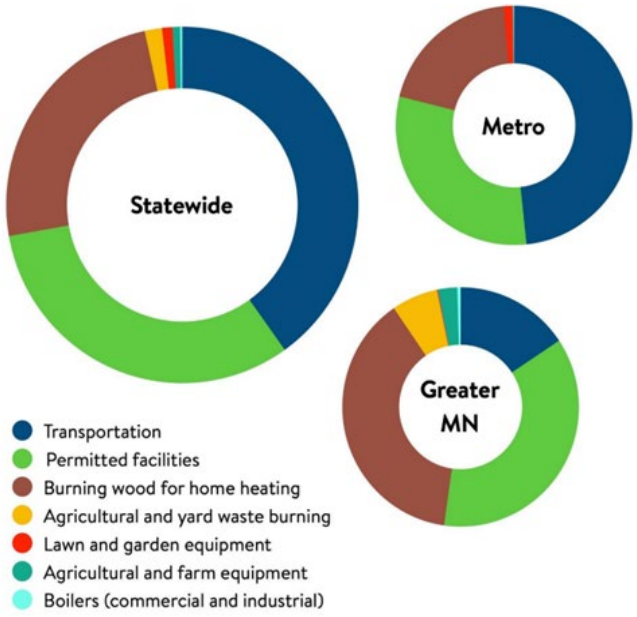
Air quality is a measure of how pollution-free the ambient air is and how healthy it is for humans, other animals, and plants. Emissions of air pollutants will occur during construction and operation of new infrastructure for the project. Overall air quality in Minnesota has improved over the last 20 years, but current levels of air pollution still contribute to health impacts. As illustrated in **Figure 11,** today, most of our air pollution comes from smaller, widespread sources. The rest comes from a wide

[105] Id.
[106] Id.

variety of things we use in our daily lives: our vehicles, local businesses, heating and cooling, and yard and recreational equipment.[107]

The nearest air quality monitor to the project is in Rochester, Minnesota, approximately 139 miles northeast of the project area. Air quality in the area has been considered "good" between 190 and 292 days of the year from 2017-2023. During the same time period, the number of days classified as moderate occurred varied between 73 and 160. Air quality was considered unhealthy for sensitive groups on one day in both 2020 and 2022, two days in 2021, and 14 days in 2023. Air quality was classified as unhealthy on one day in 2023.[108] The increase in the number of days of moderate or worse air quality in 2023 was statewide and largely attributable to wildfire smoke.[109]

Figure 11. Air Pollution Sources by Type



Potential Impacts

Minimal intermittent air emissions are expected during construction of the project. Air emissions associated with construction are highly dependent upon weather conditions and the specific activity occurring. For example, traveling to a construction site on a dry gravel road will result in more fugitive dust than traveling the same road when wet. Once operational, neither the generating facility nor the transmission line will generate criteria pollutants or carbon dioxide.

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[107] MPCA, *The Air We Breathe The State of Minnesota's Air Quality in 2021,* (2023), https://www.lrl.mn.gov/docs/2022/mandated/221697.pdf.

[108] MPCA, *Annual AQI Days by Reporting Region*, (2024), https://data.pca.state.mn.us/views/Minnesotaairqualityindex/AQIExternal?%3Aembed=y&%3AisGuestRedirectFromVizportal=y.

[109] DNR, *Smoke Event of Jun 14, 2023*, (n.d.), https://www.dnr.state.mn.us/climate/journal/smoke-event-june-14-2023.html.

Air emissions from project construction activities would likely primarily include carbon dioxide (CO2), nitrogen oxides (NOx) and other particulate matter. Motorized equipment will emit exhaust. This includes construction equipment and vehicles travelling to and from the project. Exhaust emissions, primarily from diesel equipment, would vary according to the phase of construction.

All projects that involve movement of soil, or exposure of erodible surfaces, generate some type of fugitive dust emissions. The project will generate fugitive dust from travel on unpaved roads, grading, and excavation. Dust emissions would be greater during dry periods and in areas where fine-textured soils are subject to surface activity.

Emissions associated with maintenance are dependent upon weather conditions and the specific activity occurring. Vehicle exhaust will be emitted during maintenance visits to the generating facility. The applicant indicates that, over the life of the project, fugitive dust emissions will be reduced by the elimination of farming and establishment of perennial native plantings and other permanent vegetative cover. The applicant also indicates that the project will have a positive effect on air quality by replacing electrical generation produced by burning fossil fuels, reducing associated greenhouse gas emissions.

MITIGATION

Exhaust emissions can be minimized by keeping vehicles and equipment in good working order, and not running equipment unless necessary. Northern Crescent Solar indicates that BMPs will be used during construction and operation of the project to minimize dust and emissions.

As a component of the construction stormwater permit that will be obtained for the project, an NPDES and State Disposal System CSW permit, and an associated SWPPP, will be developed and implemented prior to construction in order to minimize the potential for fugitive dust emissions.

Watering exposed surfaces, covering disturbed areas, and reducing speed limits on-site are all standard construction practices.

The AIMP identifies construction BMPs related to soils and vegetation that will help to mitigate against fugitive dust emissions. Several sections of the draft plan indirectly mitigate impacts to air quality, including sections related to construction and vegetation removal, soils, erosion and sediment control, and restoration of the site to pre-construction conditions.[110]

4.7.2 Geology and Groundwater

The ROI for geology and groundwater is the land control area. Impacts to domestic water supplies are not expected. Impacts to geology are not anticipated. Localized impacts to groundwater resources, should they occur, would be intermittent, but have the potential to occur over the long-term. Indirect impacts from surface waters might occur during construction. Impacts can be mitigated through use of BMPs for stormwater management.

Groundwater in Minnesota is largely a function of local geologic conditions that determine the type and properties of aquifers. Minnesota is divided into six groundwater provinces based on bedrock and glacial geology. The project site is within Province 2, the South-central Province, and is

[110] Application, Appendix E.

characterized by glacial sediment that is typically fine-grained (e.g., clay and silt) and may contain only limited extents of surficial and buried sand aquifers. Province 2 contains sedimentary bedrock aquifers that are commonly used.[111]

Pollution sensitivity of near surface materials in the project area is in the "low" category.[112] The sensitivity to pollution of near-surface materials is an estimate of the time it takes for water to travel through the unsaturated zone to reach the water table, which for the purposes of the model was assumed to be 10 feet below the land surface.[113] This means that the project area is generally expected to have "low" groundwater pollution sensitivity where contaminants from the land surface would not reach groundwater for months to a year.[114] Low sensitivity does not guarantee protection. Leakage from an unsealed well for example, may bypass the natural protection, allowing contamination to directly enter an aquifer.

Depth to bedrock beneath the project is estimated to be 150 to 250 feet below ground level. Depth to water table in the preliminary development area ranges from just below the surface to more than 200 centimeters depending on the soil type.[115] Depth to water table is shallower in the mapped hydric soils and areas delineated as wetland, and deeper in the non-hydric soil units.

The land control area was reviewed for wells listed on the Minnesota Well Index (MWI) and MDH Wellhead Protection Areas (WHPAs).[116] The MDH maintains the Minnesota Well Index (MWI), which provides basic information (e.g., location, depth, geology, construction, and static water level) for wells and borings drilled in Minnesota. The MWI identifies one documented well within the project site, 25 additional wells within one mile of the project area.[117]

Under the Safe Drinking Water Act, each state is required to develop and implement a Wellhead Protection Program to identify the land and recharge areas contributing to public supply wells and prevent the contamination of drinking water supplies. WHPA encompasses the area around a drinking water well where contaminants could enter and pollute the well. Public and non-public community water supply source-water protection in Minnesota is administered by the MDH through the Wellhead Protection program. WHPAs for public and community water-supply wells are delineated based on a zone of capture for 10-year groundwater time-of-travel to the well and are available through a database and mapping layer maintained by MDH (2023b). A search for WHPAs in the MDH database indicated that the land control area is located entirely inside of a WHPA for a drinking water well where contaminants could ender and pollute the well.

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[111] DNR, Minnesota Groundwater Provinces 2021, (n.d.), https://www.dnr.state.mn.us/waters/groundwater_section/mapping/provinces.html.
[112] Minnesota Natural Resource Atlas, (n.d.), https://mnatlas.org/gis-tool/.
[113] Adams, Roberta, *Pollution Sensitivity of Near-Surface Materials,* (2016), https://www.leg.state.mn.us/docs/2017/other/170839.pdf.
[114] DNR, *Methods to Estimate Near-Surface Pollution Sensitivity*, (2016), https://files.dnr.state.mn.us/waters/groundwater_section/mapping/gw/gw03_ps-ns.pdf.
[115] United States Department of Agriculture, *Web Soil Survey,* (n.d.), https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.
[116] Application, Section 5.4.4.
[117] MDH, *Minnesota Well Index,* (2024), https://www.health.state.mn.us/communities/environment/water/mwi/index.html.

Potential Impacts

Potential impacts to geology and groundwater can occur directly or indirectly. Impacts to geological resources are likely to be minimal due to the absence of karst features.

Geotechnical soil borings will be completed by Northern Crescent Solar as Project design and engineering advances; this information will be assessed for potential impacts to geologic resources.

Direct impacts to groundwater are generally associated with construction, for example, structure foundations that could penetrate shallow water tables or groundwater usage. Indirect impacts could occur through spills or leaks of petroleum fluids or other contaminants that contaminate surface waters which could ultimately contaminate groundwater. The disturbance of soil and vegetative cover could affect water quality in groundwater resources. Impacts to groundwater resources, including aquifers and the Clearwater River, are not anticipated as water supply needs will be limited and aquifers are not common in the area.

Construction of the project is not likely to require subsurface blasting, and newly fractured bedrock causing groundwater flow is not anticipated. A domestic well is likely to be installed as a component of the O&M building. Northern Crescent Solar acknowledges that the construction of a solar project will create an increase in impervious and semi-impervious surfaces within the area of land control. This could lead to an increase of stormwater runoff, and in turn reduce groundwater recharge.

The project is not anticipated to require the use or storage of large quantities of hazardous materials that might otherwise have the potential to spill or leak into area groundwater. An SPCC Plan will be required for the transformer substation. Northern Crescent Solar states that transformers would be contained per USEPA requirements.[118]

The variables from the applicant's geotechnical study will be used to engineer the solar array foundation system. Typically, the foundation is a steel pile, which is driven into the ground with a hydraulically powered high-frequency hammer mounted on a tracked carrier. The piles are installed at pre-defined locations throughout the array area to a depth depending on soil properties and other factors such as wind and snow loads.[119]

The electrical collection system, DC and AC collection systems, is anticipated to be installed below-ground. The panels deliver DC power to the inverters through below-ground DC cabling that will be installed in trenches at a depth of at least three feet below grade.

Mitigation

Stormwater management is important to ensure that structure foundations maintain their integrity and that rainwater and surface runoff drain away from the project structures and roads in a way that does not adversely affect existing drainage systems, roads, or nearby properties. Appropriate permanent stormwater management measures, including minimizing the area of impervious surfaces at the site to reduce the volume and velocity of the stormwater runoff and the establishment of multiple stormwater ponds, will address drainage from the newly established impervious areas.

[118] Application, Section 5.4.4.1.
[119] Application, Section 5.5.2.1.

Northern Crescent Solar indicates that solar panels will be mounted above the ground with vegetation underneath, allowing water to filter into vegetation and soil prior to discharging.

Northern Crescent Solar plans to install a well to supply water to the O&M building. Any new wells require notification to MDH and would be constructed by a well borer licensed by MDH. If any previously unmapped wells are discovered, Northern Crescent Solar should cap and abandon the well in place in accordance with MDH requirements.

Because the project will disturb more than one acre, Northern Crescent Solar must obtain a CSW Permit from the MPCA. The CSW Permit will identify BMPs for erosion prevention and sediment control. As part of the CSW Permit, Northern Crescent Solar will also develop a SWPPP that describes construction activity, temporary and permanent erosion and sediment controls, BMPs, permanent stormwater management that will be implemented during construction and through the life of the project. Implementation of the protocols outlined in the SWPPP will minimize the potential for soil erosion and detail stormwater management methods during construction and operation of the facility. Section 4.3.11 of DSPs (**Appendix C and Appendix D**) require the permittee to obtain a MPCA CSW Permit and implement the BMPs within for erosion prevention and sediment control. Impacts to groundwater can also be minimized by mitigating impacts to and soils and surface waters as discussed in Sections **4.7.3** and **4.7.4**.

An NPDES permit application to discharge stormwater from construction facilities may also be acquired by Northern Crescent Solar from the MPCA. BMPs will be used during construction and operation of the project to protect topsoil and adjacent resources and to minimize soil erosion, whether the erosion is caused by water or wind. Practices may include containment of excavated material, protection of exposed soil, stabilization of restored material, and treating stockpiles to control fugitive dust.

4.7.3 Soils

The ROI for the soils is the land control area. Impacts to soils will occur during construction and decommissioning of the project. The impact intensity level is expected to be minimal. Potential impacts will both positive and negative, and short- and long-term. Isolated moderate to significant negative impacts associated with high rainfall events could occur. Because the soil at the solar facility will be covered with native perennial vegetation for the life of the project, soil health is likely to improve.

The soils deposited in the area (**Table 14**) are made up of mainly silty clay loam, clay loam or silt loam. More than half of the soil is designated as hydric or predominantly hydric (616.9 acres), while the remaining soil is considered nonhydric (562 acres). The soils within the site may be susceptible to compaction or rutting during wet conditions due to the hydric texture of the soil. Most of the soils within the solar facility project site and land control area are designated prime farmland if drained (52.2%), and the rest is designated prime farmland (47.6%) and prime farmland of state importance (0.1%).

Table 14. Soil Types in Solar Facility project Site[120]

Soil type	Farmland Classification	Hydric Rating*	Acres
Brownton silty clay loam, 0 to 2% slopes	Prime farmland if drained	Hydric	6.8
Canisteo clay loam, 0 to 2% slopes	Prime farmland if drained	Hydric	15.1
Marna silty clay loam, 0 to 2% slopes	Prime farmland if drained	Predominantly Hydric	31.6
Okoboji Silty clay loam, 0 to 2% slopes	Prime farmland if drained	Hydric	16.3
Madelia silty clay loam, 0 to 2% slopes	Prime farmland if drained	Predominantly Hydric	315.6
Spicer silty clay loam, 0 to 2% slope	Prime farmland if drained	Predominantly Hydric	90.9
Kingston silty clay loam, 1 to 3% slopes	All areas are prime farmland	Predominantly Nonhydric	193.7
Waldorf silty clay loam, 0 to 2% slopes	Prime farmland if drained	Predominantly Hydric	26.5
Darfur loam	Prime farmland if drained	Predominantly Hydric	4.5
Delft clay loam, 0 to 2% slopes	Prime farmland if drained	Predominantly Hydric	1.4
Klossner muck, lake plain, depressional, 0 to 1% slopes	Farmland of statewide importance	Hydric	5.0
Fostoria loam	All areas are prime farmland	Predominantly Nonhydric	85.0
Lakefield silt loam	All areas are prime farmland	Predominantly Nonhydric	58.5
Truman silt loam, 2 to 6% slopes	All areas are prime farmland	Predominantly Nonhydric	76.7
Clarion loam, 2 to 6% slopes	All areas are prime farmland	Predominantly Nonhydric	42.5
Grogan silt loam, 1 to 6% slopes	All areas are prime farmland	Predominantly Nonhydric	11.7
Guckeeen silty clay loam, 1 to 3% slopes	All areas are prime farmland	Predominantly Nonhydric	6.7
Ocheyedan loam, 2 to 6% slopes	All areas are prime farmland	Predominantly Nonhydric	55.8
Shorewood silty clay loam, 1 to 3% slopes	All areas are prime farmland	Predominantly Nonhydric	1.5

[120] Application, Table 22.

Shorewood silty clay loam, 3 to 6% slopes	All areas are prime farmland	Predominantly Nonhydric	6.4
Bold-Truman complex, 12 to 18% slopes, eroded	Not prime farmland	Predominantly Nonhydric	0.7
Collinwood silty clay loam, 1 to 3% slopes	All areas are prime farmland	Predominantly Nonhydric	3.8
Webster clay loam, 0 to 2% slopes	Prime farmland if drained	Predominantly Hydric	103.1
Nicollet clay loam, 1 to 3% slopes	All areas are prime farmland	Predominantly Nonhydric	18.9
Solar Facility Subtotal			**1,178.8**

* The Hydric Rating is based on the composition of hydric components of a soil unit. The five classes are Hydric (100% hydric components), Predominantly Hydric (66-99% hydric components), Partially Hydric (33-65% hydric components), Predominantly Nonhydric (1-32% hydric components), and Nonhydric (less than 1% hydric components).

Potential Impacts

The impact intensity level is expected to be low to moderate. Primary impacts to soils include compaction from construction equipment, soil profile mixing during grading and pole auguring, rutting from tire traffic, and soil erosion. Impacts to soils are likely to be greatest with the below-ground electrical collection system. Potentials impacts will be positive and negative, and short- and long-term. Isolated moderate to significant negative impacts associated with high rainfall events could occur. Because the soil at the solar facility would be covered with native perennial vegetation for the operating life of the project, soil health would likely improve over the operating life of the project.

Construction of the solar facility will disturb approximately 929 acres within the land control area, and 882.7 acres of that will be used for the solar facility project site. As with any ground disturbance, there is potential for soil compaction and erosion. Heavy rainfall events during construction or prior to establishment of permanent vegetation, increase the risk that significant sedimentation and erosion could occur.

The soils within the site are generally loamy in texture and poorly drained. As a result, the soils are susceptible to compaction or rutting during wet conditions due to the hydric texture of the soil. The soils are less susceptible to wind erosion during dry periods due to the level nature, however areas with higher slopes may be more susceptible. Existing drain tiles may be used or new tiles installed to ensure proper drainage.

Soil cover and management at the solar facility will change from cultivated cropland to a mixture of pervious areas with native groundcover plantings and semi-impervious surfaces. Once permanent vegetation is properly established, stormwater management, as well as general soil health, might improve due to use of native plants. The location and amount of stored topsoil will be documented to facilitate re-spreading of topsoil after decommissioning. These benefits could extend beyond the life of the project if they are preserved through decommissioning practices, and if the site is returned to agricultural use.

Mitigation

Several sections of the DSPs **(Appendix C and Appendix D**) address soil-related impacts

- Section 4.3.9 requires protection and segregation of topsoil;
- Section 4.3.11 requires the permittee to obtain a MPCA CSW Permit and implement the BMPs within for erosion prevention and sediment control.
- Section 4.3.16 of **Appendix C** requires that "site restoration and management" practices enhance "soil water retention and reduces storm water runoff and erosion".
- Sections 4.3.17 and 4.3.15 (respectively) require the permittee to develop a VMP that defines how the land control area will be revegetated and monitored over the life of the project. Appropriate seeding rates and timing of revegetation will stabilize soils and improve overall soil health. Northern Crescent Solar has included a draft VMP as Appendix F of its joint site permit application.
- Section 4.3.18 of **Appendix C** requires the permittee to develop an AIMP which details methods to minimize soil compaction, preserve topsoil, and establish and maintain appropriate vegetation to ensure the project is designed, constructed, operated, and ultimately restored in a manner that would preserve soils to allow for the land to be returned to agricultural use. Northern Crescent Solar has included a draft AIMP as Appendix E of its joint site permit application.

4.7.4 Surface Water and Floodplains

The ROI for surface water resources is the land control area. The impact intensity level is anticipated to be minimal. Direct impacts to surface waters are not expected. Indirect impacts to surface waters might occur. These impacts will be short-term, of a small size, and localized. Impacts can be mitigated.

Solar farm projects have the potential to impact surface water resources and floodplains. These projects could directly impact water resources and floodplains if these features cannot be avoided through project design. Projects also have the potential to adversely impact surface waters though construction activities which move, remove, or otherwise handle vegetative cover and soils. Changes in vegetative cover and soils can change runoff and water flow patterns.

The project is split between the Blue Earth River and the Le Sueuer River Watershed.[121] The nearest Public Waters Inventory (PWI) body of water are two unnamed public water wetlands, located approximately 0.2 miles east of the project area and the Blue Earth River, located approximately 0.2 miles west of the project area. Within the project area, there are four delineated wetlands, which are classified as Type 2 and Wet Meadow.[122]

Under Section 303(d) of the Clean Water Act, states are required to assess all waters of the state to determine if they meet water quality standards, list waters that do not meet standards and update the list biannually and conduct total maximum daily load studies to set pollutant-reduction goals needed to restore waters to the extent that they meet water quality standards for designated uses. The list, known as the 303(d) list, is based on violations of water quality standards. The MPCA has jurisdiction over determining 303(d) waters in the State of Minnesota. There are no waters listed by

[121] DNR, *Minnesota's watershed basins*, (n.d.), https://www.dnr.state.mn.us/watersheds/map.html.
[122] Application, Table 24.

the MPCA as impaired waters within the project site. The Blue Earth River, approximately 0.2 miles west of the project, is listed as an impaired water.[123]

Floodplains are flat, or nearly flat, land adjacent to a river or stream that experiences occasional or periodic flooding. It includes the floodway, which consists of the stream channel and adjacent areas that carry flood flows, and the flood fringe, which includes areas covered by the flood, but which do not experience a strong current. Floodplains prevent flood damage by detaining debris, sediment, water, and ice. The Federal Emergency Management Agency (FEMA) delineates floodplains and determines flood risks in areas susceptible to flooding. The base flood that FEMA uses, known as the 100-year flood, has a one percent chance of occurring during each year.

At the state level, the DNR oversees the administration of the state floodplain management program by promoting and ensuring sound land use development in floodplain areas in order to promote the health and safety of the public, minimize loss of life, and reduce economic losses caused by flood damages. The DNR also oversees the national flood insurance program for the state of Minnesota. Floodplains are also regulated at the local level.

According to the FEMA website, the project area is mapped as Zone C and not at risk for a 100-year flood. There are no Zone A floodplains within the land control area.[124] The applicant states that the developed area of the project will not impact FEMA floodplain areas. Due to Minnesota's warmer and wetter climate, there is increased risk for damaging rain events and more frequent flooding. These events could impact the project (**Section 4.7.9**).

Potential Impacts

The Blue Earth River Watershed is an area that historically can be impacted by issues of turbidity, which can cause damage to wildlife habitat in the Blue Earth River and the Minnesota River.

The project is designed to avoid direct impacts to surface waters by avoiding placement of project components such as access roads, solar arrays, inverters, or transmission structures in surface waters.

Construction of the project creates a potential for indirect impacts if sediment or fugitive dust created by excavation, grading, vegetation removal, and construction traffic reaching nearby surface waters.

Overall, and due to the establishment of perennial vegetation at the solar facility, the project is expected to have a long-term positive impact on water quality.

Mitigation

Standard construction management practices, including, but not limited to containment of excavated soils, protection of exposed soils, stabilization of restored soils, and controlling fugitive dust, would minimize the potential for eroded soils to reach surface waters.

[123] MPCA, *Impaired Waters Viewer,* (2014), https://gisdata.mn.gov/dataset/impaired-waters-viewer.
[124] FEMA, *FEMA Flood Map Service Center,* (n.d.), https://msc.fema.gov/portal/home.

Best management practices to minimize the impact on surface waters will be utilized as a part of the SWPPP, including but not limited to sediment control, revegetation plans, and management of exposed soils to prevent sediment from entering waterbodies.[125]

Northern Crescent Solar plans to maintain drainage system integrity during construction, including rerouting, reinforcement, or other methods outlined in the AIMP filed with the joint site permit application.[126]

The DSPs (**Appendix C and Appendix D**) have two standard conditions that address potential impacts to surface waters:

- Section 4.3.11 of both DSPs require the permittee to "implement erosion prevention and sediment control practices recommended by the [MPCA]" and to "obtain a [CSW Permit]." A CSW Permit requires both temporary and permanent stormwater controls. This section also requires implementation of erosion and sediment control measures, contours graded to provide for proper drainage, and all disturbed areas be returned to pre-construction conditions. Northern Crescent Solar will also develop a SWPPP that complies with MPCA rules and guidelines. The SWPPP describes construction activity, temporary and permanent erosion and sediment controls, BMPs, permanent stormwater management that will be implemented during construction and through the life of the project. Implementation of the protocols outlined in the SWPPP will minimize the potential for soil erosion during construction.
- Section 4.3.16 of **Appendix C** requires that "site restoration and management" practices enhance "soil water retention and reduces storm water runoff and erosion".

4.7.5 Wetlands

The ROI for wetlands is the land control area. The impact intensity level is anticipated to be minimal. Although there is a potential for wetlands to be indirectly affected, direct impacts are not expected. These impacts will be short-term, of a small size, and localized. Impact can be mitigated.

Wetlands are areas with hydric (wetland) soils, hydrophilic (water-loving) vegetation, and wetland hydrology (inundated or saturated during much of the growing season). Wetland types include marshes, swamps, bogs, and fens. Wetlands vary widely due to differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors.[127]

Wetlands are important to the health of waterways and communities that are downstream. Wetlands can be one source of hydrology in downstream watercourses and water bodies, detain floodwaters, recharge groundwater supplies, remove pollution, and provide fish and wildlife habitat. Wetland health also has economic impacts because of their key role in fishing, hunting, agriculture, and recreation. These large infrastructure projects could temporarily or permanently impact wetlands if these features cannot be avoided through project design. During construction, temporary disturbance of soils and vegetative cover could cause sediment to reach wetlands which could in turn affect wetland functionality.

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[125] Application, Section 5.4.5.3.
[126] Id.
[127] USEPA, *What is a Wetland,* (2024), https://www.epa.gov/wetlands/what-wetland.

The applicant assessed the potential for wetlands within the solar farm footprint through a formal wetland delineation in July of 2021. Additional wetland analysis, including wetland mapping and identification, was conducted for this EA using desktop reviews of available resource (i.e., National Wetlands Inventory (NWI) data, DNR Public Waters Inventory, etc.).

A total of 10 wetlands were identified during the field survey for the project using the boundary at that time. Of the 10 delineated wetlands, 6 are now outside of the project area, and 4 are within the proposed project area.[128] Wetlands were further identified to determine type and acreage using NWI data. Wetland types include wet meadow, floodplain forest, and shallow open water/wert meadow.

This EA uses the National Wetland Inventory for Minnesota (NWI-MN) to allow for comparison of wetland type between the Solar Facility Units (**Table 15**). This comparison includes portions of wetlands that have been delineated for this project. The NWI-MN is a publicly available GIS database that provides information on the location and characteristics of wetlands in Minnesota. The inventory is a 2008 update of the USFWS National Wetlands Inventory that was completed for Minnesota in the 1980s. Wetlands listed on the NWI-MN may be inconsistent with local wetland conditions; however, the NWI-MN provides an accurate and readily available database of wetland resources within the land control area that can be used to identify wetlands at the solar facility.[129]

Table 15. NWI-MN Wetlands in Project Footprint[130]

Wetland type	Acres
Wet Meadow	0.351

Northern Crescent Solar contracted with Westwood and completed an onsite wetland delineation in July of 2021 across the entire land control area, and outside the project area, delineating wetlands totaling approximately 2.321 acres. Out of the wetlands delineated, 0.351 acres are within the project area. Correspondence with USACE and Faribault County SWCD occurred to approve wetland delineation and approval that they are not a Water of the United States before the joint site permit application was submitted.[131] **Table 16** summarizes delineated wetlands both within and outside of the project area, which were identified using GIS shapefiles provided from Northern Crescent Solar's joint site permit application.

[128] Application, Section 5.4.5.2.
[129] DNR, *Wetland Finder,* (2024), https://wetland-finder.dnr.state.mn.us/.
[130] DNR, National Wetland Inventory of Minnesota, (2015), https://gisdata.mn.gov/dataset/water-nat-wetlands-inv-2009-2014.
[131] Application, Section 5.4.5.2.

Table 16. Delineated Wetlands

Wetland type	Acres in project area	Total acres delineated
Shallow Open Water/Wet Meadow	0	0.63
Floodplain Forest	0	0.06
Wet Meadow	0.351	1.631
Total	0.351	2.321

POTENTIAL IMPACTS

The NWI-MN mapping identified approximately 34.65 acres Freshwater Emergent wetlands. Northern Crescent Solar's wetland delineation identified approximately 0.351 acres of wetland within the project site, and 1.97 acres of wetland in the nearby area outside of the project.

Although wetlands have been identified within the project area, the preliminary site layout for the solar facility avoids locating solar arrays and associated facilities in wetlands. The wetlands still within project area are along the border of the project area along roadways. There may be potential for temporary, short-term impacts to wetlands that occur during installation of the electrical collection lines and temporary access roads.

MITIGATION

The project site layout has been designed to avoid all wetlands delineated to date. If wetland impacts are required for the final layout, coordination with the appropriate agency, such as the USACE under Section 404 and 401 of the Federal Clean Water Act (CWA) and the Faribault County SWCD under the Minnesota Wetland Conservation Act (WCA), would occur prior to construction. If unavoidable wetland impacts take place, impacts will be replaced in accordance with Section 404 of the Federal CWA and the Minnesota CWA.[132]

Section 4.3.13 of the DSPs (**Appendix C and Appendix D**) generally prohibits placement of the solar energy generating system or associated facilities in public waters and public waters wetlands. The permit condition does allow for electric collector or feeder lines to cross or be placed in public waters or public waters wetlands subject to permits and approvals by the DNR and the USACE, and local units of government as implementers of the WCA.

4.7.6 Vegetation

The ROI for vegetation is the land control area. The solar facility will convert row crop farmland to perennial vegetation for the life of the project. Potential impacts of the solar facility can be mitigated through development of a VMP.

The solar facility is located in the North Central Glaciated Plains, Minnesota River Prairie subsection (251Nb) of the Prairie Parkland Province. Pre-settlement vegetation consisted primarily of tallgrass prairie, with many islands of wetland prairie. Forests of silver maple, elm, cottonwood, and willow

[132] Application 5.4.5.2.

grew on floodplains along the Minnesota River and other streams in the area. Fire was the most common natural disturbance before settlement and has allowed woodlands to develop from what was previously oak openings or brush prairies. Little of the natural vegetation from pre-European settlement is present today, as the current land-use in the project area is predominately.[133]

Potential Impacts

Construction of the solar facility will eliminate vegetative cover and create impermeable surfaces at access roads and inverter skids. Removal of vegetative cover exposes soils and could result in soil erosion. Temporary or permanent removal of vegetation also has the potential to affect wildlife habitat. Agricultural land within the solar facility would be converted to perennial, low growing vegetative cover, resulting in a net increase in vegetative cover for the life of the project. Under the arrays, a mesic grass will primarily be used in areas that won't shade the panels. Native grass-only seed mixes will be used at the solar facility in the corridor areas, depending on drainage. In wetland and stormwater management units, native seed mixes that contain plants well suited for soils frequently becoming saturated will be used.[134] Once established, vegetation would be maintained through periodic mowing and herbicide application.[135]

Construction activities at the solar facility could introduce or spread invasive species and noxious weeds and the early phases of site restoration and seeding of native species can result in populations of non-native and invasive species on site.

Mitigation

Several sections of the DSPs (**Appendix C and Appendix D**) address impacts to vegetation:

- Sections 4.3.17 and 4.3.15 (respectively) require the permittee to develop a VMP in coordination with state agencies and to file the VMP prior to construction. The applicant has prepared a draft VMP as Appendix F of the joint site permit application. The VMP must include the following:
    - Management objectives addressing short term (Year 0-3, seeding and establishment) and long term (Year 4 through the life of the permit) goals.
    - A description of planned restoration and vegetation management activities, including how the site will be prepared, timing of activities, how seeding will occur (broadcast, drilling, etc.), and the types of seed mixes to be used.
    - A description of how the site will be monitored and evaluated to meet management goals.
    - A description of the management tools used to maintain vegetation (e.g., mowing, spot spraying, hand removal, fire, grazing, etc.), including the timing and frequency of maintenance activities.

[133] DNR, *Ecological Classification System: Ecological Land Classification Hierarchy*, (n.d.), https://www.dnr.state.mn.us/ecs/251Ba/index.html.
[134] Application, Appendix F.
[135] Id.

  - Identification of the third-party (e.g., consultant, contractor, site manager, etc.) responsible for restoration, monitoring, and long-term vegetation management of the site.
  - Identification of on-site noxious weeds and invasive species (native and non-native) and the monitoring and management practices to be utilized.
  - A site plan showing how the site will be revegetated and that identifies the corresponding seed mixes. Best management practices should be followed concerning seed mixes, seeding rates, and cover crops.

- Section 4.3.18 of **Appendix C** requires the permittee to develop an AIMP which details methods to minimize soil compaction, preserve topsoil, and establish and maintain appropriate vegetation to ensure the project is designed, constructed, operated, and ultimately restored in a manner that would preserve soils to allow for the land to be returned to agricultural use. Northern Crescent Solar has included a draft AIMP as Appendix E of its joint site application.
- Section 4.3.15 of **Appendix C** requires the permittee to minimize the number of trees removed and to leave existing low growing species in the ROW undisturbed to the extent possible, or to replant to blend in with adjacent areas following construction.

4.7.7 Wildlife and Habitat

The ROI for non-avian wildlife and their habitats is the land control area, the ROI for birds is the local vicinity. Potential impacts may be positive or negative and are species dependent. Long-term, minimal positive impacts to small mammals, insects, snakes, etc. would occur. Impacts to large wildlife species, for example, deer, will be negligible. Significant negative impacts could occur to individuals during construction and operation of the project.

Once restored, the land control area will provide native habitat for the life of the project. The project does not contribute to significant habitat loss or degradation or create new habitat edge effects. The introduction of PV panels and fencing creates the potential for bird collisions and funneling wildlife towards roads in certain areas. Potential impacts can be mitigated in part through design and BMPs. The impact intensity level is expected to be minimal.

The project landscape is dominated by agriculture, also including roads, homes, and farmsteads. Landscape types and vegetation communities vary throughout the local vicinity. Fencerows and woodlots, as well as small pockets of wetlands and grassland, provide habitat for terrestrial and avian wildlife.

Wildlife utilizing the land control area are common species associated with disturbed habitats and are accustomed to human activities (e.g., agricultural activities and road traffic) occurring in the area. Mammals, reptiles, and amphibians are present. These species include raccoon, coyote, red fox, striped skink, white tailed deer, woodchuck, American toad, common garter snake, and the northern leopard frog.

Avian species common to the site include the killdeer, red-winged blackbird, ring-necked pheasant, various small perching birds and common raptors such as a red-tail hawk. There are no Important Bird Areas (IBA) designated by the National Audubon Society within the site; the Upper Minnesota River

Valley IBA is located approximately 30 miles north of the project, and the Des Moines River IBA is located approximately 14 miles southwest of the project.[136]

Potential Impacts

The impact intensity level is expected to be minimal. Impacts could be positive or negative and depend on species type. Potential impacts will be short- and long-term and can be mitigated.

Non-Avian Wildlife Individuals will be displaced to adjacent habitats during construction. Because the project area does not provide critical habitat, this should not impact life cycle functions, for example, nesting. Direct significant impacts to individuals might occur, that is, small species might be crushed or otherwise killed during construction. Population level impacts are not anticipated.

The largest impact to wildlife associated with solar facilities is fencing. Project fencing will be 8 ft-high chain link fences topped with three strands of high-tensile wire. Although deer can jump many fences, they can become tangled in both smooth and barbed-wire fences, especially if the wires are loose or installed too closely together.[137] Predators can use fences to corner and kill prey species.[138]

Plastic erosion control netting is frequently used for erosion control during construction and landscape projects and can negatively impact wildlife populations. Wildlife entanglement and death from plastic netting and other plastic materials has been documented in birds, fish, mammals, and reptiles.[139]

Reduced pesticide use, as compared to agricultural production, has the potential to benefit insects, including pollinators, and smaller wildlife such as rodents, birds, insects, and reptiles.

Birds Bird injuries or mortality may occur due to lack of fencing visibility. Raptors in pursuit of prey may be vulnerable to the nearly invisible wire strands, although other low flying birds such as grouse and owls are also vulnerable to fence collisions.

Risks to birds have been identified near PV solar facilities. Preliminary findings in one report, based on limited data, suspect the danger is this appearance of water causing migrating birds to attempt to land, consequently incurring trauma and related predation.[140]

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[136] Audubon Minnesota, *Minnesota Important Bird Areas*, (n.d.), https://mn.audubon.org/node/4281.

[137] Colorado Division of Wildlife, *Fencing with Wildlife in Mind,* (2009), https://cpw.state.co.us/Documents/LandWater/PrivateLandPrograms/FencingWithWildlifeInMind.pdf.

[138] Huijser, Marcel, et al. *Construction Guidelines for Wildlife Fencing and Associated Escape and Lateral Access Control Measures,* (2015), http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP25-25%2884%29_FR.pdf.

[139] DNR, *Wildlife-friendly Erosion Control*, (2013), http://files.dnr.state.mn.us/eco/nongame/wildlife-friendly-erosion-control.pdf.

[140] USFWS Forensics Lab, *Avian Mortality at Solar Energy Facilities in Southern California*, (2014), http://www.ourenergypolicy.org/wp-content/uploads/2014/04/avian-mortality.pdf.

Habitat There are no DNR WMAs or migratory waterfowl feeding and resting, or USFWS Waterfowl Production areas within one mile of the site. The Prescott WMA is located just southeast of the project site.

Wildlife habitat in the area is currently highly fragmented. The row crop habitat at the solar facility being converted is not crucial to wildlife populations, although the land control area may be used as a travel corridor or, occasionally, as a food source (for example, standing corn). Once restored, the developed area within the solar facility will provide herbaceous cover and native habitat for the life of the project. This change might be attractive to some species, and not others. Fencing will restrict ingress and egress of larger wildlife, and habitat benefits will be limited to small mammals, grassland birds, reptiles, insects, etc. accustomed to human disturbance. Overall, the project does not contribute to significant habitat loss or degradation or create new habitat edge effects.

4.7.7.1 MITIGATION

Several sections of the DSPs (**Appendix C and Appendix D**) specify measures that will minimize impacts to wildlife:

- Section 4.3.16 of **Appendix C** requires use of "site restoration and management practices that provide for native perennial vegetation and foraging habitat beneficial to gamebirds, songbirds, and pollinators".
- Section 4.3.32 of **Appendix C** requires the permittee to coordinate with the DNR to ensure that the fence used in the project minimizes impacts to wildlife.
- Sections 8.14 and 8.13 (respectively) require the permittee to report "any wildlife injuries and fatalities" to the Commission on a quarterly basis.

Other potential mitigation measures include:

- Siting facilities away from wildlife movement corridors can avoid or minimize impacts to wildlife movement.
- Checking open trenches and removing any wildlife caught in trenches before backfilling mitigates impacts.
- Once permanent vegetation is established, restricting mowing from April 15 to August 15 to improve the potential for ground nesting habitat.
- Using less reflective solar panels with white gridding to reduce glare.
- Using biodegradable erosion control materials.

4.7.8 Rare and Unique Resources

The ROI for rare and unique resources is the local vicinity. The impact intensity level is anticipated to be minimal. Impacts could be both short and long term and could be positive (e.g., through introduction of habitat), or negative (e.g., by removing trees during migratory season). Impacts can be mitigated.

Construction and operation of solar facilities may adversely impact rare and unique resources through the taking or displacement of individual plants or animals, invasive species introduction, and habitat loss. Conversely, in some cases solar sites can be managed to provide habitat. For example, the introduction of native vegetation into a landscape otherwise dominated by cultivated row crops could create habitat for pollinators, such as the rusty patched bumble bee.

The Minnesota DNR classifies rare plant or animal communities across the state. These include Scientific and Natural Areas, High Conservation Value Forest, Minnesota Biological Survey (MBS) Native Plant Communities, and MBS Sites of Biodiversity Significance

The Division of Ecological and Water Resources within DNR manages the Natural Heritage Information System (NHIS). The NHIS "provides information on Minnesota's rare plants, animals, native plant communities, and other rare features. The NHIS is continually updated as new information becomes available and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. Its purpose is to foster better understanding and conservation of these features."[141] NHIS data includes federally endangered, threatened, or candidate plant species, and endangered or threatened animal species. The system also includes state endangered, threatened, or special concern species. The NHIS database a source of information, but not the sole source for identifying these resources, as some areas surveys have not been conducted extensively or recently making.

The USFWS provides information for use in National Environmental Policy Act (NEPA) documents, and reviews and provides comments on these documents. Through this process, the USFWS seeks to ensure that impacts to plant and animal resources are adequately described, and necessary mitigation is provided. One such resource is the distribution lists of federally listed threatened, endangered, and candidate species by county.

The EA does not map federal- or state-listed species found in the NHIS database, because DNR requires that public display of NHIS data either mask the identity or location of rare features due to the vulnerability of some species to exploitation. Moreover, the NHIS database masks the occurrence of rare species of by randomly incorporating their location into a larger map polygon.

POTENTIAL IMPACTS

Natural Communities

The MBS systematically collects, interprets, and provides baseline data on the distribution and ecology of rare plants, rare animals, and native plant communities.[142] The MBS uses four classifications denoting the level of biological diversity to rank sites:[143]

- **Below**. Sites lack occurrences of rare species and natural features or do not meet MBS standards for outstanding, high, or moderate rank. These sites may include areas of conservation value at the local level, such as habitat for native plants and animals, corridors for animal movement, buffers surrounding higher- quality natural areas, areas with high potential for restoration of native habitat, or open space.
- **Moderate**. Sites contain occurrences of rare species, moderately disturbed native plant communities, and/or landscapes that have strong potential for recovery of native plant communities and characteristic ecological processes.

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[141] DNR, *Natural Heritage Information System*, (n.d.), http://www.dnr.state.mn.us/nhnrp/nhis.html.
[142] DNR. *Minnesota County Biological Surveys*, (n.d.), http://www.dnr.state.mn.us/eco/mcbs/index.html.
[143] DNR, *Minnesota Biological Survey MBS Site Biodiversity Significance Ranks*, (n.d.), https://www.dnr.state.mn.us/eco/mcbs/biodiversity_guidelines.html.

- **High**. Sites contain very good quality occurrences of the rarest species, high-quality examples of rare native plant communities, and/or important functional landscapes.
- **Outstanding**. Sites contain the best occurrences of the rarest species, the most outstanding examples of the rarest native plant communities, and/or the largest, most ecologically intact or functional landscapes.

There are no MBS sites of moderate, high, or outstanding biodiversity significance within the project area. There is the Prescott WMA located just to the southeast the project, which DNR characterizes as an MBS site of moderate biodiversity significance. There are no native plant community sites within the project area.[144]

Rare Species

Northern Long Eared Bat

The Northern Long Eared Bat (NLEB) is a federally listed species and state listed species of concern. During the winter this species hibernates in caves and mines, and during the active season (approximately April-October) it roosts underneath bark or in cavities or crevices of both live and dead trees. The spread of white-nose syndrome across the eastern United States has become the major threat to the species. Activities that might impact this species include, but are not limited to, any disturbance to hibernacula and destruction or degradation of habitat including tree removal. While the land control area is primarily agricultural lands with little forested habitat, the NLEB is limited to shelterbelts or windbreaks.[145]

Tricolored Bat

The tricolored bat (TCBA), also known as the easter pipistrelle, is proposed for listing under the Endangered Species Act and is a state-listed species of concern. The USFWS proposed listing the species as endangered in September 2022. The species has been found regularly, though in low numbers, in caves and mines int the southeastern part of the state.[146] The species may roost in trees within the site during their active season (April – September).

The USFWS and DNR determined there are no known NLEB or TCBA maternity roost trees or hibernaculum in Faribault County; however, the species may still occur within the project area.[147]

Monarch Butterfly (Danaus plexippus)

The monarch butterfly is a federal candidate species. The species is common throughout Minnesota during summer months and is most frequently found in habitats where milkweed and native plants are common, including roadside ditches, open areas, wet areas, and urban gardens.[148] Due to the agricultural landscape, suitable monarch butterfly habitat is limited in the land control area.

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[144] Application, Section 5.4.6.
[145] DNR, *Rare Species Guide*, (n.d.), https://www.dnr.state.mn.us/rsg/index.html.
[146] Id.
[147] Application, Section 5.4.8.
[148] DNR, *Monarch Butterfly, (n.d.),* https://www.dnr.state.mn.us/insects/monarchbutterfly.html.

Bald Eagles and Golden Eagles

In Minnesota, the bald eagle nesting season is generally January through early July. Bald eagles are primarily found near rivers, lakes, and other waterbodies in remote and, more recently, metropolitan areas.[149]

Bald eagles are afforded additional protections under the Bald and Golden Eagle Protection Act, which is administered by the USFWS. Bald eagle incidental take permits and nest removal permits are considered to be voluntary permits, meaning a project proposer must make the determination to pursue a permit based on the respective risk of their project's potential to take a bald eagle.

Bald eagles typically nest in mature trees near large lakes or streams. Nesting habitat suitable for bald eagles is not present within the project to the west of the project site. The trees that are located within the project area are generally limited to windbreaks around residential housing, making them unsuitable for nesting. Mitigation measure may include setbacks from nests, timing restriction for construction activities, and possibly seeking a USFWS permit for removal of a nest.

MITIGATION

Techniques for minimizing impacts to wildlife and vegetation also minimize impacts to rare species. Avoiding identified areas of species occurrence or preferred habitat is the preferred mitigation measure.

The DSPs (**Appendix C and Appendix D**) propose special conditions related to the NLEB, the TCBA, and the Bald Eagle.

- Section 5.3 requires the permittee to comply with the USFWS guidance and requirements in effect regarding NLEB and TCBA, including tree clearing restrictions if applicable.
- Section 5.4 requires the permittee to file documentation authorizing any Bald Eagle nest removal prior to construction.

4.7.9 Climate Change

The project will help to shift energy production in Minnesota and the upper Midwest toward carbon-free sources. Construction emissions will have a short- term negligible increase in greenhouse gases that contribute to climate change. Overall, the project will generate energy that can be used to displace energy otherwise generated by carbon-fueled sources. The total GHG emissions produced by construction and operation of the project will be minimal when compared to the reduction in GHG emissions long-term. The project's design incorporates design elements that minimize impacts from the increase in extreme weather events such as increase flooding, storms, and heat wave events that are expected to accompany a warming climate.

Climate change refers to any significant change in measures of climate lasting for an extended period. Greenhouse gases (GHG) are gaseous emissions that trap heat in the atmosphere and contribute to climate change. These emissions occur from natural processes and human activities. The most common GHGs emitted from human activities include carbon dioxide, methane, and nitrous oxide. A change in climate can have a wide range of impacts on living species, as well as infrastructure, and

[149] DNR, *Bald Eagles in Summer*, (n.d.), https://www.dnr.state.mn.us/birds/eagles/summer.html.

may create compounding weather related events. An increase of extreme weather events, such as flooding, storms, and heat waves, is expected to accompany a warming climate.

In 2020, the electricity sector was the third largest source of Minnesota GHG emissions at 26,179,328 million tons of 137,238,222 tons, or 19.1%.[150] GHG from electricity generation have decreased by about 54% in Minnesota since 2005 due to a shift in generation to lower- and non-emitting sources and an increase in end-use energy efficiency.[151]

POTENTIAL IMPACTS

General

The DNR Minnesota Climate Explorer Tool was used to determine current climate conditions for Faribault County.[152] Annual average temperature trends show a temperature increase of 0.23 °F per decade from 1895 to the present, and 1.32 °F per decade from 1970 to present. For precipitation, total annual precipitation has increased at a rate of 0.1 inches per decade from 1895 to present.

The DNR Minnesota Climate Explorer tool was also used to project climate conditions for Faribault County. Temperature models were created to project climate data for two scenarios, Representative Concentration Pathway (RCP) 4.5 and RCP 8.5. RCP is a measure adopted by the Intergovernmental Panel on Climate Change to represent various GHG concentration pathways. The numbers (i.e., 4.5 and 8.5) represent the amount of net radiative forcing the earth receives in watts per meter squared, where a higher RCP signifies a more intense GHG effect resulting in a higher level of warming. RCP 4.5 represents an intermediate scenario where emissions begin to decrease around 2040 and RCP 8.5 represents a scenario with no emissions reductions through 2100.[153]

The climate models predict that under RCP 4.5, the average temperature for Faribault County is projected to increase by approximately 4 °F by Mid-Century (2040 to 2059) compared to current conditions (1980 to 1999). Late-Century (2080-2099) air temperature is projected to increase by approximately 6 °F for RCP 4.5, and approximately 11 °F for RCP 8.5. Mid-Century annual precipitation is projected to decrease by approximately 0.5 inches for RCP 4.5. Late-Century annual precipitation is projected to be approximately the same as current conditions for RCP 4.5, and increase approximately 0.1 inches for RCP 8.5.

Greenhouse gases

Construction activities will result in short-term increases in GHG emissions from the combustion of fossil fuels in construction equipment and vehicles. The project's construction emissions are an

[150] MPCA, *Greenhouse gas emissions data*, (2024), https://data.pca.state.mn.us/views/Greenhousegasemissionsdata/GHGsummarystory?%3Aembed=y&%3AisGuestRedirectFromVizportal=y.
[151] Id.
[152] DNR, *Minnesota Climate Explorer*, (n.d.), https://arcgis.dnr.state.mn.us/climateexplorer/main/historical.
[153] Noe, Ryan R; Keeler, Bonnie L; Twine, Tracy E; Brauman, Kate A; Mayer, Terin; Rogers, Maggie, *Climate change projections for improved management of infrastructure, industry, and water resources in Minnesota*, (2019), https://hdl.handle.net/11299/209130.

insignificant amount relative to Minnesota's overall emissions of approximately 137 million tons in 2020.[154] Potential impacts due to construction GHG emissions are anticipated to be negligible.

Other GHG emissions will be created by land use change from the loss of existing natural carbon sinks in the area. Once operational, the project will generate minimal GHG emissions. Emissions that do occur would result from vehicle usage to and from the solar array and substation for maintenance and operation of the substation and switchyard. GHG emissions for project construction is expected to be 7,940.14 short tons of CO_2 and operations are estimated to be approximately 18.5 short tons of CO_2 annually. The majority of land-use emissions will occur during construction due to the change from cropland and wetlands to settlement, however the establishment of perennial vegetation reduce this impact.

If electrical energy from the project displaces energy that would otherwise be generated by carbon-fueled power plants (e.g., coal, natural gas), the project could reduce GHG by approximately 262,228 metric tons of CO_2 equivalent annually. Thus, compared to non-renewable energy generation, the project would be beneficial with respect to GHG emissions. Total GHG emissions resulting from construction and operation of the project are anticipated to be minimal when compared to the long-term reduction in GHG emissions facilitated by the project.

Climate and weather

Tree and vegetation loss from construction could eliminate related climate resilience benefits, leading to more intense runoff during storms or flooding (thus increasing erosion and reducing water retention), increased heat extremes, and potential reductions in air quality. Removal of or impacts to wetlands due to construction eliminates the ability for the land to retain and absorb stormwater, leading to more intense stormwater runoff and nutrient loading. Revegetation is expected to offset effects, therefore impacts should be temporary and minimal.

A warming climate is expected to cause increased flooding, storms, and heat wave events. These events, especially an increased number and intensity of storms, could increase risks to the project. More extreme storms also mean more frequent heavy rainfall events, which can cause localized soil erosion or flooding. Flooding could damage the project's electrical collection system including inverters and collection wiring. Climate and weather impacts are considered in the design of the facility and include impacts from extreme storms such as stormwater runoff, strong winds and hail. Based on local hydrology and topography, there is potential for soils to become rutted due to increased rain events. Rainfall infiltration is calculated to increase once the project is completed. However, native perennial vegetation will replace seasonal row crops across most of the site, creating deep root systems that are able to improve water infiltration and mitigate stormwater runoff.

The FEMA National Risk Index[155] rates Faribault County as having "relatively low" risk for hail. The solar panel modules selected for the project are designed to withstand wind and hail events. The tracking systems are also designed to automatically stow the panels in the safest position based

[154] MPCA, *Greenhouse gas emissions data,* (2024), https://data.pca.state.mn.us/views/Greenhousegasemissionsdata/GHGsummarystory?%3Aembed=y&%3AisGuestRedirectFromVizportal=y.

[155] FEMA, *National Risk Index*, (n.d.), https://hazards.fema.gov/nri/.

on the weather conditions (wind, hail, flooding, deep snow, etc.). For example, panels are stowed in a nearly vertical position during hail events by re-orienting the trackers, which limits direct impacts between hailstones and the panels.

MITIGATION

Mitigation to reduce emissions during construction is discussed in the Air Quality section of this EA. Strategies to reduce emissions include keeping vehicles in good working order, which will reduce the amount GHG emissions from diesel or gasoline.

Project developers can employ location, design, and construction strategies to mitigate impacts resulting from a warmer, wetter, and more energetic climate by:

- Avoiding sites with high probability for extreme weather events to the extent possible.
- Designing solar panels and solar arrays to withstand stronger storms and winds.
- Planning for the potential repair and replacement of solar arrays damaged by storms.
- Designing the project's stormwater system to prevent flooding during heavy rainfall events.
- Designing the project's electrical collection system to be resistant to flooding damage.

Northern Crescent Solar states that erosion during construction activities will be minimized through the implementation of the SWPPP. This will assist in mitigating the additional erosion impacts due to the anticipated increase in 100-year storm intensity.

4.8 Unavoidable Impacts

Resource impacts are unavoidable when an impact cannot be avoided even with mitigation strategies.

Potential impacts and the possible ways to mitigate against them are discussed in this chapter. However, even with mitigation strategies, certain impacts cannot be avoided. Most adverse unavoidable impacts are associated with construction; therefore, they would be temporary.

Unavoidable adverse effects associated with construction of the project (in some instances a specific phase of construction) would last through construction and include:

- Fugitive dust.
- Noise disturbance to nearby residents and recreationalists.
- Visual disturbance to nearby residents and recreationalists.
- Soil compaction and erosion.
- Vegetative clearing (loss of shelter belts).
- Disturbance and temporary displacement of wildlife, as well as direct impacts to wildlife inadvertently struck or crushed.
- Minor amounts of marginal habitat loss.
- Possible traffic delays.
- Minor GHG emissions from construction equipment and workers commuting.

Unavoidable adverse impacts associated with the operation would last as long as the life of the project, and include:

- Visual impacts of the project.
- Cultural impacts due to a change in the sense of place for local residents.
- Loss of land for agricultural purposes.
- Injury or death of birds that collide with PV panels.
- Injury or death of birds and mammals from fencing.

4.9 Irretrievable or Irreversible Impacts

Resource commitments are irreversible when it is impossible or very difficult to redirect that resource to a different future use; an irretrievable commitment of resources means the resource is not recoverable for later use by future generations.

Irreversible and irretrievable resource commitments are primarily related to project construction, including the use of water, aggregate, hydrocarbons, steel, concrete, wood, and other consumable resources. Some, like fossil fuel use, are irretrievable. Others, like water use, are irreversible. Still others might be recyclable in part, for example, the raw materials used to construct PV panels would be an irretrievable commitment of resources, excluding those materials that may be recycled at the end of the panels' useful life. The commitment of labor and fiscal resources to develop, construct, and operate the project is considered irretrievable.

4.10 Resource Topics Receiving Abbreviated Analysis

Resource topics that will have negligible impacts from the project and that do not impact the Commission's site permit decision receive less study and analysis.

Many environmental factors and associated impacts from a project are analyzed during the environmental review process. However, if impacts are negligible and will not impact the permit decision, those resource impacts receive less study and analysis. The following resource topics meet this threshold, which is based on information provided by the applicant, field visits, scoping comments, environmental analysis, and staff experience with similar projects.

4.10.1 Displacement

Displacement can occur when residences or other buildings are located within a proposed site or right-of-way. If the buildings would potentially interfere with the safe operation of a project, they are typically removed from the site or ROW and relocated. Displacements from large energy facilities are rare and are more likely to occur in heavily populated areas where avoiding all residences and businesses is not always feasible than in rural areas where there is more room to adjust site boundaries or ROWs to accommodate the proposed energy facility.

There are no residences, business, or structures such as barns or sheds located within the preliminary development area, and none will be displaced by the project. No mitigation is proposed.

4.10.2 Communications

Electronic interference from the proposed project is not anticipated. The project area is served by about 39 AM and FM radio stations and 25 digital television channels that can be received in the project area. There are no radio, microwave, or television towers located within the boundary of the

solar facility. The nearest television broadcast tower is 22 miles southwest of the project area. There are no cell phone towers located within one mile of the project area. There is one FCC licensed antenna structure to the west of U.S. Highway 169 within one mile of the project area.

Because the solar facilities are relatively low (less than 20 feet tall), they are well below the line of site used in many communication system signals. Electronic interference associated with communications infrastructure is related to a phenomenon known as corona. Impacts are not expected, because anticipated electric fields are below levels expected to produce significant levels of corona. Additionally, the Gen-Tie line that is proposed will not exceed the height of the transmission lines already existing in the area.

The DSPs, Section 4.3.24 of **Appendix C** and Section 4.3.21 of **Appendix D**, require the permittee to take whatever action is feasible to restore or provide equivalent reception should interference occur to "radio or television, satellite, wireless internet, GPS-based agriculture navigation systems or other communication devices" as a result of the project. Additional mitigation is not proposed.

4.10.3 Implantable Medical Devices

Electromagnetic fields (EMF) might interfere with implantable electromechanical medical devices, such as pacemakers, defibrillators, neurostimulators, and insulin pumps. Impacts to implantable medical devices and persons using these devices are not expected to occur, but, if they did occur, moving away from the project would return the pacemaker to normal operation. Section 4.3.30 of **Appendix C** and Section 4.3.27 of **Appendix D** require the permittee to provide educational materials about the project to adjacent landowners. Additional mitigation is not proposed.

4.10.4 Forestry

Active forestry operations, including commercial timber harvest, woodlots, or other forestry resources do not occur within the land control area. Impacts to forestry operations will not occur.

4.10.5 Mining

There are no gravel pits within the area of land control. The closest gravel pits are located approximately two miles west and southwest from the project site.

Construction of the project will require the use of sand and aggregate for backfill and access roads. The demand for sand and gravel will be temporary and is not expected to require new or expanded sand or aggregate operations.

Impacts to mining will not occur and no mitigation is proposed.

4.11 Cumulative Potential Effects

Cumulative potential effects result from the incremental effects of a project in addition to other projects in the environmentally relevant area.

Minnesota Rule 4410.0200, subpart 11a, defines "cumulative potential effects," in part, as the "effect on the environment that results from the incremental effects of a project in addition to other projects in the environmentally relevant area that might reasonably be expected to affect the same

environmental resources, including future projects ... regardless of what person undertakes the other projects or what jurisdictions have authority over the project."

The "environmentally relevant area" includes locations where the potential effects of the project coincide with the potential effects of other projects to impact the elements studied in this EA.

Consideration of cumulative potential effects is intended to aid decision-makers so that they do not make decisions about a specific project in a vacuum. Effects that may be minimal in the context of a single project may accumulate and become significant when all projects are considered.

4.11.1 Analysis Background

The ROI for cumulative potential effects varies across elements and is consistent with the ROI identified in potential impacts and mitigation throughout this document. Cumulative potential effects—where they coincide—increase or decrease the breadth of the impact to the resources and elements studied in potential impacts and mitigation. This may or may not change the impact intensity level assigned to the resource or element.

Cumulative potential effects are impacts to the environment that results from "the incremental effects of a project in addition to other projects in the environmentally relevant area that might reasonably be expected to affect the same environmental resources, including future projects actually planned or for which a basis of expectation has been laid, regardless of what person undertakes the other projects or what jurisdictions have authority over the projects."[156]

The "environmentally relevant area" includes locations where the potential effects of the project coincide with the potential effects of other projects to impact the elements studied in this EA. Generally, this area includes the ROI for the different resource elements.

The Faribault County website and MnDOT District 7 projects were reviewed, but they did not reveal any projects proposed within the area and time of the proposed project. No other tentative projects within the area have been identified.[157]

Cumulative effects are discussed here for projects that are reasonably foreseeable in the next five years in the project area. It is assumed that the construction-related impacts of these projects are short-term, for example, construction impacts will cause local disturbances, such as increased noise levels, and traffic delays/and reroutes. Thus, the discussion here is focused on the potential long-term impacts of these projects.

Where cumulative effects are anticipated, a written description is provided. Where cumulative potential effects are not anticipated no further analysis is provided. For the purposes of this EA, actions that have occurred in the past and their associated impacts are considered part of the existing environmental and were analyzed in this section.

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[156] Minnesota Rules 4410.0200, subp. 11a.
[157] Application, Section 5.6

4.11.2 Human Settlement

Cumulative potential effects on human settlements are anticipated to be moderate. The anticipated transportation projects are largely improvements in existing roadways, so aesthetic impacts are anticipated to be minimal.

4.11.3 Public Health and Safety

Cumulative potential effects on public health and safety are anticipated to be minimal to slightly positive. Impacts on public health and safety as a result of the Northern Crescent Soar project are anticipated to be minimal (**Section 4.4.2**).

4.11.4 Land-based Economies

Cumulative potential effects on land-based economies are anticipated to be minimal. The project area is within largely agricultural land, and there are no anticipated land-based projects planned in the community outside of the Northern Crescent Solar project.

4.11.5 Archaeological and Historical Resources

Because archaeological resources are unidentified, cumulative potential effects are unknown. With proper mitigation measures, impacts to these resources can be minimized.

4.11.6 Natural Resources

Cumulative potential effects on the natural environment are anticipated to be minimal to moderate. The only foreseeable projects are along roadways resulting in minimal loss of high-quality habitat. Impacts are limited along roadways by the use of existing infrastructure ROW. Wildlife might be inadvertently harmed or killed during construction. Potential impacts can be mitigated. The overall impact intensity level is expected to remain minimal.

4.11.7 Rare and Unique Resources

Cumulative potential effects on rare and unique natural resources are uncertain. There are relatively few rare and unique species in the project area (**Section 4.7.8**). As the identified projects are improvements are along existing roadways, these areas generally do not provide habitat for rare and unique species, nor do they typically support rare communities.

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Appendix A

Scoping Decision

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COMMERCE DEPARTMENT

In the Matter of the Joint Application of Northern Crescent Solar LLC for a Solar Energy Generating System Site Permit and Battery Energy Storage System Site Permit for the up to 150 MW Northern Crescent Solar and Storage Project in Faribault County, Minnesota

ENVIRONMENTAL ASSESSMENT SCOPING DECISION

DOCKET NOs. IP-7135/GS-22-57 and ESS-24-238

The above matter has come before the Commissioner of the Department of Commerce (Department) for a decision on the scope of the environmental assessment (EA) to be prepared Northern Crescent Solar LLC's proposed 150 megawatt (MW) solar energy and storage project in Verona and Prescott Townships, Faribault County, Minnesota.

Project Description

On August 14, 2024, Primergy Solar Acquisitions, LLC, dba Northern Crescent, LLC (Primergy or applicant) submitted a joint site permit application to the Minnesota Public Utilities Commission (Commission) to construct the Northern Crescent Solar Project – an up to 150 MW alternating current photovoltaic solar energy generating facility and associated 50 MW alternating current battery energy storage system.[1]

The project will occupy approximately 929 acres in a project area of 1,179 acres in Verona and Prescott Townships, southeast of the city of Winnebago, Minnesota. The project will use photovoltaic solar panels mounted on single axis tracking systems. Underground collection cables will gather and send the electric power generated by the solar panels to a project substation. The substation will interconnect with the electrical grid via a new switchyard and an overhead generation tie transmission line. The project will include associated facilities, such as, security fencing, access roads, a supervisory control and data acquisition system, stormwater basins, and an operation and maintenance facility.[2]

The project substation and Xcel switchyard will be constructed in close proximity to each other, and will interconnect to the existing Huntley – Blue Earth 161 kV high voltage transmission line. The land or land rights needed for the Xcel switchyard and interconnection to the grid will be acquired or secured by Northern Crescent Solar and be conveyed to Xcel Energy. Xcel Energy will be responsible for the design, engineering, permitting, construction, and operation of the switchyard.[3]

Primergy indicated a generator interconnection agreement (GIA) from Midcontinent Independent System Operator (MISO) will be needed to connect to the electrical transmission system. The applicant submitted an interconnection request through the MISO definitive planning phase study process in 2020, and a GIA is expected to be in place by the second half of 2024.[4]

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[1] Northern Crescent Solar, LLC. August 18, 2024. Joint Site Permit Application, eDocket Nos. 20248-209500-01 (through -20), 20248-209501-01 (through -20), 20248-209502-01 (through -16), 20248-209503-01 (through -08) (hereinafter "Application").

[2] Joint Site Permit Application, Section 2.3.1

[3] Joint Site Permit Application, Section 2.3.2

[4] Id.

Project Purpose

Primergy indicates that the project will assist the State of Minnesota in meeting its renewable energy objectives, diversify electricity sources, meet anticipated growth in electricity demand, and meet consumers' growing demand for renewable energy. The project is expected to positively impact the electric grid by providing 50 MW of energy storage capacity, thus allowing output timing to the grid to shift from peak solar generation to peak electric demand. Primergy is working to secure a power purchase agreement, build transfer agreement, development transfer agreement, or other enforceable offtake agreements to sell the generated electricity. The power generated at the facility will be offer for sale to wholesale customers (e.g., Minnesota utilities and cooperatives) and commercial and industrial customers.[5]

Regulatory Background

In Minnesota, no person may construct a large electric power generating plant without a site permit from the Commission.[6] A large electric power generating plant is defined as a facility capable of operating at a capacity of 50 MW or more.[7] The Northern Crescent project will be capable of producing up to 150 MW and therefore requires a site permit from the Commission. Because the project is powered by solar energy, the site permit application qualifies for Commission review under the alternative permitting process described in Minnesota Statute 216E.04, Subd. 2.

As Primergy is an independent power producer, a certificate of need (CN) is not required for the project. The project is exempt under Minnesota Statute 216B.243, subd. 8(a)(8), which provides that a CN is not required for a "solar energy generating system, as defined in section 216E.01, subdivision 9a, for which a site permit application is submitted by an independent power producer under chapter 216E."[8]

Department of Commerce, Energy Environmental Review and Analysis (EERA) staff is responsible for conducting environmental review for site permit applications submitted to the Commission.[9] EERA staff will prepare an environmental assessment (EA) for the project. An EA contains an overview of the resources affected by the project. It also discusses potential human and environmental impacts and possible mitigation measures.[10] Under the alternative permitting process, an EA is the only required state environmental review document.

Scoping Process

Scoping is the first step in the environmental review process. The scoping process has two primary purposes: (1) to gather public input as to the impacts and mitigation measures to study in the EA and (2) to focus the EA on those impacts and mitigation measures that will aid in the Commission's decision on the site permit application.

Staff use the information gathered during scoping to inform the content of the EA. EERA staff gathered input on the scope of the EA through public meetings and an associated comment period. This scoping decision identifies the impacts and mitigation measures that will be analyzed in the EA.

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[5] Joint Site Permit Application, Section 1.1
[6] Minnesota Statute 216E.03.
[7] Minnesota Statute 216E.01.
[8] Minnesota Statute 216B.243, Subd. 8(a)(8)
[9] Minnesota Rule 7850.3700.
[10] Minnesota Statute 216E.04, subd. 5; Minn. Rule 7850.3700, subp. 4.

Public Information and Scoping Meetings

On October 8, 2024, Commission and EERA staff jointly held a public meeting in Blue Earth, Minnesota. Approximately 11 people attended this meeting; one attendee provided public comment expressing approval of the project and the benefits it has for local workers.[11] The following evening, October 9, 2024, Commission and EERA staff held a remote-access public meeting. One individual from the public attended this meeting, and there were no comments.

Written Public Comments

A comment period ending on October 25, 2024, provided the public with an opportunity to provide input on the scope of the EA. Two written comments were received, both from state agencies.

The Minnesota Department of Transportation (MnDOT) commented on potential environmental impacts near Highway US 169 and noted an expectation for the applicant to coordinate with MnDOT staff.[12]

The Minnesota Department of Natural Resources made comments on certain issues related to equipment used for the project as well as environmental mitigations for construction and operation procedures.[13]

HAVING REVIEWED THE MATTER, consulted with EERA staff, and in accordance with Minnesota Rule 7850.3700, I hereby make the following scoping decision:

MATTERS TO BE ADDRESSED

The EA will describe the project and the human and environmental resources of the project area. It will provide information on the potential impacts of the project as they relate to the topics outlined in this scoping decision and possible mitigation measures. It will identify impacts that cannot be avoided and irretrievable commitments of resources, as well as permits from other government entities that may be required for the project. The EA will discuss the relative merits of the proposed project site with respect to the siting factors in Minnesota Rule 7850.4100.

The issues outlined below will be analyzed in the EA for the project. This outline is not intended to serve as a table of contents for the document itself.

I. GENERAL DESCRIPTION OF THE PROJECT

A. Project Description
B. Project Purpose
C. Project Costs

[11] Northern Crescent Solar Project, Oral Comments on the Scope of Environmental Assessment, eDockets Number 202411-211652-02

[12] Minnesota Department of Transportation, Comments on the Scope of Environmental Assessment, eDockets number 202410-211284-01

[13] Minnesota Department of Natural Resources, Comments on the Scope of Environmental Assessment, eDockets number 202410-211343-01

II. REGULATORY FRAMEWORK

A. Site Permit
B. Environmental Review
C. Grid Interconnection
D. Other Permits and Approvals

III. ENGINEERING, DESIGN, AND CONSTRUCTION

A. Solar Arrays
B. Electrical Collection Systems
C. Battery Energy Storage System
D. Substation
E. Associated Facilities

IV. OPERATION AND DECOMMISSIONING

A. Maintenance
B. Vegetation Management
C. Repowering and Decommissioning

V. AFFECTED ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATIVE MEASURES

The EA will include a discussion of the human and environmental resources potentially impacted by the project. Potential impacts of the project will be described and characterized. Based on the impacts identified, the EA will describe mitigation measures that could reasonably be implemented to reduce or eliminate the identified impacts. The EA will describe any unavoidable impacts resulting from implementation of the project.

Data and analyses will be commensurate with the level of impact for a given resource and the relevance of the information to consider mitigation measures. EERA staff will consider the relationship between the cost of data and analyses and the relevance and importance of the information in determining the level of detail of information to be prepared for the EA. Less important material may be summarized, consolidated, or simply referenced.

If relevant information cannot be obtained within timelines prescribed by statute and rule, the costs of obtaining such information is excessive, or the means to obtain it is unknown, EERA staff will include in the EA a statement that such information is incomplete or unavailable and the relevance of the information in evaluating potential impacts or alternatives.

A. Environmental Setting
B. Human Settlements
    1. Noise
    2. Aesthetics
    3. Displacement
    4. Property Values
    5. Zoning and Land Use Compatibility
    6. Cultural Values
    7. Transportation and Public Services
C. Socioeconomics
    1. Environmental Justice

2. Local Economies

D. Public Health and Safety
   1. Electric and Magnetic Fields
   2. Emergency Services
E. Land Based Economies
   1. Agriculture
   2. Forestry
   3. Mining
   4. Recreation and Tourism
F. Archaeological and Historic Resources
G. Natural Environment
   1. Water Resources
   2. Soils
   3. Geology
   4. Flora
   5. Fauna
   6. Air Quality
   7. Climate Change / Climate Resiliency
H. Threatened / Endangered / Rare and Unique Natural Resources
I. Electric System Reliability
J. Adverse Impacts that Cannot be Avoided
K. Irreversible and Irretrievable Commitments of Resources

ISSUES OUTSIDE THE SCOPE OF THE EA

The EA will not address following topics:

- Any site other than the project site proposed by the applicant.
- The manner in which landowners are compensated for the project.

SCHEDULE

The EA is anticipated to be completed and available in February 2025. Public hearings will be held in the project area after issuance of the EA. Comments on the EA may be submitted into the hearing record.

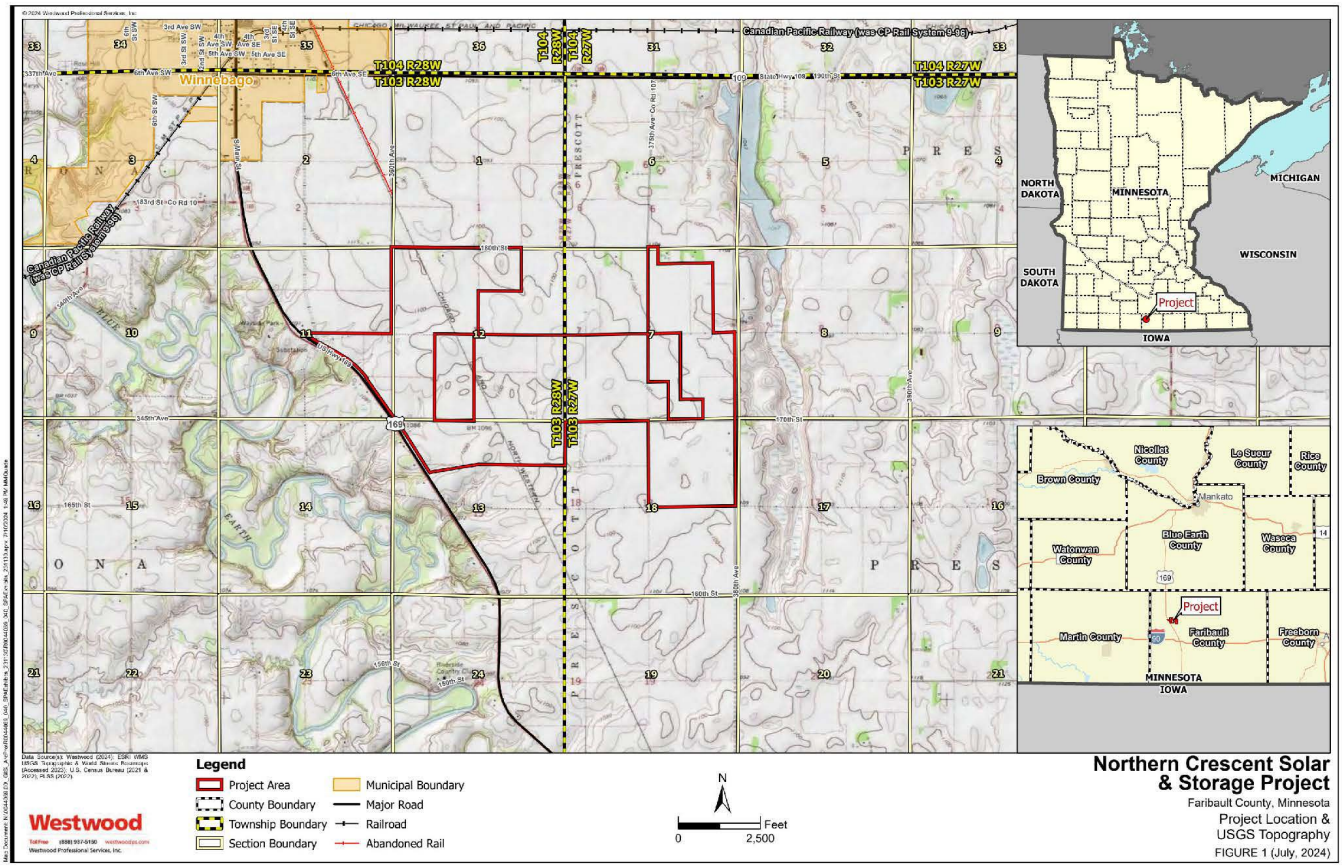
Signed this 13th day of November, 2024

STATE OF MINNESOTA
DEPARTMENT OF COMMERCE

_____

Peter Wyckoff, Deputy Commissioner

Northern Crescent Solar and Storage Project Overview Map



Appendix B

Maps

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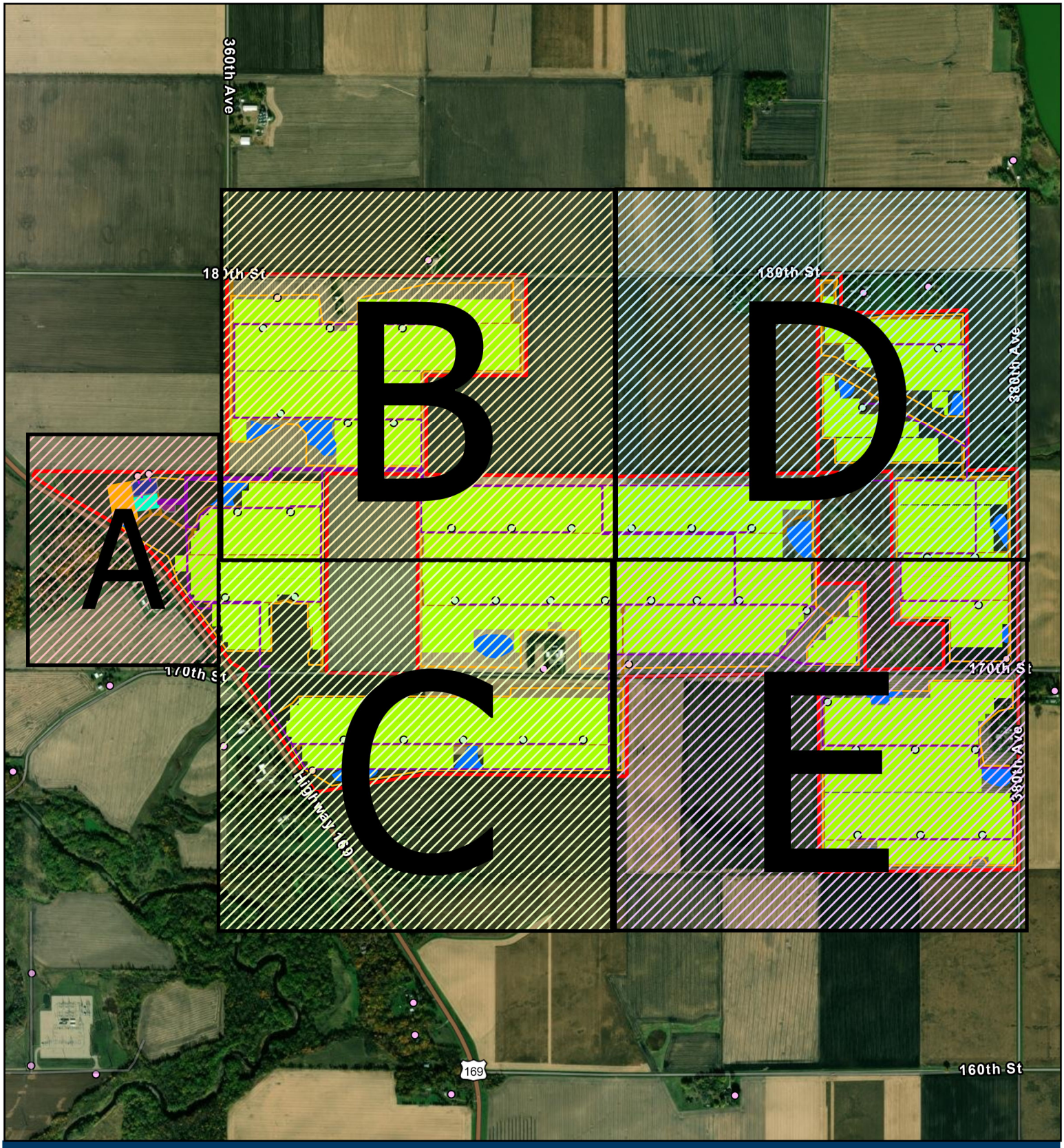

Northern Crescent Detail Map | Overview

- Weather Station
- Point of Interconnection
- Inverters Skid Point
- Underground Collection Line
- Overhead Lines
- Xcel Switchyard
- Stormwater Basin
- Project Substation
- Preliminary Development Fence Area
- O&M Facility
- Inverters
- BESS Facility
- Solar Array Rack
- Access Road
- Project Area

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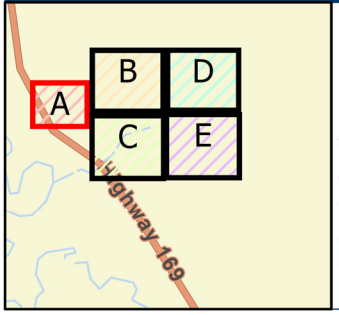
COMMERCE DEPARTMENT

Northern Crescent Detail Map | A



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- Project Area

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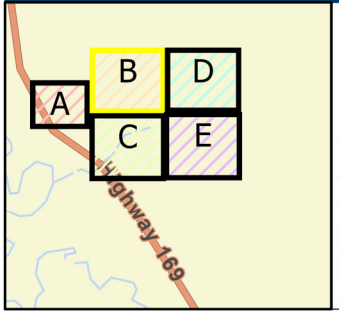
Northern Crescent Detail Map | B



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- BESS Facility
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- Project Area

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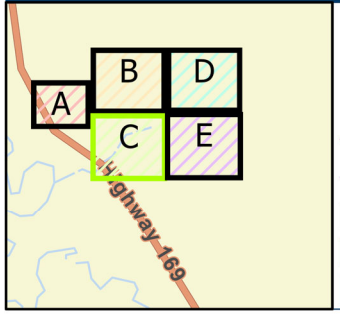
Northern Crescent Detail Map | C



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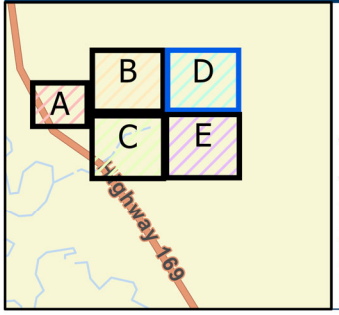
Northern Crescent Detail Map | D



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- O&M Facility
- Inverters
- BESS Facility
- Solar Array Rack
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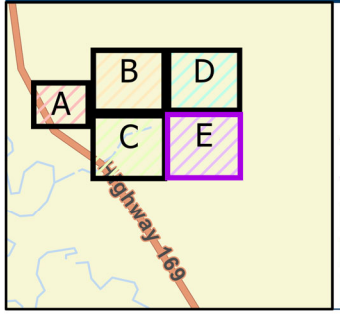
Northern Crescent Detail Map | E



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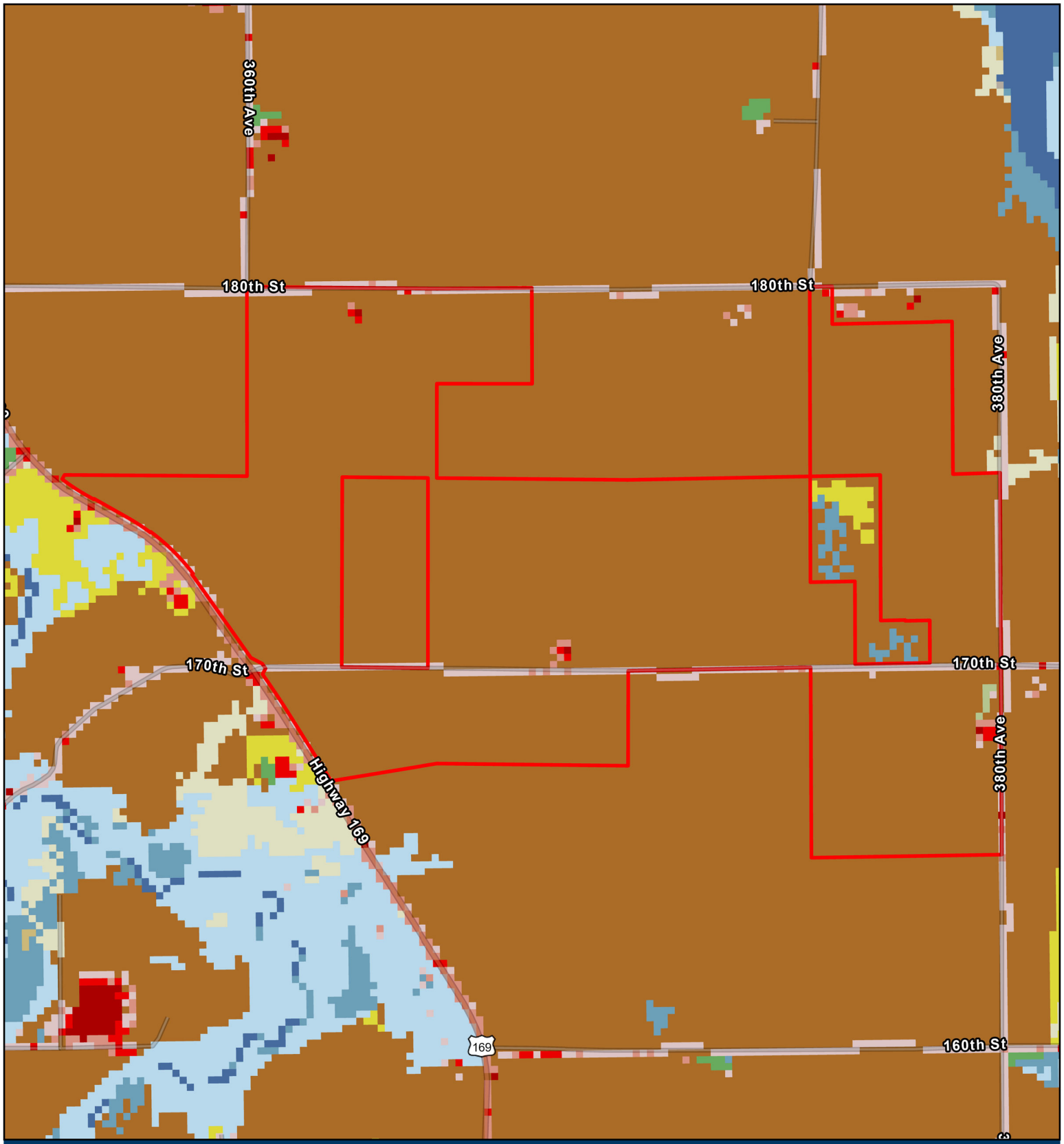

Northern Crescent Land Cover

- Project Area
- Unclassified
- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Herbaceous
- Hay/Pasture
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

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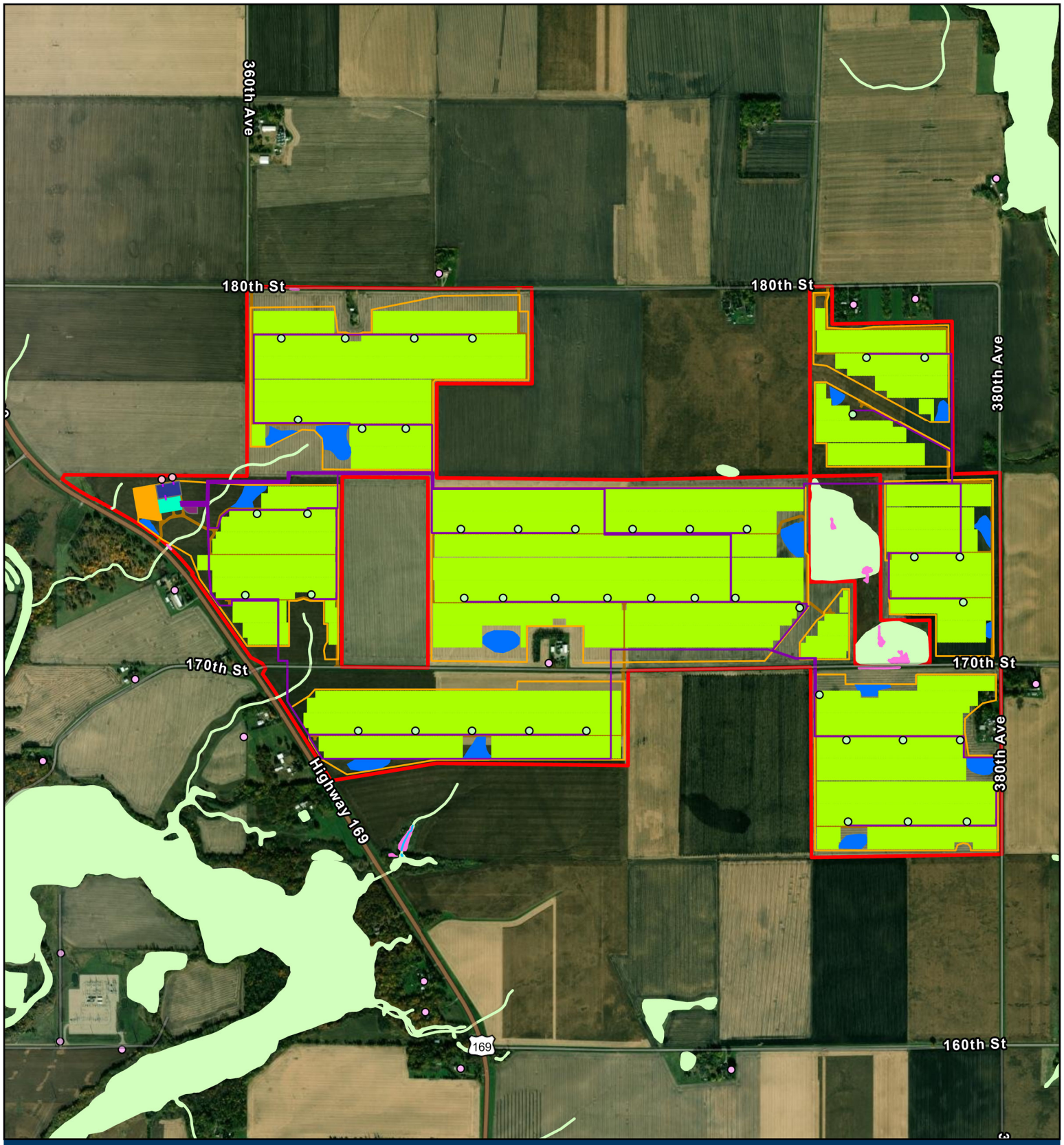

Northern Crescent Water Resources

- Water Well
- Point of Interconnection
- Inverters Skid Point
- Underground Collection Line
- Overhead Lines
- NWI Wetland
- Field Delineated Wetland
- Field Delineated Waterway
- Xcel Switchyard
- Stormwater Basin
- Project Substation
- Preliminary Development Fence Area
- O&M Facility
- Inverters
- BESS Facility
- Solar Array Rack
- Access Road
- Project Area

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COMMERCE DEPARTMENT

Appendix C

Proposed Solar Energy Draft Site Permit

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STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

SITE PERMIT FOR
~~[PROJECT NAME]~~NORTHERN CRESCENT SOLAR AND STORAGE PROJECT

A SOLAR ENERGY GENERATING SYSTEM

IN
~~[COUNTY]~~FARIBAULT COUNTY

ISSUED TO
~~[PERMITTEE]~~Primergy (Northern Crescent) Solar, LLC

PUC DOCKET NO. ~~[Docket Number]~~IP-7135/GS-22-57

In accordance with the requirements of Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850 this site permit is hereby issued to:

~~[Permittee]~~Primergy (Northern Crescent) Solar, LLC

~~[Permittee]~~Primergy (Northern Crescent) Solar, LLC is authorized by this site permit to construct and operate ~~[Provide a description of the project authorized by the Minnesota Public Utilities Commission]~~the Northern Crescent Solar Project, an up to 150 megawatt solar energy generating system located in Faribault County, Minnesota.

The solar energy generating system shall be constructed and operated within the site identified in this site permit and in compliance with the conditions specified in this site permit.

This site permit shall expire ~~[xx]~~30 years from the date of this approval.

Approved and adopted this ____ day of [Month, Year]

BY ORDER OF THE COMMISSION

_____
Will Seuffert,
Executive Secretary

To request this document in another format such as large print or audio, call 651-296-0406 or 800-657-3782 (voice). Persons with a hearing or speech impairment may call using their preferred Telecommunications Relay Service or email consumer.puc@state.mn.us for assistance.

CONTENTS

ATTACHMENTS

~~**SAMPLE PERMIT** [Project Name and PUC Docket No.]~~Proposed Draft Site Permit – Northern Crescent Solar Project – IP-7135/GS-22-57

1 SITE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this site permit to ~~[Permittee Name]~~Primergy (Northern Crescent) Solar, LLC (Permittee) pursuant to Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850. This site permit authorizes the Permittee to construct and operate ~~a [Provide a description of the project as authorized by the Commission]~~ an up to 150 megawatt solar energy generating system located in Faribault County, Minnesota(~~[Project Name, if applicable]~~Northern Crescent Solar Project, henceforth known as Project). The solar energy generating system shall be constructed and operated within the site identified in this site permit and in compliance with the conditions specified in this site permit.

1.1 Pre-emption

Pursuant to Minn. Stat. § 216E.10, this site permit shall be the sole site approval required for the location, construction, and operation of the solar energy generating system and this site permit shall supersede and preempt all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local and special purpose governments.

2 PROJECT DESCRIPTION

~~[Provide a description of the Project as authorized by the Commission]~~The Northern Crescent Solar Project – an up to 150 MW alternating current photovoltaic solar energy generating facility and associated 50 MW alternating current battery energy storage system. The project will occupy approximately 929 acres in a project area of 1,179 acres in Verona and Prescott Townships, southeast of the city of Winnebago, Minnesota. The project will use photovoltaic solar panels mounted on single axis tracking systems. Underground collection cables will gather and send the electric power generated by the solar panels to a project substation. The substation will interconnect with the electrical grid via a new switchyard and an overhead generation tie transmission line. The project will include associated facilities, such as, security fencing, access roads, a supervisory control and data acquisition system, stormwater basins, and an operation and maintenance facility.

The project substation and Xcel switchyard will be constructed in close proximity to each other, and will interconnect to the existing Huntley – Blue Earth 161 kV high voltage transmission line. The land or land rights needed for the Xcel switchyard and interconnection to the grid will be acquired or secured by Northern Crescent Solar and be conveyed to Xcel Energy. Xcel Energy will be responsible for the design, engineering, permitting, construction, and operation of the switchyard.

The Project is located in the following:

County	Township Name	Township	Range	Section
Faribault	Verona	103N	28W	11, 12, 13

Faribault	Prescott	103N	27W	7, 18

2.1 Project Ownership

At least 14 days prior to the pre-construction meeting, the Permittee shall file a description of its ownership structure, identifying, as applicable:

(a) the owner(s) of the financial and governance interests of the Permittee;
(b) the owner(s) of the majority financial and governance interests of the Permittee's owners; and
(c) the Permittee's ultimate parent entity (meaning the entity which is not controlled by any other entity).

The Permittee shall notify the Commission of:

(a) a change in the owner(s) of the majority* financial or governance interests in the Permittee; or
(b) a change in the owner(s) of the majority* financial or governance interests of the Permittee's owners; or
(c) a sale which changes the ultimate parent entity of the Permittee

* When there are only co-equal 50/50 percent interests, any change shall be considered a change in majority interest.

Also, in the event of an ownership change, the new Permittee must provide the Commission with a certification that it has read, understands and is able to comply with the conditions of this permit.

3 DESIGNATED SITE

The site designated by the Commission for the Project is depicted on the site maps attached to this site permit (Designated Site). The site maps show the approximate location of photovoltaic tracker rows and associated facilities within the Designated Site and identify a layout that seeks to minimize the overall potential human and environmental impacts of the Project, as they were evaluated in the permitting process.

The Designated Site serves to provide the Permittee with the flexibility to make minor adjustments to the layout to accommodate requests by landowners, local government units, federal and state agency requirements, and unforeseen conditions encountered during the detailed engineering and design process. Any modification to the location of a photovoltaic tracker row or associated facility shall be done in such a manner as to have human and

environmental impacts that are comparable to those associated with the layouts on the maps attached to this site permit. The Permittee shall identify any modifications in the Site Plan pursuant to Section 8.3.

4 GENERAL CONDITIONS

The Permittee shall comply with the following conditions during construction and operation of the solar energy generating system over the life of this site permit.

4.1 Site Permit Distribution

Within 30 days of issuance of this site permit, the Permittee shall provide all affected landowners with a copy of this site permit and the complaint procedures. An affected landowner is any landowner or designee that is within or adjacent to the permitted site. In no case shall a landowner receive this site permit and complaint procedures less than five days prior to the start of construction on their property. The Permittee shall also provide a copy of this site permit and the complaint procedures to the applicable regional development commissions, county environmental offices, and city and township clerks. The Permittee shall file with the Commission an affidavit of its site permit and complaint procedures distribution within 30 days of issuance of this site permit.

4.2 Access to Property

The Permittee shall notify landowners prior to entering or conducting maintenance within their property, unless otherwise negotiated with the landowner. The Permittee shall keep records of compliance with this section and provide them upon the request of Minnesota Department of Commerce (Department of Commerce) staff or Commission staff.

4.3 Construction and Operation Practices

The Permittee shall comply with the construction practices, operation and maintenance practices, and material specifications described in the permitting record for this Project unless this site permit establishes a different requirement in which case this site permit shall prevail.

4.3.1 Field Representative

The Permittee shall designate a field representative responsible for overseeing compliance with the conditions of this site permit during construction of the Project. This person shall be accessible by telephone or other means during normal business hours throughout site preparation, construction, cleanup, and restoration.

The Permittee shall file with the Commission the name, address, email, phone number, and emergency phone number of the field representative at least 14 days prior to the pre-construction meeting. The Permittee shall provide the field representative's contact information to affected landowners, local government units and other interested persons at least 14 days prior to the pre-construction meeting. The Permittee may change the field representative at any time upon notice to the Commission, affected landowners, local government units and other interested persons. The Permittee shall file with the Commission an affidavit of distribution of its field representative's contact information at least 14 days prior to the pre-construction meeting and upon changes to the field representative.

4.3.2 Site Manager

The Permittee shall designate a site manager responsible for overseeing compliance with the conditions of this site permit during the commercial operation and decommissioning phases of the Project. This person shall be accessible by telephone or other means during normal business hours for the life of this site permit.

The Permittee shall file the name, address, email, phone number, and emergency phone number of the site manager with the Commission within 14 days prior to the pre-operation meeting. The Permittee shall provide the site manager's contact information to landowners within or adjacent to the Project Boundary, local government units and other interested persons at least 14 days prior to the pre-operation meeting. The Permittee may change the site manager at any time upon notice to the Commission, landowners within or adjacent to the Project Boundary, local government units, and other interested persons. The Permittee shall file with the Commission an affidavit of distribution of its site manager's contact information at least 14 days prior to the pre-operation meeting and upon changes to the site manager.

4.3.3 Employee Training - Site Permit Terms and Conditions

The Permittee shall train and educate all employees, contractors, and other persons involved in the construction and ongoing operation of the solar energy generating system of the terms and conditions of this site permit. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.4 Independent Third-Party Monitoring

Prior to any construction, the Permittee shall propose a scope of work and identify an independent third-party monitor to conduct Project construction monitoring on behalf of the Department of Commerce. The scope of work shall be developed in consultation with and approved by the Department of Commerce. This third-party monitor will report directly to and will be under the control of the Department of Commerce with costs borne by the Permittee.

Department of Commerce staff shall keep records of compliance with this section and will ensure that status reports detailing the construction monitoring are filed with the Commission in accordance with scope of work approved by the Department of Commerce.

4.3.5 Public Services, Public Utilities, and Existing Easements

During Project construction, the Permittee shall minimize any disruption to public services or public utilities. To the extent disruptions to public services or public utilities occur these shall be temporary, and the Permittee shall restore service promptly. Where any impacts to utilities have the potential to occur the Permittee shall work with both landowners and local entities to determine the most appropriate mitigation measures if not already considered as part of this site permit.

The Permittee shall cooperate with county and city road authorities to develop appropriate signage and traffic management during construction. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.6 Temporary Workspace

The Permittee shall select temporary workspace and equipment staging areas that limit the removal and impacts to vegetation. The Permittee shall not site temporary workspace in wetlands or native prairie as defined in sections 4.3.13 and 4.3.14. The Permittee shall site temporary workspace to comply with standards for development of the shorelands of public waters as defined in Section 4.3.13. The Permittee shall obtain temporary easements outside of the authorized Project Boundary from affected landowners through rental agreements. Temporary easements are not provided for in this site permit.

4.3.7 Noise

The Permittee shall comply with noise standards established under Minn. R. 7030.0010 to 7030.0080, at all times and at all appropriate locations during operation of the Project. The Permittee shall limit construction and maintenance activities to daytime working hours to the extent practicable.

4.3.8 Aesthetics

The Permittee shall consider input pertaining to visual impacts from landowners and the local unit of government having direct zoning authority over the area in which the Project is located. The Permittee shall use care to preserve the natural landscape, minimize tree removal and

prevent any unnecessary destruction of the natural surroundings in the vicinity of the Project during construction and operation.

4.3.9 Topsoil Protection

The Permittee shall implement measures to protect and segregate topsoil from subsoil on all lands utilized for Project construction unless otherwise negotiated with affected landowner.

4.3.10 Soil Compaction

The Permittee shall implement measures to minimize soil compaction of all lands during all phases of the Project's life and shall confine compaction to as small an area as feasible. The Permittee shall use soil decompaction measures on all lands utilized for Project construction and travelled on by heavy equipment (*e.g.*, cranes and heavy trucks), even when soil compaction minimization measures are used.

4.3.11 Soil Erosion and Sediment Control

The Permittee shall implement those erosion prevention and sediment control practices recommended by the Minnesota Pollution Control Agency (MPCA) Construction Stormwater Program. If construction of the Project disturbs more than one acre of land or is sited in an area designated by the MPCA as having potential for impacts to water resources, the Permittee shall obtain a National Pollutant Discharge Elimination System/State Disposal System Construction Stormwater Permit from the MPCA that provides for the development of a Stormwater Pollution Prevention Plan that describes methods to control erosion and runoff.

The Permittee shall implement reasonable measures to minimize erosion and sedimentation during construction and shall employ perimeter sediment controls, protect exposed soil by promptly planting, seeding, using erosion control blankets and turf reinforcement mats, stabilizing slopes, protecting storm drain inlets, protecting soil stockpiles, and controlling vehicle tracking. Contours shall be graded as required so that all surfaces provide for proper drainage, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation and prevent erosion. All areas disturbed during construction of the Project shall be returned to pre-construction conditions.

4.3.12 Public Lands

In no case shall photovoltaic tracker rows and associated facilities including foundations, access roads, underground cable, and transformers, be located in the public lands identified in Minn. R. 7850.4400, subp. 1, or in federal waterfowl production areas. Photovoltaic tracker rows and

associated facilities shall not be located in the public lands identified in Minn. R. 7850.4400, subp. 3, unless there is no feasible and prudent alternative.

4.3.13 Wetlands and Water Resources

The Permittee shall not place the solar energy generating system or associated facilities in public waters and public waters wetlands, as shown on the public water inventory maps prescribed by Minnesota Statutes Chapter 103G, except that electric collector or feeder lines may cross or be placed in public waters or public waters wetlands subject to permits and approvals by the Minnesota Department of Natural Resources (DNR) and the United States Army Corps of Engineers (USACE), and local units of government as implementers of the Minnesota Wetlands Conservation Act. The Permittee shall locate the solar energy generating system and associated facilities in compliance with the standards for development of the shorelands of public waters as identified in Minn. R. 6120.3300, and as adopted, Minn. R. 6120.2800, unless there is no feasible and prudent alternative.

The Permittee shall construct in wetland areas during frozen ground conditions, to the extent feasible, to minimize impacts. When construction during winter is not possible, wooden or composite mats shall be used to protect wetland vegetation. The Permittee shall contain and manage soil excavated from the wetlands and riparian areas in accordance with all applicable wetland permits. The Permittee shall access wetlands and riparian areas using the shortest route possible in order to minimize travel through wetland areas and prevent unnecessary impacts.

The Permittee shall restore wetland and water resource areas disturbed by construction activities to pre-construction conditions in accordance with the requirements of applicable state and federal permits or laws and landowner agreements. The Permittee shall meet the USACE, DNR, Minnesota Board of Water and Soil Resources, and local government wetland and water resource requirements.

4.3.14 Native Prairie

The Permittee shall not place the solar energy generating system or associated facilities in native prairie, as defined in Minn. Stat. § 84.02, subd. 5, unless addressed in a prairie protection and management plan and not located in areas enrolled in the Native Prairie Bank Program. The Permittee shall not impact native prairie during construction activities, as defined in Minn. Stat. § 216E.01, unless addressed in a prairie protection and management plan.

The Permittee shall prepare a prairie protection and management plan in consultation with the DNR if native prairie, as defined in Minn. Stat. § 84.02, subd. 5, is identified within the Project Boundary. The Permittee shall file the prairie protection and management plan with the

Commission at least 30 days prior to submitting the Site Plan required by Section 8.3 of this site permit. The prairie protection and management plan shall address steps that will be taken to avoid impacts to native prairie and mitigation to unavoidable impacts to native prairie by restoration or management of other native prairie areas that are in degraded condition, by conveyance of conservation easements, or by other means agreed to by the Permittee, the DNR, and the Commission.

4.3.15 Vegetation Removal

The Permittee shall disturb or clear vegetation within the Designated Site only to the extent necessary to assure the safe construction, operation, and maintenance of the Project. The Permittee shall minimize the number of trees removed within the Designated Site specifically preserving to the maximum extent practicable windbreaks, shelterbelts, and living snow fences.

4.3.16 Beneficial Habitat

The Permittee shall implement site restoration and management practices that provide for native perennial vegetation and foraging habitat beneficial to gamebirds, songbirds, and pollinators; and that enhances soil water retention and reduces storm water runoff and erosion. To ensure continued management and recognition of beneficial habitat, the Permittee is encouraged to meet the standards for Minnesota's Habitat Friendly Solar Program by submitting project plans, seed mixes, a completed project planning assessment form, and any other applicable documentation used to meet the standard to the Board of Water and Soil Resources (BWSR). If the Permittee chooses to participate in Minnesota's Habitat-Friendly Solar Program, it shall file documents required to be filed with BWSR for meeting and maintaining Habitat Friendly Solar Certification with the Commission.

4.3.17 Vegetation Management Plan

The Permittee shall develop a vegetation management plan (VMP), in coordination with the Department of Commerce, and the Vegetation Management Working Group (VMWG), using best management practices established by the DNR and BWSR. The Permittee shall file the VMP and documentation of the coordination efforts between the Permittee and the coordinating agencies with the Commission at least 14 days prior to the pre-construction meeting.

Landowner-specific vegetation requests resulting from individual consultation between the Company and a landowner need not be included in the VMP. The Permittee shall provide all landowners within the Designated Site copies of the VMP. The Permittee shall file with the Commission an affidavit of its distribution of the VMP to landowners at least 14 days prior to the pre-construction meeting.

The VMP must include the following:

(a) management objectives addressing short term (year 0-5, seeding and establishment) and long term (year 5 through the life of the Project) goals;
(b) a description of planned restoration and vegetation management activities, including how the site will be prepared, timing of activities, how seeding will occur (*e.g.*, broadcast, drilling, etc.), and the types of seed mixes to be used;
(c) a description of how the site will be monitored and evaluated to meet management goals;
(d) a description of the management tools used to maintain vegetation (*e.g.*, mowing, spot spraying, hand removal, fire, grazing, etc.), including the timing and frequency of maintenance activities;
(e) identification of the third-party (*e.g.*, consultant, contractor, site manager, etc.) contracted for restoration, monitoring, and long-term vegetation management of the site;
(f) identification of on-site noxious weeds and invasive species (native and non-native) and the monitoring and management practices to be utilized; and
(g) a marked-up copy of the Site Plan showing how the site will be revegetated and that identifies the corresponding seed mixes.

Best management practices should be followed concerning seed mixes, seeding rates, and cover crops.

4.3.18 Agricultural Impact Mitigation Plan

The Permittee shall develop an agricultural impact mitigation plan (AIMP) in coordination with the Minnesota Department of Agriculture (MDA). The Permittee shall provide landowners within the Designated Site a copy of the AIMP. The Permittee shall file with the Commission the AIMP and an affidavit of the AIMP distribution to landowners at least 14 days prior to the pre-construction meeting.

4.3.19 Application of Pesticides

The Permittee shall restrict pesticide use to those pesticides and methods of application approved by the MDA, DNR, and the U.S. Environmental Protection Agency (EPA). Selective foliage or basal application shall be used when practicable. All pesticides shall be applied in a safe and cautious manner so as not to damage adjacent properties including crops, orchards, tree farms, apiaries, or gardens. The Permittee shall contact the landowner at least 14 days prior to pesticide application on their property. The Permittee may not apply any pesticide if the landowner requests that there be no application of pesticides within the landowner's property. The Permittee shall provide notice of pesticide application to landowners and

beekeepers operating known apiaries within three miles of the pesticide application area at least 14 days prior to such application. The Permittee shall keep pesticide communication and application records and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.20 Invasive Species

The Permittee shall employ best management practices to avoid the potential introduction and spread of invasive species on lands disturbed by Project construction activities. The Permittee shall develop an Invasive Species Prevention Plan and file it with the Commission at least 14 days prior to the pre-construction meeting. The Permittee shall comply with the most recently filed Invasive Species Prevention Plan.

4.3.21 Noxious Weeds

The Permittee shall take all reasonable precautions against the spread of noxious weeds during all phases of construction. When utilizing seed to establish temporary and permanent vegetative cover on exposed soil the Permittee shall select site appropriate seed certified to be free of noxious weeds. To the extent possible, the Permittee shall use native seed mixes. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.22 Roads

The Permittee shall advise the appropriate governing bodies having jurisdiction over all state, county, city, or township roads that will be used during the construction phase of the Project. Where practical, existing roadways shall be used for all activities associated with construction of the Project. Oversize or overweight loads associated with the Project shall not be hauled across public roads without required permits and approvals.

The Permittee shall locate all perimeter fencing and vegetative screening in a manner that does not interfere with routine road maintenance activities and allows for continued safe travel on public roads.

The Permittee shall construct the fewest number of site access roads required. Access roads shall not be constructed across streams and drainage ways without the required permits and approvals. Access roads shall be constructed in accordance with all necessary township, county or state road requirements and permits.

The Permittee shall promptly repair private roads or lanes damaged when moving equipment or when accessing construction workspace, unless otherwise negotiated with the affected

landowner. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.23 Archaeological and Historic Resources

The Permittee shall make every effort to avoid impacts to archaeological and historic resources when constructing the Project. In the event that a resource is encountered, the Permittee shall consult with the State Historic Preservation Office (SHPO) and the State Archaeologist. Where feasible, avoidance of the resource is required. Where not feasible, mitigation must include an effort to minimize Project impacts on the resource consistent with SHPO and State Archaeologist requirements.

Prior to construction, the Permittee shall train workers about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction. If human remains are encountered during construction, the Permittee shall immediately halt construction and promptly notify local law enforcement and the State Archaeologist. The Permittee shall not resume construction at such location until authorized by local law enforcement or the State Archaeologist. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.24 Interference

If interference with radio or television, satellite, wireless internet, GPS-based agriculture navigation systems or other communication devices is caused by the presence or operation of the Project, the Permittee shall take whatever action is necessary to restore or provide reception equivalent to reception levels in the immediate area just prior to the construction of the Project. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.25 Drainage Tiles

The Permittee shall avoid, promptly repair, or replace all drainage tiles broken or damaged during all phases of the Project's life unless otherwise negotiated with the affected landowner. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.26 Restoration

The Permittee shall restore the areas affected by construction of the Project to the condition that existed immediately before construction began to the greatest extent possible. The time

period to complete restoration may be no longer than 12 months after the completion of construction, unless otherwise negotiated with the affected landowner. Restoration shall be compatible with the safe operation, maintenance, and inspection of the Project. Within 60 days after completion of all restoration activities, the Permittee shall file with the Commission a Notice of Restoration Completion.

4.3.27 Cleanup

The Permittee shall remove and properly dispose of all construction waste and scrap from the right-of-way and all premises on which construction activities were conducted upon completion of each task. The Permittee shall remove and properly dispose of all personal litter, including bottles, cans, and paper from construction activities daily.

4.3.28 Pollution and Hazardous Wastes

The Permittee shall take all appropriate precautions to protect against pollution of the environment. The Permittee shall be responsible for compliance with all laws applicable to the generation, storage, transportation, clean up and disposal of all waste generated during construction and restoration of the Project.

4.3.29 Damages

The Permittee shall fairly restore or compensate landowners for damage to crops, fences, private roads and lanes, landscaping, drain tile, or other damage sustained during construction. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.30 Public Safety

The Permittee shall provide educational materials to landowners within and adjacent to the Designated Site and, upon request, to interested persons about the Project and any restrictions or dangers associated with the Project. The Permittee shall also implement any necessary safety measures such as placing warning signs and gates for traffic control or restricting public access. The Permittee shall file with the Commission an affidavit of its public safety notifications at least 14 days before the pre-construction meeting.

The Permittee shall submit the location of all underground facilities, as defined in Minn. Stat. § 216D.01, subd. 11, to Gopher State One Call following the completion of the construction of the Project.

4.3.31 Site Identification

The Permittee shall mark the solar energy generating system with a clearly visible identification number and or street address.

4.3.32 Security Fencing

The Permittee shall design the security fence surrounding the solar energy generating system to minimize the visual impact of the Project while maintaining compliance with the National Electric Safety Code. The Permittee shall develop a final fence plan for the specific site in coordination with the Department of Commerce and the DNR. The final fence plan shall be submitted to the Commission as part of the Site Plan pursuant to Section 8.3.

4.4 Feeder Lines

The Permittee may use overhead or underground feeder lines to carry power from an internal Project interconnection point to the Project substation or interconnection point on the electrical grid. The Permittee shall place overhead and underground feeder lines that parallel public roads within the public right-of-way or on private land immediately adjacent to the road. The Permittee shall obtain approval from the landowner or government unit responsible for the affected right-of-way.

The Permittee shall locate feeder lines in such a manner as to minimize interference with agricultural operations including but not limited to existing drainage patterns, drain tile, future tiling plans, and ditches. The Permittee shall place safety shields on all guy wires associated with overhead feeder lines. The Permittee shall submit the engineering drawings of all collector and feeder lines with the Site Plan pursuant to Section 8.3.

4.5 Other Requirements

4.5.1 Safety Codes and Design Requirements

The Permittee shall design the solar energy generating system and associated facilities to meet or exceed all relevant local and state codes, the National Electric Safety Code, and North American Electric Reliability Corporation requirements. This includes standards relating to clearances to ground, clearance to crossing utilities, clearance to buildings, strength of materials, clearances over roadways, right-of-way widths, and permit requirements. The Permittee shall keep records of compliance with these standards and provide them upon the request of Department of Commerce staff or Commission staff.

4.5.2 Other Permits and Regulations

The Permittee shall comply with all applicable state statutes and rules. The Permittee shall obtain all required permits for the Project and comply with the conditions of those permits unless those permits conflict with or are preempted by federal or state permits and regulations.

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission an Other Permits and Regulations Submittal that contains a detailed status of all permits, authorizations, and approvals that have been applied for specific to the Project. The Other Permits and Regulations Submittal shall also include the permitting agency name; the name of the permit, authorization, or approval being sought; contact person and contact information for the permitting agency or authority; brief description of why the permit, authorization, or approval is needed; application submittal date; and the date the permit, authorization, or approval was issued or is anticipated to be issued.

The Permittee shall demonstrate that it has obtained all necessary permits, authorizations, and approvals by filing an affidavit stating as such and an updated Other Permits and Regulations Submittal prior to commencing Project construction. The Permittee shall provide a copy of any such permits, authorizations, and approvals at the request of Department of Commerce staff or Commission staff.

5 SPECIAL CONDITIONS

The special conditions shall take precedence over other conditions of this permit should there be a conflict.

~~[Add Special Conditions in accordance with the record of the docket]~~

5.1 Noise

The permittee shall complete a noise study of the surrounding residential areas to ensure noise levels are below State standards. The permittee shall file with the Commission the results of these noise studies for compliance.

5.2 Unanticipated Discoveries Plan

The Permittee shall develop an Unanticipated Discoveries Plan (UDP) to be used in the event previously unrecorded archeological or historic properties, or human remains, are encountered during construction, or if unanticipated effects to previously identified archaeological or historic properties occur during construction. The UDP shall describe how previously unrecorded cultural resources or human remains found during construction shall be protected and examined. The Permittee shall file the UDP with the Commission at least 14 days prior to the pre-construction meeting.

5.3 Northern Long-eared Bat and Tricolored Bat

The Permittee shall comply with U.S. Fish and Wildlife Service guidance and requirements in effect regarding Northern Long-eared Bats and Tricolored Bats, including tree clearing restrictions if applicable.

5.4 Bald Eagle

If, in consultation with the U.S. Fish and Wildlife Service, a bald eagle nest must be removed for construction of the project, the Permittee shall file with the Commission the documentation authorizing any such nest removal at least 14 days prior to the pre-construction meeting.

6 DELAY IN CONSTRUCTION

If the Permittee has not commenced construction or improvement of the site within four years after the date of issuance of this site permit the Permittee shall file a Failure to Construct Report and the Commission shall consider suspension of this site permit in accordance with Minn. R. 7850.4700.

7 COMPLAINT PROCEDURES

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission the complaint procedures that will be used to receive and respond to complaints. The complaint procedures shall be in accordance with the requirements of Minn. R. 7829.1500 or Minn. R. 7829.1700, and as set forth in the complaint procedures attached to this site permit.

Upon request, the Permittee shall assist Department of Commerce staff or Commission staff with the disposition of unresolved or longstanding complaints. This assistance shall include, but is not limited to, the submittal of complaint correspondence and complaint resolution efforts.

8 COMPLIANCE REQUIREMENTS

Failure to timely and properly make compliance filings required by this site permit is a failure to comply with the conditions of this site permit. Compliance filings must be electronically filed with the Commission.

8.1 Pre-Construction Meeting

Prior to the start of construction, the Permittee shall participate in a pre-construction meeting with Department of Commerce staff and Commission staff to review pre-construction filing requirements, scheduling, and to coordinate monitoring of construction and site restoration activities. Within 14 days following the pre-construction meeting, the Permittee shall file with the Commission a summary of the topics reviewed and discussed and a list of attendees. The Permittee shall indicate in the filing the anticipated construction start date.

8.2 Pre-Operation Meeting

At least 14 days prior to commercial operation of the Project, the Permittee shall participate in a pre-operation meeting with Department of Commerce staff and Commission staff to coordinate field monitoring of operation activities for the Project. Within 14 days following the pre-operation meeting, the Permittee shall file a summary of the topics reviewed and discussed and a list of attendees with the Commission.

8.3 Site Plan

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission, and provide the Department of Commerce, and the counties where the Project will be constructed with a Site Plan that includes specifications and drawings for site preparation and grading; specifications and locations of the solar energy generating system and associated facilities; and procedures for cleanup and restoration. The documentation shall include maps depicting the Designated Site, solar energy generating system, and associated facilities layout in relation to that approved by this site permit.

The Permittee may not commence construction until the earlier of (i) 30 days after the pre-construction meeting or (ii) or until the Commission staff has notified the Permittee in writing that it has completed its review of the documents and determined that the planned construction is consistent with this site permit.

If the Commission notifies the Permittee in writing within 30 days after the pre-construction meeting that it has completed its review of the documents and planned construction, and finds that the planned construction is not consistent with this site permit, the Permittee may submit additional and/or revised documentation and may not commence construction until the Commission has notified the Permittee in writing that it has determined that the planned construction is consistent with this site permit.

If the Permittee intends to make any significant changes in its Site Plan or the specifications and drawings after submission to the Commission, the Permittee shall notify the Commission, the Department of Commerce, and county staff at least five days before implementing the changes. No changes shall be made that would be in violation of any of the terms of this site permit.

8.4 Status Reports

The Permittee shall file with the Commission monthly Construction Status Reports beginning with the pre-construction meeting and until completion of restoration. Construction Status Reports shall describe construction activities and progress, activities undertaken in compliance with this site permit, and shall include text and photographs.

If the Permittee does not commence construction of the Project within six months of this site permit issuance, the Permittee shall file with the Commission Pre-Construction Status Reports on the anticipated timing of construction every six months beginning with the issuance of this site permit until the pre-construction meeting. The status updates shall include information on the Project's Midcontinent Independent System Operator (MISO) interconnection process, if applicable.

8.5 Labor Statistic Reporting

The Permittee shall file quarterly Labor Statistic Reports with the Commission within 45 days of the end of the quarter regarding construction workers that participated in the construction of the Project. The Labor Statistic Reports shall:

(a) detail the Permittee's efforts and the site contractor's efforts to hire Minnesota workers; and
(b) provide an account of:
    i. the gross number of hours worked by or full-time equivalent workers who are Minnesota residents, as defined in Minn. Stat. § 290.01, subd. 7;
    ii. the gross number of hours worked by or full-time equivalent workers who are residents of other states, but maintain a permanent residence within 150 miles of the Project; and
    iii. the total gross hours worked or total full-time equivalent workers.

Permittee shall work with its contractor to determine the suitable reporting metric. The report may not include personally identifiable data.

8.6 Prevailing Wage

The Permittee, its contractors, and subcontractors shall pay no less than the prevailing wage rate as defined in Minn. Stat. § 177.42 and shall be subject to the requirements and enforcement provisions under Minn. Stat. §§ 177.27, 177.30, 177.32, 177.41 to 177.435, and 177.45. The Permittee shall keep records of contractor and subcontractor pay and provide them at the request of Department of Commerce staff or Commission staff.

8.7 In-Service Date

At least three days before the Project is to be placed into service, the Permittee shall notify the Commission of the date on which the Project will be placed into service and the date on which construction was completed.

8.8 As-Builts

Within 90 days after completion of construction, the Permittee shall submit to the Commission copies of all final as-built plans and specifications developed during the Project construction.

8.9 GPS Data

Within 90 days after completion of construction, the Permittee shall submit to the Commission, in the format requested by the Commission, geo-spatial information (*e.g.*, ArcGIS compatible map files, GPS coordinates, associated database of characteristics) for all structures associated with the Project.

8.10 Right of Entry

The Permittee shall allow Commission designated representatives to perform the following, upon reasonable notice, upon presentation of credentials and at all times in compliance with the Permittee's site safety standards:

(a) To enter upon the facilities easement of the property for the purpose of obtaining information, examining records, and conducting surveys or investigations.
(b) To bring such equipment upon the facilities easement of the property as is necessary to conduct such surveys and investigations.
(c) To sample and monitor upon the facilities easement of the property.
To examine and copy any documents pertaining to compliance with the conditions of this site permit.

8.11 Project Energy Production

The Permittee shall, by February 1st following each complete or partial year of Project operation, file a report with the Commission on the monthly energy production of the facility including:

(a) the installed nameplate capacity of the permitted facility;
(b) the total daily energy generated by the facility in MW hours;

(c) the total monthly energy generated by the facility in MW hours;
(d) the monthly capacity factor of the facility;
(e) yearly energy production and capacity factor for the facility;
(f) the average monthly and average annual solar strength gradient measured in kWh/m²/Day observed at the facility;
(g) the operational status of the facility and any major outages, major repairs, or performance improvements occurring in the previous year; and
(h) any other information reasonably requested by the Commission.

The Permittee shall file this information in a format recommended by the Department of Commerce. This information shall be considered public and must be filed electronically.

8.12 Emergency Response

The Permittee shall prepare an Emergency Response Plan (ERP) in consultation with the emergency responders having jurisdiction over the Project prior to construction. The Permittee shall file the ERP, along with any comments from emergency responders to the Commission at least 14 days prior to the pre-construction meeting and a revised ERP, if any, at least 14 days prior to the pre-operation meeting. At least 14 days prior to the pre-operation meeting the Permittee shall file with the Commission an affidavit of the distribution of the ERP to emergency responders and Public Safety Answering Points (PSAP) with jurisdiction over the Project. The Permittee shall obtain and register the Project address or other location indicators acceptable to the emergency responders and PSAP having jurisdiction over the Project.

8.13 Extraordinary Events

Within 24 hours of discovery of an occurrence, the Permittee shall notify the Commission of any extraordinary event. Extraordinary events include but shall not be limited to fires, solar panel collapse, acts of sabotage, collector or feeder line failure, and injured worker or private person. The Permittee shall, within 30 days of the occurrence, file a report with the Commission describing the cause of the occurrence and the steps taken to avoid future occurrences.

8.14 Wildlife Injuries and Fatalities

The Permittee shall report any wildlife injuries and fatalities to the Commission quarterly.

9 DECOMMISSIONING AND RESTORATION

9.1 Decommissioning Plan

The Permittee shall comply with the provisions of the most recently filed and accepted Decommissioning Plan. The initial version of the Decommissioning Plan was submitted for this Project as ~~[Identify Decommissioning Plan, *e.g.*, Appendix XX to the Site Permit Application]~~Appendix G of the joint site permit application. The Permittee shall file an updated Decommissioning Plan incorporating comments and information from the permit application process and any updates associated with the final construction plans with the Commission at least fourteen 14 days prior to the pre-construction meeting. The Permittee shall update and file the Decommissioning Plan with the Commission every five years following the commercial operation date.

The Decommissioning Plan shall provide information identifying all surety and financial securities established for decommissioning and site restoration. The Decommissioning Plan shall provide an itemized breakdown of costs of decommissioning all Project components, which shall include labor and equipment. The Decommissioning Plan shall identify cost estimates for the removal of solar panels, racks, underground collection cables, access roads, transformers, substations, and other Project components. The Decommissioning Plan may also include anticipated costs for the replacement of panels or repowering the Project by upgrading equipment.

The Permittee shall also submit the Decommissioning Plan to the local unit of government having direct zoning authority over the area in which the Project is located. The Permittee shall ensure that it carries out its obligations to provide for the resources necessary to fulfill its requirements to properly decommission the Project at the appropriate time. The Commission may at any time request the Permittee to file a report with the Commission describing how the Permittee is fulfilling this obligation.

9.2 Site Final Restoration

Upon expiration of this site permit or upon termination of operation of the Project, the Permittee shall have the obligation to dismantle and remove from the site all solar panels, mounting steel posts and beams, inverters, transformers, overhead and underground cables and lines, foundations, buildings, and ancillary equipment in accordance with the most recently filed and accepted decommissioning plan. To the extent feasible, the Permittee shall restore and reclaim the site to pre-project conditions. Landowners may require the site be returned to agricultural production or may retain restored prairie vegetation, or other land uses as agreed to between the landowner and the Permittee. All access roads shall be removed unless written approval is given by the affected landowner requesting that one or more roads, or portions thereof, be retained. All such agreements between the Permittee and the affected landowner shall be filed with the Commission prior to commencing restoration activities. The Permittee shall restore the site in accordance with the requirements of this condition and file a

Notification of Final Restoration Completion to the Commission within 18 months of termination of operation of the Project.

9.3 Abandoned Solar Installations

The Permittee shall notify the Commission of any solar equipment that is abandoned prior to termination of operation of the Project. Equipment shall be considered abandoned after one year without energy production and shall be decommissioned and the land shall be restored pursuant to sections 9.1 and 9.2, unless a plan is submitted to and approved by the Commission outlining the steps and schedule for returning the equipment to service.

10 COMMISSION AUTHORITY AFTER SITE PERMIT ISSUANCE

10.1 Final Designated Site Boundaries

After completion of construction the Commission shall determine the need to adjust the final boundary of the Designated Site required for the Project. This site permit may be modified, after notice and opportunity for hearing, to represent the actual Designated Site required by the Permittee to operate the Project authorized by this site permit.

10.2 Expansion of Designated Site Boundaries

No expansion of the site boundary described in this site permit shall be authorized without the approval of the Commission. The Permittee may submit to the Commission a request for a change in the boundary of the site for the Project. The Commission will respond to the requested change in accordance with applicable statutes and rules.

10.3 Periodic Review

The Commission shall initiate a review of this site permit and the applicable conditions at least once every five years. The purpose of the periodic review is to allow the Commission, the Permittee, and other interested persons an opportunity to consider modifications in the conditions of this site permit. No modification may be made except in accordance with applicable statutes and rules.

10.4 Modification of Conditions

After notice and opportunity for hearing this site permit may be modified or amended for cause, including but not limited to the following:

(a) violation of any condition in this permit;

(b) endangerment of human health or the environment by operation of the Project; or
(c) existence of other grounds established by rule.

10.5 More Stringent Rules

The issuance of this site permit does not prevent the future adoption by the Commission of rules or orders more stringent than those now in existence and does not prevent the enforcement of these more stringent rules and orders against the Permittee.

11 SITE PERMIT AMENDMENT

This site permit may be amended at any time by the Commission. Any person may request an amendment of the conditions of this site permit by submitting a request to the Commission in writing describing the amendment sought and the reasons for the amendment. The Commission will mail notice of receipt of the request to the Permittee. The Commission may amend the conditions after affording the Permittee and interested persons such process as is required under Minn. R. 7850.4900.

12 TRANSFER OF SITE PERMIT

The Permittee may request at any time that the Commission transfer this site permit to another person or entity (transferee). In its request, the Permittee must provide the Commission with:

(a) the name and description of the transferee;
(b) the reasons for the transfer;
(c) a description of the facilities affected; and
(d) the proposed effective date of the transfer.

The transferee must provide the Commission with a certification that it has read, understands and is able to comply with the plans and procedures filed for the Project and all conditions of this site permit.

The transferee must provide the Commission with the name and contact information for the site manager, as described in Section 4.3.2, and either a current version with eDocket reference, or a revised version of the following:

(a) VMP as described in Section 4.3.17;
(b) complaint procedures, as described in Section 7 and Attachment 1;
(c) ERP, as described in Section 8.12; and
(d) Decommissioning Plan, as described in Section 9.1.

The Commission may authorize transfer of the site permit after affording the Permittee, the transferee, and interested persons such process as is required under Minn. R. 7850.5000.

13 REVOCATION OR SUSPENSION OF SITE PERMIT

The Commission may initiate action to revoke or suspend this site permit at any time. The Commission shall act in accordance with the requirements of Minn. R. 7850.5100, to revoke or suspend this site permit.

14 EXPIRATION DATE

This site permit shall expire ~~[xx]~~ 30 years after the date this site permit was approved and adopted.

Appendix D

Proposed Battery Energy Storage Draft Site Permit

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STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

SITE PERMIT FOR
~~[PROJECT NAME]~~ NORTHERN CRESCENT SOLAR AND STORAGE PROJECT

AN ENERGY STORAGE SYSTEM

IN
~~[COUNTY]~~FARIBAULT COUNTY

ISSUED TO
~~[PERMITTEE]~~ Primergy (Northern Crescent) Solar, LLC

PUC DOCKET NO. ~~[Docket Number]~~IP-7135/ESS-24-238

In accordance with the requirements of Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850 this site permit is hereby issued to:

~~[Permittee]~~Primergy (Northern Crescent) Solar, LLC

~~[Permittee]~~ **Primergy (Northern Crescent) Solar, LLC** is authorized by this site permit to construct and operate ~~[Provide a description of the project authorized by the Minnesota Public Utilities Commission]~~ an up to 50 megawatt battery energy storage system located in Faribault County, Minnesota.

The energy storage system shall be constructed and operated within the site identified in this site permit and in compliance with the conditions specified in this site permit.

This site permit shall expire ~~[xx]~~30 years from the date of this approval.

Approved and adopted this ____ day of [Month, Year]

BY ORDER OF THE COMMISSION

_____
Will Seuffert,
Executive Secretary

To request this document in another format such as large print or audio, call 651-296-0406 or 800-657-3782 (voice). Persons with a hearing or speech impairment may call using their preferred Telecommunications Relay Service or email consumer.puc@state.mn.us for assistance.

CONTENTS

ATTACHMENTS

~~**SAMPLE PERMIT** [Project Name and PUC Docket No.]~~Proposed Site Draft Permit – Northern Crescent Solar Project – IP-7135/ESS-24-238

1 SITE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this site permit to ~~[Permittee Name]~~Primergy (Northern Crescent) Solar, LLC (Permittee) pursuant to Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850. This site permit authorizes the Permittee to construct and operate ~~a [Provide a description of the project as authorized by the Commission]~~ an up to 50 megawatt battery energy storage system located in Faribault County, Minnesota(~~[Project Name, if applicable]~~Northern Crescent Solar Project, henceforth known as Project). The energy storage system shall be constructed and operated within the site identified in this site permit and in compliance with the conditions specified in this site permit.

1.1 Pre-emption

Pursuant to Minn. Stat. § 216E.10, this site permit shall be the sole site approval required for the location, construction, and operation of the energy storage system and this site permit shall supersede and preempt all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local and special purpose governments.

2 PROJECT DESCRIPTION

~~[Provide a description of the Project as authorized by the Commission]~~The Northern Crescent Solar Project – an up to 150 MW alternating current photovoltaic solar energy generating facility and associated 50 MW alternating current battery energy storage system. The project will occupy approximately 929 acres in a project area of 1,179 acres in Verona and Prescott Townships, southeast of the city of Winnebago, Minnesota. The project will use photovoltaic solar panels mounted on single axis tracking systems. Underground collection cables will gather and send the electric power generated by the solar panels to a project substation. The substation will interconnect with the electrical grid via a new switchyard and an overhead generation tie transmission line. The project will include associated facilities, such as, security fencing, access roads, a supervisory control and data acquisition system, stormwater basins, and an operation and maintenance facility.

The project substation and Xcel switchyard will be constructed in close proximity to each other, and will interconnect to the existing Huntley – Blue Earth 161 kV high voltage transmission line. The land or land rights needed for the Xcel switchyard and interconnection to the grid will be acquired or secured by Northern Crescent Solar and be conveyed to Xcel Energy. Xcel Energy will be responsible for the design, engineering, permitting, construction, and operation of the switchyard.

The Project is located in the following:

County	Township Name	Township	Range	Section
Faribault	Verona	103N	28W	11, 12, 13
Faribault	Prescott	103N	27W	7, 18

2.1 Project Ownership

At least 14 days prior to the pre-construction meeting, the Permittee shall file a description of its ownership structure, identifying, as applicable:

(a) the owner(s) of the financial and governance interests of the Permittee;
(b) the owner(s) of the majority financial and governance interests of the Permittee's owners; and
(c) the Permittee's ultimate parent entity (meaning the entity which is not controlled by any other entity).

The Permittee shall notify the Commission of:

(a) a change in the owner(s) of the majority* financial or governance interests in the Permittee; or
(b) a change in the owner(s) of the majority* financial or governance interests of the Permittee's owners; or
(c) a sale which changes the ultimate parent entity of the Permittee

*When there are only co-equal 50/50 percent interests, any change shall be considered a change in majority interest.

In the event of an ownership change, the new Permittee must provide the Commission with a certification that it has read, understands, and is able to comply with the conditions of this permit.

3 DESIGNATED SITE

The site designated by the Commission for the Project is depicted on the site maps attached to this site permit (Designated Site). The site maps show the approximate location of the energy storage system and associated facilities within the Designated Site and identify a layout that seeks to minimize the overall potential human and environmental impacts of the Project, as they were evaluated in the permitting process.

The Designated Site serves to provide the Permittee with the flexibility to make minor adjustments to the layout to accommodate requests by landowners, local government units, federal and state agency requirements, and unforeseen conditions encountered during the detailed engineering and design process. Any modification to the location of a photovoltaic tracker row or associated facility shall be done in such a manner as to have human and environmental impacts that are comparable to those associated with the layouts on the maps

attached to this site permit. The Permittee shall identify any modifications in the Site Plan pursuant to Section 8.3.

4 GENERAL CONDITIONS

The Permittee shall comply with the following conditions during construction and operation of the energy storage system over the life of this site permit.

4.1 Site Permit Distribution

Within 30 days of issuance of this site permit, the Permittee shall provide all affected landowners with a copy of this site permit and the complaint procedures. An affected landowner is any landowner or designee that is within or adjacent to the permitted site. In no case shall a landowner receive this site permit and complaint procedures less than five days prior to the start of construction on their property. The Permittee shall also provide a copy of this site permit and the complaint procedures to the applicable regional development commissions, county environmental offices, and city and township clerks. The Permittee shall file with the Commission an affidavit of its site permit and complaint procedures distribution within 30 days of issuance of this site permit.

4.2 Access to Property

The Permittee shall notify landowners prior to entering or conducting maintenance within their property, unless otherwise negotiated with the landowner. The Permittee shall keep records of compliance with this section and provide them upon the request of Minnesota Department of Commerce (Department of Commerce) staff or Commission staff.

4.3 Construction and Operation Practices

The Permittee shall comply with the construction practices, operation and maintenance practices, and material specifications described in the permitting record for this Project unless this site permit establishes a different requirement in which case this site permit shall prevail.

4.3.1 Field Representative

The Permittee shall designate a field representative responsible for overseeing compliance with the conditions of this site permit during construction of the Project. This person shall be accessible by telephone or other means during normal business hours throughout site preparation, construction, cleanup, and restoration.

The Permittee shall file with the Commission the name, address, email, phone number, and emergency phone number of the field representative at least 14 days prior to the pre-construction meeting. The Permittee shall provide the field representative's contact information to affected landowners, local government units and other interested persons at least 14 days prior to the pre-construction meeting. The Permittee may change the field representative at any time upon notice to the Commission, affected landowners, local government units and other interested persons. The Permittee shall file with the Commission an affidavit of distribution of its field representative's contact information at least 14 days prior to the pre-construction meeting and upon changes to the field representative.

4.3.2 Site Manager

The Permittee shall designate a site manager responsible for overseeing compliance with the conditions of this site permit during the commercial operation and decommissioning phases of the Project. This person shall be accessible by telephone or other means during normal business hours for the life of this site permit.

The Permittee shall file the name, address, email, phone number, and emergency phone number of the site manager with the Commission within 14 days prior to the pre-operation meeting. The Permittee shall provide the site manager's contact information to landowners within or adjacent to the Project Boundary, local government units and other interested persons at least 14 days prior to the pre-operation meeting. The Permittee may change the site manager at any time upon notice to the Commission, landowners within or adjacent to the Project Boundary, local government units, and other interested persons. The Permittee shall file with the Commission an affidavit of distribution of its site manager's contact information at least 14 days prior to the pre-operation meeting and upon changes to the site manager.

4.3.3 Employee Training - Site Permit Terms and Conditions

The Permittee shall train and educate all employees, contractors, and other persons involved in the construction and ongoing operation of the energy storage system of the terms and conditions of this site permit. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.4 Independent Third-Party Monitoring

Prior to any construction, the Permittee shall propose a scope of work and identify an independent third-party monitor to conduct Project construction monitoring on behalf of the Department of Commerce. The scope of work shall be developed in consultation with and approved by the Department of Commerce. This third-party monitor will report directly to and will be under the control of the Department of Commerce with costs borne by the Permittee.

Department of Commerce staff shall keep records of compliance with this section and will ensure that status reports detailing the construction monitoring are filed with the Commission in accordance with scope of work approved by the Department of Commerce.

4.3.5 Public Services, Public Utilities, and Existing Easements

During Project construction, the Permittee shall minimize any disruption to public services or public utilities. To the extent disruptions to public services or public utilities occur these shall be temporary, and the Permittee shall restore service promptly. Where any impacts to utilities have the potential to occur the Permittee shall work with both landowners and local entities to determine the most appropriate mitigation measures if not already considered as part of this site permit.

The Permittee shall cooperate with county and city road authorities to develop appropriate signage and traffic management during construction. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.6 Temporary Workspace

The Permittee shall select temporary workspace and equipment staging areas that limit the removal and impacts to vegetation. The Permittee shall not site temporary workspace in wetlands or native prairie as defined in sections 4.3.13 and 4.3.14. The Permittee shall site temporary workspace to comply with standards for development of the shorelands of public waters as defined in Section 4.3.13. The Permittee shall obtain temporary easements outside of the authorized Project Boundary from affected landowners through rental agreements. Temporary easements are not provided for in this site permit.

4.3.7 Noise

The Permittee shall comply with noise standards established under Minn. R. 7030.0010 to 7030.0080, at all times and at all appropriate locations during operation of the Project. The Permittee shall limit construction and maintenance activities to daytime working hours to the extent practicable.

4.3.8 Aesthetics

The Permittee shall consider input pertaining to visual impacts from landowners and the local unit of government having direct zoning authority over the area in which the Project is located. The Permittee shall use care to preserve the natural landscape, minimize tree removal and

prevent any unnecessary destruction of the natural surroundings in the vicinity of the Project during construction and operation.

4.3.9 Topsoil Protection

The Permittee shall implement measures to protect and segregate topsoil from subsoil on all lands utilized for Project construction unless otherwise negotiated with affected landowner.

4.3.10 Soil Compaction

The Permittee shall implement measures to minimize soil compaction of all lands during all phases of the Project's life and shall confine compaction to as small an area as feasible. The Permittee shall use soil decompaction measures on all lands utilized for Project construction and travelled on by heavy equipment (*e.g.*, cranes and heavy trucks), even when soil compaction minimization measures are used.

4.3.11 Soil Erosion and Sediment Control

The Permittee shall implement those erosion prevention and sediment control practices recommended by the Minnesota Pollution Control Agency (MPCA) Construction Stormwater Program. If construction of the Project disturbs more than one acre of land or is sited in an area designated by the MPCA as having potential for impacts to water resources, the Permittee shall obtain a National Pollutant Discharge Elimination System/State Disposal System Construction Stormwater Permit from the MPCA that provides for the development of a Stormwater Pollution Prevention Plan that describes methods to control erosion and runoff.

The Permittee shall implement reasonable measures to minimize erosion and sedimentation during construction and shall employ perimeter sediment controls, protect exposed soil by promptly planting, seeding, using erosion control blankets and turf reinforcement mats, stabilizing slopes, protecting storm drain inlets, protecting soil stockpiles, and controlling vehicle tracking. Contours shall be graded as required so that all surfaces provide for proper drainage, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation and prevent erosion. All areas disturbed during construction of the Project shall be returned to pre-construction conditions.

4.3.12 Public Lands

In no case shall the energy storage system and associated facilities including foundations, access roads, underground cable, and transformers, be located in the public lands identified in Minn. R. 7850.4400, subp. 1, or in federal waterfowl production areas. Photovoltaic tracker

rows and associated facilities shall not be located in the public lands identified in Minn. R. 7850.4400, subp. 3, unless there is no feasible and prudent alternative.

4.3.13 Wetlands and Water Resources

The Permittee shall not place the energy storage system or associated facilities in public waters and public waters wetlands, as shown on the public water inventory maps prescribed by Minnesota Statutes Chapter 103G, except that electric collector or feeder lines may cross or be placed in public waters or public waters wetlands subject to permits and approvals by the Minnesota Department of Natural Resources (DNR) and the United States Army Corps of Engineers (USACE), and local units of government as implementers of the Minnesota Wetlands Conservation Act. The Permittee shall locate the energy storage system and associated facilities in compliance with the standards for development of the shorelands of public waters as identified in Minn. R. 6120.3300, and as adopted, Minn. R. 6120.2800, unless there is no feasible and prudent alternative.

The Permittee shall construct in wetland areas during frozen ground conditions, to the extent feasible, to minimize impacts. When construction during winter is not possible, wooden or composite mats shall be used to protect wetland vegetation. The Permittee shall contain and manage soil excavated from the wetlands and riparian areas in accordance with all applicable wetland permits. The Permittee shall access wetlands and riparian areas using the shortest route possible in order to minimize travel through wetland areas and prevent unnecessary impacts.

The Permittee shall restore wetland and water resource areas disturbed by construction activities to pre-construction conditions in accordance with the requirements of applicable state and federal permits or laws and landowner agreements. The Permittee shall meet the USACE, DNR, Minnesota Board of Water and Soil Resources, and local government wetland and water resource requirements.

4.3.14 Native Prairie

The Permittee shall not place the energy storage system or associated facilities in native prairie, as defined in Minn. Stat. § 84.02, subd. 5, unless addressed in a prairie protection and management plan and not located in areas enrolled in the Native Prairie Bank Program. The Permittee shall not impact native prairie during construction activities, as defined in Minn. Stat. § 216E.01, unless addressed in a prairie protection and management plan.

The Permittee shall prepare a prairie protection and management plan in consultation with the DNR if native prairie, as defined in Minn. Stat. § 84.02, subd. 5, is identified within the Project Boundary. The Permittee shall file the prairie protection and management plan with the

Commission at least 30 days prior to submitting the Site Plan required by Section 8.3 of this site permit. The prairie protection and management plan shall address steps that will be taken to avoid impacts to native prairie and mitigation to unavoidable impacts to native prairie by restoration or management of other native prairie areas that are in degraded condition, by conveyance of conservation easements, or by other means agreed to by the Permittee, the DNR, and the Commission.

4.3.15 Vegetation Management

The Permittee shall disturb or clear vegetation within the Designated Site only to the extent necessary to assure the safe construction, operation, and maintenance of the Project. The Permittee shall minimize the number of trees removed within the Designated Site specifically preserving to the maximum extent practicable windbreaks, shelterbelts, and living snow fences.

4.3.16 Application of Pesticides

The Permittee shall restrict pesticide use to those pesticides and methods of application approved by the MDA, DNR, and the U.S. Environmental Protection Agency (EPA). Selective foliage or basal application shall be used when practicable. All pesticides shall be applied in a safe and cautious manner so as not to damage adjacent properties including crops, orchards, tree farms, apiaries, or gardens. The Permittee shall contact the landowner at least 14 days prior to pesticide application on their property. The Permittee may not apply any pesticide if the landowner requests that there be no application of pesticides within the landowner's property. The Permittee shall provide notice of pesticide application to landowners and beekeepers operating known apiaries within three miles of the pesticide application area at least 14 days prior to such application. The Permittee shall keep pesticide communication and application records and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.17 Invasive Species

The Permittee shall employ best management practices to avoid the potential introduction and spread of invasive species on lands disturbed by Project construction activities. The Permittee shall develop an Invasive Species Prevention Plan and file it with the Commission at least 14 days prior to the pre-construction meeting. The Permittee shall comply with the most recently filed Invasive Species Prevention Plan.

4.3.18 Noxious Weeds

The Permittee shall take all reasonable precautions against the spread of noxious weeds during all phases of construction. When utilizing seed to establish temporary and permanent

vegetative cover on exposed soil the Permittee shall select site-appropriate seed certified to be free of noxious weeds. To the extent possible, the Permittee shall use native seed mixes. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.19 Roads

The Permittee shall advise the appropriate governing bodies having jurisdiction over all state, county, city, or township roads that will be used during the construction phase of the Project. Where practical, existing roadways shall be used for all activities associated with construction of the Project. Oversize or overweight loads associated with the Project shall not be hauled across public roads without required permits and approvals.

The Permittee shall locate all perimeter fencing and vegetative screening in a manner that does not interfere with routine road maintenance activities and allows for continued safe travel on public roads.

The Permittee shall construct the fewest number of site access roads required. Access roads shall not be constructed across streams and drainage ways without the required permits and approvals. Access roads shall be constructed in accordance with all necessary township, county or state road requirements and permits.

The Permittee shall promptly repair private roads or lanes damaged when moving equipment or when accessing construction workspace, unless otherwise negotiated with the affected landowner. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.20 Archaeological and Historic Resources

The Permittee shall make every effort to avoid impacts to archaeological and historic resources when constructing the Project. In the event that a resource is encountered, the Permittee shall consult with the State Historic Preservation Office (SHPO) and the State Archaeologist. Where feasible, avoidance of the resource is required. Where not feasible, mitigation must include an effort to minimize Project impacts on the resource consistent with SHPO and State Archaeologist requirements.

Prior to construction, the Permittee shall train workers about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction. If human remains are encountered during construction, the Permittee shall immediately halt construction and promptly notify local law enforcement and the State Archaeologist. The Permittee shall not

resume construction at such location until authorized by local law enforcement or the State Archaeologist. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.21 Interference

If interference with radio or television, satellite, wireless internet, GPS-based agriculture navigation systems or other communication devices is caused by the presence or operation of the Project, the Permittee shall take whatever action is necessary to restore or provide reception equivalent to reception levels in the immediate area just prior to the construction of the Project. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.22 Drainage Tiles

The Permittee shall avoid, promptly repair, or replace all drainage tiles broken or damaged during all phases of the Project's life unless otherwise negotiated with the affected landowner. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.23 Restoration

The Permittee shall restore the areas affected by construction of the Project to the condition that existed immediately before construction began to the greatest extent possible. The time period to complete restoration may be no longer than 12 months after the completion of construction. Restoration shall be compatible with the safe operation, maintenance, and inspection of the Project. Within 60 days after completion of all restoration activities, the Permittee shall file with the Commission a Notice of Restoration Completion.

4.3.24 Cleanup

The Permittee shall remove and properly dispose of all construction waste and scrap from the right-of-way and all premises on which construction activities were conducted upon completion of each task. The Permittee shall remove and properly dispose of all personal litter, including bottles, cans, and paper from construction activities daily.

4.3.25 Pollution and Hazardous Wastes

The Permittee shall take all appropriate precautions to protect against pollution of the environment. The Permittee shall be responsible for compliance with all laws applicable to the

generation, storage, transportation, clean up and disposal of all waste generated during construction and restoration of the Project.

4.3.26 Damages

The Permittee shall fairly restore or compensate landowners for damage to crops, fences, private roads and lanes, landscaping, drain tile, or other damage sustained during construction. The Permittee shall keep records of compliance with this section and provide them upon the request of Department of Commerce staff or Commission staff.

4.3.27 Public Safety

The Permittee shall provide educational materials to landowners within and adjacent to the Designated Site and, upon request, to interested persons about the Project and any restrictions or dangers associated with the Project. The Permittee shall also implement any necessary safety measures such as placing warning signs and gates for traffic control or restricting public access. The Permittee shall file with the Commission an affidavit of its public safety notifications at least 14 days before the pre-construction meeting.

The Permittee shall submit the location of all underground facilities, as defined in Minn. Stat. § 216D.01, subd. 11, to Gopher State One Call following the completion of the construction of the Project.

4.3.28 Site Identification

The Permittee shall mark the energy storage system with a clearly visible identification number and/or street address.

4.4 Collector and Feeder Lines

The Permittee may use overhead or underground collector and feeder lines to carry power from an internal Project interconnection point to the energy storage system. The Permittee shall place overhead and underground collector and feeder lines that parallel public roads within the public right-of-way or on private land immediately adjacent to the road. The Permittee shall obtain approval from the landowner or government unit responsible for the affected right-of-way.

The Permittee shall locate collector and feeder lines in such a manner as to minimize interference with agricultural operations including but not limited to existing drainage patterns, drain tile, future tiling plans, and ditches. The Permittee shall place safety shields on all guy

wires associated with overhead collector and feeder lines. The Permittee shall submit the engineering drawings of all collector and feeder lines with the Site Plan pursuant to Section 8.3.

4.5 Other Requirements

4.5.1 Safety Codes and Design Requirements

The Permittee shall design the energy storage system and associated facilities to meet or exceed all relevant local and state codes, the National Electric Safety Code, and North American Electric Reliability Corporation requirements. This includes standards relating to clearances to ground, clearance to crossing utilities, clearance to buildings, strength of materials, clearances over roadways, right-of-way widths, and permit requirements. The Permittee shall keep records of compliance with these standards and provide them upon the request of Department of Commerce staff or Commission staff.

4.5.2 Other Permits and Regulations

The Permittee shall comply with all applicable state statutes and rules. The Permittee shall obtain all required permits for the Project and comply with the conditions of those permits unless those permits conflict with or are preempted by federal or state permits and regulations.

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission an Other Permits and Regulations Submittal that contains a detailed status of all permits, authorizations, and approvals that have been applied for specific to the Project. The Other Permits and Regulations Submittal shall also include the permitting agency name; the name of the permit, authorization, or approval being sought; contact person and contact information for the permitting agency or authority; brief description of why the permit, authorization, or approval is needed; application submittal date; and the date the permit, authorization, or approval was issued or is anticipated to be issued.

The Permittee shall demonstrate that it has obtained all necessary permits, authorizations, and approvals by filing an affidavit stating as such and an updated Other Permits and Regulations Submittal prior to commencing Project construction. The Permittee shall provide a copy of any such permits, authorizations, and approvals at the request of Department of Commerce staff or Commission staff.

5 SPECIAL CONDITIONS

The special conditions shall take precedence over other conditions of this permit should there be a conflict.

5.1 ~~[Add Special Conditions in accordance with the record of the docket]~~ Noise

The permittee shall complete a noise study of the surrounding residential areas to ensure noise levels are below State standards. The permittee shall file with the Commission the results of these noise studies for compliance.

5.2 Unanticipated Discoveries Plan

The Permittee shall develop an Unanticipated Discoveries Plan (UDP) to be used in the event previously unrecorded archeological or historic properties, or human remains, are encountered during construction, or if unanticipated effects to previously identified archaeological or historic properties occur during construction. The UDP shall describe how previously unrecorded cultural resources or human remains found during construction shall be protected and examined. The Permittee shall file the UDP with the Commission at least 14 days prior to the pre-construction meeting.

5.3 Northern Long-eared Bat and Tricolored Bat

The Permittee shall comply with U.S. Fish and Wildlife Service guidance and requirements in effect regarding Northern Long-eared Bats and Tricolored Bats, including tree clearing restrictions if applicable.

5.4 Bald Eagle

If, in consultation with the U.S. Fish and Wildlife Service, a bald eagle nest must be removed for construction of the project, the Permittee shall file with the Commission the documentation authorizing any such nest removal at least 14 days prior to the pre-construction meeting.

6 DELAY IN CONSTRUCTION

If the Permittee has not commenced construction or improvement of the site within four years after the date of issuance of this site permit the Permittee shall file a Failure to Construct Report and the Commission shall consider suspension of this site permit in accordance with Minn. R. 7850.4700.

7 COMPLAINT PROCEDURES

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission the complaint procedures that will be used to receive and respond to complaints. The complaint procedures shall be in accordance with the requirements of Minn. R. 7829.1500

or Minn. R. 7829.1700, and as set forth in the complaint procedures attached to this site permit.

Upon request, the Permittee shall assist Department of Commerce staff or Commission staff with the disposition of unresolved or longstanding complaints. This assistance shall include, but is not limited to, the submittal of complaint correspondence and complaint resolution efforts.

8 COMPLIANCE REQUIREMENTS

Failure to timely and properly make compliance filings required by this site permit is a failure to comply with the conditions of this site permit. Compliance filings must be electronically filed with the Commission.

8.1 Pre-Construction Meeting

Prior to the start of construction, the Permittee shall participate in a pre-construction meeting with Department of Commerce staff and Commission staff to review pre-construction filing requirements, scheduling, and to coordinate monitoring of construction and site restoration activities. Within 14 days following the pre-construction meeting, the Permittee shall file with the Commission a summary of the topics reviewed and discussed and a list of attendees. The Permittee shall indicate in the filing the anticipated construction start date.

8.2 Pre-Operation Meeting

At least 14 days prior to commercial operation of the Project, the Permittee shall participate in a pre-operation meeting with Department of Commerce staff and Commission staff to coordinate field monitoring of operation activities for the Project. Within 14 days following the pre-operation meeting, the Permittee shall file a summary of the topics reviewed and discussed and a list of attendees with the Commission.

8.3 Site Plan

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission, and provide the Department of Commerce, and the counties where the Project will be constructed with a Site Plan that includes specifications and drawings for site preparation and grading; specifications and locations of the energy storage system and associated facilities; and procedures for cleanup and restoration. The documentation shall include maps depicting the Designated Site, energy storage system, and associated facilities layout in relation to that approved by this site permit.

The Permittee may not commence construction until the earlier of (i) 30 days after the pre-construction meeting or (ii) or until the Commission staff has notified the Permittee in writing that it has completed its review of the documents and determined that the planned construction is consistent with this site permit.

If the Commission notifies the Permittee in writing within 30 days after the pre-construction meeting that it has completed its review of the documents and planned construction, and finds that the planned construction is not consistent with this site permit, the Permittee may submit additional and/or revised documentation and may not commence construction until the Commission has notified the Permittee in writing that it has determined that the planned construction is consistent with this site permit.

If the Permittee intends to make any significant changes in its Site Plan or the specifications and drawings after submission to the Commission, the Permittee shall notify the Commission, the Department of Commerce, and county staff at least five days before implementing the changes. No changes shall be made that would be in violation of any of the terms of this site permit.

8.4 Status Reports

The Permittee shall file with the Commission monthly Construction Status Reports beginning with the pre-construction meeting and until completion of restoration. Construction Status Reports shall describe construction activities and progress, activities undertaken in compliance with this site permit, and shall include text and photographs.

If the Permittee does not commence construction of the Project within six months of this site permit issuance, the Permittee shall file with the Commission Pre-Construction Status Reports on the anticipated timing of construction every six months beginning with the issuance of this site permit until the pre-construction meeting. The status updates shall include information on the Project's Midcontinent Independent System Operator (MISO) interconnection process, if applicable.

8.5 Labor Statistic Reporting

The Permittee shall file quarterly Labor Statistic Reports with the Commission within 45 days of the end of the quarter regarding construction workers that participated in the construction of the Project. The Labor Statistic Reports shall:

(a) detail the Permittee's efforts and the site contractor's efforts to hire Minnesota workers; and
(b) provide an account of:

i. the gross number of hours worked by or full-time equivalent workers who are Minnesota residents, as defined in Minn. Stat. § 290.01, subd. 7;
ii. the gross number of hours worked by or full-time equivalent workers who are residents of other states, but maintain a permanent residence within 150 miles of the Project; and
iii. the total gross hours worked or total full-time equivalent workers.

The Permittee shall work with its contractor to determine the suitable reporting metric. The report may not include personally identifiable data.

8.6 Prevailing Wage

The Permittee, its contractors, and subcontractors shall pay no less than the prevailing wage rate as defined in Minn. Stat. § 177.42 and shall be subject to the requirements and enforcement provisions under Minn. Stat. §§ 177.27, 177.30, 177.32, 177.41 to 177.435, and 177.45. The Permittee shall keep records of contractor and subcontractor pay and provide them at the request of Department of Commerce staff or Commission staff.

8.7 In-Service Date

At least three days before the Project is to be placed into service, the Permittee shall notify the Commission of the date on which the Project will be placed into service and the date on which construction was completed.

8.8 As-Builts

Within 90 days after completion of construction, the Permittee shall submit to the Commission copies of all final as-built plans and specifications developed during the Project construction.

8.9 GPS Data

Within 90 days after completion of construction, the Permittee shall submit to the Commission, in the format requested by the Commission, geo-spatial information (*e.g.*, ArcGIS compatible map files, GPS coordinates, associated database of characteristics) for all structures associated with the Project.

8.10 Right of Entry

The Permittee shall allow Commission designated representatives to perform the following, upon reasonable notice, upon presentation of credentials and at all times in compliance with the Permittee's site safety standards:

(a) To enter upon the facilities easement of the property for the purpose of obtaining information, examining records, and conducting surveys or investigations.
(b) To bring such equipment upon the facilities easement of the property as is necessary to conduct such surveys and investigations.
(c) To sample and monitor upon the facilities easement of the property.
To examine and copy any documents pertaining to compliance with the conditions of this site permit.

8.11 Emergency Response

The Permittee shall prepare an Emergency Response Plan (ERP) in consultation with the emergency responders having jurisdiction over the Project prior to construction. The Permittee shall file the ERP, along with any comments from emergency responders to the Commission at least 14 days prior to the pre-construction meeting and a revised ERP, if any, at least 14 days prior to the pre-operation meeting. At least 14 days prior to the pre-operation meeting the Permittee shall file with the Commission an affidavit of the distribution of the ERP to emergency responders and Public Safety Answering Points (PSAP) with jurisdiction over the Project. The Permittee shall obtain and register the Project address or other location indicators acceptable to the emergency responders and PSAP having jurisdiction over the Project.

8.12 Extraordinary Events

Within 24 hours of discovery of an occurrence, the Permittee shall notify the Commission of any extraordinary event. Extraordinary events include but shall not be limited to fires, acts of sabotage, collector or feeder line failure, and injured worker or private person. The Permittee shall, within 30 days of the occurrence, file a report with the Commission describing the cause of the occurrence and the steps taken to avoid future occurrences.

8.13 Wildlife Injuries and Fatalities

The Permittee shall report any wildlife injuries and fatalities to the Commission quarterly.

9 DECOMMISSIONING AND RESTORATION

9.1 Decommissioning Plan

The Permittee shall comply with the provisions of the most recently filed and accepted Decommissioning Plan. The initial version of the Decommissioning Plan was submitted for this Project as ~~[Identify Decommissioning Plan, *e.g.*, Appendix XX to the Site Permit Application]~~Appendix G of the joint site permit application. The Permittee shall file an updated

Decommissioning Plan incorporating comments and information from the permit application process and any updates associated with the final construction plans with the Commission at least fourteen 14 days prior to the pre-construction meeting. The Permittee shall update and file the Decommissioning Plan with the Commission every five years following the commercial operation date.

The Decommissioning Plan shall provide information identifying all surety and financial securities established for decommissioning and site restoration. The Decommissioning Plan shall provide an itemized breakdown of costs of decommissioning all Project components, which shall include labor and equipment.

The Permittee shall also submit the Decommissioning Plan to the local unit of government having direct zoning authority over the area in which the Project is located. The Permittee shall ensure that it carries out its obligations to provide for the resources necessary to fulfill its requirements to properly decommission the Project at the appropriate time. The Commission may at any time request the Permittee to file a report with the Commission describing how the Permittee is fulfilling this obligation.

9.2 Site Final Restoration

Upon expiration of this site permit or upon termination of operation of the Project, the Permittee shall have the obligation to dismantle and remove from the site all Project components in accordance with the most recently filed and accepted decommissioning plan. To the extent feasible, the Permittee shall restore and reclaim the site to pre-project conditions. Landowners may require the site be returned to agricultural production or may retain restored prairie vegetation, or other land uses as agreed to between the landowner and the Permittee. All access roads shall be removed unless written approval is given by the affected landowner requesting that one or more roads, or portions thereof, be retained. All such agreements between the Permittee and the affected landowner shall be filed with the Commission prior to commencing restoration activities. The Permittee shall restore the site in accordance with the requirements of this condition and file a Notification of Final Restoration Completion to the Commission within 18 months of termination of operation of the Project.

10 COMMISSION AUTHORITY AFTER SITE PERMIT ISSUANCE

10.1 Expansion of Designated Site Boundaries

No expansion of the site boundary described in this site permit shall be authorized without the approval of the Commission. The Permittee may submit to the Commission a request for a change in the boundary of the site for the Project. The Commission will respond to the requested change in accordance with applicable statutes and rules.

10.2 Periodic Review

The Commission shall initiate a review of this site permit and the applicable conditions at least once every five years. The purpose of the periodic review is to allow the Commission, the Permittee, and other interested persons an opportunity to consider modifications in the conditions of this site permit. No modification may be made except in accordance with applicable statutes and rules.

10.3 Modification of Conditions

After notice and opportunity for hearing this site permit may be modified or amended for cause, including but not limited to the following:

(a) violation of any condition in this permit;
(b) endangerment of human health or the environment by operation of the Project; or
(c) existence of other grounds established by rule.

10.4 More Stringent Rules

The issuance of this site permit does not prevent the future adoption by the Commission of rules or orders more stringent than those now in existence and does not prevent the enforcement of these more stringent rules and orders against the Permittee.

11 SITE PERMIT AMENDMENT

This site permit may be amended at any time by the Commission. Any person may request an amendment of the conditions of this site permit by submitting a request to the Commission in writing describing the amendment sought and the reasons for the amendment. The Commission will mail notice of receipt of the request to the Permittee. The Commission may amend the conditions after affording the Permittee and interested persons such process as is required under Minn. R. 7850.4900.

12 TRANSFER OF SITE PERMIT

The Permittee may request at any time that the Commission transfer this site permit to another person or entity (transferee). In its request, the Permittee must provide the Commission with:

(a) the name and description of the transferee;
(b) the reasons for the transfer;
(c) a description of the facilities affected; and

(d) the proposed effective date of the transfer.

The transferee must provide the Commission with a certification that it has read, understands and is able to comply with the plans and procedures filed for the Project and all conditions of this site permit.

The transferee must provide the Commission with the name and contact information for the site manager, as described in Section 4.3.2, and either a current version with eDocket reference, or a revised version of the following:

(a) complaint procedures, as described in Section 7 and Attachment 1;
(b) ERP, as described in Section 8.12; and
(c) Decommissioning Plan, as described in Section 9.1.

The Commission may authorize transfer of the site permit after affording the Permittee, the transferee, and interested persons such process as is required under Minn. R. 7850.5000.

13 REVOCATION OR SUSPENSION OF SITE PERMIT

The Commission may initiate action to revoke or suspend this site permit at any time. The Commission shall act in accordance with the requirements of Minn. R. 7850.5100, to revoke or suspend this site permit.

14 EXPIRATION DATE

This site permit shall expire ~~[xx]~~30 years after the date this site permit was approved and adopted.