Environmental Assessment:

Snowshoe Energy Storage Project

Human and Environmental Impacts of Constructing and Operating the

150 MW Snowshoe Energy Storage Project

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COMMERCE DEPARTMENT

Project Contacts

Responsible Government Unit

Public Utilities Commission
121 Seventh Place East, Suite 350
Saint Paul, MN 55101-2147

Commission Representative

Jacques Harvieux
(651) 201-2233
jacques.harvieux@state.mn.us

Preparer

Department of Commerce
85 Seventh Place East, Suite 280
Saint Paul, MN 55101-2198

Commerce Representative

Suzanne Steinhauer
(651) 539-1843
suzanne.steinhauer@state.mn.us

Project Proposer

Snowshoe BESS, LLC
7480 Flying Cloud Drive, Suite 425
Eden Prairie, MN 55344

Snowshoe BESS Representative

Mary Matze
(786) 321-9379
mmatze@spearmintenergy.com

Snowshoe BESS, LLC (Snowshoe), a wholly owned subsidiary of Spearmint Energy, proposes to construct and operate an Energy Storage Project with a nominal power rating of up to 150 MW alternating current (AC) with approximately 600 megawatt-hours (MWh) of energy capacity on a site of approximately 28 acres in Kalmar Township, Olmsted County, Minnesota. Snowshoe must obtain a site permit from the Minnesota Public Utilities Commission before it can construct the proposed Snowshoe Energy Storage Project.

Sources

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

Project Mailing List

To place your name on the project mailing list contact docketing.puc@state.mn.us or (651) 201-2204 and provide the docket number (24-279,), your name, email address, and mailing address. Please indicate whether you would like to receive notices by email or U.S. mail.

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Acronyms and Abbreviations

Acronym/Abbreviation	Description
AC	alternating current
AIMP	Agricultural Impact Mitigation Plan
ALJ	administrative law judge
applicant	Snowshoe BESS, LLC
BESS	Battery Energy Storage System
BMP	best management practice
Commerce	Department of Commerce
Commission	Public Utilities Commission
CSW Permit	Construction Stormwater Permit
dBA	A-weighted sound level recorded in units of decibels
DC	direct current
DNR	Minnesota Department of Natural Resources
DSP	draft site permit
DWSMA	Drinking Water Supply Management Area
EA	environmental assessment
EMF	electromagnetic fields
ESS	Energy Storage System
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
kV	kilovolt
LFP	lithium iron phosphate battery technology
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

NAC	noise area classification
NMC	nickel manganese cobalt battery technology
NHIS	Natural Heritage Information System
NLEB	Northern Long Eared Bat
project	Snowshoe BESS
ROI	region of influence
ROW	right-of-way
SHPO	State Historic Preservation Office
SMMPA	Southern Minnesota Municipal Power Agency
SWPPP	Stormwater Pollution Prevention Plan
USFWS	United States Fish and Wildlife Service
VMP	Vegetation Management Plan
WCA	Wetland Conservation Act
WHPA	Wellhead Protection Area

DEFINITIONS

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

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

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

distribution line means power lines that operate below 69 kilovolts.

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

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

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

land control area means the 28 acre area for which Snowshoe is assumed to have site control through a lease agreement. The site permit application refers to this as the "Project Area." The term is used to bound a review area and should not be understood to imply the applicant has secured, or will definitely secure, the necessary land rights.

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

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

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

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

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

1 Introduction

Snowshoe BESS, LLC (Snowshoe or applicant), a wholly owned subsidiary of Spearmint Energy, proposes to construct and operate a battery energy storage system (BESS) with a nominal power rating of up to 150 MW alternating current (AC) with approximately 600 megawatt-hours (MWh) of energy capacity on a site of approximately 28 acres in Kalmar Township, Olmsted County, Minnesota. As proposed, facility will be connected to the electric grid through a tap line of approximately 300 feet between the project substation and the adjacent Maple Leaf Substation owned and operated by the Southern Minnesota Municipal Power Agency (SMMPA). Snowshoe anticipates that project construction will begin in early 2027 and that operation will commence in late 2027.

Snowshoe must obtain a site permit from the Minnesota Public Utilities Commission (Commission) before it can construct the proposed Snowshoe Energy Storage project (facility or project).

The applicant filed a site permit application (application) on October 7, 2024, and the Commission found the application to be substantially complete on November 19, 2024.

The Minnesota Department of Commerce (Commerce) prepared this environmental assessment (EA) for the proposed project. The EA describes the project, highlights resources affected by the project and discusses potential human and environmental impacts to these resources.[1] It also discusses ways to mitigate potential impacts. These mitigation strategies can become enforceable conditions of the Commission's site permit.

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

1.1 How is this document organized?

The EA addresses the matters identified in the scoping decision.

This EA is based on the applicant's site permit application and public scoping comments. It addresses the matters identified in the January 13, 2025, scoping decision (**Appendix A**)

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

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

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

1.2 What does the applicant propose to construct?

Snowshoe proposes to construct a 150 MW BESS and associated facilities on a site of approximately 28 acres in Kalmar Township in Olmsted County, Minnesota.

Snowshoe proposes to construct and operate a BESS with a nominal power rating of up to 150 MW alternating current (AC) with approximately 600 MWh of energy capacity on a site of approximately 28 acres in Kalmar Township, Olmsted County, Minnesota. In addition to batteries, racking, and enclosures, the facility will also include inverters and transformers, electrical feeder lines, a project substation, stormwater drainage basins, storage and parking areas, and fencing surrounding the perimeter of the facility. Snowshoe may construct and operations and maintenance facility at the site or may lease existing space nearby to house operations and maintenance materials. The facility will be connected to the electric grid through a tap line of approximately 300 feet between the project substation and the adjacent Maple Leaf Substation owned and operated by SMMPA.

Snowshoe indicates that the project will help meet the growing demand for renewable energy and will assist Minnesota in reaching its Renewable Energy Objectives by allowing wind and solar resources to continue producing energy at times when they would otherwise be curtailed due to low demand.

Snowshoe indicates that it anticipates entering into a tolling agreement with an affiliated merchant energy business or other third part market participant, rather than a long-term power purchase agreement more typical of renewable projects. Alternatively, Snowshoe may sell the project to a utility or operate under a different revenue structure.[2]

Snowshoe filed a generator interconnection agreement application for the project with the Midcontinent Independent System Operator in 2022 and anticipates signing a generation interconnection agreement in early 2026.[3] Snowshoe anticipates that construction on the project will begin in early 2027 and be completed in time to begin operating in the 4th quarter of 2027.[4] Total project cost is expected to be approximately $214 million, and annual operating costs are anticipated to be approximately $8.2 million.[5]

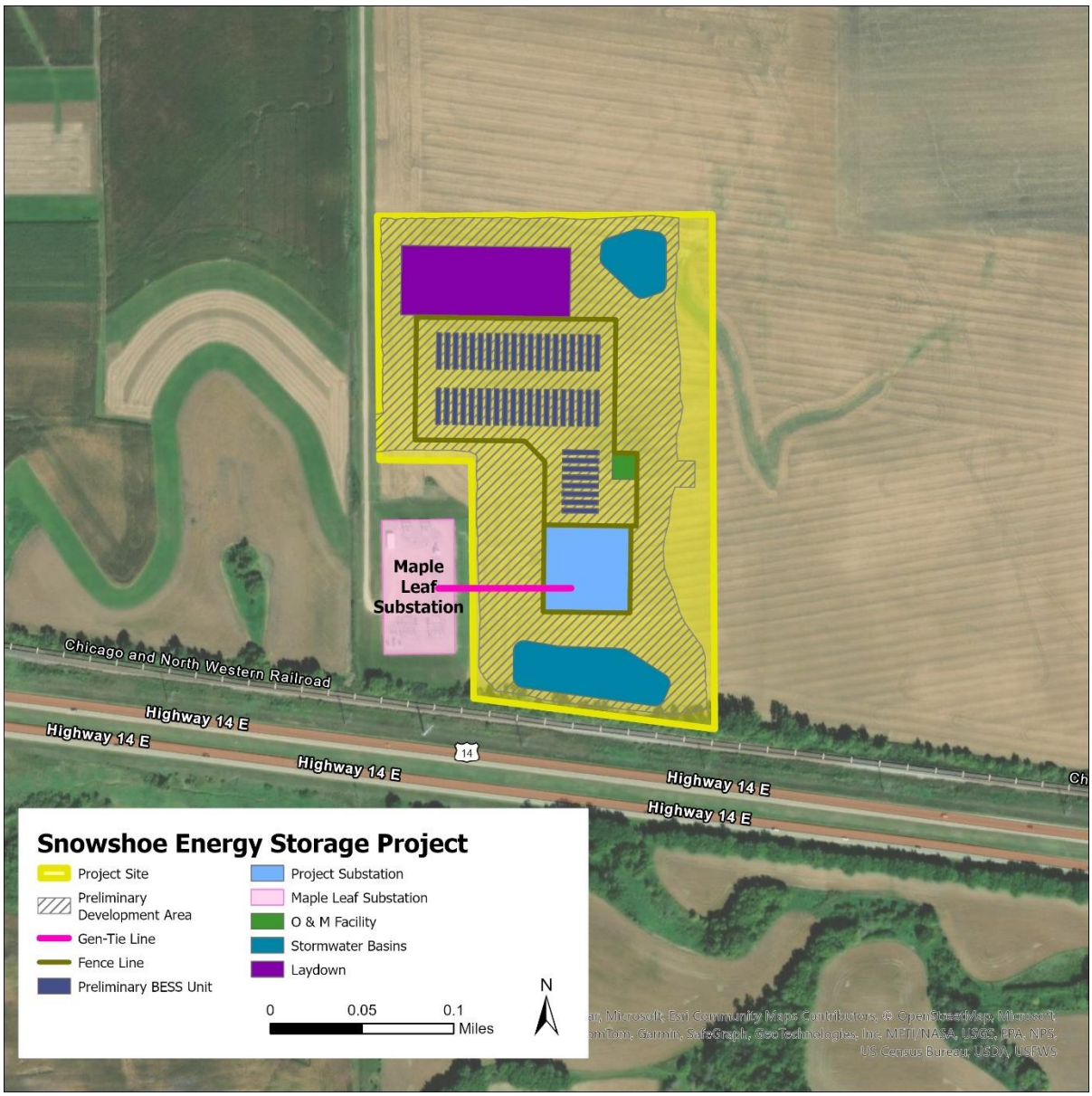
[2] SPA, pp. 4 -5

[3] SPA,p. 15

[4] SPA, pp. 7-8

[5] SPA, p. 16

Figure 1. Proposed Snowshoe BESS Project



1.3 What is the state of Minnesota's role?

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

To build the project, the applicant needs a site 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 Olmsted County or a Construction Stormwater Permit from the Minnesota Pollution Control Agency (MPCA). A site permit supersedes local zoning, building, and

land use rules.[6] The Commission's site permit decision must be guided, in part, however, by consideration of impacts to local zoning and land use in accordance with the legislative goal to "minimize human settlement and other land use conflicts".[7]

Snowshoe applied to the Commission for a site permit for the project on October 7, 2024.[8] The Commission must consider whether the record supports issuing a site permit, and what conditions should be placed on the site permit.[9]

To ensure a fair and robust airing of the issues, the Minnesota Legislature set out a process for the Commission to follow when considering site permit applications.[10] In this instance, an EA was 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 site permit application.

1.4 What is the public's role?

Minnesota needs your help to make informed decisions.

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

1.5 What is an Environmental Assessment?

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

This EA contains an overview of affected resources and discusses potential human and environmental impacts and mitigation measures. Within Commerce, the Energy Environmental Review and Analysis staff prepared this document as part of the environmental review process.

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[6] Minnesota Statutes 216E.10, subd. 1.

[7] Minnesota Statutes 216E.03, subd. 7.

[8] , Snowshoe BESS, LLC, *Snowshoe Energy Storage Project: Application to the Minnesota Public Utilities Commission for a Site Permit*, October, 7, 2024, eDocket ID: 202410-210785-01, 202410-210785-02, 202410-210785-03, 202410-210785-04, 202410-210785-05, 202410-210785-06, 202410-210785-07, 202410-210785-08, 202410-210785-09, 202410-210785-10, 202410-210788-01, 202410-210788-02, 202410-210788-03, 202410-210788-04

[9] 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

[10] *See generally* Minnesota Statute 216E.

Scoping is the first step in the process. It provides opportunities to provide comments on the content of this environmental assessment, suggest alternatives, and to mitigate potential impacts.

1.6 Where do I get more information?

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

If you would like more information or if you have questions, please contact Commerce staff: Suzanne Steinhauer, suzanne.steinhauer@state.mn.us, 651-539-1843 or the Commission Staff: Jacques Harvieux, jacques.harvieux@state.mn.us, 651-201-2233.

Information about the project, including the site permit application, notices, and public comments, can be found on eDockets: https://www.edockets.state.mn.us/documents by entering "24-279"in the Docket # field and selecting the search button. Information is also available on Commerce's webpage for the project: https://apps.commerce.state.mn.us/web/project/15868.

1.7 What permits are needed?

A site permit, from the Commission is required. Federal, state, and local permits may also be necessary to construct the project.

The project requires a site permit from the Commission because it meets the statutory definition of *energy storage system*, which is equipment and associated facilities designed with a nameplate capacity of 10 MW or more and is capable of storing generated electricity for a period of time and delivering the electricity for use after storage.[11]

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

1.8 What are the potential impacts of the project?

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

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

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

[11] Minn. Stat. 216E.01, subd. 3a

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

1.8.1 Human Settlement

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

Aesthetics: The impact intensity level is expected to be minimal to moderate and long-term. Impacts are anticipated to be minimal for travelers along public roadways, while the facility will be more noticeable to nearby residences.

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 permit.

Land Use and Zoning: The impact intensity level is anticipated to be minimal. Land use impacts are anticipated to be long-term and localized. Although energy storage systems are not specifically addressed in local planning documents or zoning codes, the proposed facility is generally consistent with local land use ordinances and the Olmsted County's Comprehensive Plan. Constructing the project will change land use at the site from agricultural to energy storage production for the expected 30 year life of the project. After the project's useful life, the land control area could be restored to agricultural or other planned land uses by implementing appropriate restoration measures. Impacts can be minimized.

Noise: The impact intensity level during construction will range from negligible to significant depending on the activity, potential construction impacts are anticipated to be intermittent and short-term. Impacts are unavoidable but can be minimized. These localized impacts may affect nearby residences and might exceed state noise standards. Once operational, noise impacts are anticipated to range from negligible to significant at nearby residences. Noise impacts from operation of the facility can be minimized mitigated.

Property Values. 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.

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

Socioeconomics: The impact intensity level is anticipated to be minimal and positive. Effects associated with construction will, overall, be short-term and minimal. Impacts from operation will

be negligeable. Significant positive effects may occur for individuals. Adverse impacts are not anticipated.

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

1.8.2 Human Health and Safety

Large energy projects have potential to impact human health and safety. Most concerns are related to the construction phase, although BESS facilities do create additional operational risks.

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

Public Safety and Emergency Services: Like any construction project, there are risks for injuries 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. The main safety hazard of a BESS is battery failure leading to thermal runaway which has the potential to spread to nearby batteries and containers, quickly presenting an emergency. Emergency response to fires or thermal runaway events at BESS facilities require specialized response. Potential impacts from construction are anticipated to be minimal. Potential impacts during operation are anticipated to be moderate to significant. Impacts would be short- and long-term and can be minimized.

1.8.3 Land-based Economies

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

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

Tourism and Recreation: Because of site is not close to major recreational or tourism resources, potential impacts to recreational opportunities and tourism are anticipated to be negligeable.

1.8.4 Archeological and Historic Resources

The impact intensity level is anticipated to be negligible to minimal. Impacts would be localized. Impacts can be mitigated through siting and an unanticipated discoveries plan.

1.8.5 Natural Resources

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

Air Quality Potential impacts to air quality during construction would be intermittent, localized, short-term, and minimal. Impacts are associated with fugitive dust and exhaust. Impacts can be mitigated. Once operational, the BESS facility will not generate criteria pollutants or carbon dioxide.

Negligible fugitive dust and exhaust emissions would occur as part of routine maintenance activities. Impacts are unavoidable and do not affect a unique resource. Impacts can be minimized.

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

Soils: Impacts to soils will occur during construction and decommissioning of the project. The impact intensity level is expected to be minimal. Potential negative impacts will occur over both the short- and long-term. Isolated moderate to significant negative impacts associated with high rainfall events could occur. Impacts can be mitigated through use of BMPs for stormwater management.

Surface Water: 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. Impact can be mitigated.

Wetlands: There are no wetlands with the site, so no direct impacts to wetlands are anticipated from the project. With proper construction management practices, indirect impacts to offsite wetlands can be avoided.

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

Wildlife and Habitat: 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. While most of the site will be covered by crushed rock, a portion of 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. 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, as the project avoids identified areas of species occurrence and preferred habitat. No additional mitigation measures are proposed Impacts can be mitigated.

1.9 What factors guide the Commission's decision?

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

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

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

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

B. Effects on public health and safety.

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

D. Effects on archaeological and historic resources.

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

F. Effects on rare and unique natural resources.

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

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

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

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

K. Electrical system reliability.

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

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

N. Irreversible and irretrievable commitments of resources.

The Commission is also guided by the "state's goals to conserve resources, minimize environmental impacts, minimize human settlement and other land use conflicts, and ensure the state's electric energy security through efficient, cost-effective power supply and electric transmission infrastructure."[12]

A draft site permit (DSP) for the Project is included in **Appendix C**.

1.10 Siting Factors – Analysis and Discussion

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

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

factor. Finally, certain factors are relatively succinct, but the scoping process identified elements to be analyzed in this EA. For example, the public health and safety factor includes an EMF element.

Factor M (unavoidable impacts) and **Factor N** (irreversible and irretrievable resource commitments) are discussed in Section 4.8 and Section 4.9, respectively, of this EA.. **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.

Other factors are ranked as follows:

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

Table 1 Application of Siting Factors

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

Factor B: Public Safety		
Element	Construction	Operation
EMF	●	●
Emergency Services	●	●
Medical Devices	●	●
Public Safety	○	○
Stray Voltage	●	●
Worker Safety	○	○

Factor C: Land-based Economies		
Element	Construction	Operation
Agriculture	●	●
Forestry	●	●
Mining	●	●
Tourism	●	●

Factor D: Archaeological and Historic Resources		
Element	Construction	Operation
Archeological	●	●
Historic	●	●

Factor E: Natural Resources		
Element	Construction	Operation
Air Quality	●	●
Geology and Groundwater	●	●
Soils	●	●
Surface Water	●	●
Topography	●	●
Vegetation	●	●
Wetlands	●	●
Wildlife	●	●
Wildlife Habitat	●	●

Factor F: Rare and Unique Resources		
Element	Construction	Operation

Fauna	●	●
Flora	●	●

Factor I: Use of Existing Generating Plants		
Element	Construction	Operation
Existing Plants	⊘	⊘

1.10.1 Discussion

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

FACTOR A: HUMAN SETTLEMENT

Aesthetics Visual impacts are subjective. Thus, potential impacts are unique to the individual and can vary widely. Although there are no other BESS facilities nearby, the proposed BESS is similar in appearance to a transmission substation. 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.

Noise Noise impacts from construction of the facility will be temporary and intermittent and range from negligible to significant depending on the construction equipment used and the location of the listener. Once operational, noise impacts are anticipated to range from negligible to significant at nearby residences.

FACTOR B: PUBLIC SAFETY

Public Safety and Emergency Services In addition to construction-related risks, BESS facilities have unique public safety risks related to operation. The main safety hazard for BESS facilities is battery failure leading to thermal runaway which has the potential to spread to nearby batteries and containers, quickly presenting an emergency. Emergency response to fires or thermal runaway events at BESS facilities require specialized response. Potential impacts from construction are anticipated to be minimal. Potential impacts during operation are anticipated to be moderate to significant. Employing best practices in facility design and operation, including identifying hazards and developing training for emergency responders can mitigate potential impacts.

FACTOR I: POWER PLANTS

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

1.11 What's next?

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

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

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

2 Proposed Project

Snowshoe proposes to construct and operate a BESS with a nominal power rating of up to 150 MW AC with approximately 600 MWh of energy capacity on a site of approximately 28 acres in Kalmar Township, Olmsted County, Minnesota. The facility will be connected to the electric grid through a tap line of approximately 300 feet between the project substation and the adjacent Maple Leaf Substation owned and operated by SMMPA. This chapter describes the project and how it would be constructed, operated, and decommissioned.

2.1 BESS Facility

2.1.1 How do BESS facilities work?

A BESS connects to the electric grid and transfers electric energy from the grid to store in batteries when demand is low and then transferred back to the grid during outages or when demand is high.

A BESS consists of a series of electrochemical devices (batteries) that charges by collecting energy from a source (the electric grid or a power plant) and discharges the energy at a later time when needed. Battery storage can enhance the flexibility of a power system and can help integrate renewable generation technologies like wind and solar into the grid by storing energy when demand is low and discharging the energy when demand is high.[13]

2.1.2 Where is the Project located?

The Project is in Kalmar Township in Olmsted County, Minnesota (Figure 1).

As shown in Figure 1, the facility is located on a site of approximately 28 in section 35 of Kalmar Township (Township 107N, Range 15W) in Olmsted County. The facility site is east of the city of Byron and is bounded by US Highway 14 to the south.

Snowshoe selected the site based on the available capacity and low interconnection costs at the Maple Leaf Substation and landowner interest.[14] Snowshoe indicates that it has entered into voluntary lease agreement with a landowner for up to 35 years.[15]

2.1.3 How is the facility designed?

In addition to battery energy storage enclosures, the facility will also include inverters and transformers, electrical feeder lines, a project substation, stormwater drainage basins, access roads, storage and parking areas, and fencing surrounding the perimeter of the facility. Snowshoe may construct and operations and maintenance facility at the site or may lease existing space nearby to house operations and maintenance materials. The facility will be connected to the electric grid through a tap line of approximately 300 feet between the project substation and the adjacent Maple

[13] National Renewable Energy Laboratories, *Grid-Scale Battery Storage: Frequently Asked Questions*. September 2019, https://www.nrel.gov/docs/fy19osti/74426.pdf

[14] SPA, p. 18

[15] SPA, p. 20

Leaf Substation. Snowshoe indicates that the specific equipment and final design will depend upon market conditions and equipment availability at the time of construction (anticipated in 2027).[16]

2.1.3.1 BATTERIES AND BESS ENCLOSURES

The BESS industry currently uses two main types of lithium-ion batteries:[17]

- **Nickel Manganese Cobalt (NMC)**: Nickel is the primary source of energy in NMC batteries, but manganese and cobalt are required to stabilize and provide the desired power output. Because cobalt is expensive, these batteries typically use eight parts nickel to one part each of manganese and cobalt (8:1:1). NMC have a high energy density, which means that they can store energy in a smaller package, making them suitable for electric vehicles and consumer electronics such as smartphones and laptops.
- **Lithium Ion Phosphate (LFP)**: LFP batteries are comprised of roughly equal parts of iron and phosphate. Relative to NMC technology, LFP batteries are more chemically stable and less prone to thermal runaway events and combustion, and the components of LFP batteries are cheaper and generally considered to be less toxic. LFP batteries are commonly used in energy storage facilities.

Battery storage technology is developing rapidly, and Snowshoe indicates that it is anticipates using some type of LFP battery technology but will defer selection of the technology until closer to the anticipated start of construction in 2027. Snowshoe has developed a preliminary design modeled on the Tesla Megapack 2 XL battery. [18]

The batteries are housed in enclosures (Figure 2), Under the preliminary design, BESS enclosures will occupy approximately 1.3 acres of the approximately 7.6 acre fenced area of the site. Each BESS enclosure will connect to pad-mounted switchgear, transformer(s) to step up and step down voltage, and an electric distribution system via 34.5 kV underground cables. Snowshoe anticipates that the dimensions of the BESS enclosures are approximately 10 feet tall, eight feet wide, and 20 feet long.[19]

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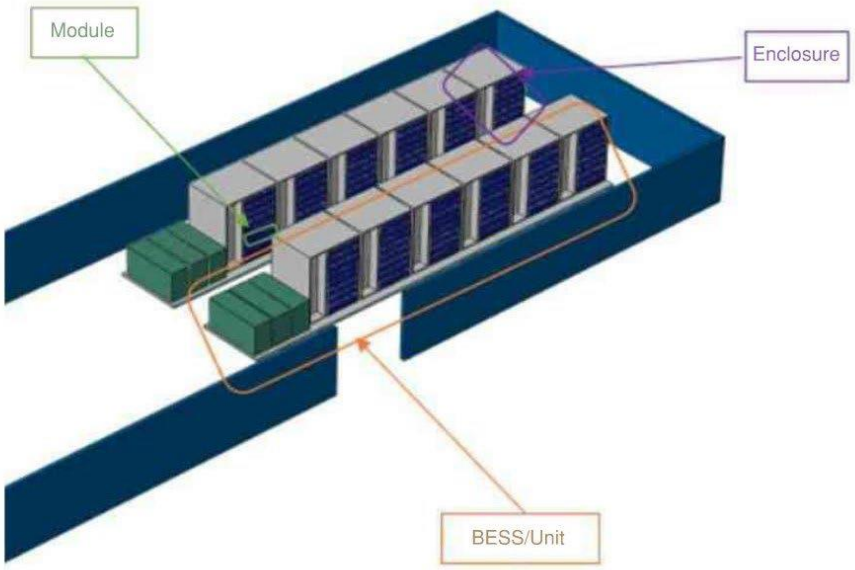
[16] SPA, p. 21

[17] Mayfield Renewables, October 2023, *Comparing NMC and LFP Lithium-Ion Batteries for C&I Applications,* https://www.mayfield.energy/technical-articles/comparing-nmc-and-lfp-lithium-ion-batteries-for-ci-applications/#:%7E:text=Nickel%20Manganese%20Cobalt%20(NMC)%20and%20Lithium%20Iron%20Phosphate%20(LFP,long%2Dterm%20reliability%20are%20paramount) (Accessed March 6, 2025)

[18] SPA, pp. 21-22

[19] SPA, pp. 21-23; see also **Appendix D**, response to Question 5

Figure 2. Representative BESS Enclosures[20]



2.1.3.2 Project Tap Line and Substation

Electricity will flow from the Maple Leaf Substation to the project substation via a 161 kV tap line of approximately 300 feet. At the project substation, transformers will step the voltage down from 161 kV to 34.5 kV and then back from 34.5 kV to 161 kV depending upon the flow of electricity. Pending final design, Snowshoe anticipates that the tap line will be comprised of two dead-end structures (one each at the Maple Leaf and project substation) and one to two tangent structures to support the line between dead-end structures.[21]

2.1.3.3 Power Conversion System

Electrical energy will flow between the project substation and the BESS enclosures through underground 34.5 kV AC feeder lines (

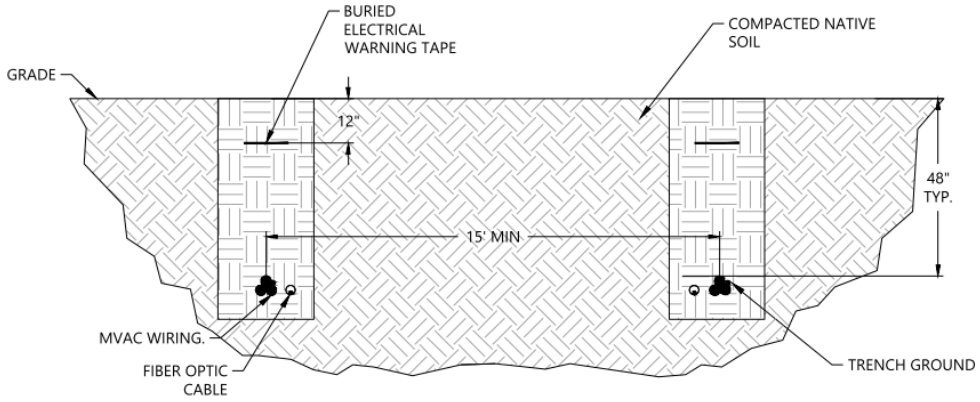
Figure 3). The power will pass through medium voltage transformers and inverters to the battery modules. The inverters convert AC to DC for storage in the battery modules and from DC to AC for delivery back to the grid. Depending upon the final technology, transformers and inverter may either be located within BESS enclosures or may be located on pads near the BESS enclosures.[22]

[20] SPA, p. 22, Image 2

[21] SPA, p. 24

[22] SPA, pp. 13-14, 23-24

Figure 3: Underground Cabling



2.1.3.4 Fencing

Snowshoe will install security fencing around the perimeter of the facility, with separate fencing for the substation. Fencing will be secured to posts that will be directly embedded in the soil or set in concrete foundations as required for structural integrity. At the time of application, Snowshoe anticipated that using six foot tall chain link fencing topped by one to two feet of barbed wire.[23] The BESS facility will be accessed through a locked gates the access road. The project substation will be accessed through a separate gate located within the larger fenced area.[24]

2.1.3.5 Access Roads and Drive Area

Snowshoe anticipates that the site will be accessed through a gate off SMMPA's access road to the Maple Leaf Substation. SMMPA's access road is off 14th Street Northwest (County Road 134). Snowshoe has secured an alternative access route off 14th Street through the landowner if it is unable to reach agreement with SMMPA. During construction the entry road apron will be approximately 165 feet wide to allow a safe turning radii for trucks entering and leaving the site. Within the site, the surfaces between BESS enclosures and the fence will be covered by gravel, allowing for access to the enclosures and substation. Snowshoe anticipates the internal spacing/drive lanes will be approximately 24 feet wide.[25]

2.1.3.6 Operations and Maintenance Building

Snowshoe indicates that it may construct an operations and maintenance (O&M) building within the fenced site to provide a workspace for maintenance activities and to store parts, supplies, and equipment. If constructed, preliminary plans anticipate locating the O&M building and associated parking area on approximately 0.1 acres along the eastern portion of the site.

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[23] SPA, p. 25

[24] **Appendix D**, Response to Question 4

[25] SPA, pp. 25-26

Alternatively, Snowshoe may rent an existing warehouse or commercial space nearby to serve as an operations base and storage facility.[26]

2.1.4 How would the BESS facility be constructed?

Snowshoe anticipates that construction of the facility will begin in early 2027 with an in-service date of late 2027. This section summarizes construction activities. Unless otherwise noted, this summary has been adapted from Section 4.3. and Appendix C, the *Draft Vegetation Management Plan* (VMP) of the site permit application.

Construction will begin after necessary permits are obtained and the interconnection process is finalized. Snowshoe anticipates that construction will begin in early 2027 to meet an in-service date of the fourth quarter 2027. The actual construction schedule is dependent upon permitting, final design, delivery of equipment, and workforce availability.

Construction is defined in Minn. Stat. 216E.01, subd. 3 as clearing of land, excavation, or other action that would adversely affect the natural environment of the site but does not include temporary disturbances needed for surveying or geotechnical investigation. Snowshoe's pre-construction activities include geotechnical investigation, identification of underground utilities, final project design, and component procurement (e.g., batteries, racking, inverters, BESS containers, transformers, etc.).

Initial site preparation includes soil and vegetation stabilization in areas where there won't be disturbance, installation of erosion and sediment control devices, vegetation removal in some areas, grubbing and grading, tree removal, site access improvements, and preparation of a staging and laydown areas and job site trailers. Snowshoe anticipates a laydown are of approximately 2.2 acres on the northern portion of the site (Figure 1). Stormwater basins will also be constructed. The applicant anticipates approximately 17 acres of the site will require grading. Based on preliminary design, Snowshoe estimates approximately 109,000 cubic yards of cut and 89,000 cubic yards of fill will be required for the project.

Typical construction equipment will be used for the project – scrapers, bulldozers, dump trucks, watering trucks, pickup trucks, and backhoes. Additional specialty equipment could include a skid steer loader, pile driver, cranes, concrete truck and boom truck, a high reach bucket truck, and a truck-mounted auger or drill rig.

The applicant estimates that for several weeks there will be five to 10 semi-trucks daily to deliver the project components such as batteries, enclosures, inverters, and transformer skids. Traffic will decrease once these components are delivered. Traffic volume during construction will predominantly come from worker travel to the construction site. Snowshoe estimates daily construction traffic of about 20 to 40 light duty trucks and cars during the 9 - 12 months of construction.

The applicant estimates that the project will create approximately 75 temporary construction jobs, and one to two full-time jobs to operate and maintain the facility.

[26] SPA, p. 25

Access Roads and Drive Areas

Preliminary design for the facility anticipates installing a new driveway off SMMPA's access road to the Maple Leaf Substation. Preliminary design is for a 154 foot wide apron, narrowing to approximately 24 feet as it enters fenced area.

Unlike internal access roads in solar facilities, which have specifically designed road profiles, the entire fenced area containing the BESS equipment will be graveled to allow vehicles to move in lanes between BESS enclosures. Construction of the drive area will begin with scraping and removal of topsoil from the developed area. Topsoil removed from the developed area will be stockpiled in suitable locations on-site After the topsoil has been segregated, the contractor will compact the subgrade materials along the to the specified compaction requirements specified in the civil and geotechnical engineer plans. Following compaction of the drive lanes area, Snowshoe will install geotextile fabric and eight inches of aggregate, which will then be compacted.

Substation and Interconnection

Site preparation for the substation, including grading and compacting, will occur concurrently with the grading for the BESS. Following site preparation, contractors will install a grounding grid and underground conduit within the substation footprint along with foundations for the transformer, control house(s), and high voltage structures. Substation equipment will be delivered to the site and installed on the prepared foundations. Contractors will construct secondary containment areas for the transformer according to design requirements in the SPCC plan, and final grading will occur around the Project substation. Dead end structures will be installed at both the Maple Leaf Substation and the Project Substation and conductors will be strung along the tap line. Depending upon final design one tangent structure between the dead-end structures may be required. Final perimeter fencing will be installed and crushed rock will be lain within the fenced area extending approximately five feet outside the fence line.

Power Conversion System

The electrical collection system will be installed below-ground. Cable for the AC electrical collection system will be placed 42 inches underground. A trench will be excavated for the cabling, topsoil and subsoil will be segregated and stockpiled. Once cabling is installed in the trench, the trench will be backfilled with subsoil followed by topsoil.[27]

Depending upon final equipment selected, inverters may be inside the BESS enclosures or may be mounted on a pad adjacent to the enclosures. Preliminary design anticipates that inverter and transformer skids will be placed on concrete foundations reinforced with rebar. Concrete foundations may be poured on-site or pre-cast and then assembled.

BESS Enclosures

Once the BESS area has been prepared and underground cables and conduits are installed, workers will install pile foundations (driven piles or helical piles) for the BESS containers. BESS containers

[27] SPA, pp. 37-37; **Appendix D**, Response to Question 5

(approximately eight feet by 20 feet) will be placed on foundations by crane and will be bolted or welded to pile caps. Installation of the BESS enclosures will require the use of trenching machines, pile drivers, forklifts, concrete trucks, boom trucks, and cranes. [28]

STORMWATER DRAINAGE

At the time of the application, the preliminary design anticipated two stormwater drainage basins, with a total area of approximately two acres. Contractors would remove topsoil to be temporarily stored at a suitable location. Subsoil would be excavated in accordance with design depths and slopes to accommodate inlets and outlets. Excavated subsoil would be distributed throughout the site as fill material in areas where grading is required. Topsoil would be replaced, and the basins will be seeded with a seed mixture that is tolerant of wet conditions.[29]

FENCING

Snowshoe will install permanent security fencing around the perimeter of the BESS facility. Preliminary design anticipates approximately 2.6 miles of fencing in total.[30] Snowshoe anticipates using a six-foot tall chain link fence topped by one to two feet of barbed wire. Fence posts will be directly embedded or set in concrete foundations at corner and gate posts and in some locations as necessary. Gates will be installed at the entrance from the access road and at the substation entrance within the larger fenced area. Security cameras will be located at entrances and location within the site.[31]

RESTORATION

After construction, the developed area will be graded to natural contours (as possible) and soils will be decompacted. Most of the disturbed areas will be reseeded with seed mixes in accordance with the project's VMP and stormwater pollution prevention plan (SWPPP). A cover crop will be planted to prevent erosion during the time it takes for native seeds / vegetation to establish and erosion control measures (e.g., silt fences, mulch, sediment control logs) will be used until seeded vegetation has established.

Snowshoe has prepared a draft VMP outlining how the site will be revegetated, maintained, and monitored over the life of the project to ensure restoration goals and objectives are met.[32] Once vegetation at the site has been established, mowing will be done only when necessary to ensure safe operation of the facility. Mechanical removal and selective use of herbicides may be used to treat unwanted woody species and noxious and perennial weeds.

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[28] **Appendix D**, Response to Question 5

[29] SPA, Appendix C, *Draft Vegetation Management Plan*, p. 12

[30] SPA, Appendix D, *Decommissioning Plan*, Attachment A

[31] **Appendix D**, Response to Question 4

[32] SPA, Appendix C, *Draft Vegetation Management* Plan

2.1.5 How would the facility be operated and maintained?

Snowshoe estimates the service life of the project to be 30 years.[33] Following restoration and construction closeout, control of the facility will transfer from the construction team to the operations staff. One or two full time maintenance staff will perform regularly scheduled inspections of electrical equipment, maintain or repair equipment as needed, maintain vegetation at the site, and remove snow as needed (Table 2). The operations staff may be employed by Snowshoe, Spearmint Energy (Snowshoes' parent) or an affiliate, or a qualified contractor.

2.1.5.1 Battery Augmentation

Along with the normal physical degradation of manmade structures as they age, the batteries used in the facility will lose the ability to store and deliver energy over time. This process, sometimes referred to as "derating" or "degradation," results in diminished capacity and efficiency, shorter operational life, and a decline in performance over time. Battery degradation is caused by chemical wear and tear that occurs over multiple charging and discharging cycles, aging (regardless of how the battery is used), and environmental factors such as temperature fluctuation, humidity, and dust in the operating environment. The normal degradation can also be impacted by, temperature extremes, humidity, and other factors[34]

To maintain the facility's capacity and accreditation, BESS facilities anticipate replacing degraded batteries with new batteries periodically over the course of the facility's operating life. This periodic replacement is referred to as "augmentation." Battery augmentation may involve either the addition of battery modules within the existing enclosures (Scenario 1) or the installation of new enclosures and new batteries (Scenario 2).[35] Snowshoe indicates the type and frequency of augmentation will depend upon final design and equipment selection but anticipates augmentation will occur every three to seven years. The facility's actual augmentation cycle depends upon factors that are unknown at this time, including actual degradation of the cells compared to theoretical assumptions, future changes in technology, and other factors. [36]

[33] SPA, p. 33

[34] GridX. *What is Battery Degradation and How to Prevent It*. February 6, 2025, https://www.gridx.ai/knowledge/what-is-battery-degradation-and-how-to-prevent-it NREL, Grid-Scale Battery Storage: Frequently Asked Questions

[35] SPA, p. 23

[36] Appendix D, Response to Question 7

Table 2. Operations and Maintenance Tasks and Frequency[37]

Device	Task	Preliminary Frequency
BESS	System visual check	Once Yearly
	Filter Inspection	Once Yearly
	Battery condition check	Continuous - remote
	Breaker check	Once Yearly
	Cooling system check	Once Yearly
Electric Boards	Case visual check	Once Yearly
	Fuses check	Once Yearly
	Surge arresters check	Once Yearly
	Torque check	Once Yearly
	DC voltage and current check	Once Yearly
	Grounding check	Once Yearly
Inverter	Case visual inspection	Once Yearly
	Air intake and filters inspections	Once Yearly
	DC voltage and current check	Once yearly
	Conversion efficiency inspection	Once yearly
	Datalogger memory download	Once yearly
	Fuses check	Once yearly
	Grounding check	Once yearly
	Torque check	Once yearly
Support Structures	Visual check	Once yearly
MV Transformers	Visual Check	Once yearly

2.1.6 What happens at the end of the 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 storage capacity with newer or more efficient batteries and other equipment. Any site permit issued by the Commission will specify the maximum capacity, so if Snowshoe wishes to increase the capacity, it must seek an amendment to the site permit. At the end of the project's useful life, Snowshoe will either take the necessary steps to continue operation of the project (re-permitting and retrofitting) or will decommission the project.

[37] SPA, Table 4.3-1. Annual electrical checks on the BESS equipment, electric boards, and inverters, are on the DC side to ensure that the DC current and voltage are in the expected range given a specific power command. Values on the AC-side can be read from the energy management system, but the AC side is not typically inspected unless there is a specific issue being investigated. (Personal communication, March 26, 2025)

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. Snowshoe provided a draft decommissioning plan as Appendix D of its site permit application.

If the project is not repowered, Snowshoe will decommission the project and remove the project facilities. Decommissioning would include removal of the BESS enclosures (cabinets, batteries, racking, and other auxiliary equipment), foundations, transformers and pad-mounted inverters, fencing, project substation, project tap line structures and conductors, gravel and crushed rock, and the access road. Below-ground electric and communications cabling would be removed to a depth of four feet. Snowshoe anticipates the decommissioning of the facility will take approximately 12 weeks to complete.

Commission permits require that permittees are responsible for all decommissioning costs. Snowshoe anticipates the total estimated cost to decommission the project is approximately $902,000 and estimated salvage/scrap value is approximately $401,000, for a net decommissioning cost of approximately $501,000.

Snowshoe anticipates establishing either an escrow account or surety bond equal to 125 percent of the net costs with Olmsted County as a beneficiary of the financial assurance.

2.2 Project Schedule

Snowshoe anticipates the project will begin commercial operation by the end of 2027. Table 3 shows Snowshoe's estimated development and construction milestones.

Table 3. Anticipated Project Schedule[38]

Activity	Anticipated Timeframe
Land Acquisition	Complete
Site Permit	Q3 2025
Downstream Permits	Q4, 2026
Construction	Q1 - Q3 2027
Testing and Commissioning	Q4 2027
Commercial Operation Date	Q4 2027

[38] Adapted from SPA, pp. 6-8

2.3 Project Costs

Snowshoe estimates the total installed capital cost to construct the project to be approximately $255 million (Table 4). Actual costs will depend on final material and labor costs. [39]

Snowshoe estimates annual operations and maintenance costs of approximately $8.2 million. Maintenance costs include labor, materials, and lease payments.[40]

Table 4. Estimated Project Costs

Project Component	Estimated Cost ($ millions)
Engineering & Design	3
Procurement	130
Construction	71
Development expense (land acquisition & permitting)	11
Interconnection (preliminary)	35
Financing	5
Total Project Cost	255

[39] SPA, at pp. 16-17; **Appendix D**, Response to Question 1

[40] SPA, p. 16

3 Regulatory Framework

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

3.1 What Commission approvals are required?

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

The project requires a site permit from the Commission because it meets the definition of an *energy storage system* which means electric equipment with a capacity of 10 MW or more that is capable of storing electricity for a period of time and delivering the electricity for use after storage.[41]

3.2 What is environmental review?

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

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

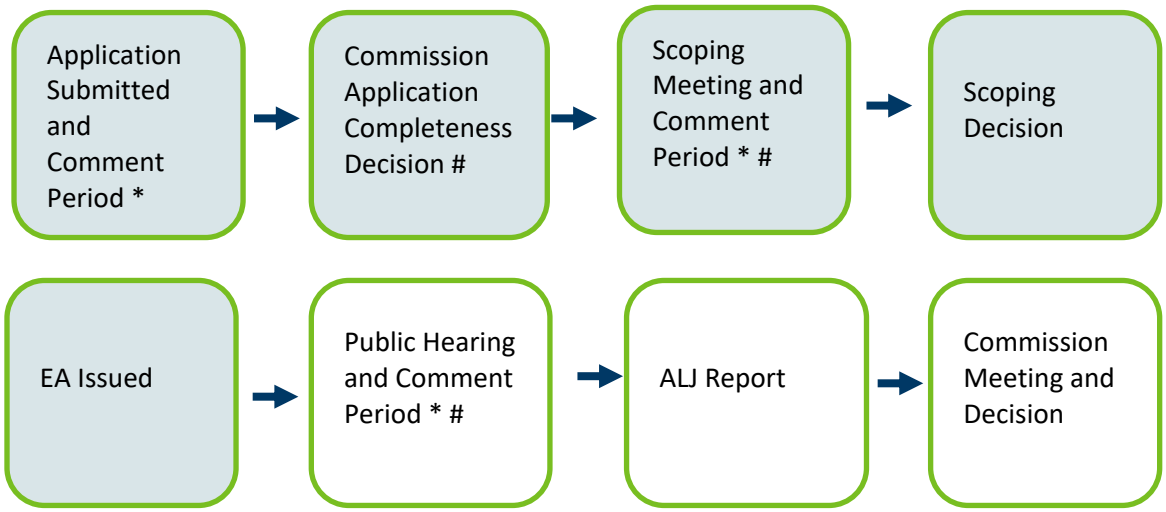
3.3 What does the review and permitting process look like?

The Commission accepted the site permit application as substantially complete on November 19, 2023. Public information and scoping meetings were held in Byron, Minnesota on December 9, 2024, and online on December 12, 2023.

Figure 4. outlines the environmental review and permitting process for this project.

[41] 2023 Minn. Stat., 216E.01, subd. 3a

Figure 4. Permitting Process Summary[42]



Application Filing and Acceptance

Snowshoe provided the required written notice of its intent to file a site permit under the alternative process on August 19, 2024.[43] Snowshoe filed an application for a site permit on October 7, 2024.[44] The Commission accepted the application as substantially complete in its order dated November 19, 2024.[45] The order also referred the matter to the Office of Administrative Hearings for

[42] Read from left to right; shaded steps are complete; "*" means public comment opportunity and "#" means public meeting opportunity.

[43] Snowshoe BESS, LLC, *Notice of Intent by Snowshoe BESS, LLC to Submit a Site Permit Application Under the Alternative Permitting Process*., August 19, 2024, eDocket ID: 20248-209598-01

[44] Snowshoe BESS, LLC, *Snowshoe Energy Storage Project: Application to the Minnesota Public Utilities Commission for a Site Permit*, October, 7, 2024, eDocket ID: 202410-210785-01, 202410-210785-02, 202410-210785-03, 202410-210785-04, 202410-210785-05, 202410-210785-06, 202410-210785-07, 202410-210785-08, 202410-210785-09, 202410-210785-10, 202410-210788-01, 202410-210788-02, 202410-210788-03, 202410-210788-04, ..

[45] Commission, Order, November 19, 2024, eDocket ID: 202411-212121-01

appointment of an ALJ to conduct a public hearing for the project. Commission staff provided a *Sample Site Permit for an Energy Storage System* on November 27, 2024.[46]

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 comments have been compiled and are available to review or download.

Scoping includes a public meeting and comment period that provide opportunities for interested persons to help develop the scope (or contents) of the EA.[47] 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 November 26, 2024, the Commission and Commerce issued a joint *Notice of Public Information and Environmental Assessment Scoping Meetings* and associated public comment period.[48] The notice was sent to those individuals on the project contact list, representatives from state agencies, tribal governments, tribal historic preservation officers, and to potentially affected landowner and was also available on Commerce's webpage for the Project.

Commission and Commerce staff held a public information and scoping meetings in Byron, Minnesota on December 9, 2024, and an online meeting on December 12, 2024. The comment period closed on December 30, 2024. Three people attended the Byron meeting, and two attendees provided public comments. There were no public comments at the online meeting.[49] In addition to the comments received at the public meeting in Byron, written comments were received from the Minnesota Department of Agriculture (MDA), the Minnesota Department of Natural Resources (DNR), the International Union of Operating Engineers (IUOE) Local 49, and the North Central States Regional Council (NCSRC) of Carpenters.

The MDA commented that the agency is working with Snowshoe to collaboratively develop an agricultural impact mitigation plan (AIMP).[50]

The DNR provided comments on the proposed fencing, lighting impacts, dust control, and erosion control methods. The DNR recommended against use of barbed wire and requested that Snowshoe coordinate with the DNR before finalizing fence design. The DNR also recommended the use of downlit lighting that minimizes blue hues, backlight, and glare, avoidance of dust control methods

[46] Commission, Sample Energy Storage System Site Permit, November 27, 2024, eDockets No. 202411-212496-01

[47] Minn. R. 7850.3700, subp. 2.

[48] Commission and Commerce *Notice of Public Information and Environmental Review Scoping Meeting*, November 26, 2024 eDocket ID: 202411-212439-01

[49] Oral Comments, Public Scoping and Information Meetings, Byron, Minnesota, December 9, 2024 and virtual meeting, December 12, 2024, eDocket ID: 20251-213617-01, 20251-213617-02.

[50] MDA, Comment, November 1, 2024, eDocket ID: 202411-211562-01

containing chlorides, and the use of wildlife-friendly erosion control as mitigation measures to minimize impacts to wildlife and the environment.[51]

In comments at the public meeting in Byron and in written comments, the IUOE Local 49 and the NCSRC of Carpenters expressed support for the project and recommended the EA examine local economic impacts.[52]

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 January 13, 2025 (**Appendix A**). The scoping decision identifies the issues to be evaluated in this EA.

3.4 Are other permits or approvals required?

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

A site permit from the Commission is the only state permit required for siting the project. However, various federal, state, and local approvals might be required for activities related to construction and operation of the project. These subsequent permits are referred to as "downstream" permits and must be obtained by the permittee prior to construction.[53] Table 5 lists potential downstream permits that might be required, several of which are discussed below.

3.4.1 Federal

The U.S. Environmental Protection Agency requires certain facilities to develop, maintain, and implement a Spill Prevention, Control and Countermeasures Plan (SPCCP) to prevent oil spills and control any spills that do occur. An SPCCP may be required for power transformers within the project substation.

A permit is required from the United States Fish and Wildlife Service (USFWS) for the incidental taking[54] of any threatened or endangered species. The project is not expected to impact federally listed threatened or endangered species, and no permit from the USFWS is anticipated to be necessary.

Table 5. Potential Downstream Permits

[51] DNR Comment, December 23, 2024, eDocket ID: 20242-213309-01

[52] IUOE Local 49 and NCSRC of Carpenters Comment, December 31, 2024, eDocket ID: 202412-213419-01; see also oral comments from Byron public meeting at pp. 15-16.

[53] DSP (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").

[54] 16 U.S. § 1532(19) (defining "take" to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in such conduct).

Unit of Government	Type of Application	Purpose	Anticipated for Project
Federal			
U.S. Environmental Protection Agency	Spill Prevention, Control and Countermeasures Plan (SPCCP)	Prevent oil spills and minimize impacts from any spills that do occur.	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	Yes
	Water Appropriation Permit	Balances competing management objectives; may be required for construction dewatering	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	No
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)	No
	Oversize/Overweight Permit	Controls use of roads for oversize or overweight vehicles	No
Board of Water and Soil Resources	Wetland Conservation Act	Ensures conservation of wetlands	No
Local			
Olmsted County	Right-of-Way/Utility Permit	Needed to construct or maintain electrical lines along or across county highway ROW	No

Unit of Government	Type of Application	Purpose	Anticipated for Project
	Access Permit	Needed to move, widen, or create a new driveway access to county roads	Possible
	Wetland Conservation Act Permit	Ensures conservation of wetlands	No
	Moving Permit/ Oversize/Overweight Vehicle Permit	Needed to transport oversized and overweight loads on county roads	Yes

3.4.2 State

Potential impacts to state lands and waters, as well as fish and wildlife resources, are regulated by the DNR. Licenses are required to cross state lands or waters.[55] Projects affecting the course, current, or cross-section of lakes, wetlands, and streams that are public waters may require a *Public Waters Work Permit*.[56] 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."[57] The CSW Permit requires use of best management practices; development of a Stormwater Pollution Prevention Plan; and adequate stormwater treatment capacity once the project is complete. Projects must be designed so that 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.[58]

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

[55] Minnesota Statutes 84.415.

[56] DNR (n.d.) *Requirements for Projects Involving Public Waters Work Permits*, http://www.dnr.state.mn.us/waters/watermgmt_section/pwpermits/requirements.html.

[57] MPCA. *Construction Stormwater*. (2022). https://www.pca.state.mn.us/business-with-us/construction-stormwater

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

certification from the State in which the discharge originates that the discharge complies the applicable water quality standards."[59] The certification becomes a condition of the federal permit.

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

A permit from MnDOT is required for construction, placement, or maintenance of utility lines adjacent or across trunk highway rights-of-way. Coordination would be required to construct access roads or driveways from trunk highways. 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.[60]

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

3.4.3 Local

Olmsted County oversees local implementation of the WCA in the project area. The WCA requires that any person "proposing to impact a wetland to first, attempt to avoid the impact; second, attempt to minimize the impact; and finally, replace any impacted area with another wetland of at least equal function and value."[61]

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.
- Overwidth 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.

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

[60] MnDOT. *Utility Accommodation on Highway Right of Way:* (2023). https://www.dot.state.mn.us/policy/operations/oe002.html

[61] Minnesota. Rule. 8420.0100, subp. 2.

3.5 Do electrical codes apply?

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

The project must meet requirements of the National Electrical Safety Code.[62] 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".[63] 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.

3.6 Are any issues outside the scope of this EA?

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

This EA does not address the following:

- The need for the project, including questions of size, type, timing, and alternative system configurations.
- Any impacts related to the manufacture of the elements of the project including batteries, battery storage units, concrete, fuel used for construction vehicles, etc.
- The manner in which landowners are compensated for the project.

[62] *See* Minnesota. Statute. 326B.35; Minn. R. 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)

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

4 Project Impacts and Mitigation

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

4.1 How are potential impacts measured?

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

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

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

4.1.1 Potential Impacts and Mitigation

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

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

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

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

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

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

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

4.1.2 Regions of Influence

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

- Land control area (land control of the BESS and gen-tie line)
- Local vicinity (1,600 feet from the boundary of the BESS)
- Project area (one mile from the boundary of the facility)
- Region (Olmsted 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, Electrical Interference, Land Use and Zoning	Land control area
	Noise, Property Values	Local vicinity
	Aesthetics, Cultural Values, Recreation	Project area
	Socioeconomics	Region
Public Services	Airports, Roads, Emergency Services, Public Utilities	Project area
Public Health and Safety	Electric and Magnetic Fields, Implantable Medical Devices, Stray Voltage, Worker and Public Safety	Land control area
Land-based Economies	Agriculture, Forestry, Mining	Site control area
	Tourism	Project area
Archaeological and Historic Resources		Project area
Natural Environment	Geology and Groundwater, Soils, Vegetation, Water Resources, Wetlands, Wildlife (except birds), Wildlife Habitat	Land control area
	Wildlife (birds), Rare and Unique Resources	Local vicinity
	Air Quality	Region

4.2 Project Setting

The project is in a rural area north of US Highway 14 between the cities of Byron and Rochester in Olmsted County. Olmsted County is a rapidly growing area of Minnesota. The project area is dominated by agricultural and rural residential land uses and scattered farmsteads.

The proposed facility is located on a rolling agricultural site between the cities of Byron and Rochester in Kalmar Township in Olmsted County, Minnesota (Figure 1). The topography at the site is slightly rolling, with a range in surface elevation from approximately 1,139 to 1,205 feet above sea

level.[64] There are no lakes or streams within the site, the nearest surface water body is an unnamed tributary of Cascade Creek, located approximately 0.6 miles northeast of the site.

The project is in the Rochester Plateau (222 Lf) subsection of the Eastern Broadleaf Forest Province.[65] Prior to European settlement vegetation in the project area was primarily oak barrens and openings, with characteristic trees being bur oak and northern pin oak. Species associated with oak openings and barrens are still present, however large areas of these species are uncommon. The site is located approximately one mile east of the city of Byron, and two miles west of Rochester. The current land-use in the local vicinity is a mixture of agricultural and residential.

Land use within the site is dominated by agriculture; approximately 98 percent of the 28 acre site is currently used for cultivated agriculture (primarily corn and soybeans). Land use in the project area is predominantly agricultural and rural residential with scattered commercial and industrial land uses such as SMMPA's Maple Leaf substation, which borders the site to the west. US Highway 14 and the railroad are the major transportation corridors in the project area. Built features common to the area include residences and buildings, paved and gravel roads, the Dakota Minnesota and Eastern railroad, and electric power infrastructure including substations, transmission lines, and distribution lines.

4.3 Human Settlement

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

4.3.1 Aesthetics

The ROI for aesthetics is the project area. The project will introduce new manmade structures into the existing landscape. Portions of the project may be visible from local roads, US Highway 14, and nearby residences. For most people who pass through the project area on US Highway 14 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 vicinity, the impact intensity level is anticipated to be moderate. 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.

[64] SPA, Appendix C, Preliminary Vegetation Management Plan, p. 6

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

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 gently rolling terrain, dominated by row crop fields of corn and soybeans, and rural residences. The built environment in the project area includes the city of Byron, roads, a railroad, and electric and infrastructure including the Maple Leaf substation adjacent to the facility and a People's Cooperative Substation approximately 1,900 feet northeast of the site, as well as transmission and distribution lines. There are also existing community solar facilities within several miles of the site. Residences and farmstead are scattered throughout the project area. There are no residences or businesses within the site; however, there are five residences within the project vicinity (1,600 feet). The nearest home to the facility is located approximately 1,200 feet north of the site boundary.[66]

Potential Impacts

The visible elements of the facility will consist of approximately 192 new BESS enclosures[67], a fenced area of approximately 7.6 acres, a project substation, up to four new transmission structure, a new 10-foot chain link fence topped by barbed wire surrounding the facility, new stormwater ponds, and potentially a new O&M building.

The project will convert approximately 28 acres from agricultural use into a BESS facility. Although the change will be noticeable, it is similar in appearance to existing electric substations in the project area.

For residents outside the project vicinity and for others with low viewer sensitivity, such as travelers along U.S. Highway 14, aesthetic impacts are anticipated to be minimal. For these viewers, BESS enclosures would be relatively difficult to see due to the rolling topography and existing vegetation along the highway, and the substation and transmission structures would be indiscernible from those of the adjoining Maple Leaf Substation. Residents in the project vicinity and areas residents traveling local roads are likely to be more sensitive to aesthetic impacts, but the topography of the site and existing screening around nearby residences will tend toscreen the 10-foot enclosures and surrounding fence.

Exterior security lighting will be installed at the project substation. Switch activated lights will be located at each BESS enclosure to allow for maintenance and repair.[68] As cameras installed at the

[66] SPA, p. 43 and Appendix E, *Noise Assessment*

[67] SPA, Appendix E, *Noise Assessment*

[68] SPA, pp. 44-45

gates and along the fence line will be used, Snowshoe does not plan to install lighting at gates or along the fence line.[69] Impacts to light-sensitive land uses are not anticipated given the rural project location and the minimal required lighting for operations.

MITIGATION

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

Section 4.3.8 of the DSP (**Appendix C**) requires the permittee to consider landowner input with respect to visual impacts and to use care to preserve the natural landscape.

Section 5.1 of the DSP is a special condition requiring the permittee to minimize lighting impacts by using shielded and downward facing light fixtures and using lights that minimizes blue hue

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.

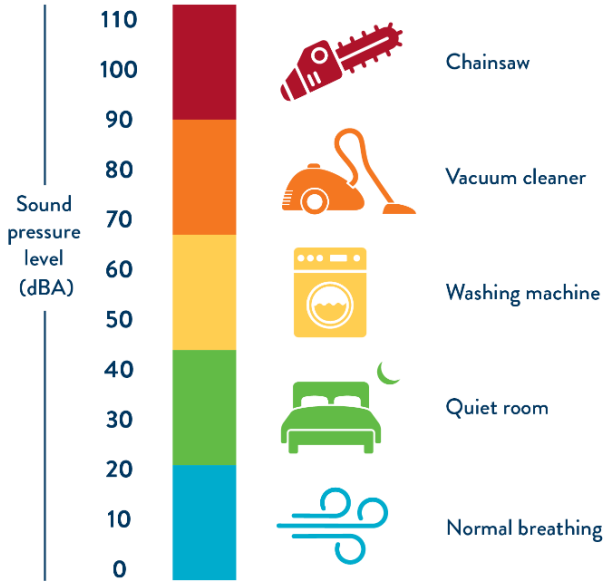
4.3.2 Noise

The ROI for noise is the local vicinity. The impact intensity level during construction will range from negligible to significant depending on the activity, potential construction impacts are anticipated to be intermittent and short-term. Impacts are unavoidable but can be minimized. These localized impacts may affect nearby residences and might exceed state noise standards. Once operational, noise impacts are anticipated to range from negligible to significant at nearby residences. Noise impacts from operation of the facility can be minimized mitigated.

[69] Appendix D, Response to DR 4,

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.[70] 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 5 provides decibel levels for common indoor and outdoor activities.[71]

Figure 5. 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. A complete list is available at Minnesota Rule 7030.0050.

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 7 provides current Minnesota noise standards.

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

[71] Federal Aviation Administration (February 9, 2018) *Fundamentals of Noise and Sound*, retrieved from: https://www.faa.gov/regulations_policies/policy_guidance/noise/basics/.

Table 7. Noise Area Classifications (dBA)

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

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

Potential Impacts

The primary noise receptors are the local residences. Although there are no residences within the site, there are five residences within the local vicinity (in this case, the closest residence is approximately 1,200 feet from the site boundary) and an additional 14 residences located between 1,600 and 3,200 feet of the site boundary.[72] The proposed project is in a rural, agriculturally dominated area and is near a railroad and US Highway 14. Residences are in NAC 1. Noise receptors could also include individuals working outside in the project vicinity. Potential noise impacts from the project are associated with construction noise and operational noise.

Construction Noise from construction will be temporary in duration, limited to daytime hours and potentially moderate to significant depending in location. Snowshoe indicates its intent to limit construction noise to daytime hours to the extent practicable. Construction noise will vary depending upon the phase of construction and the equipment being used. 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 piers for BESS enclosures will also contribute to construction noise. The noise from construction activities would dissipate with distance and be audible at varying decibels, depending on the locations of the equipment and receptor.

Thus, this construction noise could 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.

[72] SPA, at pp. 46, 59, Appendix E.

Operation The primary noise sources during facility operation are BESS containers, substation transformer(s), heating ventilation and air conditioning (HVAC) equipment at the O&M building, and auxiliary transformers.[73] Unlike solar facilities, which do not operate during the night, BESS facilities can be expected to operate throughout the day, resulting in noise levels may vary throughout the day. The applicant modeled noise levels from the facility using manufactures information for the substation transformer, 48 auxiliary transformers, and two HVAC units at the O&M facility. Because Snowshoe has not selected the BESS equipment, the applicant used "typical" BESS units with integrated inverters and batteries for 192 BESS containers. The noise report indicates that additional noise analysis may be required if the final equipment selected differs from the modeling assumptions. New analysis may also be required if battery augmentation requires new BESS enclosures or new battery equipment. The modeling estimates facility-only nighttime noise between 38.1 and 47.7 dBA and a total noise of between 45.8 and 49.5 dBA at the modeled residences.[74] Although the modeled results are less than the nighttime standard of 50 dBA, the noise may be noticeable to nearby residents.[75] Noise from routine maintenance activities is anticipated to be negligible to minimal. Noise from the electrical collection system is not expected to be perceptible.

4.3.2.1 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 during construction. Snowshoe indicates it will mitigate construction noise impacts by limited construction to daytime hours to the extent practicable and ensuring that equipment and vehicles are operated with functioning mufflers and noise control devices.[76]

Snowshoe has not proposed noise mitigation measures once the facility is operational. Additional mitigation measures to minimize noise during operation include selecting individual BESS units with lower noise levels, installing equipment silencers on BESS enclosures, installation of noise barriers (such as fences or berms), and operational limits.

The DSP (**Appendix C**) includes permit conditions to minimize and mitigate noise impacts.

- Section 4.3.7 is a standard condition that requires the permittee to comply with noise standards established under Minnesota noise standards as defined under Minnesota Rule, part 7030.010 to 7030.0080, and to limit construction and maintenance activities to daytime hours to the extent practicable.
- Section 5.2 is a special condition that requires the permittee to file a pre-construction noise modeling and impact assessment summarizing results from noise propagation modeling using the selected equipment and final layout prior to construction of the facility. This

[73] SPA, Appendix E, p. 4

[74] SPA, pp. 59 -60 Appendix E, pp. 3-5

[75] SPA, p. 60

[76] SPA, p. 60

condition also requires the permittee to file an updated noise impact assessment prior to modifying the permitted facility.

- Section 5.3 is a special condition that requires the permittee to file a proposed methodology for conduct of a post-construction noise study prior to construction of the project and to file the noise study within 18 months of operation. This section also clarifies that the project must be operated to comply with MPCA noise standards at all times and that the Permittee may be required to modify design or operation of the facility to comply with MPCA noise standards.

4.3.3 Cultural Values

The ROI for cultural values is the project area. The impact intensity is expected to be minimal and long-term. 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 in the project area derive primarily from European ancestry. Cultural values are also informed by work and leisure pursuits, for example, farming and snowmobiling, as well as land use, such as agricultural cropland. Community events in the project area are usually tied to geographic features, seasonal/municipal events, and national holidays.

The Olmsted County General Land Use Plan strives to balance the growth in the area with preservation of natural and scenic resources by concentrating urban and suburban development, maximizing efficiency of resource use, preserving the natural and cultural resources that provide a sense of place of the county, ensuring that growth. The comprehensive plan seeks to locate utilities to minimize potential aesthetic, public health or welfare impacts, including those to property.[77]

[77] Olmsted County, Olmsted County General Land Use Plan. (2022) https://www.olmstedcounty.gov/sites/default/files/2020-10/Olmsted%20County%20Land%20Use%20Plan.pdf

POTENTIAL IMPACTS

Construction and operation of the project is not anticipated to impact or alter the work life and leisure pursuits of residents or visitors in the project area or affect land use in such a way as to impact the underlying culture or community unity of the area.

At the same time, the development of the project may change the character of the area, at least where it is visible. In addition, the project represents a shift in energy infrastructure by introducing storage facilities to the landscape. 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. This tension between infrastructure projects and rural character creates real tradeoffs.

Because of the relatively small size of the project and distance from homes, businesses and recreational resource, impacts to cultural resources from the project are anticipated to be minimal.

MITIGATION

There are no conditions included in the DSP that directly address mitigation for impacts to cultural values. No mitigation is proposed.

4.3.4 Land Use and Zoning

The ROI for land use and zoning is the land control area. The impact intensity level is anticipated to be minimal. Land use impacts are anticipated to be long-term and localized. Although energy storage systems are not specifically addressed in local planning documents or zoning codes, the proposed facility is generally consistent with local land use ordinances and the Olmsted County's Comprehensive Plan. Constructing the project will change land use at the site from agricultural to energy storage production for the expected 30 year life of the project. 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.

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 the BESS will alter current and future land use and land cover in the land control area.

The National Land Cover Database provides "spatial reference and descriptive data for characteristics of the land surface" nationwide.[78] Current land use at the site is agricultural,

[78] U.S. Geological Survey. *The National Land Cover Database*. (February 2012), retrieved from: http://pubs.usgs.gov/fs/2012/3020/fs2012-3020.pdf.

approximately 93 percent of the site is covered in cultivated crops while the remainder is covered with grassland and pasture.

A site permit from the Commission supersedes local zoning, building, or land use rules.[79] 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."[80]

The site is located in the Olmsted County's A-1 Agricultural Protection District. Under Article V, Section 5.00 of the Olmsted County Zoning Ordinance…,

> *"The purpose of this district is to maintain, conserve and enhance agricultural land, and natural habitat for plant and animal life. This district is intended to encourage long term agricultural uses and preserve prime agricultural farmland by restricting the location and density of non-farm dwellings and other non-farm land uses."*[81]

The site is located within the Resource Protection Area of the Olmsted County General Land Use Plan. This Resource Protection Area is intended to provide for and protect sensitive natural areas and resource-related uses, including parks and open space, mining, farming, wind turbines and feedlots as well as commercial and industrial uses that are related to extraction nor natural resource use and have relatively low requirements for sewage treatment and traffic.[82]

The site is outside Byron's 25-year growth boundary and 50-year urban reserve,[83] but is located within Rochester's Urban Influence Area. Rochester's Comprehensive Plan characterizes the Urban Influence Area as areas where the city has the ability to extend sanitary sewer service over the long term, perhaps in a 40 to 60 year time frame. Although the plan realizes the potential for future development, there are no plans for development in the near term. The plan recommends that the townships and the county discourage inefficient development patterns in these areas.[84]

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[79] Minn. Stat. 216I.19, subd. 1, Minnesota Statutes 216E.10, subd. 1.

[80] Minn. Stat. 216I.05, subd. 11((a)(2); Minnesota Statutes 216E.03, subd. 7.

[81] Olmsted County, *Olmsted County Zoning Ordinance, Code of Ordinance Chapter 1400, Article V, Section5.0, https://www.olmstedcounty.gov/sites/default/files/2024-05/Chapter%201400%20Zoning%20Ordinance_2023_0.pdf*

[82] Olmsted County, 2022, *Olmsted County General Land Use Plan*, https://www.olmstedcounty.gov/sites/default/files/2023-01/GLUP2045Final.pdf , Section 8, Figure 11-1

[83] Byron, 2022, *Byron Comprehensive Plan* https://www.byronmn.com/vertical/sites/%7BAB4DA627-110F-4DDB-A83D-A27638C29D9A%7D/uploads/22.01__FINAL_FINAL_FINAL_-_Comp_Plan_December_2022.pdf , Figure 1.2 Existing Land Use and Growth Boundaries Map

[84] Rochester, 2018, *Planning 3 Succeed: Rochester Comprehensive Plan 2040*, https://www.rochestermn.gov/home/showpublisheddocument/24222/636903969909230000 , pp. 149 and 151

POTENTIAL IMPACTS

Neither Kalmar Township nor Olmsted County have land use regulations that specifically address BESS facilities. Small non-utility wind energy conversion systems and WECS meteorological towers are a permitted use in the Olmsted County's A-1 Agricultural Protection District. Small utility wind energy conversion systems and solar energy farms are conditional uses in the district, subject to the performance standards of the district.

The proposed facility appears to be consistent with the types of industrial uses that have relatively low requirements for sewage treatment and traffic described in Olmsted County's Resource Protection Area.[85]

MITIGATION

The project would convert approximately 28 acres of cultivated cropland to a BESS. The DSP (**Appendix C**) has several permit conditions related to the preservation and restoration of agricultural land:

- Section 4.3.22 requires the permittee to avoid damage to drain tile and to repair or replace drain tile if damaged over the project's life.
- Section 5.5 is a special condition that requires the permittee to prepare an AIMP that details methods to minimize soil compaction, preserve topsoil, and establish and maintain appropriate vegetation to ensure the project is designed, constructed, operated and ultimately restored in a manner that would preserve soils to allow for the land to be returned to agricultural use.
- Section 5.6 is a special condition that requires the applicant to prepare a VMP to prevent soil erosion and invests in soil health by establishing a plan to protect soil resources by ensuring perennial cover. The applicant's draft VMP is found in Appendix C of the site permit application.
- Section 9.2 requires removal of all project-related infrastructure and restore the site to restore and reclaim the site to pre-project conditions to the extent feasible. The applicant's draft decommissioning plan is found in Appendix D of the site permit application.

Impacts to local zoning can be mitigated by ensuring the project is consistent, to the greatest extent practicable, with Olmsted County's conditional use permitting criteria for A 1 districts.

4.3.5 Property Values

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

[85] Olmsted County, 2022, *Olmsted County General Land Use Plan*, https://www.olmstedcounty.gov/sites/default/files/2023-01/GLUP2045Final.pdf , Section 81

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 an energy storage 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.[86]

POTENTIAL IMPACTS

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 possible. 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.

Commerce staff was unable to locate peer reviewed literature that addressed potential impacts to property values from stand-alone BESS.

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, noise, and screening could have an unpredictable range of influence over property value. The project is screened to some extent from nearby residences by the topography and existing windbreaks around homes.

To the extent that negative impacts do occur they are expected to decrease with distance from the project. Aesthetic and noise impacts that might affect property values would be limited to

[86] Department of Commerce (2022) *Rights-of-way and Easements for Energy Facility Construction and Operation*, retrieved from: https://apps.commerce.state.mn.us/eera/web/project-file/12227

residences and parcels in the project vicinity where the facility may be visible and where noise impacts from operation may occur.

MITIGATION

Impacts to property values can be mitigated by reducing aesthetic impacts and encumbrances to future land use. Impacts can also be mitigated through individual agreements with neighboring landowners. Such agreements are not within the scope of this EA.

4.3.6 Transportation and Public Services

The ROI for transportation and public services is the project area. Potential impacts to the electrical grid, roads and other utilities are anticipated to be short-term, intermittent, and localized during construction. The project may install a well and septic system but impacts to existing wells and septic systems are not expected to occur. Impacts to railroads and pipelines 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: The project area is not serviced by city water supply or sanitary sewer and residents in the project area have private wells for domestic water needs and private septic systems of drain fields for domestic wastewater. The applicant has not identified any existing wells or septic fields in its search of Minnesota Department of Health (MDH) and landowner records. [87]

Electric Utilities: The primary electric provider in the project area is Peoples Energy Cooperative (Xcel Energy serves most of the city of Byron west of 10th Avenue Northeast). [88] Four transmission lines connect to the SMMPA Maple Leaf Substation adjacent to the site; two 161 kV lines generally follow US Highway 14 east to west and two 69 kV lines travel north to south out of the Maple Leaf Substation. In addition to the lines connecting the Maple Leaf Substation, a 69 kV line follows 14th Street NW into the Kalmar Substation.[89] In addition to the high voltage transmission lines, there are lower voltage electric distribution lines throughout the project area.

Pipelines: Minnesota Energy Resources provides natural gas service in the project area. There is a hazardous liquid pipeline located west of the site and a gas pipeline north of the site There are no mapped pipelines within the area of land control.[90]

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[87] SPA, p. 62

[88] City of Byron, Utilities and Services, https://www.byronmn.com/newresidentinfo

[89] SPA, pp. 62-63 and Figure 2.

[90] SPA, p 63 and Figure 2; US Department of Transportation, National Pipeline Mapping System Public Viewer, https://pvnpms.phmsa.dot.gov/PublicViewer/

Railroads: The Dakota Minnesota and Eastern Railroad is along the project's southern boundary, between the site and US Highway 14. The project will avoid railroad property and railroad right of way (ROW).[91]

Roads: The major roadways accessing the project area is U.S. Highway 14, located just south of the site; the site is not accessible from US Highway 14. Other roads in the project vicinity are county and township roads. The preferred access to the site is off the existing SMMPA access road to the Maple Leaf Substation. If the applicant is not able to reach an agreement with SMMPA, the site will be accessed from 14th Street Northwest. [92]

Airports: The Rochester International Airport is the only registered airport in Olmsted County; it is located approximately nine miles southeast of the project. The Dodge Center Airport is located approximately 12 miles west of the site. In order to assure safety, both the Federal Aviation Authority (FAA) and MnDOT office of Aeronautics have established guidelines for the location of structures near airports. The FAA has height restrictions for development near public airports and guidelines for placement of buildings and other structures near high frequency omnidirectional range navigation systems. MnDOT has zoning areas around public airports that restrict the area where buildings and other structures can be placed.

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: If an O&M facility is constructed, Snowshoe may install a well for drinking water or onsite-septic system for sanitary services. [93]

Railroads: No impacts to railroads are anticipated. The project will avoid railroad property and railroad ROW. [94]

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 to 40 pickup trucks, cars, and/or other types of employee vehicles onsite during construction. Truck traffic to the site will vary by construction phase. Snowshoe anticipates up to 15 semi-trucks per day will be used for delivery of facility components. Construction traffic will be perceptible to area residents, but because the average daily traffic on the area is well below design capacity, this increased traffic is not expected to affect traffic

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[91] SPA, p. 62

[92] SPA, at p. 61,

[93] SPA, p. 65; see also Appendix D, response to Question 6 and the attached revised seeding plan that indicates a septic tank and leach field.

[94] SPA, p. 62

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. Snowshoe states that overweight or oversized loads are "unlikely," but will obtain appropriate approvals for these loads prior to construction. [95]

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

Electric Utilities: No long-term impacts to utilities will occur because of the project. The Project will not impact existing transmission lines, and Spearmint Energy indicates it does not anticipate any customer outages during construction of the Project and connection to the Maple Leaf Substation

Air Safety: The applicant used the FAA's Notice Criteria to determine if further aeronautical study or FAA filing is needed. The applicant indicates that the project does not exceed notice criteria. [96]

MITIGATION

Water and Wastewater: A well construction permit from the MDH would be required if a well is installed at an O&M facility.

Utilities: Section 4.3.5 of the DSP (**Appendix C**) is a standard permit condition that requires the permittee to minimize disruptions to public utilities.

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.

Railroads: As no impacts to existing railroads are anticipated, no mitigation is proposed.

Roads: New driveways, such as the alternate access road off 14th Street or changes to existing driveways from county roads will require permits from the county.

Section 4.3.19 of the DSP requires 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.

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

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[95] SPA, p. 64

[96] SPA, pp. 111-112, Appendix B

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

4.3.7 Socioeconomics

The ROI for socioeconomics is the region. The impact intensity level is anticipated to be minimal 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 negligeable. Adverse impacts are not anticipated.

The project is in an area that is growing faster than the state of Minnesota as a whole. Between 2000 and 2020, the population in Olmsted County grew by nearly 31 percent, compared to 15.9 percent for Minnesota as a whole. The population of Byron has increased by 81 percent over the same time, while the population of Kalmar Township has declined by approximately nine percent over the same period.

While the median household incomes and the percentage of minority population in Olmsted County is similar to that in Minnesota, the household incomes in Kalmar Township and the neighboring city of Byron are substantially higher than the county or the state and the and percentage of minority population is lower than for Olmsted County or Minnesota. (

Table 8).

In 2023 the sectors with the largest employment in Olmsted County were educational services, health care, and social assistance sector (50.6 percent), manufacturing (eight percent) and retail trade (7.7 percent).[97] Olmsted County is part of the Minnesota Department of Employment and Economic Development Region 10, which is the Southeast Economic Development Region. Unemployment rates fluctuate with the economy, but the unemployment rate for Region 10 has been consistently similar to the state, typically 0.5 to one percent below of Minnesota's unemployment rate.[98] In 2023, Olmsted County had a slightly lower unemployment rate (3.6 percent) than the state average (3.9 percent). The county also had a higher labor force participation rate (70.4 percent) than Minnesota as a whole (68.5 percent).[99]

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[97] US Census, https://data.census.gov/profile/Olmsted_County,_Minnesota?g=050XX00US27109#employment

[98] Minnesota Department of Economic Employment and Development (DEED). *Economic Development Region 10: Central, 2024 Regional Profile*. (2024), https://mn.gov/deed/assets/2024_Region10_tcm1045-133257.pdf

[99] DEED. County Profile: Olmsted County. (2024) https://mn.gov/deed/assets/012725_olmsted_tcm1045-407643.pdf

Table 8. Population Characteristics

Area	Total Population				Population Characteristics***		
	2000 Census*	2020 Census*	% Change 2000 - 2020	2023 Estimate **	% Minority‡	Median Household Income ($)	% Below Poverty Level
Minnesota	4,919,479	5,706,494	15.9	5,800,386	22.3	84,313	9.3
Olmsted County	124,277	162,847	31.0	164,055	22.2	87,856	7.9
Byron	3,487	6,312	81.0	6,688	8.1	121,681	6.2
Kalmar Township	1,226	1,117	-8.9	1,146	3.1	152,813	6.0

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

** 2022, Minnesota State Demographic Center, Population Data, Our Estimates, https://mn.gov/admin/demography/data-by-topic/population-data/our-estimates/

*** 2022 American Community Survey 5-year estimates

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

Potential Impacts

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 minimal. The project will not disrupt local communities or businesses and does not disproportionately impact low-income or minority populations (see discussion of environmental justice in Section 4.3.8). Adverse impacts are not anticipated.

The applicant anticipates the project will require approximately 75 jobs during the construction phase, and one to two long-term personnel during the operations phase. Indirect economic benefits will occur from additional local spending on lodging, goods and services and local sales tax.[100]

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. The applicant indicates it will work with its main construction contractor to develop a workforce and hiring plan that provides opportunities for the local workforce. Construction will require Minnesota licensed

[100] SPA, pp. 31, 64

electricians because most of the assembly and wiring for the BESS equipment is considered electrical work under the Minnesota electrical code.[101]

Property taxes are calculated on the land underlying the facility. The land is currently taxed as agricultural (class 2A). Following construction of the facility, the land classification will likely change to commercial/industrial (class 3a) (commercial/industrial/public utility) which is taxed at a higher rate than land used primarily for homestead or agriculture. The value of the generation equipment is exempted from the property tax.[102] According to the terms of its lease agreement, Snowshoe will pay its portion of property taxes to the landowner and the landowner will continue paying taxes on the site. Snowshoe anticipates that the project will have annual property tax payments of approximately $17,745 to Olmsted County and $944 to Kalmar Township over the twenty year lease.[103] Unlike solar and wind facilities that pay a production tax based on energy generated, Snowshoe will not pay a production tax because the facility does not generate power, it stores power.

The removal of approximately 28 acres of the over 300,000 acres of farmland in Olmsted County will not have a significant impact on agricultural-related businesses. Adverse impacts associated with the loss of agricultural land and agricultural production will be mitigated through lease payments to landowners.

MITIGATION

Section 8.5 of the DSP (**Appendix C**) requires quarterly reports concerning efforts to hire Minnesota workers.

Section 8.6 of the DSP requires the permittee, as well as its construction contractors and subcontractors, to pay no less than the prevailing wage rate.

As socioeconomic impacts are anticipated to be positive in the short term and insignificant over the long term operation of the project. No additional mitigation is proposed.

4.3.8 Environmental Justice

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

The PUC defines an environmental justice area as meeting one or more of the following criteria:[104]

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[101] SPA, pp. 64, 71

[102] Appendix D, Response to Question 2. See also, Minnesota Department of Revenue, n.d., *Battery energy Storage Systems: Property Tax Treatment,* https://www.revenue.state.mn.us/battery-energy-storage-systems

[103] SPA, p. 72

[104] Minn. Stat. 216B.1691, subd. 1(e)

(1) 40 percent or more of the area's total population is nonwhite;

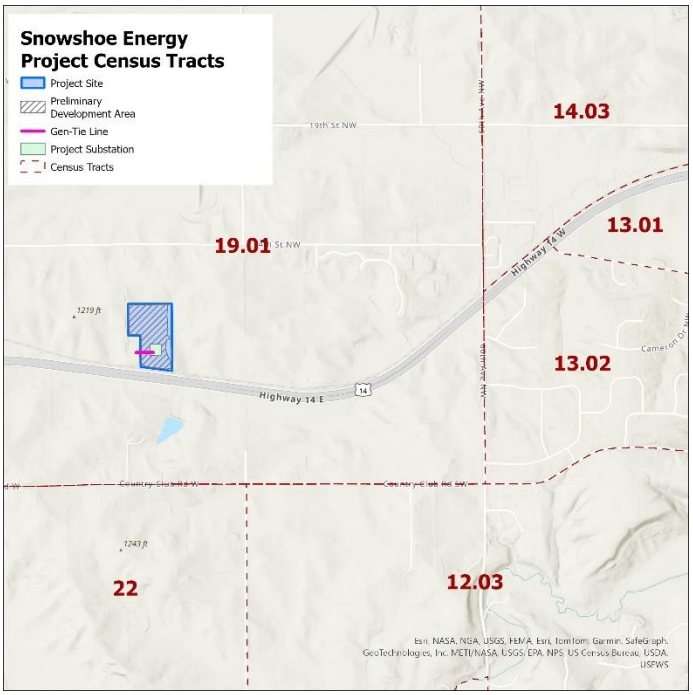
(2) 35 percent or more of households in the area have an income that is at or below 200 percent of the federal poverty level;

(3) 40 percent or more of the area's residents over the age of five have limited English proficiency; or

(4) the area is located within Indian country, as defined in United State Code, title 18, section 1151.

Environmental justice means 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. "[105] The purpose of considering impact to environmental justice communities is to ensure that all people benefit from equitable levels of environmental protection and have the same opportunities to participate in decisions that might affect their environment or health.

Figure 6. Census Tracts



Potential Impacts

Utility infrastructure can adversely impact low-income, minority or tribal populations. To identify potential environmental justice concerns in the project area, staff used the MPCA's environmental Justice Mapping Tool to identify environmental justice populations.[106]

Staff conducted a demographic assessment of the affected community to identify low-income and minority populations using U.S. Census data. Table 9 provides low-income and minority population data and Figure 6 shows the census tract used to compare the project area with Olmsted County. Low-income and minority populations

[105] MPCA, Environmental Justice Website, https://www.pca.state.mn.us/about-mpca/environmental-justice#:~:text=The%20MPCA%20is%20committed%20to,laws%2C%20regulations%2C%20and%20policies

[106] MPCA, Understanding Environmental Justice in Minnesota, https://experience.arcgis.com/experience/bff19459422443d0816b632be0c25228/page/Page/?views=EJ-areas

are determined to be present in an area when the low-income percentage or minority group percentage exceeds 50 percent or is "meaningfully greater" than in the general population. In this analysis, a difference of 10 percentage points or more was used as the threshold to distinguish whether a "meaningfully greater" low-income or minority population resides in the ROI.

Table 9 Low-Income and Minority Population Characteristics

Area	Population	% Below Poverty Level	Median Household Income ($)	% Minority Population‡
Region of Comparison				
Minnesota	5,706,494	9.3	85,086	22.5
Olmsted County	162,847	7.9	87,856	22.2
Project Census Tract				
19.01	3,925	1.7	135,329	8.3

Source: U.S. Census Bureau, 2023 American Community Survey1-year Estimate

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

MITIGATION

The project will not create disproportionate or adverse impacts to low income or minority populations because the low-income or minority residents of the project area not a meaningfully greater than the area of comparison. Mitigation is not proposed.

4.4 Human Health and Safety

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

4.4.1 Electronic and Magnetic Fields

The ROI for EMF is the site. Impacts to human health from possible exposure to EMFs are not anticipated.

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 10 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."[107]

Table 10. Electric and Magnetic Field Strength of Common Household Objects[108]

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

[107] 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

[108] Ibid.

** 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."[109]

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.[110] 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."[111] "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."[112]
>
> "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."[113]

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[109] 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

[110] National Cancer Institute. *Magnetic Field Exposure and Cancer*. (2022). http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/magnetic-fields-fact-sheet .

[111] National Institute of Environmental Health Sciences. *Electric and Magnetic Fields*, (2024). http://www.niehs.nih.gov/health/topics/agents/emf/index.cfm.

[112] World Health Organization. *Extremely Low Frequency Fields*. (2007). http://www.who.int/peh-emf/publications/Complet_DEC_2007.pdf?ua=1, page 10.

[113] State of Minnesota, State Interagency Working Group on EMF Issues (2002) *A White Paper on Electric and Magnetic Field (EMF) Policy and Mitigation Options*, https://apps.commerce.state.mn.us/eera/web/project-file?legacyPath=/opt/documents/EMF%20White%20Paper%20-%20MN%20Workgroup%20Sep%202002.pdf: page 1.

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.[114]

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.[115] Additionally, international organizations have adopted standards for exposure to electric and magnetic fields (Table 11)

Table 11. 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

[114] *Id*., page 36.

[115] 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.

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 buried electrical collection lines, the transformers installed at each inverter, and the project tap line between the project substation and the Maple Leaf substation. Because the batteries operate in DC, and DC electricity does not produce hertz, the batteries do not produce electric fields. The batteries do create a magnetic field that rapidly degrades with distance [116]

4.4.1.1 MITIGATION

No health impacts from EMF are anticipated. EMF diminishes with distance from a conductor or inverter. The nearest home is approximately 1,200 feet from site boundary. At this distance both electric and magnetic fields will dissipate to background levels. No additional mitigation is proposed.

4.4.2 Public Safety and Emergency Services

The ROI for public and work safety is the land control area. Like any construction project, there are risks for injuries 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. The main safety hazard of a BESS is battery failure leading to thermal runaway which has the potential to spread to nearby batteries and containers, quickly presenting an emergency. Emergency response to fires or thermal runaway events at BESS facilities require specialized response. Potential impacts from construction are anticipated to be minimal. Potential impacts during operation are anticipated to be moderate to significant. 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. In addition to the typical operational risks associated with an electric facility (falls, electrical accidents, etc..) battery storage facilities include a heightened risk of thermal runaway events and fires. During operation there are occupational risks similar to those associated with construction. Public risks would result from unauthorized entry into the facility.

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 Olmsted County Sheriff, and the police departments of Rochester. Fire service is provided by the Rochester Fire Department and the volunteer Byron Fire Department. Ambulance response is provided by the Mayo Ambulance. The nearest hospitals to the project (two campuses of the Mayo Clinic Hospital and the Olmsted Medical Center) are less than 10 miles from the site.

[116] SPA, pp. 52-53

POTENTIAL IMPACTS

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 falls, equipment use, or electrocution can create a demand for emergency, public health, or safety services that would not exist if the Project were not to be built. Although no road closures are anticipated during construction,[117] any temporary closures could impede police, fire, and other rescue vehicles access to the site of an emergency.

As with other industrial facilities, there is the potential for falls, fire or other industrial accidents once operational. The main safety hazard of a BESS is battery failure leading to thermal runaway which has the potential to spread to nearby batteries and containers, quickly presenting an emergency. The movement of electrons and lithium ions within the battery cell produces electricity as well as heat. Lithium-ion batteries are designed to allow heat to dissipate from the cell to maintain a controlled reaction. Thermal runaway is a phenomenon when a battery cell generates heat at a greater rate than the heat can dissipate from the cell, resulting in a cascading chemical reaction which produces additional heat. Thermal runaway events can result in extremely high temperatures, smoke, fire, and potentially ejection of gas, shrapnel, and particulates.[118] Although BESS are a relatively new technology, there is a growing body of research that informs industry standards minimize the potential for these types of incidents and mitigate potential safety concerns in the event of such incidents.

As discussed in Section 2.1.3, There are two major types of lithium ion battery technology used in BESS facilities. The chemistry of NMC batteries allows them to charge and discharge at higher rates (referred to as “energy density”) than LMC batteries. The ability to charge and discharge at high rates made them a popular choice in early BESS projects. However, compared to LFP batteries, the NMC batteries have a lower thermal runaway temperature, creating increased risks and requiring enhanced monitoring. In comparison, LFP batteries have a higher thermal runaway temperature, making them more stable and less prone to fire. As a result of the relative thermal stability compared to NMC technology as well as decreased costs as the LFP technology matured, the energy storage industry has recently pivoted to LFP technology.

Emergency response to fires or thermal runaway events at BESS facilities require specialized response. Fires at BESS facilities present unique challenges to firefighters. Unlike other utilities or industrial sites, BESS facilities do not have a single point of disconnect and, although separate parts of the system can be disconnected, the batteries will remain energized.[119] Because of the gases that accumulate within containers during a thermal runaway event or fire, first responders should not approach or enter the containers. Because of the difficulty in extinguishing fires, the risk that some

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[117] SPA, p. 75

[118] UL Research Institutes (2021). *What is Thermal Runaway*, https://ul.org/research/electrochemical-safety/getting-started-electrochemical-safety/what-thermal-runaway

[119] American Clean Power, *Energy Storage Emergency Response Plan Template*, https://cleanpower.org/wp-content/uploads/gateway/2022/11/ACP_Energy_Storage_Emergency_Response_Plan_Template.pdf , pp.14-17

batteries will remain energized, and the potential exposure to toxic gas, the industry recommends that first responders monitor the event and allow fires to burn themselves out as the energy is depleted from the batteries.

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. Crews will be trained and briefed on safety issues, reducing the risk of injury. The project will be fenced to prevent unauthorized access.

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

In addition to the use of the more stable LFP technology, Snowshoe's facility design uses modular containers that are tested by the manufacturer to ensure fire resistance. Modern BESS containers include explosion prevention systems to remove flammable gases during a thermal runaway event and relieve pressure to limit gas levels within the containers from reaching levels that can be flammable or explosive. The containers are spaced to minimize the potential for fire to spread to other containers. The BESS equipment is monitored remotely, tracking cell voltage and temperature to identify and isolate potential issues before they occur. The facility will also install fire detection systems at the containers to recognize incidents and disconnect and isolate failed equipment.

The National Fire Protection Association issued updated *NFPA 855 Standard for the Installation of Stationary Energy Storage Systems* in 2023. The standard includes requirement for fire detection and suppression, explosion control, exhaust ventilation, gas detection, and thermal runaway.[120]

NFPA standards require BESS facilities to prepare a hazard mitigation analysis (HMA) detailing the results of the equipment testing and the risks associated with the technology prior to installation of the BESS. Snowshoe indicates that HMAs are typically prepared during the financing phase of a project, while other sources indicate that HMAs are typically provided to jurisdictional unit for

[120] National Fire Protection Association, NFPA 85: Standard for the Installation of Stationary Energy Storage Systems, https://www.nfpa.org/product/nfpa-855-standard/p0855code#2023-edition-details The standard is available for purchase, the website highlights details of the updated edition.

approval of a BESS project. Snowshoe indicates that it will provide the HMA to the Commission when it is available.[121]

Public safety is addressed in several sections of the DSP (**Appendix C**):

- Section 4.3.27 requires the permittee to take several public safety measures, including landowner educational materials, appropriate signs and gates, etc.
- Section 5.4 is a special condition that requires the permittee to file a HMA detailing the testing results for the selected equipment and the risks associated with the technology at least 30 days prior to the pre-construction meeting.
- Section 8.11 of the DSP is a standard condition that requires permittees file an *Emergency Response Plan* with the Commission and local first responders prior to operation. As discussed above, the fire hazards associated with BESS facilities require additional training for first responders. Emergency response plans for BESS facilities require project-specific details on emergency response to incidents at the BESS. This includes BESS-specific training. The American Clean Power Association has developed an Emergency Response Plan template for BESS Facilities.[122]
- Section 8.12 requires 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 batteries.

4.5 Land-based Economies

BESS facilities can impact land-based economies by precluding or limiting land use for other purposes. Impacts to agriculture, tourism and recreation are discussed in this section. Impacts to forestry and mining are not anticipated, and those resources are discussed in **Section 4.10**

4.5.1 Agriculture

The ROI for agriculture is the site. Potential impacts to agricultural producers are anticipated to be minimal. A loss of approximately 28 acres farmland in Olmsted 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 93 percent of the area used for cultivated row crops (primarily corn and soybeans) and another two percent used for hay and pasture. The site is not irrigated.

In 2022, there were approximately 308,404 acres of farmland in Olmsted County, comprising approximately 74 percent of all land in the county. This represents an increase of approximately

[121] Appendix D, Response to Question 3

[122] American Clean Power Association, , Energy Storage Emergency Response Plan Template

eight percent in total agricultural acreage since 2017. By acreage, the largest crops are corn and soybeans. Dairy cows and cattle are the largest livestock category. [123]

Prime farmland is defined by Federal regulation at 7 C.F.R.657.5(a)(1) "is 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 site contains approximately 11.7 acres classified as prime farmland and 1.8 acres of soils classified as prime farmland when drained. There are approximately 13.7 acres of soils classified as "Farmland of Statewide Importance."[124]

Potential Impacts

The impact intensity level is expected to be minimal and very localized. The intensity of the impact is likely to be subjective. For example, conversion of farmland to energy uses can be viewed as a conversion from one type of industrial use to another. Conversely, the conversion of farmland to energy uses can be viewed as a negative impact to agricultural production.

The project will result in up to 28 acres of farmland being removed from agricultural production for the life of the project. Although this change in land use would take productive farmland out of production for the life of the project, the removal of 28 acres relative to 308,404 acres of farmland in the county is insignificant. The applicant indicates that the land could be returned to agricultural uses after the project is decommissioned and the site is restored.[125]

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 DSP (**Appendix C**) address agricultural mitigation and soil-related impacts:

- Section 4.3.9 requires protection and segregation of topsoil.
- Section 4.3.10 requires measures to minimize soil compaction.
- Section 4.3.11 requires the permittee to implement erosion prevention and sediment control practices recommended by the MPCA and to obtain a CSW Permit.
- Section 4.3.17 requires the permittee to develop an Invasive Species Management Plan to prevent introduction and spread of invasive species during construction of the project.

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[123] United States Department of Agriculture, 2022 Census of Agriculture, County Profile: Olmsted County, Minnesota, https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Minnesota/cp27109.pdf

[124] SPA, p. 91, Table 5.5-4

[125] SPA, Appendix D, Decommissioning Plan

- Section 4.3.18 requires the permittee to take reasonable precautions against the spread of noxious weeds.
- Section 4.3.26 requires the permittee to fairly restore or compensate landowners for damages to crops, fences, drain tile, etc. during construction.
- Section 5.5 requires the permittee to develop an AIMP with MDA. The plan should detail 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.
- Section 5.6 is a special condition that requires the permittee to develop a VMP that defines how the land control area will be revegetated and monitored over the life of the project. Appropriate seeding rates and timing of revegetation will stabilize soils and improve overall soil health. Snowshoe has included a draft VMP as Appendix C of its site permit application.

Reduced or lost farming revenues may be offset by lease agreements, which are outside the scope of this document.

4.5.2 Tourism and Recreation

The ROI for recreation is the local vicinity and the ROI for tourism is the project area. Because of site is not close to major recreational or tourism resources, potential impacts to recreational opportunities and tourism are anticipated to be negligeable.

In 2023 the leisure and hospitality industry in Olmsted County accounted for about $627.7 million in gross sales and employed an estimated 9,412 people.[126] Downtown Rochester, which includes the Mayo Medical Center and the Rochester Arts District, is the top destination point for visitors to southern Minnesota.[127] Additional tourism destinations in the Project Area are related to recreational activities including bird watching, fishing, hunting, boating, golfing, and snowmobiling.

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.

There are no wildlife management areas, Scientific and Natural Areas or state parks within one mile of the site. The closest Wildlife Management Area is the Moon Valley Wildlife Management Area, located approximately 4.4 miles northwest of the site. Although there are a number of parks in and

[126] Explore Minnesota (n.d.) *20232 Leisure & Hospitality Industry Data*, retrieved from: https://mn.gov/tourism-industry/assets/2023%20MN%20L%26H%20Data_tcm1135-665060.pdf

[127] Explore Minnesota, 2024. *Visitor Trends & County-Level Reports,* https://mn.gov/tourism-industry/assets/2023%20Minnesota%20Visitr%20Trends%20-%20Final_tcm1135-615178.pdf

near the cities of Byron and Rochester, the nearest park is approximately two miles from the site. The nearest recreational trail is the Tiger Bear Trail snowmobile trail one mile west of the site.[128]

Potential Impacts

Impacts to recreation are anticipated to be nominal and are the construction and operation of the project is not anticipated to impact recreation or tourism in the Project Area.

Mitigation

Because no impacts are anticipated, no mitigation is proposed.

4.6 Archeological, Cultural, and Historic Resources

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

Archeological resources are locations where objects or other evidence of archaeological interest exist, and can include aboriginal mounds and earthworks, ancient burial grounds, prehistoric ruins, or historical remains.[129] Historic resources are sites, buildings, structures, or other antiquities of state or national significance.[130]

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

Potential Impacts

Snowshoe reports contacting the eleven Minnesota Tribal Nations' Tribal Historic Preservation Officers and the Minnesota Indian Affairs Council for additional information or comment on the project.[131]

Snowshoe conducted a Phase Ia literature review to identify previously recorded archaeological and historic architectural resources within and near the Project. This Phase Ia review examined records from the Minnesota State Historic Preservation Office (SHPO) and Minnesota Office of the State Archeologist for an area within one mile of the site boundary.

The literature review did not identify any previously recorded archaeological resources or National Register of Historic Places properties within one mile of the site. The literature review did identify three historic or architectural resources within one mile, none of which have been evaluated for listing on the National Register for Historic Places. In addition to the literature review, Westwood

[128] SPA, p. 69

[129] Minnesota Statutes, Section. 138.31, subd. 14.

[130] Minnesota. Statutes, Section 138.51.

[131] SPA, pp. 111-112 and Appendix G

Professional Services conducted a Phase I Archaeological Reconnaissance Survey of the site in April 2024. No archaeological or cultural resources were identified during the investigations and Westwood recommended the project proceed as planned without further archaeological investigations.[132]

MITIGATION

Prudent siting to avoid impacts to archaeological and historic resources is the preferred mitigation. The DSP (**Appendix C**) contains several permit conditions intended to minimize impacts to archaeological and cultural resources:

- Section 4.3.20 is a standard permit condition that requires 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.
- Section 5.7 requires the permittee to prepare an Unanticipated Discoveries Plan outlining steps to be taken if previously unrecorded cultural resources or human remains are encountered during construction.
- Section 5.8requires the permittee to file correspondence from SHPO to ensure that SHPO recommendations on mitigation measures, including surveys, are in the record.

4.7 Natural Resources

The facility's impacts on natural resources are dependent upon many factors, such as how the project is designed, constructed, maintained, and decommissioned. Other factors, for example, the environmental setting, influence potential impacts. Impacts can and do vary significantly both within, and across, projects.

4.7.1 Air Quality

The ROI for air quality is the region. Potential impacts to air quality during construction would be intermittent, localized, short-term, and minimal. Impacts are associated with fugitive dust and exhaust. Impacts can be mitigated. Once operational, the BESS facility 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.

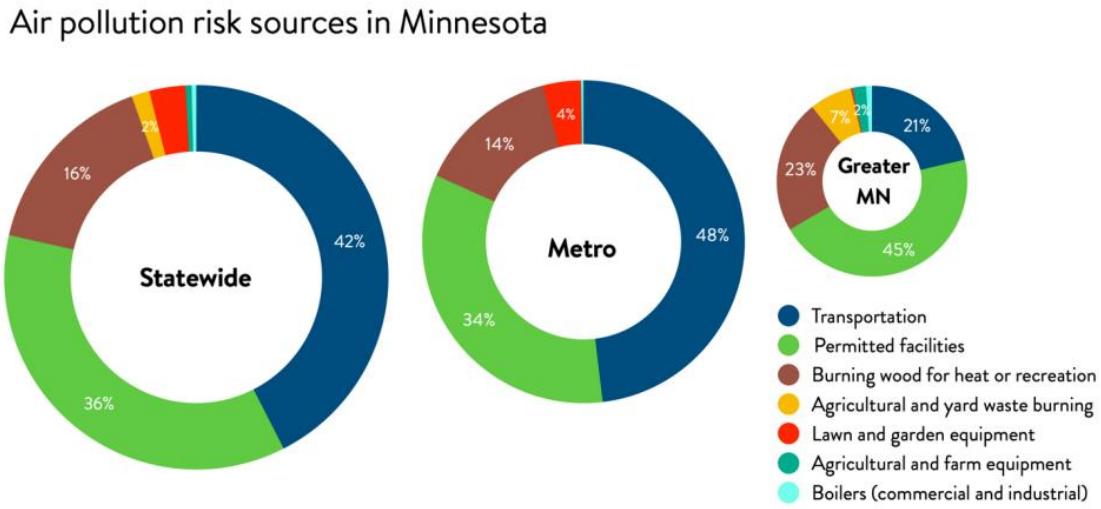
Air quality is a measure of how pollution-free the ambient air is and how healthy it is for humans, other animals, and plants. Emissions of air pollutants will occur during construction and operation of new infrastructure for the project. Overall air quality in Minnesota has improved over the last 20 years, but current levels of air pollution still contribute to health impacts. As illustrated in **Figure 7**,

[132] SPA, pp. 75 – 77 and Appendix F

today, most of our air pollution that can lead to health effects are transportation, permitted facilities, and wood burning for heat or recreation. Transportation has a much greater contribution to air pollution in the metro area than in greater Minnesota [133]

The nearest air quality monitor to the project is in Rochester, Minnesota, approximately 9.5 mile southeast of the facility. Between 2013 and 2023, air quality in the area has been considered "good" between 190 and 293 days of the year and moderate between 70 and 160 days. During this interval air quality was considered unhealthy for sensitive groups for one or two days in six years, with a notable increase in 2023, when air quality was considered unhealthy for sensitive groups on 14 days and unhealthy on one day. [134] The increase in the number of days of moderate or worse air quality in 2021 and 2023 was statewide and largely attributable to drought conditions and wildfire smoke in the upper Midwest. [135]

Figure 7. Air Pollution Sources by Type[136]



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

[133] MPCA 2025. *The Air We Breathe: The State of Minnesota's Air Quality, January 2025 Report to the Legislature,* https://www.pca.state.mn.us/sites/default/files/lraq-1sy25.pdf

[134] MPCA. *Annual AQI Days by Reporting Region*, https://data.pca.state.mn.us/views/Minnesotaairqualityindex/AQIExternal?%3Aembed=y&%3AisGuestRedirectFromVizportal=y (accessed March 12, 2025)

[135] MPCA. 2025. *The Air We Breathe: The State of Minnesota's Air Quality, January 2025 Report to the Legislature,* https://www.pca.state.mn.us/sites/default/files/lraq-1sy25.pdf pp. 12-13

[136] The State of Minnesota's Air Quality, January 2025 Report to the Legislature, https://www.pca.state.mn.us/sites/default/files/lraq-1sy25.pdf

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.

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.

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 permanent vegetative cover.

MITIGATION

Exhaust emissions can be minimized by keeping vehicles and equipment in good working order, and not running equipment unless necessary.

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

Several sections of the draft site permit indirectly mitigate impacts to air quality, including sections related to soils, vegetation removal, restoration, and pollution and hazardous wastes.

4.7.2 Geology and Groundwater

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

Groundwater in Minnesota is largely a function of local geologic conditions that determine the type and properties of aquifers. Minnesota is divided into six groundwater provinces based on bedrock and glacial geology. The project site is within Province 3, the Karst province, which can be characterized as having thin glacial sediments overlying thick and extensive bedrock prone to karst features such as sinkholes, and caves. In this province, groundwater is typically derived from bedrock aquifers below the glacial sediment cover. Groundwater is generally readily available, but

water quality is susceptible to pollution from surface activity because fractures and sinkholes can form passageways that funnel water and contaminants quickly from the surface to groundwater.[137]

The site is underlain by the Cambrian-Ordovician aquifer system which Is recharged as water from the surficial aquifer system moves downward. The depth to the water table within the site ranges from zero to 50 feet, with an average depth of 20 to 30 feet.[138] Depth to groundwater is shallower in the mapped hydric soils in the northeastern portion of the site and deeper in the non-hydric soil units comprising the majority of the site.

The MDH maintains the Minnesota Well Index, which provides basic information (e.g., location, depth, geology, construction, and static water level) for wells and borings drilled in Minnesota.[139] The index did not identify any wells within the site. The 64 wells within the project area are predominantly monitoring wells (24 active, 18 sealed) and domestic wells (17 active, one sealed) with single instances of commercial, multiple dwelling, "other" and "unknown" wells. According to data from the Minnesota Well Index, the wells in the project area vary in depth from seven to 424 feet [140]

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. Public and non-public community water supply source-water protection in Minnesota is administered by the MDH. A wellhead protection area (WHPA) encompasses the area around a drinking water well where contaminants could enter and pollute the well. The site is located outside of any WHPA. The closest WHPA is the Rochester Central WHPA located 1.5 miles east of the site. The Byron WHPA and the Rochester Northwest WHPAs are respectively located two miles west and 2.4 miles northeast of the site.[141]

A Drinking Water Supply Management Areas (DWSMA) is a clearly defined geographic area around a WHPA outlined by clear boundaries like roads. The DWSMA is managed by a wellhead protection plan, typically by the city. The MDH assigned vulnerability ratings to each DWSMA based on factors including geologic sensitivity, well construction, maintenance and use. The Byron DWSMA is classified as low vulnerability, while the Rochester Central DWSMA has a mixture of vulnerability

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[137] DNR, Minnesota Groundwater Provinces (2021) https://www.dnr.state.mn.us/waters/groundwater_section/mapping/provinces.html

[138] SPA, pp. 85-86

[139] MDH (2024.) *Minnesota Well Index* https://www.health.state.mn.us/communities/environment/water/mwi/index.html .

[140] SPA, pp 87-88.

[141] MDH. 2024. Source Water Protection Web Map Viewer, https://www.health.state.mn.us/communities/environment/water/swp/mapviewer.html , map viewer available at https://mdh.maps.arcgis.com/apps/View/index.html?appid=8b0db73d3c95452fb45231900e977be4))

classifications ranging from low to high. The areas of the Rochester Central DWSMA nearest the site are classified as low to moderate vulnerability.[142]

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 thickness of surficial materials (76 to 150 feet) and the absence of karst features.[143]

Direct impacts to groundwater are anticipated to be limited to a single well for domestic use. Other direct impacts to groundwater associated with construction, for example, structure foundations that could penetrate shallow water tables or groundwater usage are not anticipated.[144]

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. Once constructed the impervious surface area will be approximately eight acres including the access road, the fenced area, and an additional five-foot graveled area along the perimeter of the fence line.

Geotechnical and pull testing studies will be performed to determine the topsoil and subsoil types, and the mechanical properties of the soils. These variables will be used to engineer the foundations for the BESS containers, substation, and transformers. The BESS foundations will be approximately one to three feet below ground surface depending upon soil conditions.[145]

The electrical collection system is anticipated to be installed below-ground at a depth of approximately 42 inches

Mitigation

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

Geotechnical soil testing will determine final installation process for the foundation structures. Similarly, the perimeter fence may require concrete foundations in some locations.

Because the project will disturb more than one acre, Snowshoe must obtain a CSW Permit from the PCA. The CSW Permit will identify BMPs for erosion prevention and sediment control. As part of the

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[142] Ibid.

[143] SPA, p. 84

[144] SPA, p. 90

[145] SPA, p 90

CSW Permit, Snowshoe will also develop a SWPPP that describes construction activity, temporary and permanent erosion and sediment controls, BMPs, permanent stormwater management that will be implemented during construction and through the life of the project. Implementation of the protocols outlined in the SWPPP will minimize the potential for soil erosion and detail stormwater management methods during construction and operation of the facility.

Snowshoe will install secondary containment for the Project substation's main power transformer to contain any potential spills or leaks of transformer oil or other fluids and prevent impacting the groundwater. The SWPPP prepared for the project will include the design for the secondary containment for the main power transformer and for any oil filled operational equipment, such as the inverter/transformer units at the BESS containers. Depending upon final design and the size of any storage tanks, a SPCCP may be required by the United State Environmental Protection Agency for construction and possibly the operation phase of the facility.[146]

Section 4.3.11 of DSP (**Appendix C**) requires the permittee to obtain a MPCA CSW Permit and implement the BMPs for erosion prevention and sediment control. Impacts to groundwater can also be minimized by mitigating impacts to and soils and surface waters as discussed in Sections 4.7.3 and 4.7.4.

Any new wells require notification to MDH and would be constructed by a well borer licensed by MDH. If any previously unmapped wells are discovered, Snowshoe will cap and abandon the well in place in accordance with MDH requirements.

Disturbance to groundwater flow from construction activities are not anticipated. Any dewatering required during construction will be discharged to the surrounding upland vegetation, thereby allowing it to infiltrate back into the ground to minimize potential impacts. If dewatering of more than 10,000 gallons per day or 1,000,000 gallons per year, a Water Appropriations Permit from DNR is required.[147]

4.7.3 Soils

The ROI for the soils is the land control area. Impacts to soils will occur during construction and decommissioning of the project. The impact intensity level is expected to be minimal. Potential negative impacts will occur over both the short- and long-term. Isolated moderate to significant negative impacts associated with high rainfall events could occur.

The soils of Olmsted County are primarily deep dark colored soils formed in silty glacial lacustrine sediments and loamy glacial till.[148]

The soils deposited in the area (Table 12) are typically silt loam soils, with an area of silty clay hydric soils in the northeastern portion of the site. Approximately half of the site (13.7 acres) is classified as

[146] SPA, p. 51

[147] SPA, p. 90

[148] SPA, p. 91, Appendix 6

farmland of statewide importance. Soils at the remainder of the site are classified as prime farmland (11.5 acres) and another prime farmland if drained (1.8) acres.

Table 12. Soil Types in Facility Land Control Area[149]

Map Unit Symbol	Map Unit Name	Farmland Classification	Drainage Class	Hydric Rating	Acres
N536C2	Tama silt loam, driftless 6 – 12% slope	Statewide importance	Well drained	Non-hydric	11.8
N501B2	Downs Silt loam 2 – 6% slopes, moderately eroded	All areas prime farmland	Well drained	Non-hydric	5.0
203	Joy silt loam,1%–4%slopes	Prime farmland	Somewhat poorly drained	Predominanly non-hydric	3.3
N518B	Lindstrom silt loam,2%–6%slopes	Prime farmland	Well drained	Non-hydric	3.3
322C2	Timula silt loam,6%–12%slopes, moderately eroded	Statewide importance	Well drained	Non-hydric	1.9
176	Garwin silty clay loam	Prime farmland if drained	Poorly drained	Hydric	1.8
19	Chaseburg silt loam, moderately well drained, 0%–2%slopes	Prime Farmland	Moderately well-drained	Non-hydric	0.2
	Facility Total				27.2

Potential Impacts

The impact intensity level is expected to be low to moderate. Primary impacts to soils include compaction from construction equipment, soil profile mixing during grading and pole auguring, rutting from tire traffic, and soil erosion. Impacts to soils are likely to be greatest with the below-ground electrical collection system. Potentials impacts will be positive and negative, and short- and long-term. Isolated moderate to significant negative impacts associated with high rainfall events could occur.

Construction of the facility will disturb approximately 28 acres within the land control area. As with any ground disturbance, there is potential for soil compaction and erosion. Heavy rainfall events during construction or prior to establishment of permanent vegetation, increase the risk that significant sedimentation and erosion could occur.

[149] Appendix D, Response to Question 10

Soil cover and management at the facility will change from cultivated cropland to a mixture of impervious and pervious surfaces. The access road and the area within and surrounding the fenced area (approximately eight acres in total) will be covered with crushed rock, while the remainder of the site will be a mixture of native groundcover plantings and an area that may revert back to agricultural use. Soil health will likely improve for the portion of the site that is revegetated with native perennial vegetation for the operating life of the project.

MITIGATION

Several sections of the DSP (**Appendix C**) address soil-related impacts

- Section 4.3.9 requires protection and segregation of topsoil.
- Section 4.3.11 requires the permittee to obtain a MPCA CSW Permit and implement the BMPs within for erosion prevention and sediment control.
- Section 5.5 requires the permittee to develop an AIMP with MDA. The plan should detail 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.
- Section 5.6 requires the permittee to develop a VMP that defines how the land control area will be revegetated and monitored over the life of the project. Appropriate seeding rates and timing of revegetation will stabilize soils and improve overall soil health. Snowshoe has included a draft VMP as Appendix C of its site permit application.

4.7.4 Surface Water and Floodplains

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

Large electric power facilities have the potential to impact surface water resources and floodplains. These projects could directly impact water resources and floodplains if these features cannot be avoided through project design. These projects may also indirectly impact surface waters and floodplains 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 in the Zumbro River Watershed Basin.[150] There are no lakes, rivers, or other watercourses that cross the project site. The nearest PWI river is Cascade Creek, located approximately 0.6 miles northeast at its nearest point.[151]

[150] Minnesota DNR, Minnesota's watershed basins. https://www.dnr.state.mn.us/watersheds/map.html

[151] SPA, p. 86

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. The DNR also oversees the national flood insurance program for the state of Minnesota. Floodplains are also regulated at the local level. There are no mapped floodplains within the site; the nearest mapped 100-year floodplain is along Cascade Creek, located approximately 1.6 mile southeast of the site.[152]

Under Section 303(d) of the Clean Water Act, states are required to assess all waters of the state to determine if they meet water quality standards, list waters that do not meet standards and update the list biannually and conduct total maximum daily load studies to set pollutant-reduction goals needed to restore waters to the extent that they meet water quality standards for designated uses. The list, known as the 303(d) list, is based on violations of water quality standards. The MPCA has jurisdiction over determining 303(d) waters in the State of Minnesota. There are no waters listed by the MPCA as impaired waters within one mile of the project. The nearest impaired water to the site is Cascade Creek, listed as impaired for fish bioassessment and turbidity, is approximately 1.6 miles southeast of the site.[153]

Potential Impacts

The project is designed to avoid direct impacts to surface waters by avoiding siting away from surface waters.

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

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. Preliminary design for the project also anticipates two stormwater basins to control runoff from the project.[154]

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[152] SPA, Figure 9

[153] SPA, pp. 93-94

[154] SPA, p. 82, 94

Section 4.3.11 of the DSP (**Appendix C**) requires the permittee to "implement erosion prevention and sediment control practices recommended by the MPCA" and to obtain a CSW Permit. This section also requires the permittee to implement erosion and sediment control measures, grade contours to provide for proper drainage, and restore all disturbed areas to pre-construction conditions. Snowshoe will also develop a SWPPP that complies with MPCA rules and guidelines. The SWPPP describes construction activity, temporary and permanent erosion and sediment controls, BMPs, permanent stormwater management that will be implemented during construction and through the life of the project. Implementation of the protocols outlined in the SWPPP will minimize the potential for soil erosion during construction.

4.7.5 Wetlands

The ROI for wetlands is the site. There are no wetlands with the site, so no direct impacts to wetlands are anticipated from the project. With proper construction management practices, indirect impacts to offsite wetlands can be avoided.

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 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 site using desktop reviews of public data available resource. Following review of these resources, the applicant's consultant completed a field delineation at the site in April 2024., evaluating potential wetland areas for the presence of hydric soils, wetland hydrology, and hydrophytic vegetation. The review of soils did identify an area of predominantly hydric soils in the northeastern portion of the site. The National Wetland Inventory data did not identify any wetland features withing the site and NDH did not identify flowlines or waterbodies within the site. The field delineation determined there were no wetlands or waterways within the site. [156]

POTENTIAL IMPACTS

[155] USEPA. 2022. *What is a Wetland* https://www.epa.gov/wetlands/what-wetland

[156] SPA,p. 93 and Appendix I

Because there are no wetlands within the site, construction and operation of the facility will not create direct impacts to wetlands. There may be potential for temporary, short-term impacts to wetlands outside the site if there is erosion resulting from construction.

MITIGATION

The project has been sited to avoid wetlands delineated to date.

BMPs identified in the SWWP will minimize potential for sediment to reach offsite wetlands during construction.

Section 4.3.13 of the DSP (**Appendix C**) generally prohibits placement of the BESS 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 United States Army Corps of Engineers, and local units of government as implementers of the WCA.

4.7.6 Vegetation

The ROI for vegetation is the site. The facility will convert row crop farmland to a mixture of impermeable surface and perennial vegetation for the life of the project. Potential impacts of the facility can be mitigated through development of a VMP.

The project is in the Rochester Plateau (222 Lf) subsection of the Eastern Broadleaf Forest Province. Prior to European settlement vegetation in the project area was primarily tallgrass prairie and bur oak savanna. Most of this subsection is heavily farmed, although some small areas of oak openings and barrens are still present.[157] Current land-use in the project area is predominately agricultural. The site is dominated by cultivated crops (25.4 acres or 93 percent), with smaller areas of grassland (1.4 acres, five percent) and pasture or hay (0.4 acres, two percent).[158]

POTENTIAL IMPACTS

Construction of the facility will eliminate vegetative cover and create impermeable surfaces the access road and the developed area of the facility. Snowshoe estimates that approximately 23 acres (including both facility components and a re-vegetated area outside the fence line) will be converted from cropland for the life of the facility. 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.

Following construction, Snowshoe plans to establish native vegetation over the remainder of the site outside the fenced area using native prairie seed mixes that include both native grasses and

[157] DNR (n.d.) Rochester Plateau Subsection, https://www.dnr.state.mn.us/ecs/222Lf/index.html

[158] National Land Cover Database

wildflowers will be used at the facility. Once established, vegetation would be maintained using best practice guidance for establishing and maintaining the re-vegetated areas.[159]

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

MITIGATION

Several sections of the DSP (**Appendix C**) address impacts to vegetation:

- Section 4.3.15 requires the permittee to minimize the number of trees removed.
- Section 4.3.17 requires the permittee to employ BMPs to avoid potential introduction and spread of invasive species and to file an Invasive Species Management Plan prior to construction.
- Section 4.3.18 requires the permittee to take all reasonable precautions to prevent the spread of noxious weeds during construction.
- Section 5.5 is a special condition that requires the permittee to prepare an AIMP that details methods to minimize soil compaction, preserve topsoil, and establish and maintain appropriate vegetation to ensure the project is designed, constructed, operated and ultimately restored in a manner that would preserve soils to allow for the land to be returned to agricultural use.
- Section 5.6 is a special condition that requires the permittee to develop a VMP that defines how the land control area will be revegetated and monitored over the life of the project. Appropriate seeding rates and timing of revegetation will stabilize soils and improve overall soil health. Snowshoe has included a draft VMP as Appendix C of its site permit application.

4.7.7 Wildlife and Habitat

The ROI for non-avian wildlife and their habitats is the land control area, the ROI for birds is the local vicinity. 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. While most of the site will be covered by crushed rock, a portion of 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. 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 and developed areas (roads, railroads, homes, and farmsteads). Other landscape types and vegetation communities in the project area provide more varied habitats (e.g., woodlots and small grassland pockets) for wildlife.

[159] SPA, Appendix C (Draft Vegetation Management Plan)

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, amphibians, and insects are present. These species include white-tailed deer, red fox, striped skunk, raccoon, coyote, American toad, garter snake, and a variety of insects including native bees, butterflies, and moths.

Avian species common to the site include red-tailed Hawk, wild turkey, American crow, eastern bluebird, mourning dove, ring-necked pheasant. Common waterfowl like Canada geese and mallards may use the site for short-term foraging after harvest.

The Project is located within the Mississippi Flyway, which is a major north-south migration route and within Eastern Tallgrass Prairie Bird Conservation Region. Field investigations in April 2024 identified minimal nesting habitat within the site, consistent with the sites current use as a cultivated field. There are forested/shrub areas and small woodlands along the DME railroad along the southern border of the site. There are no waterfowl feeding and resting areas within one mile of the site, and the nearest Important Bird Areas (IBA) designated by the National Audubon Society is the Blufflands-Root River Important Bird Area, over 10 miles southeast of the site.[160]

POTENTIAL IMPACTS

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

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

The project's fencing does create the potential for wildlife impacts. 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.[161] Predators can use fences to corner and kill prey species.[162] Because of the project's relatively small footprint the overall impact is anticipated to be minimal.

Plastic erosion control netting is frequently used for erosion control during construction and landscape projects and can negatively impact wildlife populations. Wildlife entanglement and death

[160] SPA, pp. 98-101; Appendix J

[161] Colorado Division of Wildlife. *Fencing with Wildlife in Mind.* (2009). https://cpw.state.co.us/Documents/LandWater/PrivateLandPrograms/FencingWithWildlifeInMind.pdf, p.. 3.

[162] Marcel Huijser, et al. *Construction Guidelines for Wildlife Fencing and Associated Escape and Lateral Access Control Measures.* (April 2015). http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP25-25%2884%29_FR.pdf, page 27.

from plastic netting and other plastic materials has been documented in birds, fish, mammals, and reptiles.[163]

Snowshoe plans to re-vegetate a portion of the site outside of the fenced area with grassland species. Revegetating a portion of the site with pollinator friendly species and reduced pesticide use in these areas will benefit smaller wildlife such as rodents, birds, insects, and reptiles

Birds: Bird injuries or mortality may occur due to lack of fencing visibility. Local avian species, such as grouse, pheasants, and some raptors may be vulnerable to fence collisions.

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

Wildlife habitat in the area is currently highly fragmented. The row crop habitat at the site is not crucial to wildlife populations, although the land control area may be used as a travel corridor or, occasionally, as a food source (for example, standing corn). Following construction and restoration, a portion of the site will provide native grassland habitat for the life of the project. This change might be attractive to some species, and not others. Overall, the project does not contribute to significant habitat loss or degradation or create new habitat edge effects.

MITIGATION

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

- Section 5.9 is a special condition that requires the permittee to coordinate with the DNR to ensure that the fence used in the project minimizes impacts to wildlife
- Section 5.10 is a special condition that requires use of wildlife-friendly erosion control.
- Section 8.13 requires permittees to report “any wildlife injuries and fatalities” to the Commission on a quarterly basis.

Other potential mitigation measures include:

- 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 will improve the potential for ground nesting habitat.

4.7.8 Rare and Unique Resources

The ROI for rare and unique resources is the local vicinity. The impact intensity level is anticipated to be minimal, as the project avoids identified areas of species occurrence and preferred habitat. No additional mitigation measures are proposed Impacts can be mitigated.

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

Construction and operation of large energy facilities may adversely impact rare and unique resources through the taking or displacement of individual plants or animals, invasive species introduction, and habitat loss. Conversely, for some types of projects, 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), "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."[164] 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 provides a useful source of information, but not the sole source for identifying these resources, as some areas have not been extensively surveyed.

The USFWS provides information for use in National Environmental Policy Act 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.

POTENTIAL IMPACTS

Natural Communities

Minnesota Biological Survey (MBS) systematically collects, interprets, and provides baseline data on the distribution and ecology of rare plants, rare animals and native plant communities.[165] No MBS sites or native plant communities were identified within or adjacent to the site. The Native Prairie Assessment prepared for the project did identify one Railroad ROW prairie adjacent to the southern portion of the site.[166]

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[164] Department of Natural Resources (n.d.) *Natural Heritage Information System*, http://www.dnr.state.mn.us/nhnrp/nhis.html

[165] DNR. *Minnesota County Biological Surveys*, http://www.dnr.state.mn.us/eco/mcbs/index.html

[166] SPA, p. 103 and Appendix K

Rare Species

Northern Long Eared Bat (*Myotis septentrionalis)*

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. The preferred mitigation strategy to avoid impacts to the NLEB is avoidance of tree-clearing to the extent possible. When tree clearing is necessary, it should be done outside the pup rearing season from June 1 to July 31 and outside the active NLEB season from April 1 to October 31. The project will not require tree clearing and have no effect on the NLEB.[167]

Tri-colored bat (*Perimyotis subflavus)*

The tri-colored bat, 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 in the southeastern part of the state.[168] The species may roost in trees within the site during their active season (April – September). There are no known tri-colored bat maternity roost trees or hibernaculum in Olmsted County, but the species may still occur within or near the project area.[169] The project will not require tree clearing and will have no effect on the tri-colored bat.[170]

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.[171] The project will have no effect on the monarch butterfly.[172]

Whooping Crane (*Grus americana*)

Whooping cranes is designated as a non-essential experimental population in Wisconsin and consultation is not necessary for individual that occur outside a National Wildlife Refuge or a National Park. The project will have no effect on the whooping crane.[173]

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[167] SPA, Appendix J

[168] DNR, Rare Species Guide, Tricolored bat https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=AMACC03020

[169] SPA, p. 102,

[170] SPA, Appendix J

[171] DNR, Monarch Butterfly, n.d., https://www.dnr.state.mn.us/insects/monarchbutterfly.html

[172] SPA, Appendix J

[173] SPA, Appendix J

Prairie Bush Clover (*Lespedeza leptostachya)*

Prairie bush clover is a federally and state listed threatened species endemic to tall grass prairies of the upper Mississippi River Valley. Remaining occurrences of the species are generally restricted to remnant prairies. The primary threat to the species is habitat loss, land conversion, and encroachment of non-native and invasive species.[174] There are no records of prairie bush clover or the required habitat within the project area and the probability of species occurrence within the project area is low due to the heavy agricultural use. There are no critical habitats for the prairie bush clover in the site. The project will have no effect on the prairie bush clover.[175]

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, within metropolitan areas.[176].

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 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. Although there is a forested area along the southern boundary of the site, buffering the railroad and US Highway 14, the location and the trees comprising the windbreak are not suitable nesting habitat for bald eagles. There may be some grading near the windbreak, but preliminary construction plans do not anticipate tree removal. Mitigation measure may include setbacks from nests, timing restriction for construction activities, and possibly seeking a USFWS permit for removal of a nest. The project will not remove any trees or nests, impacts to the bald eagle are not anticipated.

Rattlesnake master (*Eryngium yuccifolium*)

Rattlesnake master, a state-listed species of special concern, is a tall prairie-obligate plant occurring primarily in mesic prairies and remnant prairie habitat. The native prairie assessment prepared for the project did not identify native prairie or areas with high potential for native prairie within the site. No impacts are anticipated.[177]

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. No additional mitigation measures are proposed.

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[174] DNR, Prairie Bush Clover, n.d. https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDFAB27090

[175] SPA, Appendix J

[176] DNR, *Bald Eagles in Summer*. https://www.dnr.state.mn.us/birds/eagles/summer.html

[177] SPA, p. 106 and Appendix K

4.7.9 Climate Change

The project has the potential 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. 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.

4.7.9.1 Potential Impacts

Construction activities will result in short-term increases in GHG emissions from the combustion of fossil fuels in construction equipment and vehicles.

Total GHG emissions for project construction are estimated to be approximately 776 tons of carbon dioxide (CO_2).[178] The project's construction emissions are an insignificant amount relative to Minnesota's overall emissions of approximately 126 million tons in 2022.[179]. Potential impacts due to construction GHG emissions are anticipated to be negligible.

Once operational, the project will generate minimal GHG emissions. Emissions that do occur would result from vehicle usage to and from the facility for maintenance and operation. GHG emissions for project operation are estimated to be approximately 5.6 tons of CO_2 annually.[180]

To the extent that the storage provided by the project reduces curtailment of generation from renewable resources such as wind and solar, it could reduce the use carbon-fueled power plants (e.g., coal, natural gas) that might step in to meet demand and reduce GHG from those sources.

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. 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.

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[178] SPA, Appendix H.

[179] MPCA, n.d., Minnesota Greenhouse Gas Inventory, https://data.pca.state.mn.us/views/Greenhousegasemissionsdata/TotalGHGemissionsgoals?%3Aembed=y&%3AisGuestRedirectFromVizportal=y (accessed March 28, 2025)

[180] SPA, Appendix H

The FEMA National Risk Index[181] rates Olmsted County as having "relatively low" hazard risk overall, with higher risk for losses due to winter weather and tornados. Snowshoe indicates that although there is not a flooding risk modeled for the site, flood factor modeling shows a minimal flood hazard for the adjacent Maple Leaf Substation.[182]

When widely deployed, BESS systems can enable greater integration of renewable energy and maintain grid stability and provide backup power during extreme weather events.

MITIGATION

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

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

- Avoiding sites with high probability for extreme weather events to the extent possible.
- Designing facility components to withstand snow loads as well as stronger storms and winds.
- 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.

Snowshoe states it will select enclosures and design foundations to withstand the current and anticipated temperature fluctuations install a temperature modulation system such as liquid and/or air cooling or natural convection in the enclosures to regulate heat and optimize battery performance.

The BESS enclosures selected for the project are designed to withstand wind, flood, blizzard, and hail events. Final design will include a safety factor for snow and wind loads for components and equipment pads. Unlike wind turbines or solar panels mounted on tracking systems, BESS enclosures are stationary and do not need to be stowed during high winds or hail.

The preliminary site plan includes two stormwater drainage basins to reduce stormwater runoff from the site. Final site design will ensure the site will meet state and county requirement for reducing runoff and treating stormwater. Final site design may employ swales and berms to prevent flooding and route water to stormwater basins.

4.8 Unavoidable Impacts

[181] FEMA National Risk Index. https://hazards.fema.gov/nri/

[182] SPA, p. 81

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

Potential impacts and the possible ways to mitigate against them were discussed earlier 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.
- 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.

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

- Visual impacts of the project.
- Noise disturbance to nearby residents.
- 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 and mammals from fencing.

4.9 Irretrievable or Irreversible Impacts

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

Irreversible and irretrievable resource commitments are primarily related to project construction, including the use of water, aggregate, hydrocarbons, steel, concrete, wood, and other consumable resources. Some, like fossil fuel use, are irretrievable. Others, like water use, are irreversible. Still others might be recyclable in part, for example, the raw materials used to construct batteries and enclosures would be an irretrievable commitment of resources, excluding those materials that may

be recycled at the end of useful life. The commitment of labor and fiscal resources to develop, construct, and operate the project is considered irretrievable.

4.10 Resource Topics Receiving Abbreviated Analysis

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

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

4.10.1 Displacement

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

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

4.10.2 Communications

Electronic interference from the proposed project is not anticipated. The project area is served by several AM and FM radio stations and digital television channels. There are no radio, microwave, or television towers are located within the site. Landline telephone service to the project area is provided by Citizens Communications Company, Frontier Communications and Qwest Corporation. Mobile service Cellular phone service in the service area is provided by national carriers.

Global Positioning System (GPS) Electronic interference associated with communications infrastructure is related to a phenomenon known as corona. Impacts are not expected, because anticipated electric fields are below levels expected to produce significant levels of corona.

Because the BESS facilities are relatively low (less than 20 feet), they are well below the line of site used in many communication system signals. Electronic interference associated with communications infrastructure and devices including agricultural navigation systems is related to a phenomenon known as corona. Impacts are not expected, because anticipated electric fields are below levels expected to produce significant levels of corona.

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

4.10.3 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 and no mitigation is proposed.

4.10.4 Mining

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.

There are no quarries or gravel pits within or adjacent to the site.[183] Through sale of lease of the land used for the facility, the current landowners choose energy production as the higher and greater economic use. Impacts to mining will not occur and no mitigation is proposed.

4.11 Cumulative Potential Effects

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

Minnesota Rule 4410.0200, subpart 11a, defines "cumulative potential effects," in part, as the "effect on the environment that results from the incremental effects of a project in addition to other projects in the environmentally relevant area that might reasonably be expected to affect the same environmental resources, including future projects ... regardless of what person undertakes the other projects or what jurisdictions have authority over the project."

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

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

4.11.1 Analysis Background

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

Cumulative potential effects are impacts to the environment that results from "the incremental effects of a project in addition to other projects in the environmentally relevant area that might

[183] MDO, Aggregate Source Information System Map, 2023, https://www.dot.state.mn.us/materials/asis_GE.html (accessed March 6, 2025)

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."[184]

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.

Commerce staff contacted local governments, MnDOT, the Environmental Quality Board's interactive project database, and Olmsted County to identify foreseeable projects. Reasonably foreseeable projects are identified in Table 13.

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.

Table 13. Current and Reasonably Foreseeable Future Projects

Project	Location	Anticipated Timeframe	Description
Byron Solar Project	Mantorville and Canisteo townships in Dodge County and Kalmar Township, Olmsted County (transmission line only)	2027	A 200 MW solar facility located on approximately 1,800 acres, and interconnecting at the Byron Substation through approximately three miles of 345 kV transmission line The Commission issued site and route permits in 2023. The project does not yet have an offtaker. .
Crane and Sandhill Battery Energy Storage Projects	Kalmar Township, Olmsted County	2027	Two independent BESS facilities, each with a capacity of up to 200 MW AC and a storage capacity of up to 800 MWh. The facilities are on adjacent parcels in Kalmar township, the combined sites are approximately 80 acres. The applicant submitted a site permit application to the Commission in March 2025.

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,

[184] Minn. R. 4410.0200, subp. 11a

actions that have occurred in the past and their associated impacts are considered part of the existing environmental and were analyzed in this section.

4.11.2 Human Settlement

Cumulative potential effects on human settlements are anticipated to be moderate. Some projects would have positive effects on human settlements by improving transportation and safety. Future energy projects will result in aesthetic impacts.

The increase in renewable energy projects and energy storage projects in the area may increase tension in the project area between renewable energy and rural character.

4.11.3 Public Health and Safety

Cumulative potential effects on public health and safety are anticipated to be minimal to moderate. Impacts on public health and safety as a result of the Snowshoe BESS are anticipated to be moderate to significant (Section 4.4.2). The addition of battery storage facilities introduces potential public safety hazards from thermal runaway events. Response to thermal runaway events and fires at BESS facilities requires specialized training. Employing best practices in facility design and operation, including identifying hazards and developing training for emergency responders can mitigate potential impacts

4.11.4 Land-based Economies

Cumulative potential effects on land-based economies are anticipated to be minimal. Additional energy infrastructure will result in conversion of agricultural land from production to power generation and storage, but the loss of agricultural land is anticipated to be minimal overall.

4.11.5 Archaeological and Historical Resources

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

4.11.6 Natural Resources

Cumulative potential effects on the natural environment are anticipated to be minimal to moderate. Most of the foreseeable projects are in cultivated agricultural areas or along roadways resulting in minimal loss of high-quality habitat. Impacts are limited along roadways by the use of existing infrastructure ROW. Wildlife might be inadvertently harmed or killed during construction. Long term and permanent impacts include a greater risk of bird electrocution or collision due to increased transmission lines on the landscape. Potential impacts can be mitigated. The overall impact intensity level is expected to remain minimal.

4.11.7 Rare and Unique Resources

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

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