Environmental Assessment:

Benton Solar Project

The Human and Environmental Impacts of Constructing and Operating the Benton Solar Project

July 2025

MINNESOTA
PUBLIC UTILITIES COMMISSION

PUC Docket Nos. IP-7115/GS-23-423, IP-7115/TL-23-425

and IP-7115/ESS-24-283

OAH Docket No. 28-2500-40508

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Benton Solar, LLC (Benton Solar) proposes to construct, own, and operate a 100 megawatt (MW) solar energy generating system, a 100 MW battery storage system, a 0.5 mile long 115 kilovolt (kV) high voltage transmission line (HVTL), and associated facilities in Benton County, Minnesota. Benton Solar must obtain two site permits and one route permit from the Minnesota Public Utilities Commission before it can construct the proposed Benton Solar Project.

Sources

Much of the information used to prepare this environmental assessment comes from the joint site permit application and route 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 numbers (23-423, 23-425 and 24-283), your name, email address, and mailing address. Please indicate whether you would like to receive notices by email or U.S. mail.

Alternative Formats

This document can be made available in alternative formats, that is, large print or audio, by calling (651) 296-0406 (voice).

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[1] Prior to July 1, 2025, Logan Hicks was a staff member within the Department of Commerce, Energy Environmental Review and Analysis unit, which was tasked with developing this environmental assessment. As the result of legislation, and as of July 1, 2025, Logan Hicks is a staff member with the Public Utilities Commission.

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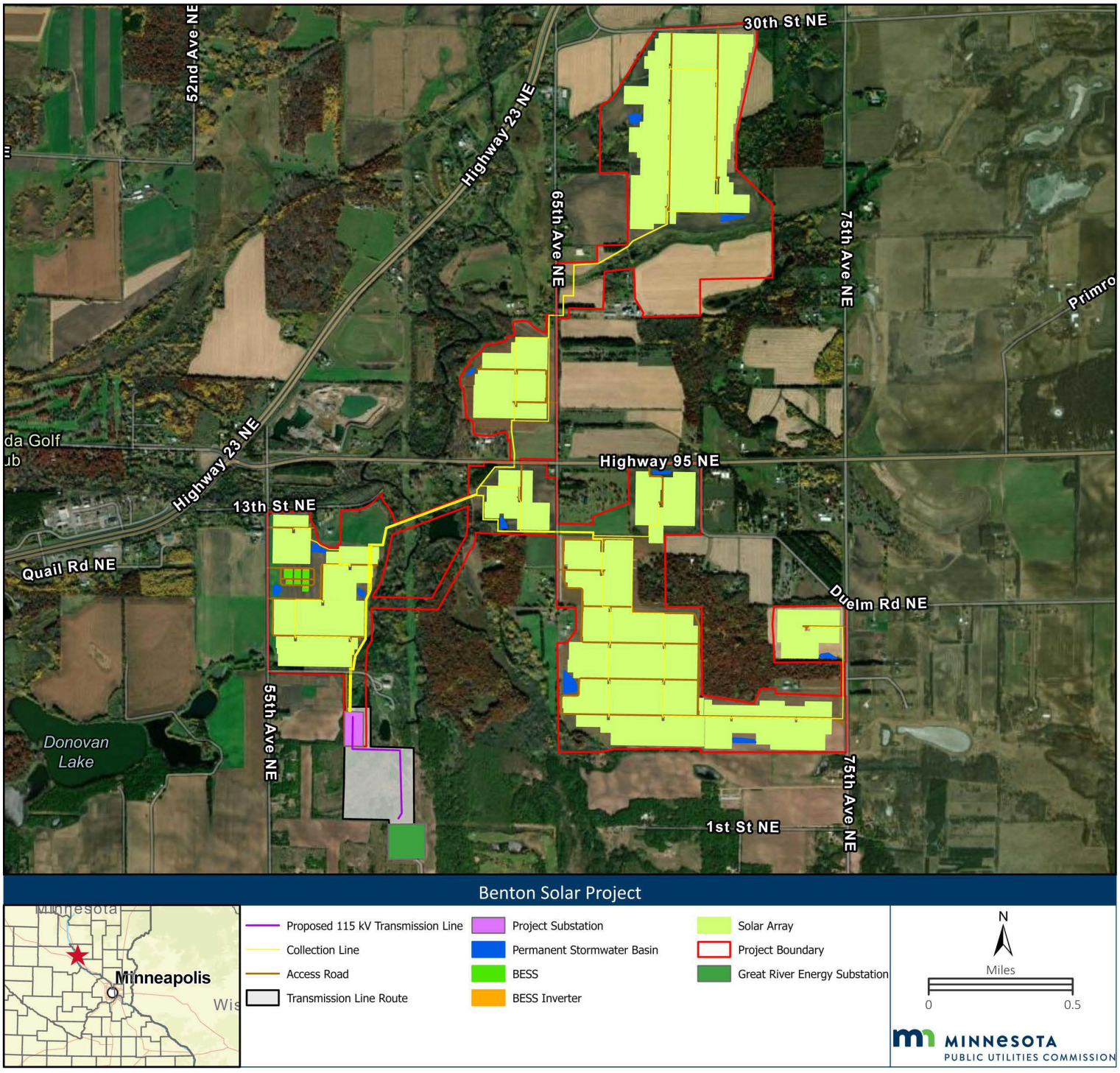
Acronyms and Abbreviations

Acronym/Abbreviation	Description
AC	alternating current
AIMP	Agricultural Impact Mitigation Plan
ALJ	administrative law judge
applicant	Benton Solar, LLC
BMP	best management practice
BWSR	Board of Water and Soil Resources
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	Benton Solar 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
US	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

Project Overview Map



Summary

What is this document?

This document is an environmental assessment. The Minnesota Public Utilities Commission will use the information in this document to inform their permit decisions for the project. You can use it to help make comments about the project.

This environmental assessment (EA) contains an overview of the resources affected by the project. It also discusses potential human and environmental impacts and mitigation measures. Energy Environmental Review and Analysis (EERA) staff within the Department of Commerce (Commerce) began preparing this document as part of the environmental review process. On July 1, 2025, EERA staff moved from Commerce to the Public Utilities Commission (Commission). Accordingly, this document has been issued as a Commission document.

Where do I get more information?

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

If you would like more information or if you have questions, please contact Commission staff: Logan Hicks (logan.m.hicks@state.mn.us), (651) 539-1067 or Cezar Panait (cezar.panait@state.mn.us) (651) 201-2207.

Information about the project, including the permit applications, notices, and public comments, can be found on eDockets: https://www.edockets.state.mn.us/documents by searching "23-423", "23-425" or "24-283" under "Docket #'s". Information is also available on the Commission's webpage for the project: https://puc.eip.mn.gov/web/project/15684.

What are the applicants proposing to construct and why?

The project includes a solar energy generating facility, storage facility, and high voltage transmission line.

Benton Solar, LLC, proposes to build the Benton Solar Project in Minden Township, Benton County, Minnesota. The project includes a solar generating facility and energy storage facility to help provide power when demand is high, and generation is low. The solar generating facility will help address electrical reliability concerns for current and future electricity consumers and assist in Minnesota's goal to provide 100% carbon-free energy by 2040. The high voltage transmission is proposed as part of the project to connect the facility to an existing substation, approximately half a mile south of the proposed project. For a detailed map of the project, please reference **Appendix B**.

What permits are needed?

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

The project requires two site permits and one route permit from the Commission. The site permits are required for the solar generation facility and the energy storage facility. The route permit is required for the associated transmission line.

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.

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 permit decisions. Potential impacts are anticipated to be negligible for displacement, forestry, and mining.

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.

Electronic Interference No impacts to electronic devices are anticipated and if unanticipated impacts do occur, the applicant would be required to restore services.

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.

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

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.

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.

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.

Human Health and Safety

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

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.

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 Constructing the project to NESC standards and Commission route permit requirements would mitigate stray voltage and induced voltage concerns. Therefore, potential impacts from stray voltage and induced voltage are anticipated to be minimal.

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 Benton 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.

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.

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.

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.

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.

Floodplains and Topography The impact intensity for floodplains is predicted to be short- and long-term, with both negative and beneficial impacts. Short-term and negatively minimal during construction, as the floodplain topography could be affected by construction. Beneficially long-term during operation, as reestablishing native vegetation helps with soil penetration. The topography impacts are expected to be minimal, as the topography is not anticipated to be changed much.

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.

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 permits for the project.

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 any permits. Site permits define the location of the project and include conditions specifying mitigation measures. Route permits define the route of the transmission line and also includes conditions specifying mitigation measures. The Commission is expected to make permit decisions in the second half of 2025.

1 Introduction

Benton Solar, LLC (Benton Solar or applicant) is proposing to construct and operate the Benton Solar Project (project), a 100 megawatt (MW) solar farm, a 100 MW battery energy storage system (BESS), and a 0.5 mile long 115 kilovolt (kV) high voltage transmission line (HVTL) in Benton County, Minnesota. Benton Solar must obtain two site permits and one route permit 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 the proposed 115 kV HVTL to an existing substation owned by Great River Energy (GRE).

The applicant filed a joint solar and storage site permit application (joint site permit application) and a route permit application on September 24, 2024. The Commission found the joint site permit application and route permit application to be substantially complete on December 19, 2024.

Energy Environmental Review and Analysis (EERA) staff within the Department of Commerce (Commerce) began preparing this environmental assessment (EA) as part of the environmental review process. On July 1, 2025, EERA staff moved from Commerce to the Commission; accordingly, this EA has been issued as a Commission document. 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 and route permits.

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".[2]

1.1 What is the state of Minnesota's role?

The applicant needs two site permits and one route permit from the Commission to construct the project. An administrative law judge will oversee a public hearing.

To build the project, the applicant needs two site permits and one route permit 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 Benton County or a Construction Stormwater Permit from the Minnesota Pollution Control Agency (MPCA). A Commission permit supersedes local zoning, building, and land use rules.[3] The Commission's 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."[4]

[2] Minnesota Statutes 216E.02, subd. 1.
[3] Minnesota Statutes 216E.10, subd. 1.
[4] Minnesota Statutes 216E.03, subd. 7.

Benton Solar submitted a joint site permit application and route permit application to the Commission for two site permits and one route permit for the project on September 24, 2024.[5] [6] The Commission must consider whether the record supports issuing permits, and what conditions should be placed on the permits.[7]

To ensure a fair and robust airing of the issues, the Minnesota Legislature has set out a process for the Commission to follow when considering permit applications.[8] 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 permit applications.

1.2 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.

1.3 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, route 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 and discusses how this EA is organized.
- **Chapter 2** summarizes the regulatory framework, including the site and route 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 3** describes the project—design, construction, operation, and decommissioning.
- **Chapter 4** describes the environmental setting; details potential human and environmental impacts from the project; and identifies measures to mitigate adverse impacts. It summarizes the cumulative potential effects of the project and other projects and lists unavoidable impacts and irreversible and irretrievable commitments of resources.

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[5] Benton Solar, LLC, *Joint Application to the Minnesota Public Utilities Commission for Site Permits,* September 24, 2024, eDockets Numbers 20249-210442-01 (through -20), 20249-210443-01 (through -04).

[6] Benton Solar, LLC, *Application to the Minnesota Public Utilities Commission for a Route Permit*, September 24, 2024, eDockets Numbers 20249-210445-01 (through -07).

[7] 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.

[8] See generally Minnesota Statutes 216E.

- **Chapter 5** discusses the siting and routing factors and their application to the project.
- **Chapter 6** identifies the sources used to prepare the document.

2 Regulatory Framework

Chapter 2 discusses the permitting process used by the Commission. It describes the environmental review process and lists the factors the Commission considers when making a 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.

2.1 What Commission approvals are required?

The project requires 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.[9] 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.[10] Additionally, the project also requires a route permit due to the associated HVTL which meats the definition of a *high-voltage transmission line,* which 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.[11] 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.

2.2 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 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 this project, requires preparation of an EA and a public hearing.[12]

[9] Minnesota Statutes 216E.01, subd. 5.
[10] Minnesota Statutes 216E.01, subd. 3.
[11] Minnesota Statutes 216E.01, subd. 4.
[12] Minnesota Statutes 216E.04, subd. 1 and 5; Minnesota Rules 7850.3700, subp. 1. Applicants are free to elect the alternative process if their project qualifies for it.

2.3 What permitting steps have occurred to date?

The Commission accepted the joint site permit application and route permit application as complete on December 19, 2024. Public information and scoping meetings were held in Sauk Rapids, Minnesota on January 14, 2025, and online on January 15, 2025.

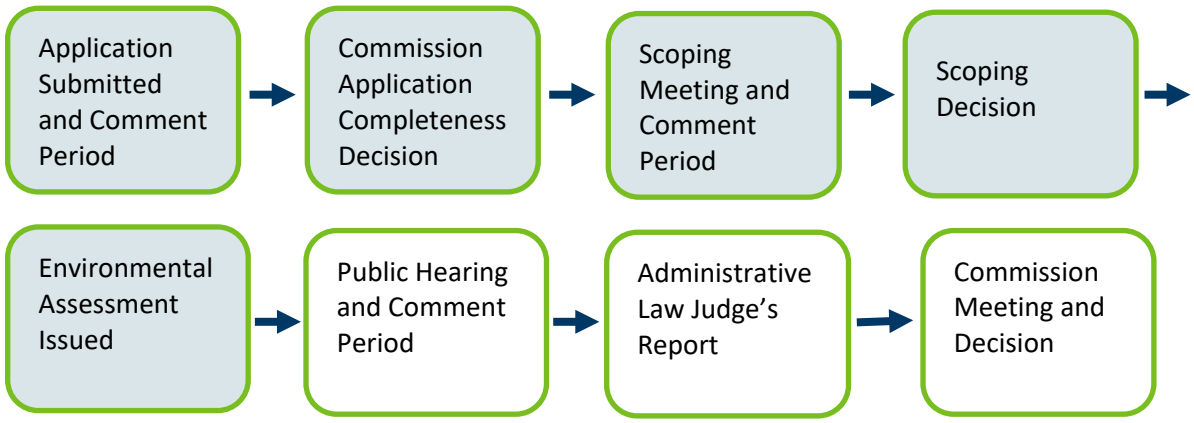
Application Filing and Acceptance

Benton Solar provided the required written notice of its intent to file a joint site permit application and route permit application under the alternative process on August 20, 2024.[13]

Benton Solar filed a joint site permit application (SPA)[14] and a route permit application (RPA)[15] on September 24, 2024. The Commission accepted the joint site permit application as substantially complete in its order dated December 19, 2024.[16] The order also referred the matter to the Office of Administrative Hearings for appointment of an administrative law judge (ALJ) to conduct a contested case hearing for the project. Commission staff provided a Sample Solar Site Permit,[17] a Sample Energy Storage System Site Permit,[18] and a Sample HVTL Route Permit[19] on October 22, 2024.

Figure 1 outlines the permitting process as it has unfolded for this project.[20]

Figure 1. Permitting Process Summary



[13] Benton Solar, *Notice of Intent to Submit a Route Permit Application and a Joint Site Permit Application under the Alternative Permitting Process*, August 20, 2024, eDockets No. 20248-209653-01.
[14] Benton Solar, *Joint Site Permit Application*, September 24, 2024, eDockets Nos. 20249-210442-01 (through -20), 20249-210443-01 (through -04).
[15] Benton Solar, *Route Permit Application*, September 24, 2024, eDockets Nos. 20249-210445-01 (through -07).
[16] Commission, *Order*, December 19, 2024, eDockets No. 202412-213205-01.
[17] Commission, *Sample Solar Site Permit*, November 27, 2024, eDockets No. 202411-212479-01.
[18] Commission, *Sample Energy Storage System Site Permit*, November 27, 2024, eDockets No. 202411-212481-01.
[19] Commission, *Sample HVTL Route Permit*, November 27, 2024, eDockets No. 202411-212480-01.
[20] Read from left to right; shaded steps are complete.

SCOPING PROCESS

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.[21] 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.[22] 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 Sauk Rapids, Minnesota on January 14, 2025, and an online meeting on January 15, 2025. The comment period closed on January 31, 2024. Approximately 40 people attended the Sauk Rapids meeting, and seven attendees provided public comment and questions. Ten individuals attended the online meeting and while two individuals asked questions regarding the project, no comments were provided.[23] Thirty written public comments were received from individuals, one collective of residents, the Minnesota Future Farmers of America, and two state agencies.[24]

Several individuals and organizations raised concerns with the project, while several addressed support for the project and the applicant. Topics of concern included potential impacts associated with aesthetics, property values, cultural values, topography/drainage, land use, health and safety, noise pollution, wildlife, water and soil resources, vegetation, archaeological and historic lands, road use, and airports.

The Minnesota Department of Natural Resources provided comments regarding project fencing and lighting as well as potential impacts to Blanding's turtles and bats. The Minnesota Department of Transportation (MnDOT) noted the proximity of the project to Trunk Highway 95. MnDOT provided comments regarding potential impacts related to cultural resources, protected species, and water basins.

Benton Solar provided a response to these comments on February 12, 2025.[25]

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[21] Minnesota Rules 7850.3700, subp. 2.

[22] Commission and Commerce, *Notice of Public Information and Environmental Review Scoping Meeting*, December 26, 2024, eDockets No. 202412-213328-01.

[23] Commerce, *Oral Comments on the Scope of the Environmental Assessment*, February 5, 2025, eDockets No. 20252-214999-01.

[24] Commerce, *Written Comments on the Scope of the Environmental Assessment*, February 5, 2025, eDockets No. 20252-214999-02.

[25] Benton Solar, *Response,* February 12, 2025, eDocket No. 20252-215314-01.

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 March 26, 2025 (**Appendix A**). The scoping decision identifies the issues to be evaluated in this EA.

2.4 What factors guide the Commission's decision?

Minnesota statutes and rules 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 permits for the project and, if permits are issued, where the project will be located and what permit conditions are appropriate.

Minnesota Statutes 216E.03 lists considerations that guide the study, evaluation, and designation of permits. Minnesota Rule 7850.4100 lists the factors the Commission must consider when making a 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."[26]

2.5 What does the Commission approve in a permit?

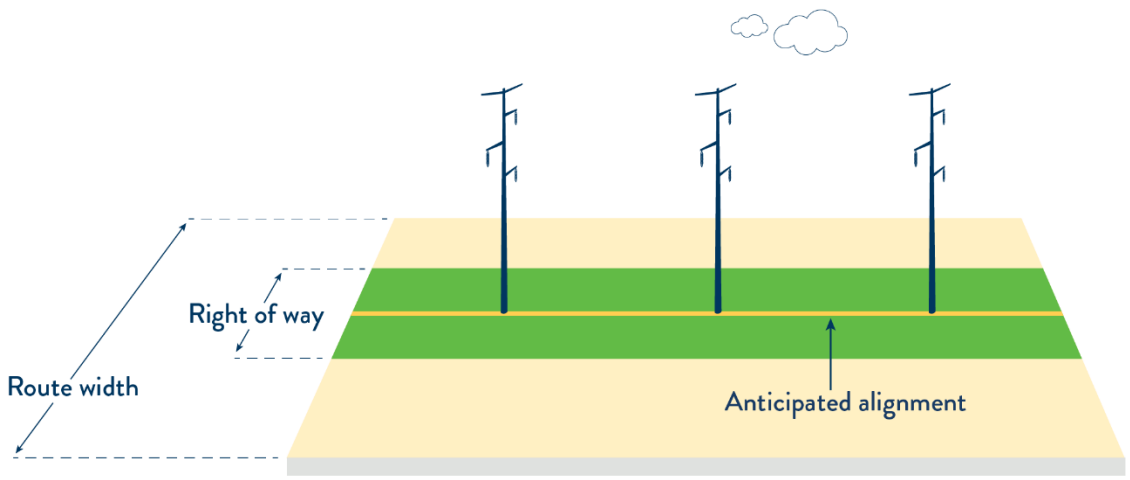
For site permits, the Commission approves a specific project site and associated permit conditions. For a route permit, the Commission approves a route and an anticipated alignment for the transmission line as well as permit conditions.

When the Commission issues a site permit, it designates a site for the project. A large electric generating plant or an energy storage system may be constructed only on a site approved by the Commission.[27]

When the Commission issues a route permit it designates a route and an anticipated alignment.[28] The right-of-way (ROW) is the area required for safe operation of the HVTL. It must be within the designated route and is the area for which the permittee obtains easements to construct and operate the HVTL. The route width is typically wider than the actual ROW needed for the HVTL. This extra width provides flexibility when constructing the HVTL but is not so wide that it is impossible to determine where the HVTL would be constructed. A wider route width allows permittees to work with landowners to address their concerns and to address engineering issues that may arise after a permit is issued. The route width, in combination with the anticipated alignment, is intended to balance flexibility and predictability. **Figure 2** illustrates a transmission line alignment, right-of-way, and route.

[26] Minnesota Statutes 216E.03, subd. 7(a).
[27] Minnesota Statute 216E.03, subd. 1.
[28] Minnesota Statute 216E.03, subd. 2.

Figure 2. Route and Right-of-Way Illustration



The HVTL must be constructed within the Commission's designated route and along the anticipated alignment. The anticipated alignment is the anticipated location of the structures and HVTL within the ROW and route.

2.6 Are other permits or approvals required?

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

Site and route permits from the Commission are the only state permits required for siting and routing the project. However, various federal, state, and local approvals might be required for activities related to construction and operation of the project. These subsequent permits are referred to as "downstream" permits and must be obtained by the permittee prior to construction.[29] **Table 1** lists potential downstream permits that might be required, several of which are discussed below.

Table 1. 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

[29] 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").

Unit of Government	Type of Application	Purpose	Anticipated for project
U.S. Fish and Wildlife Service	Threatened and Endangered Species Consultation	Consultation to mitigate impacts to federally listed species	Possible
	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			
Benton County	Transportation Permit	Required for transporting oversized and overweight loads on County roadways.	Possible

Unit of Government	Type of Application	Purpose	Anticipated for project
	Access Driveway/Entrance Permit	Required for moving, widening or creation a new driveway access to County roads	Possible
	Drainage and Ditching Work Within County Highway Right-of-Way	Required to work within public roads rights-of-way	Possible
Benton 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
Benton County Soil and Water Conservation District (SWCD)	Minnesota Wetland Conservation Act Approval	Activities affecting water resources	Possible

2.6.1 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."[30] 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[31] of any threatened or endangered species. As a result, USFWS encourages project proposers to consult with

[30] USEPA, *Section 404 Permit Program*, (February 6, 2025), http://www.epa.gov/cwa-404/section-404-permit-program.

[31] 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).

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.

2.6.2 State

Potential impacts to state lands and waters, as well as fish and wildlife resources, are regulated by the Minnesota Department of Natural Resources (DNR). Licenses are required to cross state lands or waters.[32] Projects affecting the course, current, or cross-section of lakes, wetlands, and streams that are public waters may require a *Public Waters Work Permit*.[33] Utility infrastructure that will be crossing DNR managed lands require the agency to provide a Utility Crossing License.[34] 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."[35] The CSW permit requires use of best management practices; development of a Stormwater Pollution Prevention Plan (SWPPP); and adequate stormwater treatment capacity once the project is complete. Projects must be designed so that 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.[36]

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."[37] The certification becomes a condition of the federal permit.

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

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[32] Minnesota Statutes 84.415.
[33] DNR, *Requirements for Projects Involving Public Waters Work Permits*, (n.d.), http://www.dnr.state.mn.us/waters/watermgmt_section/pwpermits/requirements.html.
[34] DNR, *Utility Crossing License,* (2023), https://www.dnr.state.mn.us/permits/utility_crossing/index.html.
[35] MPCA, *Construction Stormwater*, (2023), https://www.pca.state.mn.us/business-with-us/construction-stormwater.
[36] MPCA, *Minnesota Stormwater Manual,* (2025), https://www.pca.state.mn.us/water/minnesotas-stormwater-manual.
[37] 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.

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.[38]

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.[39] Coordination would be required to construct access roads or driveways from trunk highways.[40] 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.[41]

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.

2.6.3 Local

Benton County local permits may be required as a component of this project, including: [42]

- 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.

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[38] Minnesota Department of Labor and Industry, *Electrical Permits, Contractors*, (n.d.), https://www.dli.mn.gov/business/electrical-contractors/electrical-permits-contractors.
[39] Minnesota Rules, Part 8810.3300, subp. 1.
[40] MnDOT, *Land Management*, (2022), https://www.dot.state.mn.us/utility/forms.html.
[41] MnDOT, *Utility Accommodation on Trunk Highway Right of Way: Policy OE002,* (2025), https://www.dot.state.mn.us/policy/operations/oe002.html.
[42] Benton County, *Public Works/Highways,* (n.d.), https://www.co.benton.mn.us/256/Public-Works-Highway.

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.

2.7 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.[43] 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."[44] 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.

2.8 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.

[43] 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.

[44] 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 Proposed Project

Benton Solar proposes to construct and operate an up to 100 MW solar farm, a 100 MW battery storage system, and 0.5 mile 115 kV HVTL in Minden Township, Benton County, Minnesota. The project will occupy approximately 1,000 acres (951.4 acres within the solar farm and battery storage project area and 48.3 acres within the route width of the proposed HVTL) east of the city of St. Cloud. This 1,000 acres is defined as the "area of land control". There is a planned "preliminary development area" of 631.9 acres, in which the applicant plans on the developing within the land control area. The project will interconnect to the electrical grid through the proposed HVTL, which will connect the proposed project substation to an existing substation owned by Great River Energy (GRE). This chapter describes the project and how it would be constructed, operated, and decommissioned.

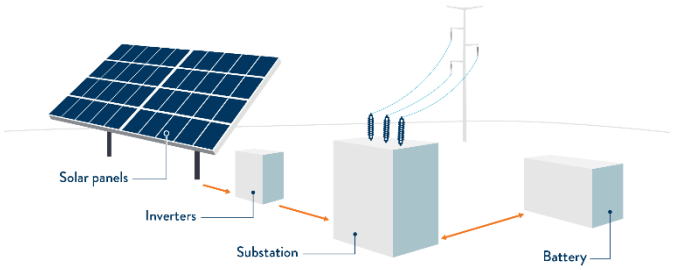
3.1 Solar Facility and BESS

3.1.1 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 3. 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 3** shows a simplified schematic of the major components of the solar generating and storage facility.

3.1.2 How are the solar facility and BESS designed?

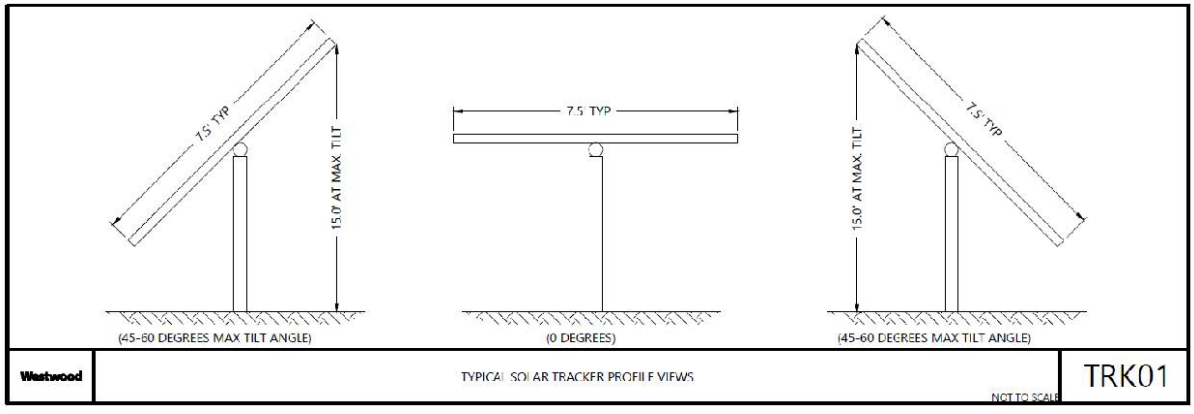
The project will consist of photovoltaic (PV) panels, trackers, inverters, transformers, access roads, security fencing, below-ground electric collection and communication lines, a project substation and interconnection facilities, conduit, metering and switchgear, step-up transformers, supervisory control and data acquisition (SCADA) system, an operation and maintenance facility, four weather stations, a BESS, laydown yards, and a short aboveground 115 kV transmission line.

Solar Arrays

Benton 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 to 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. **Figure 4** and **Figure 5** show a typical solar array and tracking profile. When tilted to their highest position (early and late in the day), the top edge of the solar panels may be at a maximum 20 feet above the ground, depending on the manufacturer. 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 260,208 PV panels to establish the up to 100 MW AC capacity, although the total number may be more or less as a specific PV panel has not been selected for the project.[45]

Figure 4. Typical Solar Array

Figure 5. Typical Solar Tracking Profile



[45] SPA, Section 3.1.1.1.

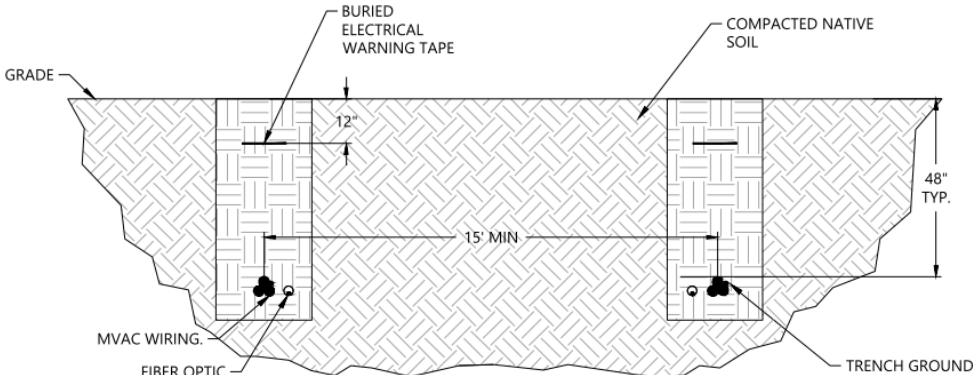
Electrical Collection System

The direct current (DC) electrical energy generated by the solar panels (about 1,500 volts DC) will be delivered to inverters through cables that are typically mounted underneath the PV panels.[46] The inverters convert the electricity from DC to 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. Power inverters will be placed on inverter "skids" on top of concrete slab or pile foundations typically 18 feet wide by 30 feet long. From a distance, inverter skids will look like one-half of a semi-trailer box (**Figure 6**). The final number of inverters will depend on the inverters selected for the project as well as the final solar panel configuration.

Figure 6. Inverter

Electrical energy (34.5 kV AC) will be transmitted from inverter skids to the project substation through underground cables (**Figure 7**). Cabling will be trenched or plowed into place to a depth between 3 to 4 feet below grade.[47]

Figure 7. Underground Cabling



BESS Facility

The project BESS is proposed to be located in the western portion of the project area. **Figure 8** shows a detailed layout of the solar facility and the BESS.

[46] SPA, Section 3.1.1.3.
[47] SPA, Section 3.1.3.

Figure 8. Solar Facility and BESS Detail

Locating the BESS centrally as opposed to scattered throughout the site allows for better monitoring, maintenance, and efficiency.[48] The BESS is currently designed to occupy 3.1 acres consisting of many self-contained cabinets that will not exceed 25 feet in height (**Figure 9**). 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.[49]

[48] SPA, Section 3.1.2.
[49] Id.

Figure 9. Representative BESS

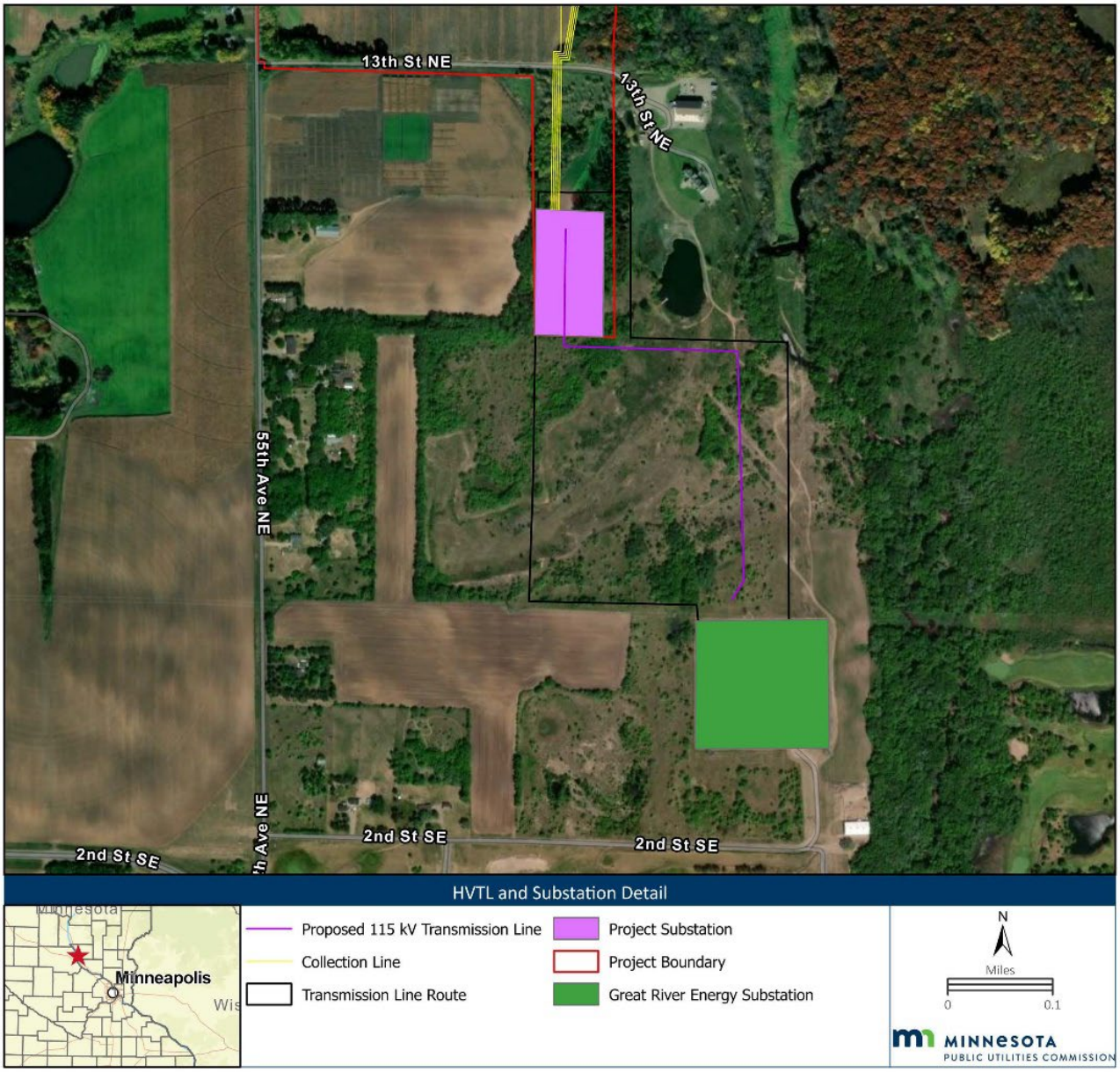
Project Substation

The project substation is proposed to be located in the southwestern portion of the project site adjacent to the point of connection to the proposed 115 kV HVTL. The substation will be located inside the project fence and is estimated to occupy no more than approximately 5 acres of land.[50] Underground 34.5 kV collector lines from the inverters will deliver energy to the project substation. The project substation will be a 34.5/115 kV step-up substation and connect to an existing GRE substation via the proposed 115 kV HVTL. Other components of the substation include metering and switching. The substation will be designed according to the NESC and regional utility practices.[51]

Figure 10 shows a detailed layout of the HVTL, project substation and existing GRE substation.

[50] RPA, Section 2.6.
[51] Id.

Figure 10. HVTL and Substation Detail



Operations and Maintenance Facility

The operations and maintenance (O&M) facility is proposed to be a leased off-site space. The facility will store O&M supplies, repair equipment, and network access to the SCADA system for monitoring the project facilities.[52]

[52] SPA, Section 3.1.7.

Fencing

All solar arrays will be fenced for security. The applicant plans to install 58,768 linear feet of permanent security fencing along the perimeter of the preliminary development area.[53] The perimeter fencing around the project will be up to 8 feet tall agricultural woven wire topped with 2 strands of smooth wire, for a maximum height of 10 feet. A permanent 6 foot tall chain link fence, with one foot of barbed wire at the top, will be installed along the perimeter of the project substation. A permanent seven foot tall chain link fence, with one foot of barbed wire at the top, will be installed along the perimeter of the BESS facility.

Access Roads

Although the total length of access roads will depend upon final site design, the preliminary layout anticipates approximately 7.6 miles of graveled access roads.[54] These roads will be used for operations and maintenance activities. The majority of the access roads will be approximately 10 feet wide with 5 foot shoulders on either side. Two access roads, leading to the substation and BESS facility, will be 20 feet wide with 2 foot shoulders on either side. Access roads may be wider along internal road intersections, curves or turnarounds. Gated entrances to access roads will be locked.

3.1.3 How would the solar facility and BESS be constructed?

Benton Solar anticipates that construction of the solar facility will begin in 2026 with an in-service date in the fourth quarter of 2027. This section summarizes construction activities of the solar facility and BESS. Unless otherwise noted, this summary has been adapted from Section 3.4.2 of the SPA.

Benton Solar anticipates that construction will begin in 2026 to meet an in-service goal of the fourth quarter in 2027. 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 14 months with a 16-week winter break. Benton Solar anticipates approximately nine laydown yards on 6.6 acres of the project area. The applicant anticipates grading only areas where the elevation requires accommodation for certain pieces of equipment or aspects of the project.

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 pile drivers, concreate trucks and pumpers, boom trucks, tractor trailers, and large cranes.

The applicant estimates that the project will create approximately 150 to 300 temporary jobs for construction and installation phases, and two to three permanent full-time jobs for the project operation phase.

[53] SPA, Section 3.1.5.
[54] SPA, Section 3.1.4.

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 that moves along tracks. 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 using hand tools.

Electrical Collector System

The electrical collection system will be installed below-ground for the AC electrical collection system at a depth between 3 to 4 feet, using trenching. Benton Solar currently has a "north" and "south" route to cross the Elk River. They are anticipating using the north route but will utilize the south route if environmental factors make it a better option when conducting surveying. The collection cables will be horizontally bored beneath the river. Benton Solar will work with landowners to find the optimal path for the electrical collector system.

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.

Project Substation

Construction of the project substation will begin with soil scraping and segregating. 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.

Access Roads and Laydown Yards

Construction of the access roads will begin with topsoil stripping and segregating. The subgrade will then be compacted and the roads will be installed as designed, with or without geo-fabric depending on soil type. The roads will be surfaced with gravel and compacted. Once installed, the applicant will then install drainage ditches as designed. Additionally, Benton Solar will establish several temporary laydown yards on a total of 6.6 acres.

Restoration

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

Benton Solar has prepared a preliminary VMP (Appendix D of the SPA) 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 species.

3.1.4 How would the solar facility and BESS be operated and maintained?

Benton Solar estimates the service life of the project to be 25 to 30 years.[55] Operational staff will be actively engaged during the construction phase of the project. Following commissioning, 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 two to 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 and BESS 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 2. Regular Operations and Maintenance Tasks[56]

Equipment	Task
Solar Modules	Visual check of the panels, wiring and junction boxes, solar module strings and string boxes faults, solar module string measurement of the insulation, and vegetation management (if necessary)
BESS	System visual inspection, filter inspection, and HVAC systems check
Electric Boards	Case visual check, fuses check, surge arresters check, torque check, DC 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, and torque check
Support Structures	Visual check and PV panels torque check on random sample
Substation	Visual inspection

[55] SPA, Section 3.5.
[56] SPA, Table 3.6.1.

3.1.5 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 permit or permits must be amended. At the end of the project's useful life, Benton 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. Benton Solar provided a draft decommissioning plan as Appendix E of its SPA.

If the project is not repowered, Benton 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.

Benton Solar anticipates that the total estimated cost to decommission the project is approximately $13,210,665. Estimated salvage/scrap value is approximately $14,440,284, offsetting the cost resulting in $1,229,700 in surplus. Benton Solar states they will coordinate with Benton County to develop an agreed upon timeline for establishing a means of financial surety (e.g., bond, letter of credit, escrow, or similar instrument). The cost of decommissioning will be reevaluated every five years afterwards.[57]

3.2 HVTL

3.2.1 How is the HVTL designed?

The HVTL will be designed in compliance with all applicable standards regarding clearance to ground, clearance to existing utilities, clearance to buildings, strength of materials, and ROW widths. Crews will follow standard construction practices; GRE and procedures; and industry safety procedures.

Alternating current transmission lines, such as the proposed project, consist of three separate phases, each phase requiring a conductor to carry the electrical power. This project is using single-conductor phase wires, or one wire per conductor. A typical conductor is a cable consisting of aluminum wires stranded around a core of steel wires. There will be a shield wire strung above the phases to prevent damage from lightning strikes.

A 100-foot ROW is necessary for the project. Structures will generally be 70 to 95 feet tall, made of steel, and will be 300 to 400 feet apart. The average diameter of the steel structures at ground level will be 30 inches.

[57] SPA, Section 4.2.

The expected service life is about 40 years, although it is possible the line and structures will last longer than 40 years. During this time, Benton Solar expects the HVTL should not be out of service for any extended period except for the rare times when scheduled maintenance is required or when a natural event, such as a tornado, thunderstorm, or ice storm causes an outage.

3.2.2 How would the applicant acquire land rights?

The applicant would negotiate with landowners for easement rights. In this case, it is one private landowner, and Great River Energy.

In addition to long-term easements for the operation and maintenance of the HVTL, agreements for the use of temporary workspace might be obtained from some landowners. Temporary workspace generally includes a laydown yard(s) used to stage or store structures, vehicles, equipment, and supplies. Laydown yards are generally sited on previously disturbed or developed areas.

Benton Solar states that they will use laydown yards mentioned in **Section 3.1.3**, and create approximately 7 staging areas along the ROW for equipment use.

3.2.3 How would the HVTL be constructed?

More detailed descriptions of construction of the HVTL can be found in Chapter 5 of the RPA.

Construction will not begin until the applicants obtain necessary approvals and land rights. Activities must comply with easement agreements. Construction in areas where approvals are not needed or where already obtained could proceed while approvals for other areas are in progress. Benton Solar will notify landowners of the anticipated construction schedule, which might ultimately vary due to permit conditions, weather, and available workforce and materials.

Benton Solar will follow standard construction practices, including best management practices (BMPs) designed to mitigate impacts. BMPs are based on industry-specific standards and experience with previous projects. Construction would progress, generally, as follows:

- Survey and staging
- Determining applicable construction access,
- Installing stormwater pollution prevention and erosion control measures,
- Clearing, grubbing, and grading the project ROW,
- Delivering materials
- Installation of foundations,
- Assembling, erecting, and setting structures, and
- Installing ground rods, insulators, shield wires, and conductors.

Typical vegetation removal equipment includes chainsaws, mowers, cranes, bucket trucks, tractors, dump trucks, pickup trucks, flatbed trucks, backhoes, and bulldozers. After vegetation removal, typical construction equipment may include digger-derrick line trucks, track-mounted drill rigs, dump trucks, front-end loaders, bucket trucks, bulldozers, flatbed tractor-trailers, pickup trucks, concrete trucks, and various trailers.

ROW Preparation

Before ground disturbance occurs, surveyors will mark the anticipated alignment and ROW boundary. Following surveying, Benton Solar will install the necessary access roads for construction of the line.

Construction begins by removing trees and other vegetation from the ROW that will interfere with safe construction and operation of the HVTL. Where clearing is required, all materials will either be chipped or shredded on site and spread on the ROW, stacked in the ROW for use by the property owner, or removed and disposed of depending on the agreement with the property owner during easement negotiations. Prior to structure installation, the HVTL alignment might again be surveyed and marked to guarantee proper placement of structures.

Structure Installation

This phase of construction begins by marking underground utilities using Gopher State One Call. Structures will be delivered to the installation location either directly from the manufacturer or from a marshaling yard.

Before the equipment is delivered, a foundation is installed, if necessary. This project proposes to use steel pole structures which will mostly be installed directly into the ground. This is done by auguring holes 15 to 30 feet deep and 36 to 60 inches in diameter. Some poles may also require a concrete caisson for added support. The concrete caissons will be approximately 20 to 50 feet deep, and 6 to 10 feet in diameter. Any soil removed from the ground will be spread and leveled near the site, given to the property owner for use, or removed from the site if requested by the property owner. Crews will install hardware while the structure is on the ground. The structure is then lifted, placed, and secured.

Once structures are installed conductors are strung along the line. Conductors and a shield wire will be strung, tightened, and, once appropriate tension is obtained, secured to each structure.

Restoration

Removal of equipment and debris from the ROW and laydown yard(s) is the first step in restoring the ROW. Crews will repair disturbed areas to pre-construction contours to the greatest extent practicable so that all surfaces drain naturally, blend with natural terrain, and facilitate revegetation. Restoration includes removal of debris and all temporary facilities, implementing erosion control measures, and reseeding with appropriate seed mixes.

After construction is complete Benton Solar will contact landowners to identify damages that might have occurred during construction. Benton Solar will fairly compensate landowners for any damages or hire a contractor to restore damaged property per the terms of individual easement agreements.

3.2.4 How would the HVTL be operated and maintained?

Benton Solar would be responsible for the operation, maintenance, and, when necessary, repair of the HVTL.

Benton Solar will utilize NextEra Energy Resources operations organization to perform periodic inspections of the ROW and HVTL. If problems are found during inspection, repairs will be completed. Generally, vegetation within the ROW that has the potential to interfere with the operation of the HVTL will be removed. Native shrubs that will not interfere with the safe operation of the HVTL will be allowed to reestablish in the ROW. Clearing needs are determined from annual ROW inspection.

When necessary, problem vegetation will be cleared through a combination of mechanical and hand clearing, along with targeted application of herbicide, to remove or control vegetation growth.

3.3 Where is the project located?

The project is located in Minden Township in Benton County, Minnesota.

The project is located in Minden Township in Benton County, east of the city of St. Cloud, Minnesota. State Route 95 runs east to west through the center of the project area. Benton Solar selected the site based on sufficient solar resource, environmental setting, proximity to existing electric transmission infrastructure, and landowner participation.[58] **Table 3** summarizes the project location.

Table 3: Project Location

Township	Range	Sections	Township	County
36N	30W	13, 23-26	Minden	Benton

3.4 Project Costs

Benton Solar estimates the total cost to construct the project to be approximately $330.5 million to $337.5 million ($324.5 million for the solar facility and BESS facility, $6 million to $ 13 million for the HVTL) (**Table 4**). Benton 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.

Table 4. Estimated Project Cost Ranges[59]

Project Component	Estimated Cost ($USD millions)
Solar and BESS Facility	
Development Expense	3.8
Financing	318
Interconnection	2.7
HVTL	
Land Acquisition and Permitting	2-5
Design, Procurement, and Construction	3-7
Postconstruction Closeout, Permit Compliance	1
Total Installation Cost	**330.5-337.5**

3.5 Project Schedule

[58] SPA, Section 2.3.1.
[59] SPA, Section 2.6; RPA, Section 2.9.

Benton Solar anticipates the project will begin commercial operation by the end of 2027. **Table 5** shows Benton Solar's estimated development and construction milestones.

Table 5. Anticipated Project Schedule[60]

Activity	Anticipated Timeframe
Land Acquisition	Completed prior to application
Commission Site and Route Permit Order	Q3 2025
Downstream Permits	Q3 – Q4 2025
Construction	Q1 2026 – Q4 2027
Testing and Commissioning	Q4 2027
Commercial Operation Date	Q4 2027

[60] SPA, Section 1.3; RPA, Section 2.8.

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 mitigate for potential impacts.

- 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 mitigate an impact means to any other corrective measure, such as correct or compensate For example, an impact can be mitigated by repairing, rehabilitating, or restoring the affected environment, or compensating for it by replacing or providing a substitute resource elsewhere.

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 project)
- Local vicinity (1,000 feet from the boundary of the project)
- Project area (one mile from the boundary of the project)
- Region (Benton County)

Impacts to resources may extend beyond these distances but are expected to diminish quickly. ROIs vary between resources. **Table 6** summarizes the ROIs used in this EA.

Table 6. 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
	Electronic Interference	HVTL Route Width
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, Wetlands, Vegetation, Wildlife and Habitat (except birds)	Land control area
	Floodplains and Topography, Wildlife and Habitat (birds)	Local vicinity
	Air Quality	Region
Rare and Unique Resources	—	Local Vicinity

4.2 Project Setting

The project is in a rural area, southeast of State Highway 23 with State Highway 95 running east to west through the center of it. The project is east of the city of St. Cloud in Benton County. The project area is dominated by agricultural land use.

The proposed solar facility is located in Minden Township, east of the city of St. Cloud in Benton County, Minnesota. The project is southeast of State Highway 23 and has State Highway 95 running east to west through the center of it. The topography of the project site is relatively flat with gentle slopes. Views are broad and uninterrupted except for scattered areas of trees. Residences in the area

are present across the landscape. Several of the surrounding residences are at least partially surrounded by woodlands or other vegetative screens.

The project is located in both the Laurentian Mixed Forest Province and the Eastern Broadleaf Forest Province.[61]

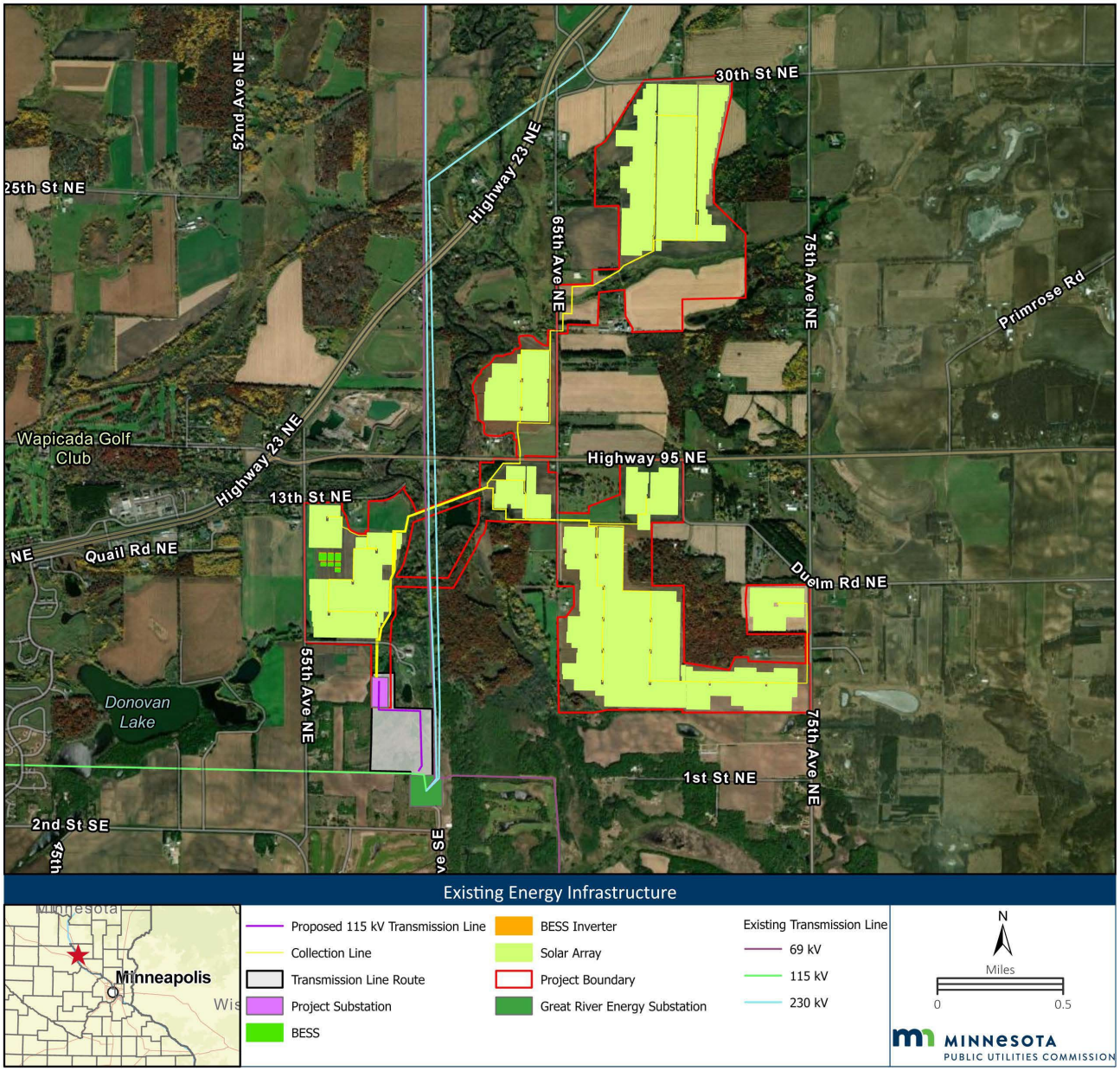
Within the Mixed Forest Province, it is located within the Mille Lacs Uplands subsection of the Western Superior Uplands section. Pre-settlement vegetation consisted primarily of a mix of conifer, hardwood and mixed conifer-hardwood forests. Maple-basswood forests were prevalent along the southern boundary of the subsection, where the project is located.

Within the Eastern Broadleaf Forest Province, it is located within the Anoka Sand Plain subsection of the Minnesota & Northeast Iowa Morainal section. Pre-settlement vegetation consisted primarily of oak barrens. Characteristic trees were small bur oak and northern pin oak. Brushland characterized large areas of the sandplain. Jack pine was present along the northern edge of the subsection, where the project is located.

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 88.1 percent of the land control area is currently used for cultivated agriculture. Built features common to the area include residences and buildings, paved and gravel roads. There are several existing transmission lines in the area. **Figure 11** shows the location of the existing powerlines in vicinity to the project area.

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

Figure 11. Existing Transmission Lines



4.3 Resource Topics Receiving Abbreviated Analysis

Resource topics that will have negligible impacts from the project and that do not impact the Commission's permit decisions 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 permit decisions, 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.

4.3.1 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.

4.3.2 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.

4.3.3 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.

4.4 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.

4.4.1 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 state, county, 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.

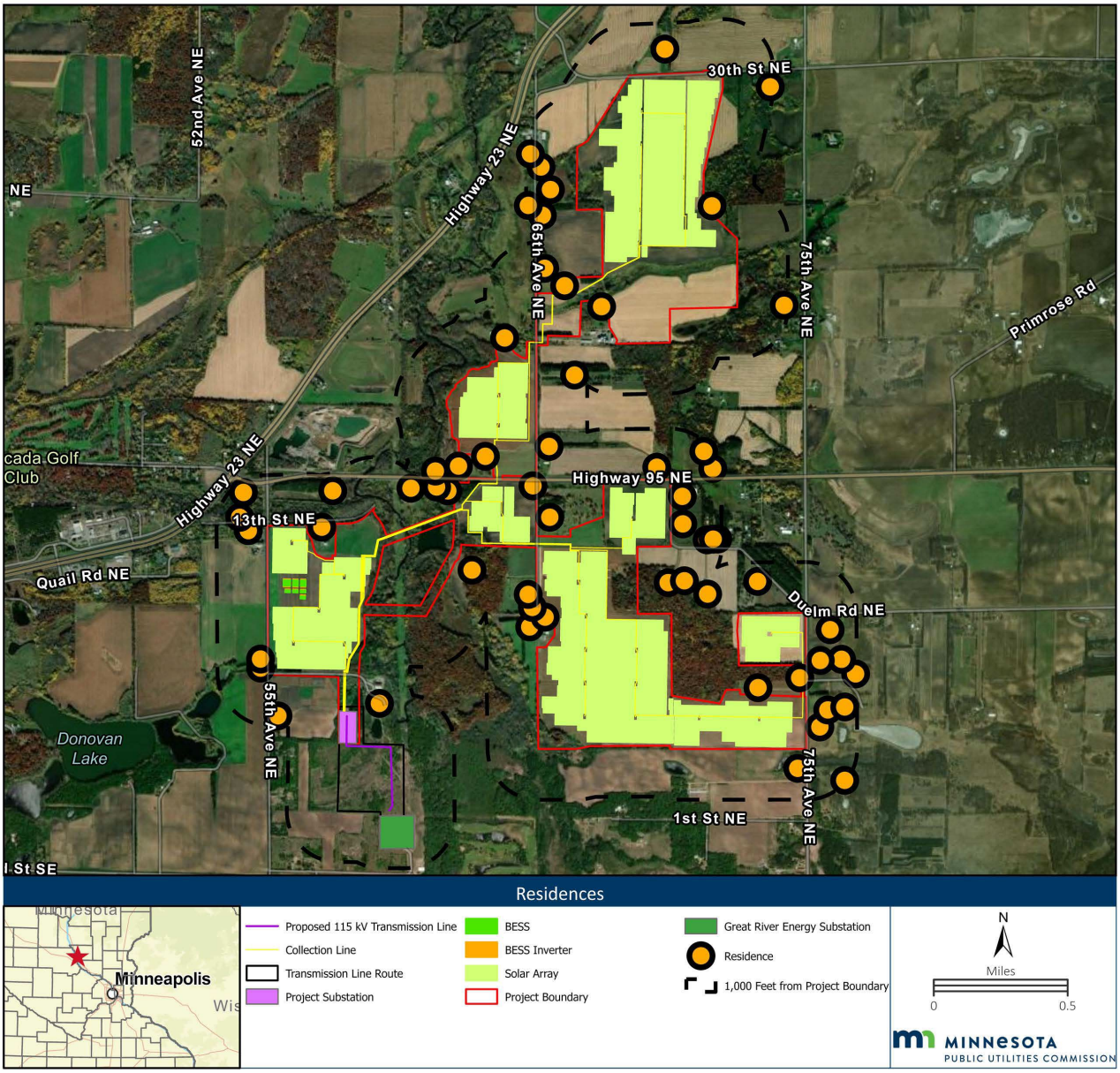
A viewshed includes the natural landscape and built features visible from a specific location. Natural landscapes can include wetlands, surface waters, distinctive landforms, and vegetation patterns. Buildings, roads, bridges, and power lines are examples of built features.

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. There are 287 residences within the project area. **Figure 12** shows the closest 60 residences, within 1,000 feet of the project. There are no residences within the project's land control area.

Figure 12. Residences within 1,000 Feet



Solar Facility and BESS Potential Impacts

The visible elements of the solar facility will consist of new PV panel arrays, transformers and inverters, a BESS, weather stations, a new substation, and security fencing surrounding the project.

The project will be a noticeable change in the landscape, converting approximately 951.4 acres of agricultural fields into solar production. 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 State Highways 23 and 95, 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, aesthetic impacts are anticipated to be moderate to significant.

Current fields of crop will be replaced with acres of solar panels. Panels will have a relatively low profile, with a maximum height of 20 feet off the ground at maximum tilt.[62] Construction of the new up to 5-acre project substation and the 3.1-acre BESS facility will also present new visual impacts. The nearest residence is approximately 315 feet from solar facility.

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 project substation. Lighting will be motion-activated and down lit to minimize impacts and effects.[63] Impacts to light-sensitive land uses are not anticipated given the rural project location coupled with minimal required lighting for operations.

HVTL Potential Impacts

The HVTL is 0.5 miles long. There will be approximately seven new vertical structures not to exceed 110 feet above ground. Although the change will be noticeable, there are other existing transmission lines already in the area proposed for the line to be built. The project will be immediately adjacent to an existing transmission line.

Mitigation

Minimizing aesthetic impacts from solar generating facilities and transmission lines 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) and one draft route permit (DRP) for the project are included in **Appendix C**, **Appendix D** and **Appendix E**, respectively.

Sections 4.3.8 of the DSPs (**Appendices C**, and **D**) 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. Additionally, the applicant has stated in their application that they will "implement BMPs to minimize the impact the project could have on existing scenic integrity and will incorporate the county setback and visual screening requirements in the project design, where necessary… Facilities

[62] SPA, Section 3.1.1.1.
[63] SPA, Section 4.2.5.2.

will be designed and sited to minimize visual impacts and to maximize the feasible distance of Facilities from public road and trail crossings."[64]

Section 5.3.7 of the DRP (**Appendix E**) requires that "The Permittee shall consider input pertaining to visual impacts from landowners or land management agencies prior to final location of structures, rights-of-way, and other areas with the potential for visual disturbance."

Site-specific landscaping plans can minimize visual impacts to adjacent land uses and homes through vegetation screening, berms, or fencing. Special conditions are proposed in Sections 5.1 of the DSPs (**Appendices C**, and **D**) requiring the applicant to develop and implement a visual screening plan for affected landowners.

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.

4.4.2 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 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 Benton County derive primarily from European ancestry, nearly half being German.[65] Cultural values are also informed by work and leisure pursuits, for example, farming and snowmobiling, as well as land use, such as agricultural cropland. Many seasonal events are held in the project area, such as the Benton County Fair held every August in Sauk Rapids to the west of the project. Additionally, Sauk Rapids River Days is held in the area in June every year. An annual spring pow wow is held in collaboration with the American Indian Center in St. Could as well.

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

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

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.

The construction and operation of the project is not anticipated to impact the annual cultural events held in the project area.

MITIGATION

There are no conditions included in the DSPs and DRP that directly address mitigation for impacts to cultural values. Section 4.3.23 and 4.3.20 of the DSPs, respectively (**Appendices C** and **D**), and section 5.3.15 of the DRP (**Appendix E**) address impacts to cultural properties. No additional mitigation is proposed.

4.4.3 Electronic Interference

The ROI for electronic interference is the route width of the HVTL. Electronic interference is not anticipated to have any impact on the surrounding environment.

Electronic interference refers to the disturbance of electronic communications, e.g., radio, television, by high voltage transmission lines. The discussion here applies solely to the HVTL and not the solar facility.

POTENTIAL IMPACTS

Electronic interference from HVTLs can impact electronic communications like radios, television and microwave communications in three ways: corona noise, shadowing effect, and gap discharge.

Corona noise primarily occurs in the radio frequency range of amplitude modulated (AM) signals. This generated noise typically occurs underneath a transmission line. It dissipates rapidly as the distance increases from the transmission line. FM radio receivers usually do not pick up interference from transmission lines because corona-generated radio frequency noise decreases in magnitude with increasing frequency and are quite small in the FM broadcast band. In most cases, the strength of the radio or television broadcast signal within a broadcaster's primary coverage area is great enough to prevent interference. Additionally, due to the higher frequencies of television broadcast signals (54 MHz and above) a transmission line seldom causes reception problems within a station's primary coverage area.

Shadowing effect comes from physically blocking communication signals. This primarily can impact two-way mobile radio communications and television signals. Digital and satellite television transmissions are more likely to be affected by shadowing generated by nearby towers. Interference could occur if the device was located immediately adjacent to a transmission line structure, blocking its signal. While television interference is rare, it can happen when a structure is aligned between a receiver and a weak, distant signal. Telecommunication towers can also be susceptible to the shadowing effect.

Gap discharge interference is the most noticed form of power line interference with radio and television signals, and typically the most easily fixed. Gap discharges are usually caused by hardware defects or abnormalities on a transmission or distribution line causing small gaps to develop between mechanically connected metal parts. As sparks discharge across a gap, they create the potential for

electrical noise, which, in addition to audible noise, can cause interference with radio and television signals. The degree of interference depends on the quality and strength of the transmitted communication signal, the quality of the receiving antenna system, and the distance between the receiver and the power line. Because gap discharges are a hardware issue, they can be repaired relatively quickly once the issue has been identified.

MITIGATION

Section 5.4.3 of the DRP (**Appendix E**) notes that if interference with radio, television, satellite, wireless internet, GPS-based agriculture navigation systems or other communication devices is caused by the presence or operation of the HVTL, then the permittee is required to take whatever action necessary to restored or provide reception equivalent to reception levels in the immediate area prior to construction. Thus, impacts to electronic communications are not anticipated.

4.4.4 Environmental Justice

The ROI for economic justice analysis is the region. The County and State are compared to U.S. Census Tract 203, which gives specific details of the population within the project area. The project will not have disproportionately high and adverse human health or environmental effects on low-income, minority, or tribal populations.

Environmental justice (EJ) refers to the "fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income in the development, implementation, and enforcement of environmental laws, regulations, and policies, and is intended to ensure that all people benefit from equal levels of environmental protection and have the same opportunities to participate in decisions that might affect their environment or health.

POTENTIAL IMPACTS

Utility infrastructure can adversely impact low-income, minority or tribal populations. To identify potential environmental justice concerns in the project area, the DNR's EJ 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.[66]

Minnesota Statute defines environmental justice areas as census tracts:[67]

- in which at least 40 percent of the population is nonwhite,
- in which at least 35 percent of households have income at or below 200 percent of the federal poverty level,
- in which at least 40 percent of the population has limited proficiency in English, or
- which are located within Indian Country, which is defined as federally recognized reservations and other Indigenous lands.

Table 7 provides low-income and minority population data within Benton County as well as Census Tract 203, which is where the project is proposed to be sited.

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[66] MPCA, *Environmental Justice*, (n.d.), https://www.pca.state.mn.us/about-mpca/environmental-justice.
[67] Minnesota Statute 116.065.

Table 7. Low-Income and Minority Population Characteristics

Area	% Population Below 200% Poverty Level	% Nonwhite Population‡	% Population with Limited English
Region of Comparison			
Minnesota	22.0	21.6	2.2
Benton County	25.0	5.2	1.2
Project Census Tract			
Census Tract 203	18.1	4.6	2.2

Sources: U.S. Census Bureau, 2023 American Community Survey 5-year Estimate & DNR EJ Tool

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

MITIGATION

The project area is not within a census tract which Minnesota statute deems an environmental justice area; therefore, disproportionate and adverse impacts to these populations are not expected, and mitigation is not proposed. Additionally, the project area is not within Indian Country. Additional mitigation is not proposed.

4.4.5 Land Use and Zoning

The ROI for land use and zoning is the land control area. The impact intensity level for the solar and BESS facility is anticipated to be moderate due to the conversion of agricultural land to land used for energy generation. The impact intensity for the HVTL is anticipated to be minimal since the HVTL does not preempt agricultural land use. 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 25 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 project is located in both the Laurentian Mixed Forest Province and the Eastern Broadleaf Forest Province.[68] Within the Mixed Forest Province, it is located within the Mille Lacs Uplands subsection of the Western Superior Uplands section. Pre-settlement vegetation consisted primarily of a mix of conifer, hardwood and mixed conifer-hardwood forests. Maple-basswood forests were prevalent along the southern boundary of the subsection, where the project is located. Fire and windthrow were the two main factors for vegetation impact. Today, agriculture is concentrated in the area where the project is proposed to be sited.

Within the Eastern Broadleaf Forest Province, it is located within the Anoka Sand Plain subsection of the Minnesota & Northeast Iowa Morainal section. Pre-settlement vegetation consisted primarily of oak barrens. Characteristic trees were small bur oak and northern pin oak. Brushland characterized large areas of the sandplain. Jack pine was present along the northern edge of the subsection, where

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

the project is located. Fire and drought were the two main factors of vegetation impact. Today, agricultural sod and vegetables are extensively grown in the region.

As shown in **Table 8** and **Table 9**, the project land cover is dominated by cultivated agriculture and hay/pasture land, with scattered forested area and developed areas around farmsteads. **Appendix B**, Land Cover map, shows the land cover in the vicinity of the project.

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 8. Land Cover within the Solar and BESS Facility Land Control Area[69]

Category	Land Control Area (Acres)	Percentage
Developed, Open Space	9.1	1.0%
Developed, Low Density	13.3	1.4%
Developed, Medium Density	1.5	0.2%
Developed, High Density	0.2	<0.1%
Emergent Herbaceous Wetlands	4.5	0.5%
Mixed Forest	1.6	0.2%
Grassland/Herbaceous	0.3	<0.1%
Evergreen Forest	1.3	0.1%
Deciduous Forest	34.5	3.6%
Hay/Pasture	43.1	4.5%
Cultivated Crops	838.1	88.1%
Total	**951.4**	100%

[69] SPA, Table 4.2-11.

Table 9. Land Cover within the HVTL Route Width[70]

Category	Land Control Area (Acres)	Percentage
Mixed Forest	1.3	2.6%
Grassland/Herbaceous	2.9	6.0%
Barren Land	1.3	2.5%
Deciduous Forest	3.5	7.2%
Hay/Pasture	25.9	53.7%
Cultivated Crops	13.6	28.1%
Total	**48.3**	100%

The applicant states in their application that a field survey did not observe any active farming within the route width.[71]

Permits from the Commission supersedes local zoning, building, or land use rules.[72] 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."[73]

The area of land control is located within Minden Township in Benton County. Benton County has a development code (zoning ordinance) through their Land Services Department.[74] The zoning ordinance is a comprehensive program that covers rural and general agriculture, residential districts, industrial districts and building permits.

Solar Facility and BESS Potential Impacts

The project is proposed to be in an area primarily zoned for agriculture. The southwestern portion of the property that is on land that is listed under an orderly annexation agreement between St. Cloud and Minden Township, that is currently being used primarily for agriculture. 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, in part, with other infrastructure in the area such as existing transmission lines.

HVTL Potential Impacts

Development of the HVTL would result in land use change for some land use types. The change of land use would have minimal impact to the character of the surrounding area and county as a whole.

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[70] RPA, Table 7.1-1.
[71] RPA, Section 7.1.1.1.
[72] Minnesota Statutes 216E.10, subd. 1.
[73] Minnesota Statutes 216E.03, subd. 7.
[74] Benton County, *Zoning Ordinances,* (n.d.), https://www.co.benton.mn.us/209/Development-Code.

Areas of woody vegetation, including forested areas would have vegetation cut close to the ground. Permanent vegetative cover would remain in the route width and ROW but woody vegetation would be periodically mowed to provide clearance for the line.

MITIGATION

The project would convert cultivated cropland to solar energy production. Benton Solar intends to utilize best practices as feasible to reduce the impact on land use. Benton Solar states they will implement Benton County setbacks and ordinances. The applicant will also follow an Agricultural Impact Mitigation Plan to ensure that agricultural land can be restored to its original condition to grow crops again.

Section 9 of the DSPs (**Appendices C** and **D**) 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 SPA.

Section 9.2 of the DSPs (**Appendices C** and **D**) require removal of all project-related infrastructure.

4.4.6 Noise

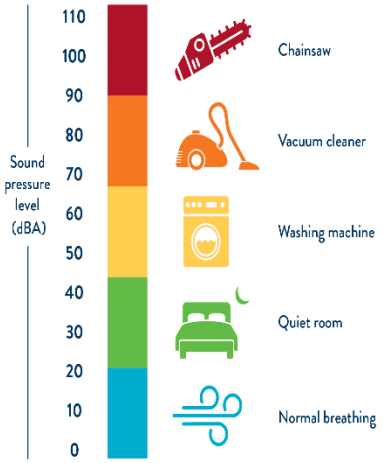
The ROI for noise is the local vicinity. Distinct noises are associated with the different phases of project construction. The impact intensity level during construction will range from negligible to significant depending on the activity. Potential impacts are anticipated to be intermittent and short-term.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

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.[75] 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 13 provides decibel levels for common indoor and outdoor activities.

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

Figure 13. 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 10** provides current Minnesota noise standards.

Table 10. 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.

The primary noise receptors are the local residences. There are 287 residences in the project area (within one mile).[76] The proposed project is in a rural, agriculturally dominated area. Rural residential areas were assumed to have an ambient daytime noise level of 40 dBA and an ambient nighttime noise level of 38 dBA.[77] Residences are in NAC 1. Noise receptors could also include individuals

[76] SPA, Section 4.2.5.1.
[77] SPA, Section 4.2.3.1.

working outside in the project vicinity. Potential noise impacts from the project are associated with construction noise and operational noise.

Solar Facility and BESS Potential Impacts

Distinct impacts from construction and operation of the project will occur.

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 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, but are anticipated to be minimal with mitigation, and long term. The primary source of noise from the solar facility will be from inverters and transformers for the solar arrays and the BESS. Noise levels are expected to be constant throughout the day and, although still constant, lower during non-daylight hours.

A noise study was conducted by the applicant. For residential areas, there is an expected maximum noise level of 45 dBA during the night for a resident along the northwestern border of the project. This is under the daytime L_{50} dBA noise standard of 60 dBA and under the nighttime standard of 50 dBA.[78] This study was conducted under the assumption that several mitigations were implemented, such as attenuation/silencer kits for the inverters and sound walls around the BESS.

HVTL Potential Impacts

Distinct impacts from construction and operation of the project will occur.

Construction

Intermittent construction noise will occur and is dependent upon the activity. Major noise producing activities are associated with clearing and grading, material delivery, auguring foundation holes, setting structures, and stringing conductors.

Noise from heavy equipment and increased vehicle traffic will be intermittent and occur during daytime hours. Noise associated with heavy equipment can range between 80 and 90 dBA at full

[78] SPA, Section 4.2.3.2.2.

power 50 feet from the source.[79] Heavy equipment generally runs at full power up to 50 percent of the time.[80] Point source sounds decrease six dBA at each doubling of distance; therefore, a 90 dBA sound at 50 feet is perceived as a 72 dBA sound at 400 feet and a 60 dBA sound at 1,600 feet. Construction noise might exceed state noise standards for short intervals at select times and locations.

Operation

Audible noise from power lines is created by small electrical discharges at specific locations along the surface of the conductor that ionize surrounding air molecules. This phenomenon—common to all power lines—is known as corona and sounds like a crackling sound. In general, any imperfection on the surface of the conductor might be a source for corona. Examples include dust and dirt, or nicks and burrs from construction. Resulting noise levels are dependent upon voltage level (corona noise increases as voltage increases) and weather conditions.

In foggy, damp, or rainy conditions, audible corona noise is common. In light rain, dense fog, snow or other relative moist conditions, corona noise might be higher than rural background levels. In heavy rain, corona noise increases even more, but because background noise increases too, corona noise is undetectable. During dry weather, corona noise is less 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.

Benton Solar will implement in its design of the project attenuation/silencer kits on BESS inverters and construction of 25-foot noise barrier walls around the BESS facility to help mitigate noise levels. Depending on the equipment selection, Benton Solar may adjust the implementation of the mitigation measures.[81]

Section 4.3.7 of the proposed DSPs and section 5.3.6 of the DRP (**Appendices C**, **D** and **E**) are standard conditions that require 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 5.2 of the proposed DSPs (**Appendices C** and **D**) are special conditions that require the applicant 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.

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[79] Federal Highway Administration, *Noise: Construction Noise Handbook*, (August 24, 2017), https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm.

[80] Id.

[81] DSP, Section 4.2.3.2.2.

4.4.7 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.[82]

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).[83] In

[82] 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.

[83] 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, 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.

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.[84] 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.[85]

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. Special conditions are proposed in Sections 5.1 of the DSPs (**Appendices C**, and **D**) requiring the applicant to develop and implement a visual screening plan for affected landowners.

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

[85] 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.

4.4.8 Recreation

The ROI for recreation is the project area. Potential impacts to recreational opportunities 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. Impacts to a snowmobile trail will be short-term, as the applicant will work to reroute the trail. There are no anticipated long-term recreation impacts from this project.

Impacts to 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.

Recreational activities in the area include snowmobiling, snowshoeing, biking, and hiking. The Elk River runs north to south along the western portion of the project area. A snowmobile trail (Benton County Trail No. 87), maintained by the Benton County Snowmobile Club, runs through the land control area. Additionally, the land control area overlaps a portion of the Sherburne Sands Conservation Opportunity Area.

POTENTIAL IMPACTS

Impacts to 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. Elk River enjoyers may avoid the area of the project where boring beneath the river may be required. Impacts for the recreational use of the Elk River are expected to be short-term and minimal. Benton Solar states in their SPA that they will coordinate with Benton County and landowners in rerouting the snowmobile trail to avoid their project. While they are rerouting the trail, it will not be able to be used. These impacts are expected to be short-term and minimal.

The Sherburne Sands Conservation Opportunity land that the project overlaps is identified as an area with high potential for conservation opportunity. However, there are no current conservation projects in the project area. Impacts are anticipated to be negligible.

MITIGATION

Section 5.3 of the DSPs (**Appendices C** and **D**) are special conditions that require the applicant to coordinate with the proper parties to have the Benton County Trail No. 87 rerouted. The special conditions also require the permittee to submit documentation of the coordination for compliance.

4.4.9 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.

Table 11 provides information about total population and household income, and individuals below the poverty level. Benton County is part of Economic Development Region 7W, the Central Planning Region, as defined by the Department of Employment and Economic Development.

In terms of unemployment rates for the Region 7W, "Region 7W has consistently reported very similar unemployment rates to the state, typically hovering just slightly above, but within 0.2% of the state rate."[86]

Table 11. Population Characteristics

Location	Total Population	Median Household Income ($)	% Poverty Rate
Minnesota	5,793,151	87,556	9.3
Benton County	41,881	71,480	13.7
Sauk Rapids	13,832	67,004	7.2

*Source: U.S. Census Bureau, QuickFacts (V2024)

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 4.4.4**). 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 anticipates the project will require up to 300 laborers during the construction and installation phases, and up to 3 long-term personnel during the operations phase. Benton Solar indicates that procurement of construction resources will give preference to local, union construction craft employees, when feasible. Benton Solar notes that non-local labor will be used when local labor is unavailable.[87]

[86] Minnesota Department of Employment and Economic Development, *Economic Development Region 7W: Central 2024 Regional Profile*, (2024), https://mn.gov/deed/assets/2024_EDR7W_RP_tcm1045-133247.pdf.
[87] SPA, Section 4.2.6.1.2.

Minnesota's Renewable Energy Objectives[88] and Renewable Energy Initiatives[89] establish several Commission priorities relating to renewable energy project construction including:

- Creation of jobs that support Minnesota families
- Employing local workers for project construction
- Recognition of the rights of workers to organize and unionize

The location of the proposed project gives Benton Solar the potential to meet Commission priorities by providing significant socioeconomic benefits to local, union construction workers. "Local workers" are defined as Minnesota residents and/or permanent residents who live within 150 miles of a proposed energy facility. Given the project is centrally located in Minnesota, the 150-mile radius would include a vast part of the state to receive these benefits. These benefits are anticipated to be greater if the construction workforce is largely composed of local labor versus non-local labor. Local workers are found to generate approximately three times more local economic activity through spending than a non-local worker at the individual level, and a largely local workforce generates double the economic impact of a largely non-local workforce. [90] [91]

The use of local workers who reside in Benton County could have significant positive impacts, not just through providing employment on this project, but by providing workers the opportunity to develop the required technical skills to work in the green economy,[92] which can increase opportunities for future employment. Minnesota is anticipated to continue to expand renewable energy development in the coming years,[93] and the state's investments in the development and incentivization of clean energy[94] will enable future renewable projects. Benton Solar's use of local labor would provide Minnesota workers with the relevant skills for the growing renewable industry, preparing them for future employment opportunities.

[88] Minnesota Statute 216B.1691, Subd. 9.
[89] Minnesota Statute 216B.2422.
[90] Franco, L., *A Transformative Investment: Maximizing the Socioeconomic Benefits of the Fargo-Moorhead Diversion Project,* (2020), https://d3ciwvs59ifrt8.cloudfront.net/272d7204-1f87-45d8-a9dc-744c9333acc6/e6f95bb7-5559-4dd9-a0bd-21c636c5b778.pdf
[91] Franco, L., *Catching the Wind 3.0: The impact of local versus non-local hiring practices on wind farms in North Dakota,* (2019), https://ndlegis.gov/assembly/67-2021/testimony/SNATRES-2301-20210204-5243-F-FRANCO_LUCAS_A.pdf
[92] Grima, S., Sood, K., Özen, E., & Dalli Gonzí, R.E. (Eds.), *Greening our economy for a sustainable future*, (2025), https://www.sciencedirect.com/book/9780443236037/greening-our-economy-for-a-sustainable-future
[93] Minnesota Energy Factsheet, (2024), https://www.cleanenergyeconomymn.org/wp-content/uploads/2024/04/2024-Minnesota-Energy-Factsheet.pdf
[94] H.F. 5247.

Once the project is operational, Benton 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.[95] Benton Solar estimates a local annual tax benefit of approximately $200,000 to Benton County and $50,000 to Minden Township.[96]

If the project is constructed, adverse impacts associated with the loss of agricultural land and agricultural production will be mitigated through lease payments to landowners. Benton Solar estimates approximately $2 million in land access payments to landowners annually, or a total of $60 million assuming a 30-year lifespan.[97]

MITIGATION

Socioeconomic impacts are anticipated to be positive. Section 8.5 of the DSPs (**Appendices C** and **D**) require quarterly reports concerning efforts to hire Minnesota workers. Consistent with Minn. Stat. 216E.03, subd. 10 (c). Section 8.6 of the DSPs (**Appendices C** and **D**) 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.

4.4.10 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.

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 East Central Energy, which provides electricity to the surrounding area. As shown in **Figure 9**, there are existing transmission lines intersecting the project area, connecting to the same GRE-owned substation the project plans to connect to.

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

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[95] 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.

[96] SPA, Section 4.2.6.1.2.

[97] Id.

Roads The major roadways accessing the project area are:

- **SH 95** is located in the center of the project and runs east-west;
- **CH 25 (75th Avenue NE)** is located on the eastern edge of the project and runs north-south;
- **CH 50 (30th Street NE)** is located in the northern portion of the project and runs east-west;
- **CH 48 (Duelm Road NE)** is located in the southeastern portion of the project and runs northwest-southeast;
- **65th Avenue NE** is located in the northern portion of the project and predominantly runs north-south;
- **55th Avenue NE** is located on the western edge of the project and runs north-south;
- **13th Street NE** is located in the southwestern portion of the project and runs east-west; and
- **2nd Street SE** is located on the southwestern edge of the project and runs east-west.

Railroads There are no railroads located within the project area. The nearest active railroad track is located 3.9 miles southwest of the site in St. Cloud.

Airports There are two airports located within 10 miles of the project. St. Cloud Regional Airport is located 1.8 miles southwest of the project, and Leaders Clear Lake Airport is located 8.9 miles south of the project.

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 Benton Solar does not anticipate impacts to water and wastewater systems. Two irrigation wells are located within the preliminary development area.[98]

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 20 – 30 loaded trucks per day. 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.

[98] SPA, Section 4.5.5.2.

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. Benton Solar indicates that should any unforeseen impacts occur, it will work with local utility providers to remedy the situation.[99]

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

Air Safety No impacts to airports are anticipated as the project is far enough from the nearest airport.

MITIGATION

Water and Wastewater Benton Solar indicates that underground utilities will be marked prior to construction start.

Utilities Section 4.3.5 of the DSPs and section 5.3.4 of the DRP (**Appendices C, D** and **E**) 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**, Section 4.3.19 of **Appendix D**, and section 5.3.14 of **Appendix E** 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.

[99] SPA, Section 4.2.9.2.2.

In addition to permit requirements for driveway access and the conditions of the DSPs and DRP, 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.

4.5 Human Health and Safety

Construction and operation of the project has the potential to impact human health and safety.

4.5.1 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 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."[100]

[100] 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.

Table 12. Electric and Magnetic Field Strength of Common Household Objects[101]

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

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."[102]

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.[103] 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."[104]

[101] Id.
[102] 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.
[103] National Cancer Institute, *Magnetic Field Exposure and Cancer*, (2016), http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/magnetic-fields-fact-sheet.
[104] National Institute of Environmental Health Sciences, *Electric and Magnetic Fields*, (2018), http://www.niehs.nih.gov/health/topics/agents/emf/index.cfm.

> "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."[105]

> "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."[106]

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:

> "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.[107]"

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.[108] Additionally, international organizations have adopted standards for exposure to electric and magnetic fields (**Table 13**).

Section 5.4.2 of the DRP (**Appendix E**) limits the maximum electric field under HVTLs in Minnesota to 8.0 kV/m. This condition was designed to prevent serious hazard from shocks when touching large

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

[106] Minnesota 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.

[107] Id.

[108] 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.

objects, such as semi-trailers or large farm equipment under "extra" high voltage transmission lines of 500 kV or higher. The Commission has not adopted a standard for magnetic fields.

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

Solar Facility and BESS 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 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.[109]

HVTL Potential Impacts

The applicants calculated electric fields associated with the project. The maximum electric field is approximately 4.0 kV/m.[110] This field strength is well below the Commission permit standard of 8.0 kV/m. The magnetic field is not expected to exceed 600 mG within the ROW of the HVTL.[111]

Mitigation

No health impacts from EMF are anticipated. EMF diminishes with distance from a conductor or inverter. The nearest solar array is located approximately 315 feet from the nearest residence. Additionally, the nearest resident to the proposed HVTL is approximately 285 feet away. At this distance both electric and magnetic fields will dissipate to background levels. No additional mitigation is proposed.

[109] 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.
[110] RPA, Section 7.2.1.4.2.
[111] Id.

4.5.2 Stray Voltage

The ROI for stray voltage is the land control area. Potential impacts to residences or farming operations from neutral-to-earth stray voltage are not anticipated. The project will all be grounded to NESC standards. Additionally, HVTLs do not produce this type of stray voltage because HVTLs do not directly connect to businesses, residences, or farms. Neutral-to-earth stray voltage is most associated with local distribution lines and electrical wiring within the affected building. Induced voltage is the result of an electric field from the HVTL extending to nearby conductive objects. Constructing the project to NESC standards and Commission route permit requirements mitigates this concern. Therefore, potential impacts from stray voltage are anticipated to be minimal for all routing options. Potential impacts can be mitigated.

In general terms, stray voltage is voltage caused by an electric current in the earth, or in groundwater, resulting from the grounding of electrical equipment or an electrical distribution system. Stray voltage encompasses two phenomena: neutral-to-earth voltage (NEV) and induced voltage.

Neutral-to-Earth Voltage NEV is a type of stray voltage that can occur where distribution lines enter structures. "Electrical systems—farm systems and utility distribution systems—are grounded to the earth to ensure safety and reliability…. Inevitably, some current flows through the earth at each point where the electrical system is grounded, and a small voltage develops."[112] This extraneous voltage appears on metal surfaces in buildings, barns, and other structures.

NEV is typically experienced by livestock that contact one or more metal objects on a farm, for example, feeders, waterers, or stalls. Metal objects on a farm are grounded to earth through electrical connections. Livestock, by virtue of standing on the ground, are also grounded to earth. If an animal touches two points at different voltages (one at neutral voltage and the other near true ground), a small current will flow through the livestock to the ground because the animal completes the electrical circuit.[113]

Despite metal objects and livestock both being grounded to the earth many factors affect the effectiveness of their respective ground, that is, a good or poor ground. In metal objects these include wire size and length, quality of connections, number and resistance of ground rods, and electrical current being grounded. Likewise, a number of factors also determine the extent to which livestock are grounded, for example, if the animal is standing on wet or dry ground. Stray voltage results from this difference in the effectiveness of grounding and on the resulting electrical currents. It can exist at any farm, house, or business that uses electricity, independent of a nearby transmission line.

If NEV is prevalent in an agricultural operation it can affect livestock health. This concern has primarily been raised on dairy farms because of its potential to affect milk production and quality. NEV is by and large an issue associated with distribution lines and electrical service at a residence or on a farm. Transmission lines do not create NEV stray voltage as they do not directly connect to businesses, residences, or farms.

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[112] Wisconsin Public Service Corporation, *Answers to Your Stray Voltage Questions: Backed by Research*, (2011), http://www.wisconsinpublicservice.com/business/pdf/farm_voltage.pdf.

[113] Michigan Agricultural Electric Council, *Stray Voltage: Questions and Answers*, (October 2008), https://www.maec.msu.edu/application/files/4216/4555/7484/Stray_Voltage_Q__A.pdf.

Induced Voltage The electric field from a transmission line can extend to nearby conductive objects, for example, farm equipment, and induce a voltage upon them. This phenomenon is dependent on many factors, including the shape, size, orientation, capacitance, and location of the object. If these conductive objects are insulated or semi-insulated from the ground and a person touches them, a small current will pass through the person's body to the ground. This may be accompanied by a spark discharge and mild shock like what can occur when an individual walks across a carpet and touches a grounded object or another person.

The primary concern with induced voltage is not the voltage, but rather the current that flows through a person to the ground when touching the object. To ensure safety in the proximity of transmission lines, the NESC requires that any discharge be less than five milliamperes. In addition, the Commission's electric field limit of 8 kV/m is designed to prevent serious shock hazards due to induced voltage. Proper grounding of metal objects under and adjacent to HVTLs is the best method of avoiding these shocks.

Transmission lines may cause additional current to flow on distribution lines where these lines parallel. When distribution lines are properly wired and grounded, these additional currents are not significant. However, if distribution lines are not properly wired and grounded, these additional currents could create induced voltage impacts.

Solar Facility and BESS Potential Impacts

All electrical components in the project, including inverters and transformers, would be grounded in accordance with the NESC. Constructing the project to NESC standards and Commission route permit requirements would mitigate stray voltage concerns. Therefore, no impacts from stray voltage are anticipated.

HVTL Potential Impacts

The proposed HVTL does not interconnect to businesses or residences within any routing option and does not change local electrical service. As a result, impacts to residences or farming operations from NEV are not anticipated. The project might induce a voltage on insulated metal objects within the final ROW; however, Section 5.4.2 of the DRP (**Appendix B**) requires that transmission lines be constructed and operated to meet NESC standards as well as the Commission's own electric field limit of 8 kV/m reducing these impacts. As a result, impacts due to induced voltage are not anticipated to occur.

Mitigation

The DRP (**Appendix E**) requires the project meet electrical performance standards. Additionally, the project would not directly connect to businesses or residences in the area and would not change local electrical service, therefore impacts due to stray voltage are not anticipated. As such, no mitigation measures are proposed.

4.5.3 Implantable Medical Devices

The ROI for implantable medical devices is the land control area. EMF from the solar facility and BESS are not high enough to interfere with these devices. Magnetic fields produced by HVTLs are not high enough to interfere with these devices; however, electric fields potentially can. Electric field strengths associated with the project are below the 5.0 kV/m interaction level for modern, bipolar pacemakers, but might interact with older, unipolar pacemakers. Should interference occur, moving away from the transmission line will mitigate the interference. Electric fields are easily shielded. Potential impacts are expected to be minimal across routing options. Impacts to human health are not anticipated. Potential impacts, if they occur, would be short-term, intermittent, and localized. Impacts would affect a unique resource (people). Impacts can be mitigated.

EMF could interfere with implantable electromechanical medical devices, such as cardiac pacemakers, implantable cardioverter defibrillators, neurostimulators, and insulin pumps. Most research on electromagnetic interference and medical devices relates to pacemakers. Manufacturers' recommended threshold for magnetic fields is 1,000 mG.[114] Laboratory tests indicate that interference from magnetic fields in pacemakers is not observed until 2,000 mG—a field strength much greater than that associated with transmission lines.[115] As a result, research has focused on electric field impacts.

Electric fields can interfere with a pacemaker's ability to sense normal electrical activity in the heart. In the unlikely event a pacemaker is impacted, the effect is typically a temporary asynchronous pacing (commonly referred to as reversion mode or fixed rate pacing). The pacemaker returns to its normal operation when the person moves away from the source of the interference.

"While the present-day units are better shielded against electromagnetic interference than their earlier counterparts, sensitivity to electric field exposure is inevitable."[116] Interference in unipolar pacemakers that results in asynchronous pacing may occur with electric fields ranging from 1.2 to 1.7 kV/m; however, other units are unaffected at 8.0 kV/m.[117] In general, electric interference must be at levels above 5.0 kV/m to interfere with modern, bipolar pacemaker behavior.[118] Some models appear unaffected at 20 kV/m.[119]

There are no sensitive receptors such as hospitals or nursing homes located within the route width of any routing option. Therefore, once constructed, the regular presence of implantable medical devices within the ROW is not expected.

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[114] Wisconsin Public Service Commission, *Environmental Impacts of Transmission Lines*, (July 2013), https://psc.wi.gov/Documents/Brochures/Enviromental%20Impacts%20TL.pdf.

[115] Electric Power Research Institute, *Susceptibility of Implanted Pacemakers and Defibrillators to Interference by Power-Frequency Electric and Magnetic Fields*, (1997), https://www.epri.com/research/products/tr-108893.

[116] Id.

[117] Id.

[118] Pinski, Sergio L. and Trohman, Richard G., *Interference in Implanted Cardiac Devices,* (2002), http://www.sarasotaanesthesia.com/reading/literature/Interference%20AICD%20Review%20Part%201.pdf.

[119] Electric Power Research Institute, (1997).

POTENTIAL IMPACTS

The calculated maximum electric field strength directly underneath the proposed 115 kV HVTL is 1.70 kV/m. Field strengths associated with the project are below the 5.0 kV/m interaction level for modern, bipolar pacemakers, but might interact with older, unipolar pacemakers. Therefore, impacts to unipolar pacemakers might occur directly underneath the HVTL.

MITIGATION

Impacts to implantable medical devices and persons using these devices might occur, but it is not expected. Patients are informed of potential problems associated with electromagnetic interference and their device. The device changes their behavior considerably. Transmission lines and substations are only one of many sources of electromagnetic interference. "Moving away from a source is a standard response to the effects of exposure…. Patients can shield themselves from [electromagnetic interference] with a car, a building, or the enclosed cab of a truck."[120] Mitigation is not proposed.

4.5.4 Public Safety, Worker 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 that 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 Benton County Sheriff and Sauk Rapids Police. Fire service and search and rescue is provided by the St. Cloud and Foley Fire Departments. The nearest hospital offering emergency care is the St. Cloud Hospital, located in St. Cloud.[121]

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

[120] Wisconsin Public Service Commission, (July 2013).
[121] SPA, Section 4.2.1.1.

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. Any temporary road closures could impede police, fire, and other rescue vehicles access to the site of an emergency.

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. Benton Solar indicates that the project will be fenced and locked to prevent unauthorized access.

Public safety is addressed in several sections of the DSPs (**Appendices C** and **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.

4.6 Land-based Economies

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

4.6.1 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 Benton 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 628 acres of the area used for cultivated row crops.

In 2017, there were approximately 194,832 acres of farmland in Benton County, approximately 74 percent of the land coverage in the county. There are a total of 816 individual farms located in Benton County, with an average farm size of 239 acres. Cropland, which includes corn, soybeans, vegetables and forage, make up 31 percent of the value of farmland sales with livestock and poultry making up the remaining 69 percent. The market value of agricultural production in Benton County in 2017 was approximately $207 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." The route width of the HVTL is completely over land designated as not prime farmland. As for the solar facility and BESS, approximately 0.7 percent of the preliminary development area is designated as prime farmland (4.6 acres), 0.9 percent is designated as prime farmland if drained (5.9 acres), 51.6 percent is designated as farmland of statewide importance (326.2 acres), and 46.7 percent is designated as not prime farmland (295.2 acres).[122]

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 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 628 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 Benton 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.

Mitigation

Several sections of the DSPs and DRP (**Appendices C, D** and **E**) address agricultural mitigation and soil-related impacts:

- Section 4.3.9 of the DSPs requires protection and segregation of topsoil.
- Section 4.3.10 of the DSPs requires measures to minimize soil compaction.
- Section 4.3.11 of the DSPs and section 5.3.8 of the DRP 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 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, 4.3.15, and 5.3.8 (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

[122] SPA, Table 2.3-1.

overall soil health. Benton Solar has included a draft VMP as Appendix D of its joint site permit application.

- Section 4.3.18 of **Appendix C** requires the permittee to develop an AIMP with MDA. Benton Solar's draft AIMP (Appendix C 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, 4.3.17, and 5.3.12 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, 4.3.18, and 5.3.13 require the permittee to take reasonable precautions against the spread of noxious weeds.
- Sections 4.3.29, 4.3.26, and 5.3.21 require the permittee to fairly restore or compensate landowners for damages to crops, fences, drain tile, etc. during construction.

4.6.2 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.

In 2023, the leisure and hospitality industry in Benton County accounted for about $68,763,385 in gross sales, and 1,212 private sector jobs.[123] Tourism in the region is largely related to fairs and festivals, as well as culture and recreational activities, in St. Cloud and Sauk Rapids, both located four miles to the west of the project.

Local events include the Benton County Fair, Granite City Days Festival, Mississippi Music Fest, Rapids River Food Fest, Sartell Summer Fest, Rice Days, Foley Fun Days, and Gilman Days.[124] There are 94 public parks and 25 miles of trails that offer year-round recreation. The Minnesota Baseball Hall of Fame Museum and the Stearns History Museum are located in St. Cloud. The Sand Prairie Wildlife Management and Environmental Education Area are located in St. Cloud. Territory Golf Club and Wapicada Golf Club are also in St. Cloud.

POTENTIAL IMPACTS

All project facilities will be located on privately-owned land, outside the area of the attractions mentioned above, therefore impacts to tourism 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.

[123] Explore Minnesota, *2023 Leisure & Hospitality Industry Data*, (n.d.), https://mn.gov/tourism-industry/assets/2023%20MN%20L%26H%20Data_tcm1135-665060.pdf.
[124] DRP, Section 7.3.3.1.

MITIGATION

Because impacts are anticipated to be minimal, no additional mitigation measures are proposed.

4.7 Archeological 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. All information for this section was sourced from the SPA, Section 4.4 and Appendix I of the SPA, unless otherwise noted.

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.[125] Historic resources are sites, buildings, structures, or other antiquities of state or national significance.[126]

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.

Benton Solar reports reaching out to 47 Native American Tribes, including the 11 Minnesota Tribal Nations describing the project. Of these, the Standing Rock Sioux Tribe, the Mille Lacs Band of Chippewa, the Rosebud Sioux Tribe, the Sisseton Wahpeton Oyate, and the Upper Sioux Community all had cultural specialists attend the field surveying conducted for the project, as described below.

Benton Solar contracted SWCA Environmental Consultants to conduct a *Phase 1a Cultural Literature Review* for the project area. The review started in October 2022 and was completed in March 2023. Upon review of the *Phase 1a Cultural Literature Review* of the project, SHPO recommended that a Phase 1 archaeological survey be conducted for the project area. SWCA Environmental Consultants completed a *Phase 1 Archaeological and Traditional Cultural Property Reconnaissance Inventory* for the project area. The results of the review identified potential resources to avoid during siting of the project. The recommendations of the review were sent to SHPO, which agreed with the recommendations as stated.

POTENTIAL IMPACTS

Previously recorded cultural resources, archaeological sites, and historic buildings and structures have been identified in the project area, but are either outside of the area of land control or are not considered not eligible for the National Register of Historic Places. The *Phase 1 Archaeological and Traditional Cultural Property Reconnaissance Inventory* identified five new avoidance areas of cultural significance near the project of cultural. Benton Solar have sited their project to avoid these areas and will avoid these areas during construction. Benton Solar also indicates that they will create an unanticipated discoveries plan.

[125] Minnesota Statutes, Section. 138.31, subd. 14.
[126] Minnesota. Statutes, Section 138.51.

MITIGATION

Prudent siting to avoid impacts to archaeological and historic resources is the preferred mitigation. Section 4.3.23 of **Appendix C**, section 4.3.20 of **Appendix D**, and section 5.3.15 of **Appendix E** 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 5.4 of the DSPs (**Appendix C,** and **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.

4.8 Natural Resources

Solar facilities can 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.

4.8.1 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.

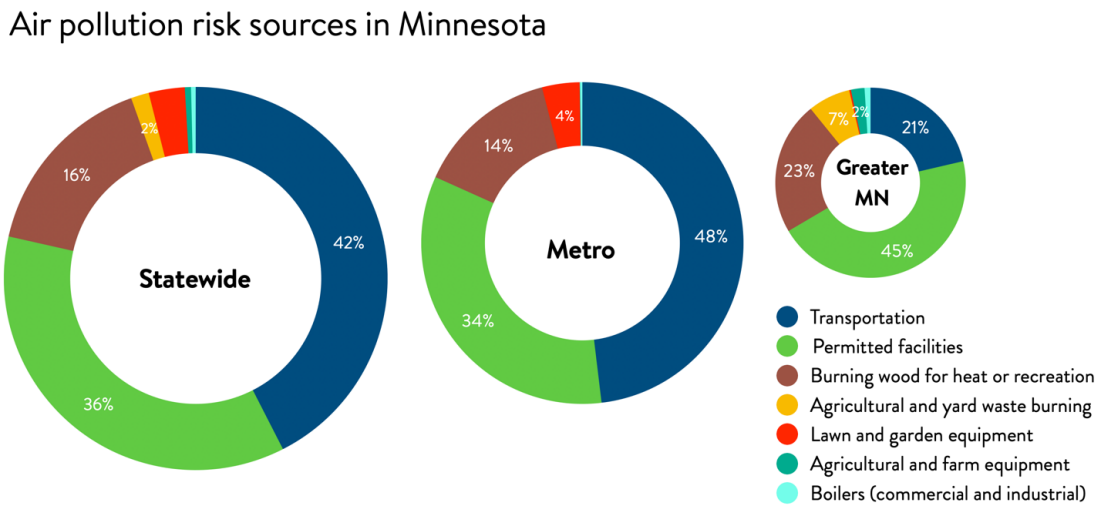
Air quality is a measure of how pollution-free the ambient air is and how healthy it is for humans, other animals, and plants. Emissions of air pollutants will occur during construction and operation of new infrastructure for the project. Overall air quality in Minnesota has improved over the last 20 years, but current levels of air pollution still contribute to health impacts. As illustrated in **Figure 14,** today, most of our air pollution comes from our vehicles (transportation) and permitted facilities. The rest comes from a wide variety of things we use in our daily lives: local businesses, heating and cooling, and yard and recreational equipment.[127]

The nearest air quality monitor to the project is in St. Cloud, Minnesota, approximately four miles west 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

[127] MPCA, *The Air We Breathe: The State of Minnesota’s Air Quality 2025*, (January 2025), https://www.pca.state.mn.us/sites/default/files/lraq-1sy25.pdf.

classified as unhealthy on one day in 2023. [128] The increase in the number of days of moderate or worse air quality in 2023 was statewide and largely attributable to wildfire smoke. [129]

Figure 14. 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.

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

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

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

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. Benton 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.[130]

4.8.2 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 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 with 26,179,328 million tons emitted representing 19.1 percent of the state's total emissions.[131] GHG emissions from electricity generation have decreased by about 54 percent in Minnesota since 2005

[130] Application, Appendix E.

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

due to a shift in generation to lower- and non-emitting sources and an increase in end-use energy efficiency.[132]

POTENTIAL IMPACTS

General

The DNR Minnesota Climate Explorer Tool was used to determine current climate conditions for Benton County.[133] Annual average temperature trends show a temperature increase of 0.40 °F per decade from 1895 to the present, and 1.69 °F per decade from 1970 to present. For precipitation, total annual precipitation has not increased or decreased from 1895 to present.

The DNR Minnesota Climate Explorer tool was also used to project climate conditions for Benton 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.[134]

The climate models predict that under RCP 4.5, the average temperature for Benton 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 0.03 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 insignificant amount relative to Minnesota's overall emissions of approximately 137 million tons in 2020.[135] 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 363 metric tons of CO_2 and operations are estimated to be approximately 20 tons of CO_2

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[132] Id.

[133] DNR, *Minnesota Climate Explorer*, (n.d.), https://climate-explorer.dnr.state.mn.us/main/historical.

[134] 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.

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

annually.[136] The majority of land-use emissions will occur during construction due to the change from cropland to developed land, however the establishment of perennial vegetation will reduce this impact.

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

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. 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[137] rates Benton County as having "relatively moderate" 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 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 section **4.8.1 Air Quality** 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.

[136] SPA, Section 4.5.3.2; RPA, Section 7.5.2.2.
[137] FEMA, *National Risk Index*, (n.d.), https://hazards.fema.gov/nri/.

4.8.3 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 4, the Central Province, and is characterized by buried sand aquifers and relatively extensive surficial sand plains, part of a thick layer of sediment deposited by glaciers overlying the bedrock. The province also has thick glacial sediment, sand and gravel aquifers are common, and the deeper fractured crystalline bedrock has poor aquifer properties and limited use as an aquifer.[138]

Pollution sensitivity of near surface materials in the project area ranges from the "very low" category to the "high" category. 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.[139] The majority of the project area, 62.2%, is within the "high" category. This means that the project area is generally expected to have "high" groundwater pollution sensitivity where contaminants from the land surface would reach groundwater within hours to a week.[140] While less than one percent of the project area is within a "low sensitivity" category, this category does not guarantee protection. Leakage from an unsealed well for example, may bypass the natural protection, allowing contamination to directly enter an aquifer.

The land control area was reviewed for wells listed on the Minnesota Well Index (MWI) and MDH Wellhead Protection Areas (WHPAs). The MDH maintains the 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 two documented well within the land control area, and 121 additional wells within one mile of the land control area.[141]

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

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[138] DNR, Minnesota Groundwater Provinces 2021, (n.d.), https://www.dnr.state.mn.us/waters/groundwater_section/mapping/provinces.html.
[139] Adams, Roberta, *Pollution Sensitivity of Near-Surface Materials,* (2016), https://www.leg.state.mn.us/docs/2017/other/170839.pdf.
[140] DNR, *Methods to Estimate Near-Surface Pollution Sensitivity*, (2016), https://files.dnr.state.mn.us/waters/groundwater_section/mapping/gw/gw03_ps-ns.pdf.
[141] MDH, *Minnesota Well Index,* (2024), https://www.health.state.mn.us/communities/environment/water/mwi/index.html.

through a database and mapping layer maintained by MDH. A search for WHPAs in the MDH database indicated that the land control area is located entirely outside of a WHPA for a drinking water well. The nearest WHPA is located to the northeast near the town of Foley.

A study of sole source aquifers (SSA) was conducted in the project area. The EPA defines a SSA or principal source aquifer area as:

- One that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer
- Where contamination of the aquifer could create a significant hazard to public health
- Where there are no alternative water sources that could reasonably be expected to replace the water supplied by the aquifer.

There are currently no EPA-designated SSAs within the project area.

Hydrogeography data from MDNR indicates that the Anoka Sand Plain Aquifer lies beneath the Site and varies between a few feet to over 75 feet in thickness. The aquifer sits at a depth between 970 and 1,030 feet, which is on the shallower end of those found in Benton County. There are no reported karst features within the project area.[142]

SOLAR FACILITY AND BESS 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.

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 the aquifer, are not anticipated as water supply needs will be limited.

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.[143]

Construction of the project is not likely to require subsurface blasting, and newly fractured bedrock causing groundwater flow is not anticipated. Typically, the foundation for the solar array 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. 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.

[142] SPA, Section 4.5.5.1.
[143] SPA, Section 4.5.5.1.

HVTL Potential Impacts

Construction and operation of transmission line projects can impact geology and groundwater through temporary, construction-related impacts and/or long-term impacts. Impacts to topography, such as the creation of abrupt elevation changes are not expected. Transmission line structures would be installed at existing grade.

Direct impacts to groundwater are generally associated with construction, for example, structure foundations that could penetrate shallow water tables.

Mitigation

Construction should not affect the bedrock of the area and disturb the groundwater flow. During construction, if the water table is reached when pile driving, trenching for collection cables, or installing poles, dewatering will be needed. If this scenario occurs, Benton Solar will need a Water Appropriation Permit from the DNR. Benton Solar indicates that they will acquire this permit if required. Benton Solar has also stated that they will avoid the two irrigation wells located within the land control area. [144]

Once the project is constructed, the operation of the facility will not have minimal to no impact on the groundwater of the area. Benton Solar has committed to developing and maintaining a Spill Prevention, Control and Countermeasures (SPCC) Plan. This plan will help prevent impacts on soil (**Section 4.8.4 Soils**), as well as mitigate impacts to the groundwater by actively monitoring and cleaning any spills in the facility.

[144] Id

4.8.4 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 be both positive and negative, and short- and long-term. Isolated moderate to significant negative impacts associated with high rainfall events could occur. Impacts can be mitigated. 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** and **Table 15**) are nearly all nonhydric or predominantly nonhydric. The soils within the site may be susceptible to compaction or rutting during wet conditions due to the hydric texture of the soil.

Table 14. Soil Types in the Solar Facility and BESS[145]

Hydric Rating*	Acres	Percent of Site
Hydric	28.5	2.9%
Predominantly Hydric	21.4	2.2%
Predominantly Nonhydric	322.2	33.9%
Nonhydric	579.4	60.9%

Table 15. Soil Types in the HVTL Route Width and ROW[146]

Hydric Rating*	Acres	Percent of Route Width	Percent of ROW
Predominantly Hydric	0.4	0.8%	0%
Nonhydric	48.0	99.2%	100%

* 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).

Solar Facility and BESS 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 or wind events could occur. Because the soil at the project would be covered with native perennial vegetation

[145] SPA, Table 4.5-5.
[146] RPA, Section 7.1.3.2.1.

for the operating life of the project, soil health would likely improve over the operating life of the project.

Construction of the solar facility and BESS will disturb approximately 631.9 acres within the land control area. As with any ground disturbance, there is potential for soil compaction and erosion. Heavy rainfall or wind 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 sandy, loamy and coarsely loamy in texture and range from poorly to well 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 more susceptible to wind erosion during dry periods due to the nonhydric nature of the soil. 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, will likely improve due to use of perennial, 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.

HVTL Potential Impacts

Minimal impacts to soils would occur in the form of soil mixing for the few poles to be installed during construction of the HVTL. During operation, soils would be subject to minor disturbance if maintenance were required.

Mitigation

Mitigation to reduce impacts to soil during construction is discussed in section **4.6.1 Agriculture** of this EA.

Additional potential impacts to soils can be mitigated by using BMPs and standard construction practices. A variety of methods can be used to minimize soil erosion. Common mitigation measure employed to minimize soil erosion include:

- Promptly seeding to establish temporary or permanent vegetative cover on exposed soil.
- Using mulch to form a temporary and protective cover on exposed soils. Mulch can help retain moisture in the soil to promote vegetative growth, reduce evaporation, insulate the soil, and reduce erosion. A common mulch material used is certified weed free hay or straw.
- Erecting or using sediment control fences that are intended to slow water flow, filter runoff, and promote the settling of sediment out of runoff via ponding behind the sediment fence.
- Using erosion control blankets and turf reinforcement mats that are typically single or multiple layer sheets made of natural and/or synthetic materials that provide structural stability to bare surfaces and slopes.
- Separating topsoil and subsoil and covering stockpiled soils.

- Returning locations where grading or temporary access is required to their original contours and elevation to the greatest extent possible.
- Permanent stormwater controls will control runoff at the substation.

4.8.5 Surface Water

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.

The project has the potential to impact surface water resources. These projects could directly impact water resources 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 located within the Mississippi River – St. Cloud watershed within the Upper Mississippi River Basin.[147] Two public watercourses travel through the area of land control. The Elk River runs north to south through the western portion of the project. An unnamed public stream runs east to west through the northern portion of the project and eventually joins the Elk River.

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. The Elk River is listed as impaired under this determination.

The National Hydrography Data Set shows another intermittent stream flowing east to west through the center of the project. Additionally, there are two more water bodies, an unnamed pond east of Elk Creek, and another unnamed pond in the northern portion of the project.

Benton Solar delineated water bodies in the project area in 2022, 2023, and 2024. They confirmed the Elk River and the two unnamed ponds during this delineation. There was no mention of the NHD intermittent stream, but they did delineate an additional ephemeral drainage stream near the unnamed pond east of Elk River.[148]

SOLAR FACILITY AND BESS POTENTIAL IMPACTS

The Mississippi River – St. Cloud Watershed is an area that historically has been impacted by issues of shoreline loss due to development. It also suffers from high amounts of sedimentation from soil

[147] DNR, *Minnesota's Watershed Basins*, (n.d.), https://www.dnr.state.mn.us/watersheds/map.html.
[148] SPA, Appendix J.

runoff. With this runoff, the rivers in the area have increased levels of phosphorous due to the high phosphorous levels in the sandy loam.[149]

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. The applicant states that they will avoid surface waters by boring beneath them using horizontal drilling for the collection lines.[150]

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.

HVTL Potential Impacts

The HVTL route width does not intersect any surface waters. As such, direct impacts to surface waters are not expected to be occur.

Indirect impacts to surface waters could occur due to the construction of the HVTL, similar to the construction of the solar facility and BESS.

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.

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.[151]

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

- Section 4.3.11 of the DSPs and section 5.3.8 of the DRP 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. Benton 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

[149] MPCA, *Mississippi River – St. Cloud Watershed Information*, (n.d.), https://www.pca.state.mn.us/watershed-information/mississippi-river-st-cloud.
[150] SPA, Section 4.5.6.2.
[151] Id.

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."

4.8.6 Floodplains and Topography

The ROI for floodplains and topography is the local vicinity. Potential impacts to the floodplain are anticipated to be minimal and negative in the short-term for construction, and positive in the long-term for operation. Topography for the area is not expected to drastically change. Potential impacts to topography are anticipated to be minimal and long-term. Impacts can be mitigated.

Floodplains

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, there are flood zones around the Elk River that are mapped as Zone A.[152] This means there is a 1.0 percent chance of flooding annually. 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 4.8.2 Climate Change**).

Topography

The topography of the area is generally flat with gentle slopes. The land around the Elk River slopes to the grade of the river.

Solar Facility and BESS Potential Impacts

Impacts to the floodplains may occur during construction. The applicant states that they will minimize grading to areas only where necessary, and that the project was sited to avoid any unnecessary grading.[153] These impacts are expected to be short-term and minimal, as the land control area is just outside of the floodplain. Once construction is completed, impacts to floodplains are expected to be beneficial and long-term, overall. While construction may alter the topography near the floodplain of

[152] FEMA, *FEMA Flood Map Service Center,* (n.d.), https://msc.fema.gov/portal/home.
[153] SPA, Section 3.4.2.1.

the Elk River, the conversion of cropland to native prairie-like conditions will aid water infiltration and minimize flooding.[154]

HVTL Potential Impacts

Transmission line structures will be installed at existing grade. Should grading occur it will be restricted to establishing a flat, safe workspace in and around the structure—major topographical changes to the landscape would not occur. Once the structure is set the topography will be repaired and restored to allow natural drainage patterns to persist and to blend with the natural terrain. The applicants will not place fill or excavated material in a manner that creates an unstable slope or in a bluff impact zone.

Minimal impacts to topography, such as the creation of elevation changes or modifications to natural drainage patterns, may occur near the Elk River crossing where steep slopes with erosion prone soils could exist. The required SWPPP BMPs will assist in stabilizing slopes and managing runoff and erosion during construction near the river crossing to ensure the existing drainage pattern remains afterwards, minimizing impacts from topography and soil/erosion that could indirectly impact other resources such as the Mississippi. The VMP will also assist in appropriate revegetation after construction to establish adequate perennial cover to avoid erosion.

Mitigation

The applicant notes that the project has been sited and designed to avoid floodplains. Additionally, the applicant has designed stormwater drainage basins to facilitate flood mitigation and ground infiltration.

Section 4.3.17 of **Appendix C** requires the permittee to develop a VMP, which will allow for revegetation of agricultural fields. Doing so will allow for better ground infiltration of rainfall. Section 4.3.25 of **Appendix C**, section 4.3.22 of **Appendix D**, and section 5.3.17 of **Appendix E** require the permittee to replace or repair any damaged drain tile for the life of the project, unless otherwise negotiated with the landowner.

4.8.7 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, minimal, 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.[155]

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

[154] DNR, *The Benefits of a Prairie*, (n.d.), https://www.dnr.state.mn.us/prairie/why-important/benefits-prairie.html.
[155] USEPA, *What is a Wetland?,* (2025), https://www.epa.gov/wetlands/what-wetland.

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.

The applicant assessed the potential for wetlands within the project footprint through a formal water resource delineation in 2022, 2023, and 2024. 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.).

This EA uses the National Wetland Inventory for Minnesota (NWI-MN) to allow for comparison of wetland types. 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 2009-2014 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.[156] **Appendix B**, Water Resources map, shows the NWI-MN wetlands in the vicinity of the project.

There are 22.8 acres of wetlands in the project footprint; the majority are freshwater emergent wetlands (**Table 16**).

[156] DNR, *Wetland Finder,* (2024), https://wetland-finder.dnr.state.mn.us/.

Table 16. NWI-MN Wetlands in Project Footprint

Wetland type	Acres in land control area	Acres in preliminary development area
Freshwater Emergent	12.9	1.32
Freshwater Forested	4.00	-
Freshwater Pond	2.27	0.06
Freshwater Shrub	1.15	-
Freshwater Shrub/Emergent	0.69	-
Riverine	1.82	0.07
Total	**22.83**	**1.45**

Benton Solar contracted with SWCA Environmental Consultants and completed an onsite wetland delineation across the land control area, delineating wetlands totaling approximately 23.5 acres. **Table 17** summarizes delineated wetlands, both inside the area of land control and inside the preliminary development area. Out of the wetlands delineated, 0.1 acres are within the preliminary development area.

Table 17. Field Delineated Wetlands in Project Footprint[157]

Wetland type	Acres in land control area	Acres in preliminary development area
Palustrine Emergent	19.0	0.1
Palustrine Forested	1.4	-
Palustrine Farmed	0.8	-
Palustrine Forested/Emergent	2.3	-
Total	**23.5**	**0.1**

Solar Facility and BESS Potential Impacts

The NWI-MN mapping identified approximately 22.83 acres of wetlands, only 1.45 of which are within the preliminary development area. Benton Solar's wetland delineation identified approximately 23.5 acres of wetland, only 0.1 of which are within the preliminary development area.

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

HVTL Potential Impacts

The NWI-MN mapping identified 0.03 acres of riverine wetlands within the HVTL route width. This wetland area is located to on the northeast corner of the route width, and the proposed alignment of

[157] SPA, Table 4.5-7.

the HVTL will avoid this area. Potential impacts for wetlands due to the HVTL are expected to be negligible.

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 Benton County SWCD under the Minnesota Wetland Conservation Act (WCA), would occur prior to construction.[158]

Section 4.3.13 of the DSPs and section 5.3.9 of the DRP (**Appendices C, D,** and **E**) 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.

4.8.8 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 project can be mitigated through development of a VMP.

The project is located in both the Laurentian Mixed Forest Province and the Eastern Broadleaf Forest Province.[159]

Within the Mixed Forest Province, it is located within the Mille Lacs Uplands subsection of the Western Superior Uplands section. Pre-settlement vegetation consisted primarily of a mix of conifer, hardwood and mixed conifer-hardwood forests. Maple-basswood forests were prevalent along the southern boundary of the subsection, where the project is located.

Within the Eastern Broadleaf Forest Province, it is located within the Anoka Sand Plain subsection of the Minnesota & Northeast Iowa Morainal section. Pre-settlement vegetation consisted primarily of oak barrens. Characteristic trees were small bur oak and northern pin oak. Brushland characterized large areas of the sandplain. Jack pine was present along the northern edge of the subsection, where the project is located.

SOLAR FACILITY AND BESS POTENTIAL IMPACTS

Construction of the solar facility and BESS 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 project 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 roughly 70/30 grass/flower and forbs mixture will primarily be used so that vegetation won't shade the panels and undesirable or noxious weeds can be easily identified. For the buffer areas, a roughly

[158] Id.

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

40/60 grass/flower and forbs mixture will be used, to promote pollinator activity. Once established, vegetation would be maintained through periodic mowing and herbicide application.[160]

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.

HVTL Potential Impacts

The construction and operation of the HVTL would alter the existing vegetation within the HVTL route width, depending on final location of the alignment.

Along the HVTL right of way, woody vegetation would be cleared. Non-woody perennial vegetation would be established and maintained within the right of way to allow for safe operation of the line and to reduce the risk of interference with electrical infrastructure. Woody vegetation removal along the right of way would increase sunlight infiltration in areas that were densely wooded, likely reducing the quantity of shade-preferring plant species and increasing the prevalence of species which utilize forest edge habitats.

Removal of vegetative cover during construction exposes soils and could result in soil erosion and the potential introduction and/or spread of invasive species within the HVTL ROW.

Mitigation

Several sections of **Appendix C** address impacts to vegetation:

- Sections 4.3.17 requires 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.
    - Identification of the third-party (e.g., consultant, contractor, site manager, etc.) responsible for restoration, monitoring, and long-term vegetation management of the site.

[160] SPA, Appendix D.

  - 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 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. Benton Solar has included a draft AIMP as Appendix C of its joint site application.
- Section 4.3.15 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.

4.8.9 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 minimal. 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, transmission lines, 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. Small pockets of forested lands, 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 opossum, striped skunk, white-tailed deer, red fox, common raccoon, coyote, and eastern cottontail.[161]

Avian species that could be found at the site include the horned lark, American goldfinch, wild turkey, ring-necked pheasant, mourning dove, and rock pigeon. The USFWS Information for Planning and Consultation (IPaC) report identified 16 species of Birds of Conservation Concern with potential to occur in the area. These species include the bobolink, chimney swift, eastern whip-poor-will, red-headed woodpecker. There are no Important Bird Areas (IBA) designated by the National Audubon Society within the project area; the Avon Hills IBA is located to the west of the project, and the Sherburne National Wildlife Refuge IBA is located southeast of the project.[162]

[161] SPA, Section 4.5.9.1.2.
[162] Audubon Minnesota, *Minnesota Important Bird Areas*, (n.d.), https://mn.audubon.org/node/4281.

There are no DNR wildlife management areas or migratory waterfowl feeding and resting, or USFWS Waterfowl Production areas within one mile of the site.

Solar Facility and BESS Potential Impacts

The local vicinity is largely composed of agricultural land. Noise and human activity associated with construction would likely lead to wildlife displacement that currently uses these agricultural lands. More mobile species would abandon habitat for nearby adjacent habitats. Less mobile species could be directly impacted by construction equipment.

Although habitat disruption may occur during construction, wildlife species are likely to adapt by using adjacent natural areas, which would likely serve as a refuge for displaced wildlife.

Fencing around solar facilities represents a potential impact to wildlife inhabiting the area. 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.

Potential impacts also include collision mortality, where birds may fly into solar panels or other infrastructure, and predation, where predators may exploit solar sites. Additionally, bird behavior such as foraging, nesting, and territoriality within solar sites can increase their vulnerability to these risks.

As discussed in **Section 4.8.8 Vegetation**, restoration of the Solar Project Area would include native perennial vegetation. This vegetative cover would likely benefit many species that prefer this habitat type over agricultural cover.

HVTL Potential Impacts

Similar to the solar facility and BESS, noise and human activity associated with HVTL construction would likely result in displacing wildlife inhabiting the area. The right-of-way clearing would fragment wildlife habitat in this area, converting it from a forested habitat to an open, routinely maintained habitat. Impacts during construction are expected to be of short duration.

During operation, potential impacts to avian species (e.g., songbirds, raptors, and waterfowl) include those described above for non-avian species but also include potential impacts from electrocution and collision with transmission line conductors. Electrocution occurs when an arc is created by contact between a bird and energized lines or an energized line and grounded structure equipment. Electrocution occurs more frequently with larger bird species, such as hawks, because they have wider wingspans that are more likely to create contact with the conductors. Independent of the electrocution risk, birds may be injured by colliding with transmission line structures and conductors. The collision risk is influenced by several factors including habitat, flyways, foraging areas, and bird size. Waterfowl, especially larger waterfowl such as swans and geese, are more likely to collide with transmission lines.

MITIGATION

Several sections of the DSPs and DRP (**Appendices C, D** and **E**) 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 of the DSPs (respectively) require the permittee to report "any wildlife injuries and fatalities" to the Commission on a quarterly basis.
- Section 5.3.16 of **Appendix E** requires the permittee to coordinate with the DNR to identify areas of the transmission line where bird diverters can be incorporated.

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 biodegradable erosion control materials.

4.9 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 the project 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."[163] 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.[164] The MBS uses four classifications denoting the level of biological diversity to rank sites:[165]

- **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.
- **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 an MBS site of "below" located northeast of the project. A small portion of the MBS site (<0.01 acres) intersects the land control area of the project.

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

There are no native plant community sites, calcareous fens, waterfowl production areas, or wildlife management areas within the project area.

Rare Species

Benton Solar contacted USFWS and the DNR in both 2023 and 2024 to request species review for the project area.[166]

The following is a list of species recognized by the USFWS as federally protected and likely to occur within the project area.

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. Because the project land control area is primarily agricultural lands with little forested habitat, the NLEB is limited to shelterbelts or windbreaks, if present at all.[167]

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.[168] The species may roost in trees within the site during their active season (April – September).

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.[169] Due to the agricultural landscape, suitable monarch butterfly habitat is limited in the land control area.

Whooping Crane (Grus americana)

The whooping crane is listed as experimental population, non-essential). Two whooping crane populations occur in the United States: the experimental, non-essential Eastern Migratory population and the wild Aransas-Wood Buffalo population. Only the Eastern Migratory population range overlaps with Minnesota. The population's summer range is located in

[166] SPA, Appendix K.
[167] DNR, *Rare Species Guide*, (n.d.), https://www.dnr.state.mn.us/rsg/index.html.
[168] Id.
[169] DNR, *Monarch Butterfly, (n.d.),* https://www.dnr.state.mn.us/insects/monarchbutterfly.html.

central Wisconsin, 200 miles southeast of the project area, and individuals migrate to Florida for wintering habitat. The likelihood of this species occurring in the site is considered low.

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.[170]

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. Mitigation measure may include setbacks from nests, timing restriction for construction activities, and possibly seeking a USFWS permit for removal of a nest.

There are no designated critical habitats within the project area.

The applicant contacted the DNR for a National Heritage Review in both 2023 and 2024. This review entails the DNR comparing the project area with the Minnesota National Heritage Information System (NHIS) to indicate which state-listed species have a potential of occurring in the project area. The following have been identified in 2023.

Blanding's Turtle (Emydoidea blandingii)

The Blanding's turtle is listed as a state threatened species. Wetland complexes and adjacent sandy uplands are necessary to support viable populations of Blanding's turtles. Calm, shallow waters, including wetlands associated with rivers and streams with rich aquatic vegetation are especially preferred. In Minnesota, this species appears fairly adaptable, utilizing a wide variety of wetland types and riverine habitats in different regions of the state. In central Minnesota, shrub wetlands are utilized throughout the summer and also serve as over-wintering sites.[171]

Creek Heelsplitter (Lasmigona compressa)

The creek heelsplitter is a mussel listed as a state species of special concern. The creek heelsplitter typically occurs in creeks, small rivers, and the upstream portions of large rivers. Its preferred substrates are sand, fine gravel, and mud.[172]

Loggerhead Shrike (Lanius ludovicianus)

The Loggerhead Shrike is a state endangered species. Loggerhead Shrikes live in areas of upland grasslands and sometimes in agricultural areas where short grass vegetation and

[170] DNR, *Bald Eagles in Summer*, (n.d.), https://www.dnr.state.mn.us/birds/eagles/summer.html.
[171] DNR, *Blanding's Turtle,* (n.d.), https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ARAAD04010.
[172] DNR, *Creek Heelsplitter,* (n.d.), https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=IMBIV22020.

perching sites such as hedgerows, shrubs, and small trees are found. They may occur in both native and non-native grasslands, including native prairie, pastures, old fields, shelterbelts, farmyards, and cemeteries.[173]

Tubercled Rein Orchid (Platanthera flava var. herbiola)

The tubercled rein orchid is listed as threatened. The normal habitat of the rein orchid is moist or wet meadows or sunny swales in savannas. It also occurs at the margins of shallow marshy lakes, especially where there is a turf of low-growing native grasses or sedges. Some of the habitats resemble small patches of prairie, though the habitats under discussion are well within the forested region of the state and are perhaps better described as permanent and natural openings in an otherwise wooded or savanna landscape. It also seems that habitats tend to be oriented along some transitional edge, rather than in any homogeneous or easily categorized community.[174]

The 2024 DNR NHIS review only returned the Blanding's turtle as a state-listed species, but out of conservatism, the applicant listed all species in their application.[175]

Benton Solar also conducted their own research on state-listed species by reviewing Minnesota's List of Endangered, Threatened, and Species of Special Concern, Minnesota's Wildlife Action Plan 2015-2025, and the DNR's Rare Species Guide. They identified additional species that may occur within the land control area based on known ranges of these species. **Table 18** below summarizes these additional species.

[173] DNR, *Loggerhead Shrike,* (n.d.), https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABPBR01030.
[174] DNR, *Tubercled Rein Orchid,* (n.d.), https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PMORC1Y082.
[175] SPA, Section 4.5.10.2.2.

Table 18. State-Listed Species with Potential to Occur in the Land Control Area[176]

Common Name	Scientific Name	State Status	Potential to Occur
Birds			
Cerulean Warbler	Setophaga cerulea	Special Concern	May Occur
Lark Sparrow	Chondestes grammacus	Special Concern	May Occur
Peregrine Falcon	Falco peregrinus	Special Concern	Unlikely to Occur
Purple Martin	Progne subis	Special Concern	May Occur
Red-Shouldered Hawk	Buteo lineatus	Special Concern	May Occur
Yellow Rail	Coturnicops noveboracensis	Special Concern	May Occur
Mammals			
Plains Pocket Mouse	Perognathus flavescens	Special Concern	May Occur
Reptiles			
Gopher Snake	Pituophis catenifer	Special Concern	Unlikely to Occur
Insects			
Regal Fritillary	Argynnis idalia	Special Concern	Unlikely to Occur
Whitney's Underwing	Catocala whitneyi	Special Concern	Unlikely to Occur
Fish			
American Eel	Anguilla rostrata	Special Concern	Unlikely to Occur
Mussels			
Black Sandshell	Ligumia recta	Special Concern	Unlikely to Occur
Plants			
Blunt Sedge	Carex obtusata	Special Concern	May Occur
Bog bluegrass	Poa paludigena	Threatened	May Occur
Butternut	Juglans cinerea	Endangered	May Occur
Clinton's bulrush	Trichophorum clintonii	Threatened	May Occur
Drummond's Campion	Silene drummondii ssp. Dummondii	Special Concern	May Occur
Hill's Thistle	Cirsium purnilum var. hillii	Special Concern	May Occur
Kinnikinnick Dewberry	Rubus Multifer	Special Concern	May Occur
Old Field Toadflax	Nuttallanthus canadensis	Special Concern	May Occur
Vermont Bristle-Berry	Rubus Vermontanus	Special Concern	May Occur

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.

[176] SPA, Table 4.5-8.

4.10 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.
- Rerouting of Snowmobile Trail No. 87

4.11 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.

4.12 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.

4.12.1 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."[177]

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 Benton County website and MnDOT District 3 projects were reviewed. MnDOT's website did not reveal any projects proposed within the area and time of the proposed project. Benton County's website shows construction on 75th Avenue NE. The website states the construction will be from Spring 2025 to Fall 2025.[178] The construction of this road should be completed by the time the project will begin construction, should it be permitted.

Two additional energy projects are currently ongoing in the area. Regal Solar (IP-7003/GS-19-395) is currently undergoing a permit amendment and is planning to be constructed by Q3 of 2027. This project is roughly 18 miles northwest of the Benton Solar project. Additionally, the Northland Reliability Project (E015, ET2/TL-22-415) has also been permitted. This project will install a new

[177] Minnesota Rules 4410.0200, subp. 11a.
[178] Benton County, *2024 Construction Projects*, December 13, 2024, https://www.co.benton.mn.us/264/Construction-Projects.

double-circuit 345 kV HVTL from Iron Range substation near Grand Rapids, Minnesota, to the existing GRE substation, the same one that Benton Solar will connect to.

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.

4.12.2 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. The energy infrastructure improvements could also impact aesthetics and cultural values.

4.12.3 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 Benton Solar project are anticipated to be minimal.

4.12.4 Land-based Economies

Cumulative potential effects on land-based economies are anticipated to be minimal. The project area is within largely agricultural land, and the Regal Solar Project is the only other land-based project planned in the community outside of the Benton Solar project. Northland Reliability Project is not anticipated to preclude land use.

4.12.5 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.

4.12.6 Natural Resources

Cumulative potential effects on the natural environment are anticipated to be minimal to moderate. Impacts are limited along roadways or 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.

4.12.7 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. As the identified projects have undergone separate environmental review, impacts to unique species or rare communities are expected to be mitigated and minimal.

5 Application of Siting and Routing Factors

5.1 Siting and Routing Factors – Analysis and Discussion

This analysis applies the Commission's siting and routing 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) are not studied as there is only one routing option. **Factor I** (use of existing generating plants) is not studied as the project is not being constructed at an existing generating facility. **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 4.10** and **Section 4.11**, respectively, of this EA. The other factors are all ranked below in **Table 19**.

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 19. Application of Siting/Routing Factors

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

Utilities	●	●
Factor B: Public Health and Safety		
Element	**Construction**	**Operation**
EMF	●	●
Emergency Services	●	●
Implantable 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	●	●
Floodplains and Topography	●	●
Wetlands	●	●
Vegetation	●	●
Wildlife	●	●
Wildlife Habitat	●	●
Factor F: Rare and Unique Resources		
Element	**Construction**	**Operation**
Fauna	●	●
Flora	●	●

5.1.1 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 and planned energy 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 permits.

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. However, the potential impacts can 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. Snowmobile Trail No. 87 will have to be rerouted. 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 Benton 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.

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Appendix A

Scoping Decision

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In the Matter of the Application of Benton Solar, LLC for a Site Permit for the 100 MW Solar Energy Generating System for the Benton Solar Project in Benton County, Minnesota

In the Matter of the Application of Benton Solar, LLC for a Site Permit for the 100 MW Battery Energy Storage System for the Benton Solar Project in Benton County, Minnesota

In the Matter of the Application of Benton Solar, LLC for a Route Permit for a 115 kV High Voltage Transmission Line Associated with the Benton Solar Project in Benton County, Minnesota

ENVIRONMENTAL ASSESSMENT SCOPING DECISION

DOCKET NOs. IP-7115/GS-23-423, ESS-24-283, and TL-23-425

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 for Benton Solar LLC's proposed 100 megawatt (MW) solar energy generating system, 100 MW energy storage system, and 115 kilovolt (kV) transmission line in Minden Township, Benton County, Minnesota.

Project Description

The Benton Solar project consists of three major components that require permitting: a 100 MW solar facility, a battery energy storage system (BESS) with a capacity of 100 MW, and 0.5 mile long 115 kV transmission line to be constructed between the solar facility and an existing Great River Energy substation. The project is located four miles east of St. Cloud, Minnesota.

100 MW Solar Facility and 100 MW Battery Energy Storage System

Benton Solar proposes to construct and operate a 100 MW solar facility and BESS in Minden Township, Benton County, Minnesota. The project will occupy approximately 951.4 acres, of which 631.9 acres will be developed for the project (see Project Overview Map). The project will use photovoltaic solar panels mounted on single axis tracking systems. Collection cables will gather and send the electric power generated by the solar panels through inverters to a project substation. The project will also utilize a BESS in tandem with solar energy generation to provide power when it is most advantageous.[1]

115 kV High Voltage Transmission Line

The project substation will interconnect with the electrical grid through a proposed 0.5 mile long 115 kV transmission line to a Great River Energy substation located south of the project.[2]

[1] Joint Site Permit Application, Section 3.
[2] Route Permit Application, Section 1.

Benton Solar indicates that a generator interconnection agreement with the Midcontinent Independent System Operator (MISO) for the project has been requested and was approved on December 7, 2022. Benton Solar is currently in the process of filing a surplus agreement with MISO for the BESS.[3]

Project Purpose

Benton Solar indicates that the project will assist the State of Minnesota in meeting its renewable energy objectives,[4] diversify electricity sources, meet anticipated growth in electricity demand, and meet consumers' growing demand for renewable energy.[5] Benton Solar is working to secure a power purchase agreement with customers to sell the electric power generated by the project.

Regulatory Background

Large Electric Power Generating Plant Site Permit and Energy Storage System Site Permit

In Minnesota, no person may construct a large electric power generating plant or an energy storage system 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] An energy storage system is defined as a facility capable of a capacity of 10 MW or more.[8] The Benton Solar project will be capable of producing up to 100 MW as well as storing 100 MW, and therefore requires site permits 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.

High Voltage Transmission Line Route Permit

In Minnesota, no person may construct a high voltage transmission line without a route permit from the Commission.[9] A high voltage transmission line is defined as a conductor of electric energy designed for and capable of operation at a voltage of 100 kV or more and greater than 1,500 feet in length.[10] The proposed project will consist of approximately 0.5 miles of 115 kV transmission line and therefore requires a route permit from the Commission. Because the applicants' proposed transmission line is under 200 kV, the project is eligible to use the alternative review process prescribed by Minnesota Statute 216E.04.[11]

The applicants indicated their intent to use the alternative review process for all three permit applications by notice to the Commission on August 20, 2024.[12]

[3] Joint Site Permit Application, Section 2.1.
[4] Minnesota Statute 216B.1691.
[5] Joint Site Permit Application, Section 1.1.
[6] Minnesota Statute 216E.03.
[7] Minnesota Statute 216E.01, Subd. 5.
[8] Minnesota Statute 216E.01, Subd. 5.
[9] Minnesota Statute 216E.03.
[10] Minnesota Statute 216E.01.
[11] Minnesota Statute 216E.04, Subd. 2 (noting those projects that are eligible to proceed under an alternative permitting process).
[12] Notice of Intent to File a Route Permit and Joint Site Permit Applications for the Benton Solar Project Pursuant to the Alternative Permitting Process, August 20, 2024, eDockets Numbers 20248-209653-01, 20248-209654-01, and 20248-209655-01.

Certificate of Need

As Benton Solar 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."[13]

The proposed 115 kV HVTL for the project will operate at a voltage greater than 100 kV but will have a length in Minnesota less than ten miles; accordingly, the project is not considered a large energy facility and does not require a certificate of need from the Commission.[14]

Environmental Review

Department of Commerce, Energy Environmental Review and Analysis (EERA) staff is responsible for conducting environmental review for site permit applications submitted to the Commission.[15] 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.[16] 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.

Public Information and Scoping Meetings

On January 14, 2025, Commission and EERA staff jointly held a public meeting in Sauk Rapids, Minnesota. Approximately 40 people attended this meeting; seven attendees provided public comments.[17] The following evening, January 15, 2025, Commission and EERA staff held a remote-access public meeting. Ten people attended this meeting; one attendee asked verbal questions and one attendee asked questions via the chat function.[18]

[13] Minnesota Statute 216B.243, Subd. 8(a)(8)
[14] Minnesota Statute 216B.2421; Minnesota Statute 216B.243.
[15] Minnesota Rule 7850.3700.
[16] Minnesota Statute 216E.04, subd. 5; Minnesota Rule 7850.3700, Subp. 4.
[17] Benton Solar Project, Oral Comments on the Scope of the Environmental Assessment, eDockets Number 20252-214999-01.
[18] Id.

Written Public Comments

A comment period ending on January 31, 2025, provided the public with an opportunity to provide input on the scope of the EA. Thirty written comments were received; two from state agencies, one from the Minnesota Future Farmers of America, one comment from a collective of residents, and twenty-six from individuals.[19]

Several individuals and organizations raised concerns with the project, while several addressed support for the project and the applicant. Topics of concern included potential impacts associated with aesthetics, property values, cultural values, topography/drainage, land use, health and safety, noise pollution, wildlife, water and soil resources, vegetation, archaeological and historic lands, road use, and airports.

The Minnesota Department of Natural Resources provided comments regarding project fencing and lighting as well as potential impacts to Blanding's turtles and bats.[20] The Minnesota Department of Transportation (MnDOT) noted the proximity of the project to Trunk Highway 95. MnDOT provided comments regarding potential impacts related to cultural resources, protected species, and water basins.[21]

On February 7, 2025, EERA staff filed a scoping summary and recommendations regarding alternatives to study in the EA with the Commission.[22] EERA staff recommended that the EA study solely the site and route proposed by Benton Solar in its site and route permit applications.[23] On March 4, 2025, and March 18, 2025, the Commission agreed with and adopted the recommendations made by EERA.[24]

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.

---

[19] Benton Solar Project, Written Comments on the Scope of the Environmental Assessment, eDockets number 20252-214999-02.
[20] Id.
[21] Id.
[22] EERA Alternatives Identified during Scoping Comment Period, eDocket number 20252-215079-01.
[23] Id.
[24] Commission Order, eDockets numbers 20253-216032-01 and 20253-216512-01.

I. GENERAL DESCRIPTION OF THE PROJECT

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

II. REGULATORY FRAMEWORK

A. Site Permits
B. Route Permit
C. Environmental Review Process
D. Other Permits and Approvals

III. ENGINEERING AND DESIGN

A. Solar Arrays
B. Battery Energy Storage System
C. Substation
D. Transmission Line
E. Associated Facilities

IV. CONSTRUCTION AND OPERATION

A. Construction
B. Operation and Maintenance
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. Topography
7. Cultural Values
8. 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 and Response

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 or route other than the project site and route 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 July 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.

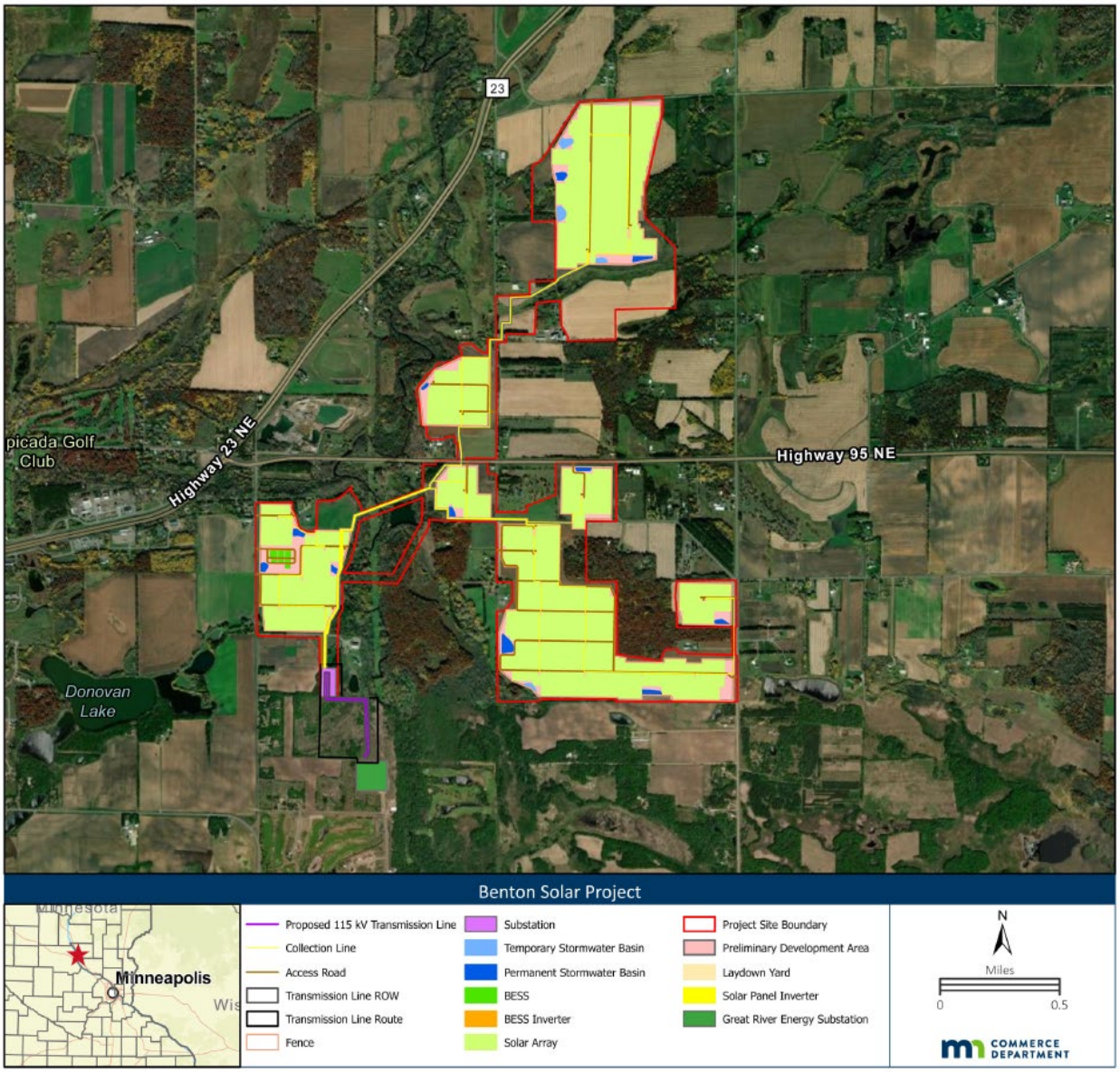
Signed this 26th day of March, 2025

STATE OF MINNESOTA
DEPARTMENT OF COMMERCE

_____

Pete Wyckoff, Deputy Commissioner

Benton Solar Project Overview Map



Appendix B

Maps

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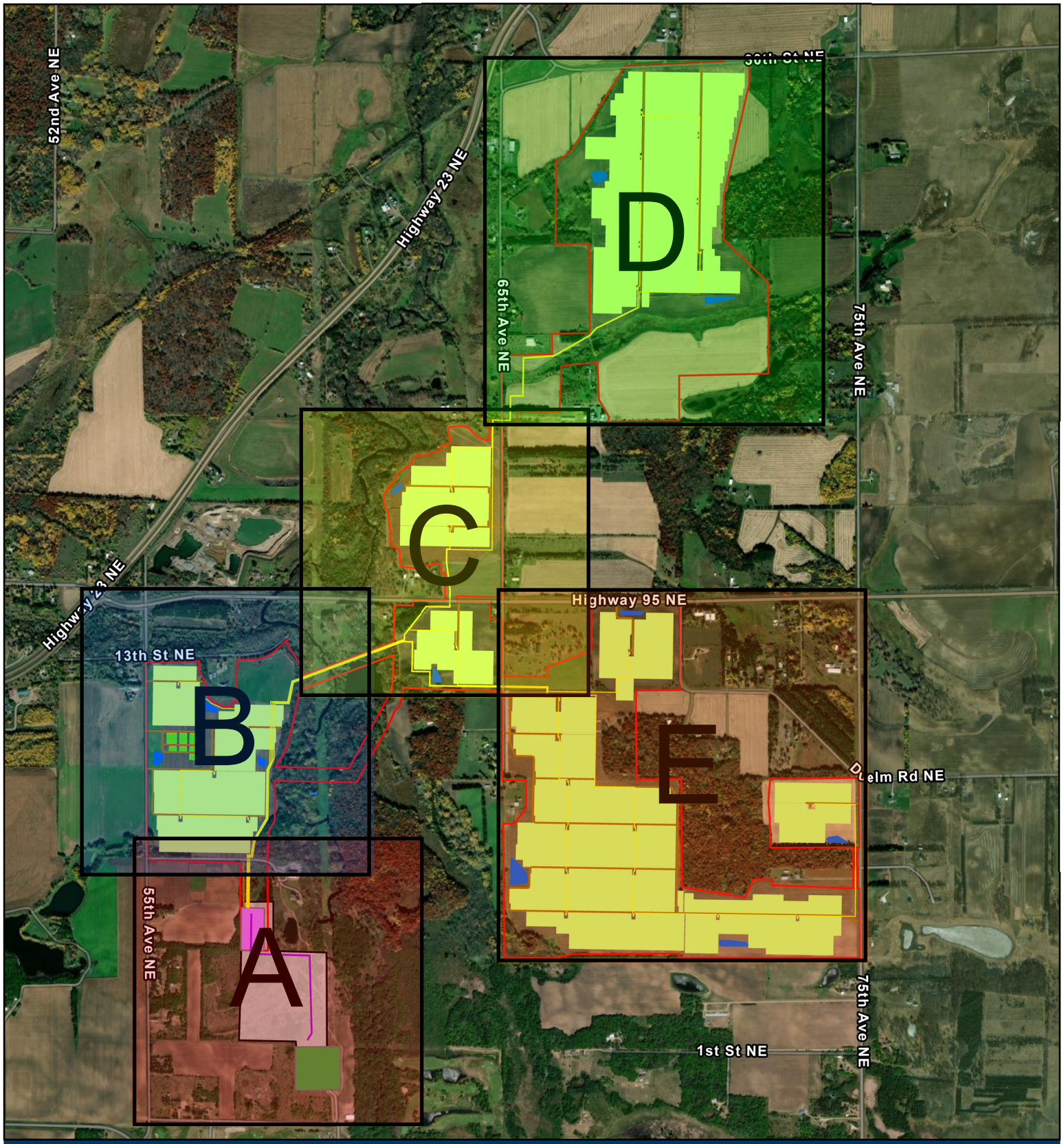

Benton Solar Project Site

- Proposed 115 kV Transmission Line
- Collection Line
- Access Road
- Project Substation
- Permanent Stormwater Basin
- BESS
- BESS Inverter
- Solar Array
- Project Boundary
- Solar Panel Inverter
- Great River Energy Substation
- Transmission Line Route

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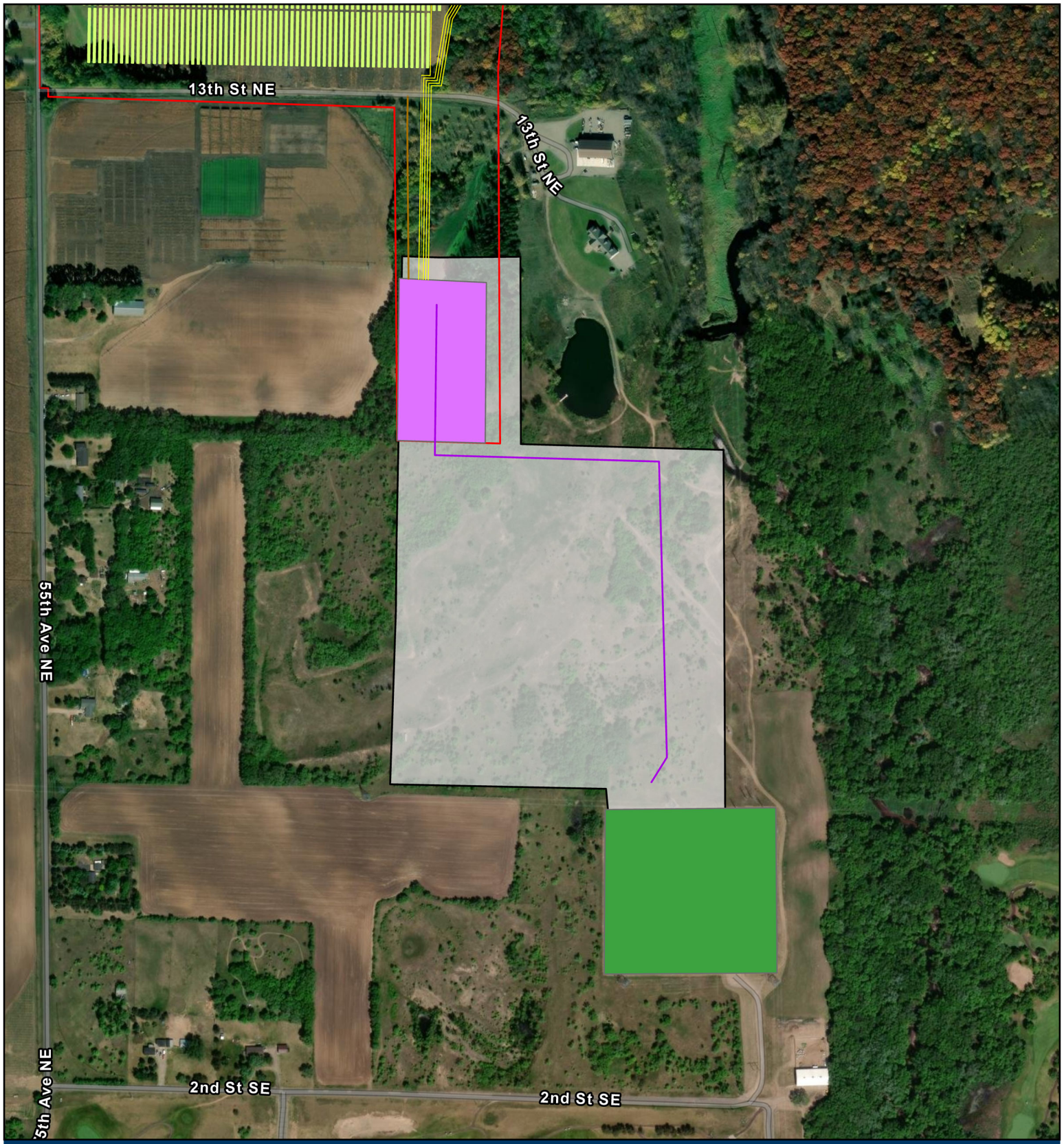
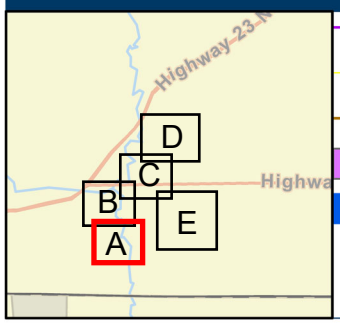
MINNESOTA PUBLIC UTILITIES COMMISSION



Benton Solar Detail Map | A



- Proposed 115 kV Transmission Line
- Collection Line
- Access Road
- Project Substation
- Permanent Stormwater Basin
- Solar Array
- Project Boundary
- Great River Energy Substation
- Transmission Line Route

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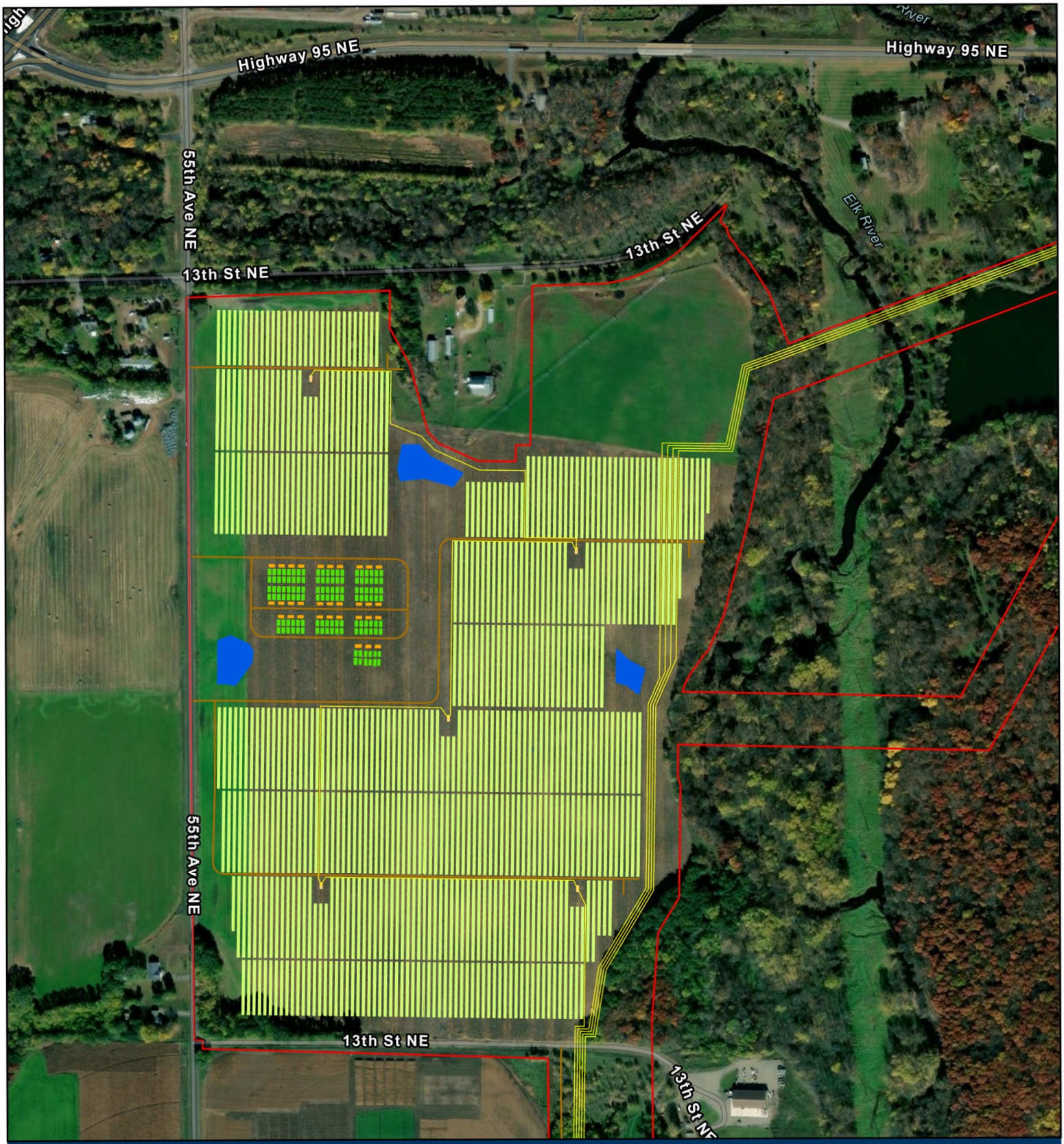
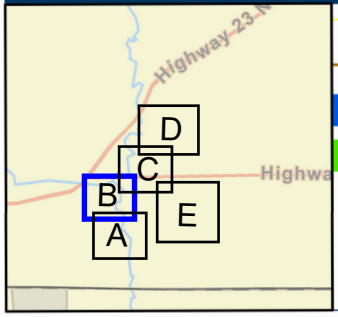


Benton Solar Detail Map | B



- Collection Line
- Access Road
- Permanent Stormwater Basin
- BESS
- BESS Inverter
- Solar Array
- Project Boundary
- Solar Panel Inverter

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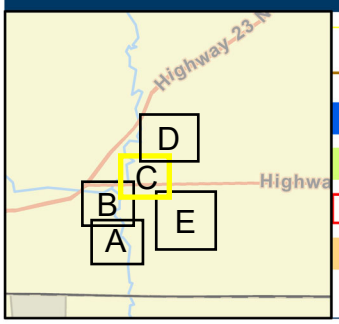
MINNESOTA PUBLIC UTILITIES COMMISSION

Benton Solar Detail Map | C



- Collection Line
- Access Road
- Permanent Stormwater Basin
- Solar Array
- Project Boundary
- Solar Panel Inverter

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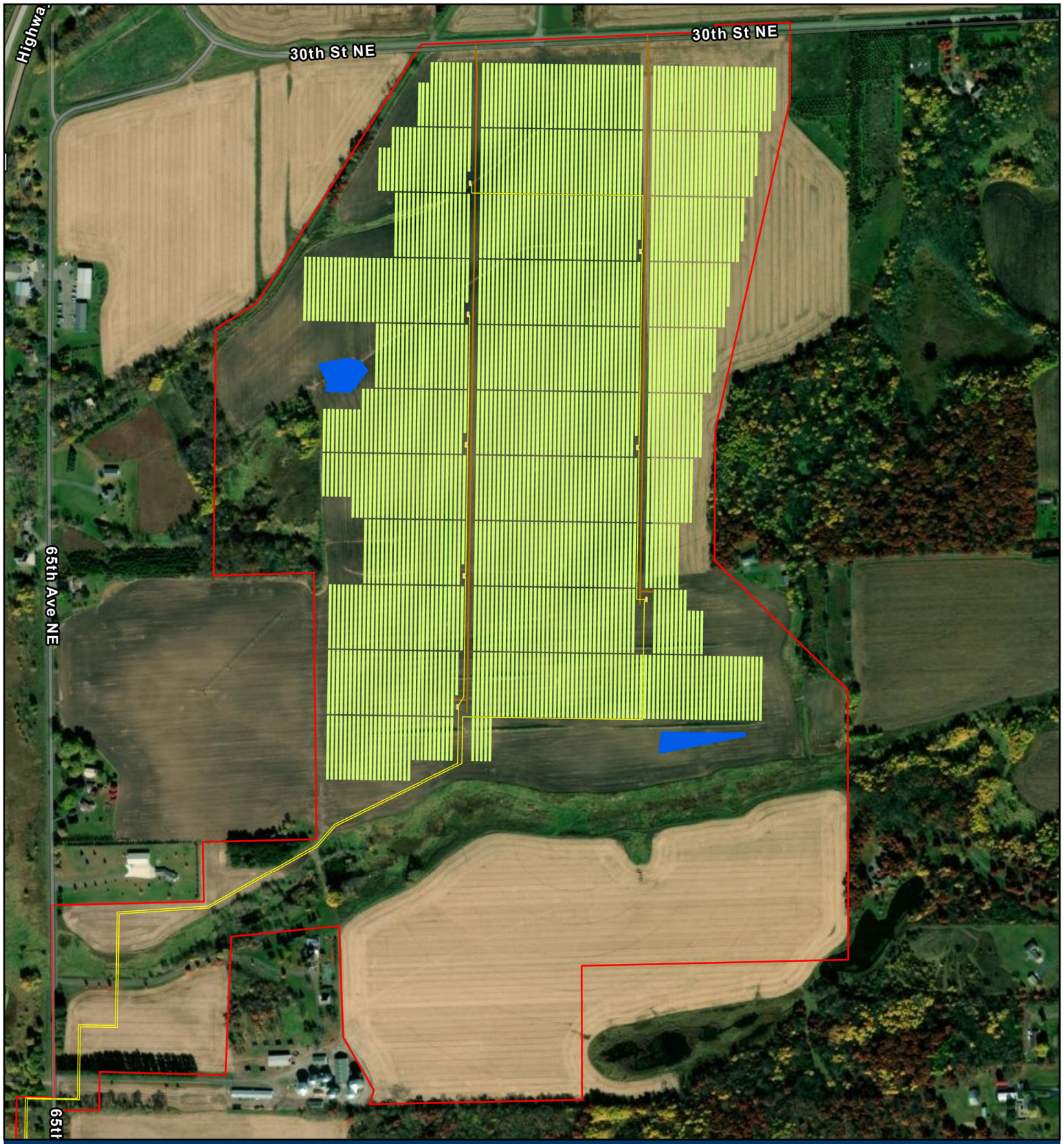
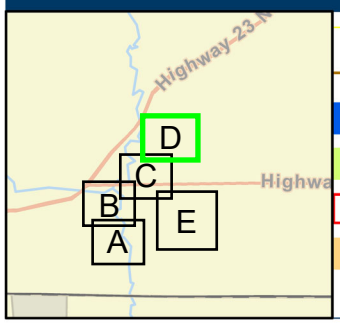


Benton Solar Detail Map | D



- Collection Line
- Access Road
- Permanent Stormwater Basin
- Solar Array
- Project Boundary
- Solar Panel Inverter

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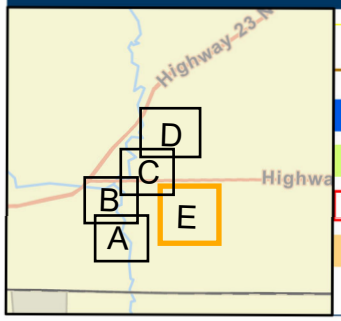
MINNESOTA PUBLIC UTILITIES COMMISSION

Benton Solar Detail Map | E



- Collection Line
- Access Road
- Permanent Stormwater Basin
- Solar Array
- Project Boundary
- Solar Panel Inverter

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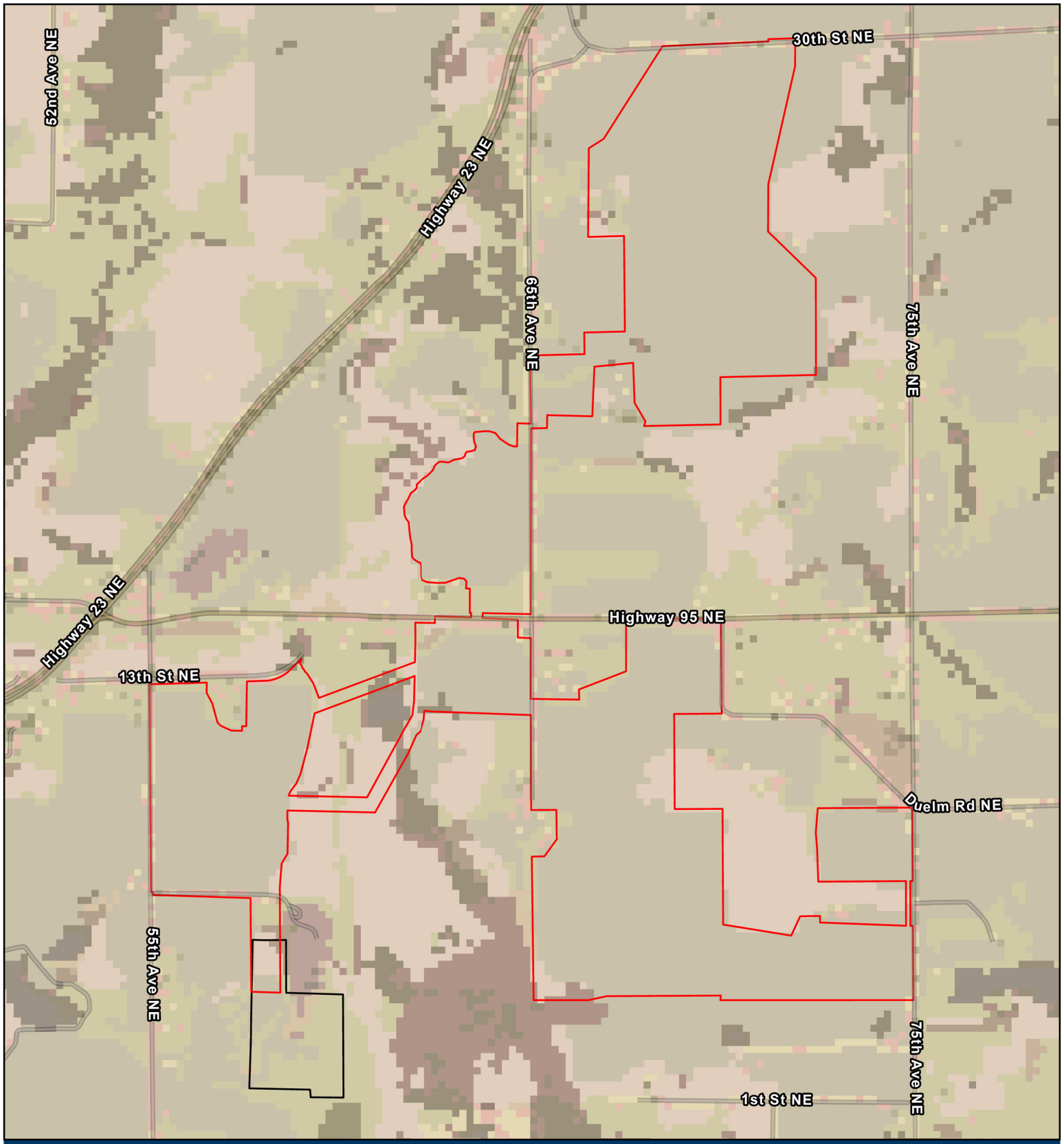

Benton Solar Land Cover

- Project Boundary
- Transmission Line Route

NLCD 2019 - Land Cover

Land Cover Class

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land (Rock/Sand/Clay)
- Decidious Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

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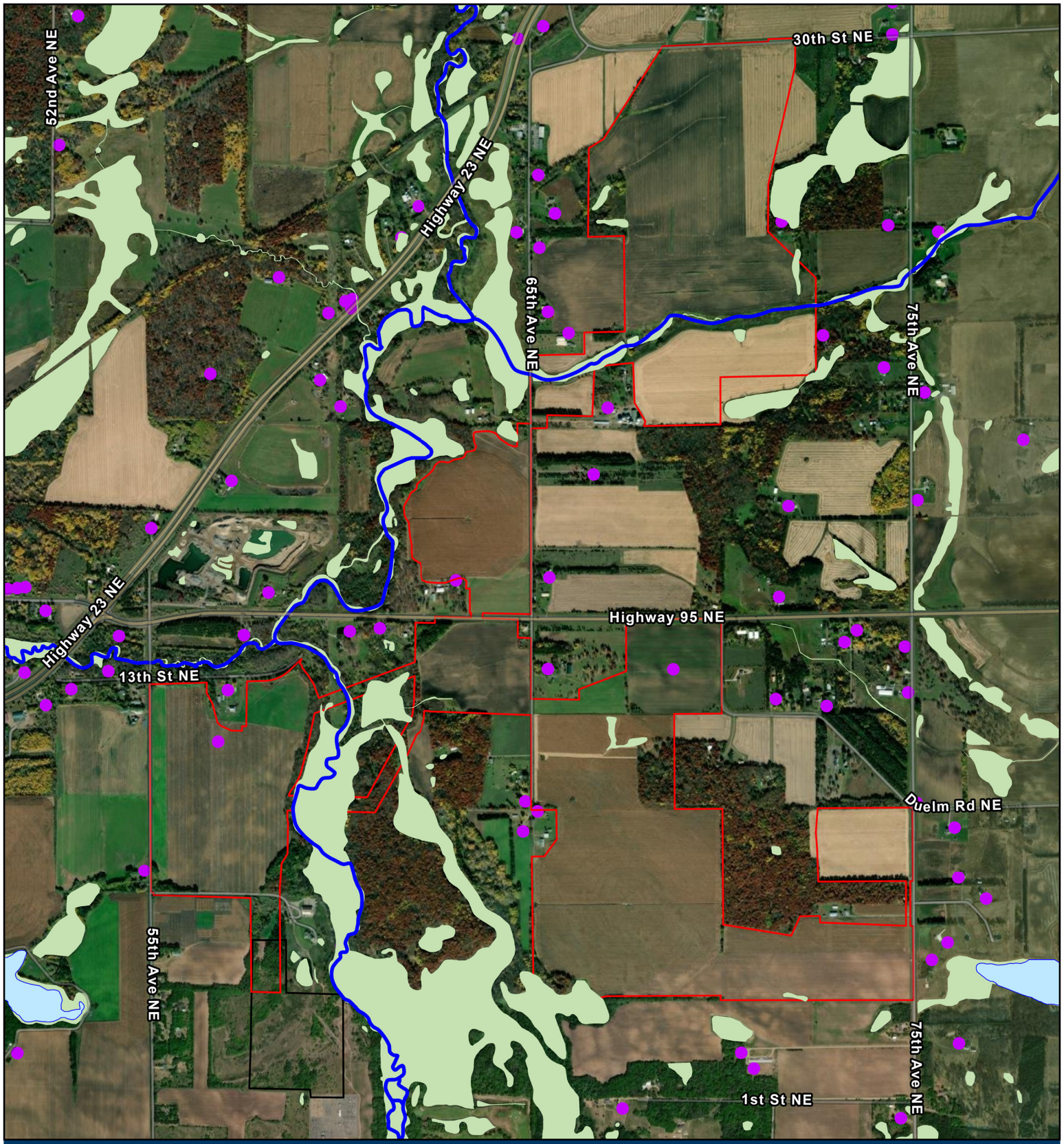

Benton Solar Water Resources

- Wetland - NWI
- Project Boundary
- Transmission Line Route
- Well
- Public Water Watercourse
- Public Waters Basins

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MINNESOTA PUBLIC UTILITIES COMMISSION

Appendix C

Proposed Solar Energy Draft Site Permit

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STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

SITE PERMIT FOR
~~[PROJECT NAME]~~BENTON SOLAR PROJECT

A SOLAR ENERGY GENERATING SYSTEM

IN
~~[COUNTY]~~BENTON COUNTY

ISSUED TO
~~[PERMITTEE]~~BENTON SOLAR, LLC

PUC DOCKET NO. ~~[Docket Number]~~IP-7115/GS-23-423

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

~~[Permittee]~~Benton Solar, LLC

~~[Permittee]~~Benton 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 Benton Solar Project, which includes an up to 100 megawatt solar energy generating system located in Benton 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~~Mike Bull,
Acting 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 – Benton Solar Project – IP-7115/GS-23-423**

1 SITE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this site permit to ~~[Permittee Name]~~Benton 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 100 megawatt solar energy generating system located in Benton County, Minnesota (~~[Project Name, if applicable~~Benton 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

A 100 megawatt solar farm in Minden Township, Benton County, Minnesota. The project will occupy approximately 951.4 acres, of which 631.9 acres will be developed for the project. The project will use photovoltaic solar panels mounted on single axis tracking systems. Collection cables will gather and send the electric power generated by the solar panels through inverters to a project substation.~~[Provide a description of the Project as authorized by the Commission]~~

The Project is located in the following:

County	Township Name	Township	Range	Section
Benton	Minden	36N	30W	13, 23-26

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~~Commission. The scope of work shall be developed in consultation with and approved by ~~the Department of Commerce~~Commission staff. This third-party monitor will report directly to and will be under the control of the ~~Department of Commerce~~Commission with costs borne by the Permittee. ~~Department of Commerce~~Commission staff shall keep records of compliance with this section and will ensure that status reports detailing the construction monitoring are filed in accordance with scope of work approved by~~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~~Commission staff 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.

5.1 Visual Screening Plan

The Permittee shall develop a site-specific Visual Screening Plan. The Visual Screening Plan shall be designed and managed to mitigate visual impacts to adjacent residences. The Visual Screening Plan shall at a minimum include: (a) objectives for screening of nearby residences; and (b) a description of the types of trees and shrub species to be used, the location of plantings, and plans for installation, establishment, and maintenance. The location of trees and shrubs included in the Visual Screening Plan that are located within the Permittee's site control shall be included in the Site Plan filed under Section 8.3. The Permittee is required to maintain and ensure the successful growth, health, and maintenance of the vegetation for 3 years.

At least 14 days prior to the pre-construction meeting, the Permittee shall file:

(a) the Visual Screening Plan;
(b) documentation of coordination with landowners adjacent to the project site; and
(c) an affidavit of its distribution of the Visual Screening Plan to landowners adjacent to the project site.

5.2 Noise

The Permittee shall complete a noise study for the project, including surrounding residential areas, to ensure noise levels are below state standards. The study shall include methodologies and assumptions. The study shall include the purpose of the monitoring, monitoring locations and their rationale, monitoring timing and duration, monitoring equipment, the monitored data, data processing, and data reporting. The permittee shall file with the Commission the results of the noise study within 12 months of operation of the project.

5.3 Snowmobile Trail 87

The Permittee shall coordinate with Benton County and the Benton County snowmobile club to reroute snowmobile trail 87 and any other snowmobile trails impacted by the project.

5.4 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.

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

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 provide 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~~Commission staff. 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 E 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]~~BENTON SOLAR PROJECT

AN ENERGY STORAGE SYSTEM

IN
~~[COUNTY]~~BENTON COUNTY

ISSUED TO
~~[PERMITTEE]~~BENTON SOLAR, LLC

PUC DOCKET NO. ~~[Docket Number]~~IP-7115/ESS-24-283

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

~~[Permittee]~~Benton Solar, LLC

~~[Permittee]~~Benton 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 Benton Solar Project, which includes an up to 100 megawatt battery energy storage system located in Benton 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~~Mike Bull,
Acting 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 – Benton Solar Project – IP-7115/ESS-24-283**

1 SITE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this site permit to ~~[Permittee Name]~~Benton 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 100 megawatt battery energy storage system located in Benton County, Minnesota (~~[Project Name, if applicable]~~Benton 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]~~A 100 megawatt (MW) battery energy storage system (BESS) in Minden Township, Benton County, Minnesota. The BESS may provide frequency response, capacity on demand, generation smoothing, and shifting and/or firming of the power output from the Solar Facility. The BESS will have a power output of 100 MW and a storage capability of 400 MWh. The BESS itself would not generate energy but would simply store electrical energy and release it to the grid when desired. The BESS would be a critical part of the project, working in tandem with the solar facility to provide net power generation that is more predictable and cost-effective than that provided by a system without a BESS.

The Project is located in the following:

County	Township Name	Township	Range	Section
Benton	Minden	36N	30W	13, 23-26

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~~Commission. The scope of work shall be developed in consultation with and approved by ~~the Department of Commerce~~Commission staff. This third-party monitor will report directly to and will be under the control of the ~~Department of Commerce~~Commission with costs borne by the Permittee. ~~Department of Commerce~~Commission staff shall keep records of compliance with this section and will ensure that status reports detailing the construction monitoring are filed in accordance with scope of work approved by~~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 Visual Screening Plan

The Permittee shall develop a site-specific Visual Screening Plan. The Visual Screening Plan shall be designed and managed to mitigate visual impacts to adjacent residences. The Visual Screening Plan shall at a minimum include: (a) objectives for screening of nearby residences; and (b) a description of the types of trees and shrub species to be used, the location of

plantings, and plans for installation, establishment, and maintenance. The location of trees and shrubs included in the Visual Screening Plan that are located within the Permittee's site control shall be included in the Site Plan filed under Section 8.3. The Permittee is required to maintain and ensure the successful growth, health, and maintenance of the vegetation for 3 years.

At least 14 days prior to the pre-construction meeting, the Permittee shall file:

(a) the Visual Screening Plan;
(b) documentation of coordination with landowners adjacent to the project site; and
(c) an affidavit of its distribution of the Visual Screening Plan to landowners adjacent to the project site.

5.2 Noise

The Permittee shall complete a noise study for the project, including surrounding residential areas, to ensure noise levels are below state standards. The study shall include methodologies and assumptions. The study shall include the purpose of the monitoring, monitoring locations and their rationale, monitoring timing and duration, monitoring equipment, the monitored data, data processing, and data reporting. The permittee shall file with the Commission the results of the noise study within 12 months of operation of the project.

5.3 Snowmobile Trail 87

The Permittee shall coordinate with Benton County and the Benton County snowmobile club to reroute snowmobile trail 87 and any other snowmobile trails impacted by the project.

5.4 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.

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

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 provide 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 E 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.

Appendix E

Proposed Draft Route Permit

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STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

ROUTE PERMIT FOR
~~[PROJECT NAME]~~Benton Solar Project

A HIGH-VOLTAGE TRANSMISSION LINE AND ASSOCIATED FACILITIES

IN
~~[COUNTY]~~BENTON COUNTY

ISSUED TO
~~[PERMITTEE]~~BENTON SOLAR, LLC

PUC DOCKET NO. ~~[Docket Number]~~IP-7115/TL-23-425

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

~~[Permittee]~~Benton Solar, LLC

~~[Permittee]~~Benton Solar, LLC is authorized by this route permit to construct and operate ~~[Provide a description of the project authorized by the Minnesota Public Utilities Commission]~~the 115 kilovolt high voltage transmission line.

The high-voltage transmission line shall be constructed within the route identified in this route permit and in compliance with the conditions specified in this route permit.

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

BY ORDER OF THE COMMISSION

_____

~~Will Seuffert~~Mike Bull,
Acting 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 Permit – Benton Solar Project – IP-7115/TL-23-425**

1 ROUTE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this route permit to ~~[Permittee Name]~~Benton Solar, LLC (Permittee) pursuant to Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850. This route permit authorizes the Permittee to construct and operate a ~~[Provide a description of the project as authorized by the Commission]~~115 kilovolt high voltage transmission line (~~[Project Name, if applicable]~~Benton Solar Project, henceforth known as Transmission Facility). The high-voltage transmission line shall be constructed within the route identified in this route permit and in compliance with the conditions specified in this route permit.

1.1 Pre-emption

Pursuant to Minn. Stat. § 216E.10, this route permit shall be the sole route approval required for construction of the transmission facilities and this route 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 TRANSMISSION FACILITY DESCRIPTION

~~[Provide a description of the Transmission Facility as authorized by the Commission]~~A 115 kilovolt high voltage transmission line connecting Benton Solar Project substation to an existing Benton substation located approximately half a mile from the Benton Solar Project site.

The Transmission Facility is located in the following:

County	Township Name	Township	Range	Section
Benton	Minden	36N	30W	13, 23-26

2.1 Structures

~~[Provide a detailed description of the structures authorized by the Commission]~~The structures will consist primarily of single-circuit monopole, steel transmission structures. The structures will be direct-embedded when feasible, and concrete piers will be used to embed the poles when direct-embedding is not feasible.

2.2 Conductors

Each of the single-circuit monopole structures generally will include three conductors, insulators, and a neutral overhead wire. ~~[Provide a detailed description of the conductors authorized by the Commission]~~

The table below details specifics on the various structure and conductor types as presented in the route permit application.

Line Type	Conductor	Structure		Foundation	Height	Span
		Type	Material			
115 kilovolt	Single bittern	Tangent single pole braced post	Steel	Direct-embed or concrete pier	60-100 feet	200-700 feet
115 kilovolt	Single Bittern	Self-support dead-end	Steel	Direct-embed or concrete pier	60-100 feet	100-600 feet
115 kilovolt	Single Bittern	Tangent two-pole braced post horizontal	Steel	Direct-embed or concrete pier	45-70 feet	200-700 feet

2.3 Substations and Associated Facilities

~~[Provide a detailed description of the associated facilities and substations as authorized by the Commission]~~The project will connect the Benton Solar Project substation to the existing Benton substation. The substation is described in docket IP-7115/GS-23-423.

3 DESIGNATED ROUTE

The route designated by the Commission is depicted on the route maps attached to this route permit (Designated Route). The Designated Route is generally described as follows:

[Provide detailed description of the authorized route including the route widths and any other specifics relevant to each segment. Also include a reference to the relevant route map to be attached to the route permit.]

The Designed Route includes an anticipated alignment and a right-of-way. The right-of-way is the physical land needed for the safe operation of the transmission line. The Permittee shall

locate the alignment and associated right-of-way within the Designated Route unless otherwise authorized by this route permit or the Commission. The Designated Route provides the Permittee with flexibility for minor adjustments of the alignment and right-of-way to accommodate landowner requests and unforeseen conditions.

Any modifications to the Designated Route or modifications that would result in right-of-way placement outside the Designated Route shall be specifically reviewed by the Commission in accordance with Minn. R. 7850.4900 and Section 10 of this route permit.

4 RIGHT-OF-WAY

This route permit authorizes the Permittee to obtain a new permanent right-of-way for the transmission line up to ~~[number]~~100 feet in width. The permanent right-of-way is typically ~~[number]~~50 feet on both sides of the transmission line measured from its centerline or alignment.

The anticipated alignment is intended to minimize potential impacts relative to the criteria identified in Minn. R. 7850.4100. The final alignment must generally conform to the anticipated alignment identified on the route maps unless changes are requested by individual landowners and agreed to by the Permittee or for unforeseen conditions that are encountered or as otherwise provided for by this route permit.

Any right-of-way or alignment modifications within the Designated Route shall be located so as to have comparable overall impacts relative to the factors in Minn. R. 7850.4100, as does the right-of-way and alignment identified in this route permit, and shall be specifically identified and documented in and approved as part of the plan and profile submitted pursuant to Section 9.1 of this route permit.

Where the transmission line parallels existing highway and other road rights-of-way, the transmission line right-of-way shall occupy and utilize the existing right-of-way to the maximum extent possible; consistent with the criteria in Minn. R. 7850.4100, and the other requirements of this route permit; and for highways under the jurisdiction of the Minnesota Department of Transportation (MnDOT), the procedures for accommodating utilities in trunk highway rights-of-way.

5 GENERAL CONDITIONS

The Permittee shall comply with the following conditions during construction and operation of the Transmission Facility over the life of this route permit.

5.1 Route Permit Distribution

Within 30 days of issuance of this route permit, the Permittee shall provide all affected landowners with a copy of this route permit and the complaint procedures. An affected landowner is any landowner or designee that is within or adjacent to the Designated Route. In no case shall a landowner receive this route 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 route 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 route permit and complaint procedures distribution within 30 days of issuance of this route permit.

5.2 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 ~~the Minnesota Department of Commerce (Department of Commerce) staff or~~ Commission staff.

5.3 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 Transmission Facility unless this route permit establishes a different requirement in which case this route permit shall prevail.

5.3.1 Field Representative

The Permittee shall designate a field representative responsible for overseeing compliance with the conditions of this route permit during construction of the Transmission Facility. 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.

5.3.2 Employee Training - Route Permit Terms and Conditions

The Permittee shall train all employees, contractors, and other persons involved in the Transmission Facility construction regarding the terms and conditions of this route 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.

5.3.3 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 construction monitoring on behalf of the ~~Department of Commerce~~Commission. The scope of work shall be developed in consultation with and approved by the ~~Department of Commerce~~Commerce staff. This third-party monitor will report directly to and will be under the control of the ~~Department of Commerce~~Commission with costs borne by the Permittee. ~~Department of Commerce~~Commission staff shall keep records of compliance with this section and will ensure that status reports detailing the construction monitoring are filed in accordance with scope of work approved by~~with~~ the Commission ~~in accordance with scope of work approved by the Department of Commerce~~.

5.3.4 Public Services, Public Utilities, and Existing Easements

During Transmission Facility 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 route 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.

5.3.5 Temporary Workspace

The Permittee shall limit temporary easements to special construction access needs and additional staging or lay-down areas required outside of the authorized right-of-way. Temporary space shall be selected to limit the removal and impacts to vegetation. The Permittee shall obtain temporary easements outside of the authorized transmission line right-

of-way from affected landowners through rental agreements. Temporary easements are not provided for in this route permit.

The Permittee may construct temporary driveways between the roadway and the structures to minimize impact using the shortest route feasible. The Permittee shall use construction mats to minimize impacts on access paths and construction areas. The Permittee shall submit the location of temporary workspaces and driveways with the plan and profile pursuant to Section 9.1.

5.3.6 Noise

The Permittee shall comply with noise standards established under Minn. R. 7030.0010 to 7030.0080. The Permittee shall limit construction and maintenance activities to daytime working hours to the extent practicable.

5.3.7 Aesthetics

The Permittee shall consider input pertaining to visual impacts from landowners or land management agencies prior to final location of structures, rights-of-way, and other areas with the potential for visual disturbance. 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 Transmission Facility during construction and maintenance. The Permittee shall work with landowners to locate the high-voltage transmission line to minimize the loss of agricultural land, forest, and wetlands, and to avoid homes and farmsteads. The Permittee shall place structures at a distance, consistent with sound engineering principles and system reliability criteria, from intersecting roads, highways, or trail crossings.

5.3.8 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 Transmission Facility 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 Transmission Facility shall be returned to pre-construction conditions.

5.3.9 Wetlands and Water Resources

The Permittee shall develop wetland impact avoidance measures and implement them during construction of the Transmission Facility. Measures shall include spacing and placing the power poles at variable distances to span and avoid wetlands, watercourses, and floodplains. Unavoidable wetland impacts as a result of the placement of poles shall be limited to the immediate area around the poles. To minimize impacts, the Permittee shall construct in wetland areas during frozen ground conditions where practicable and according to permit requirements by the applicable permitting authority. When construction during winter is not possible, the Permittee shall use wooden or composite mats to protect wetland vegetation.

The Permittee shall contain soil excavated from the wetlands and riparian areas and not place it back into the wetland or riparian area. 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 not place staging or stringing set up areas within or adjacent to wetlands or water resources, as practicable. The Permittee shall assemble power pole structures on upland areas before they are brought to the site for installation.

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, Minnesota Department of Natural Resources (DNR), Minnesota Board of Water and Soil Resources, and local units of government wetland and water resource requirements.

5.3.10 Vegetation Management

The Permittee shall minimize the number of trees to be removed in selecting the right-of-way specifically preserving to the maximum extent practicable windbreaks, shelterbelts, living snow fences, and vegetation in areas such as trail and stream crossings where vegetative screening may minimize aesthetic impacts, to the extent that such actions do not violate sound engineering principles or system reliability criteria.

The Permittee shall remove tall growing species located within the transmission line right-of-way that endanger the safe and reliable operation of the transmission line. The Permittee shall leave undisturbed, to the extent possible, existing low growing species in the right-of-way or

replant such species in the right-of-way to blend the difference between the right-of-way and adjacent areas, to the extent that the low growing vegetation that will not pose a threat to the transmission line or impede construction.

5.3.11 Application of Pesticides

The Permittee shall restrict pesticide use to those pesticides and methods of application approved by the Minnesota Department of Agriculture (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.

5.3.12 Invasive Species

The Permittee shall employ best management practices to avoid the potential introduction and spread of invasive species on lands disturbed by Transmission Facility 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.

5.3.13 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.

5.3.14 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 Transmission Facility. Where practical, existing roadways shall be used for all activities

associated with construction of the Transmission Facility. Oversize or overweight loads associated with the Transmission Facility shall not be hauled across public roads without required permits and approvals.

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.

5.3.15 Archaeological and Historic Resources

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

5.3.16 Avian Protection

The Permittee in cooperation with the DNR shall identify areas of the transmission line where bird flight diverters will be incorporated into the transmission line design to prevent large avian collisions attributed to visibility issues. Standard transmission design shall incorporate adequate spacing of conductors and grounding devices in accordance with Avian Power Line Interaction Committee standards to eliminate the risk of electrocution to raptors with larger wingspans that may simultaneously come in contact with a conductor and grounding devices. The Permittee shall submit documentation of its avian protection coordination with the plan and profile pursuant to Section 9.1.

5.3.17 Drainage Tiles

The Permittee shall avoid, promptly repair, or replace all drainage tiles broken or damaged during all phases of the Transmission Facility'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.

5.3.18 Restoration

The Permittee shall restore the right-of-way, temporary workspaces, access roads, abandoned right-of-way, and other public or private lands affected by construction of the Transmission Facility. Restoration within the right-of-way must be compatible with the safe operation, maintenance, and inspection of the transmission line. Within 60 days after completion of all restoration activities, the Permittee shall file with the Commission a Notice of Restoration Completion.

5.3.19 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.

5.3.20 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 Transmission Facility.

5.3.21 Damages

The Permittee shall fairly restore or compensate landowners for damage to crops, fences, private roads and lanes, landscaping, drain tile, or other damages 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.

5.4 Electrical Performance Standards

5.4.1 Grounding

The Permittee shall design, construct, and operate the transmission line in a manner so that the maximum induced steady-state short-circuit current shall be limited to five milliamperes root mean square (rms) alternating current between the ground and any non-stationary object within the right-of-way, including but not limited to large motor vehicles and agricultural equipment. All fixed metallic objects on or off the right-of-way, except electric fences that parallel or cross the right-of-way, shall be grounded to the extent necessary to limit the induced short-circuit current between ground and the object so as not to exceed one milliampere rms under steady state conditions of the transmission line and to comply with the ground fault conditions specified in the National Electric Safety Code. The Permittee shall address and rectify any induced current problems that arise during transmission line operation.

5.4.2 Electric Field

The Permittee shall design, construct, and operate the transmission line in such a manner that the electric field measured one meter above ground level immediately below the transmission line shall not exceed 8.0 kV/m rms.

5.4.3 Interference with Communication Devices

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

5.5 Other Requirements

5.5.1 Safety Codes and Design Requirements

The Permittee shall design the transmission line 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.

5.5.2 Other Permits and Regulations

The Permittee shall comply with all applicable state statutes and rules. The Permittee shall obtain all required permits for the Transmission Facility 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 Transmission Facility. 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 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.

6 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]

7 DELAY IN CONSTRUCTION

If the Permittee has not commenced construction or improvement of the route within four years after the date of issuance of this route permit the Permittee shall file a Failure to Construct Report and the Commission shall consider suspension of this route permit in accordance with Minn. R. 7850.4700.

8 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 route 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.

9 COMPLIANCE REQUIREMENTS

Failure to timely and properly make compliance filings required by this route permit is a failure to comply with the conditions of this route permit. Compliance filings must be electronically filed with the Commission.

9.1 Pre-Construction Meeting

Prior to the start of construction, the Permittee shall participate in a pre-construction meeting with ~~Department of Commerce 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.

9.2 Plan and Profile

At least 14 days prior to the pre-construction meeting, the Permittee shall file with the Commission~~, and provide the Department of Commerce~~, and provide the counties where the Transmission Facility, or portion of the Transmission Facility, will be constructed~~, with~~ a plan and profile of the right-of-way and the specifications and drawings for right-of-way preparation, construction, structure specifications and locations, cleanup, and restoration for the Transmission Facility. The documentation shall include maps depicting the plan and profile including the right-of-way, alignment, and structures in relation to the route and alignment approved per this route 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 route 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 route 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 route permit.

If the Permittee intends to make any significant changes in its plan and profile 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 route permit.

9.3 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 route permit, and shall include text and photographs.

If the Permittee does not commence construction of the Transmission Facility within six months of this route 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 route permit until the pre-construction meeting.

9.4 In-Service Date

At least three days before the Transmission Facility is to be placed into service, the Permittee shall notify the Commission of the date on which the Transmission Facility will be placed into service and the date on which construction was completed.

9.5 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 Transmission Facility construction.

9.6 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 Transmission Facility and each substation connected.

9.7 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 route permit.

10 ROUTE PERMIT AMENDMENT

This route permit may be amended at any time by the Commission. Any person may request an amendment of the conditions of this route 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.

11 TRANSFER OF ROUTE PERMIT

The Permittee may request at any time that the Commission transfer this route 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 Transmission Facility and all conditions of this route permit. The Commission may authorize transfer of the route permit after affording the Permittee, the transferee, and interested persons such process as is required under Minn. R. 7850.5000.

12 REVOCATION OR SUSPENSION OF ROUTE PERMIT

The Commission may initiate action to revoke or suspend this route permit at any time. The Commission shall act in accordance with the requirements of Minn. R. 7850.5100, to revoke or suspend this route permit.