MIDWATER ENERGY STORAGE PROJECT

Joint Application to the Minnesota Public Utilities Commission for a Site Permit and a Route Permit

Alternative Permitting Process
MPUC Docket No. IP-7138/ESS-24-294
MPUC Docket No. IP-7138/TL-24-295

November 2024

Joint Application to the Minnesota Public Utilities Commission for a Site Permit and a Route Permit

Midwater Energy Storage Project

Shell Rock Township, Freeborn County, Minnesota

MPUC Docket Numbers:
IP-7138/ESS-24-294
IP-7138/TL-24-295

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November 2024

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Acronym/Term	Definition
AADT	Annual Average Daily Traffic
AC	Alternating Current
Applicant or Midwater BESS	Midwater BESS, LLC
Application	Joint Application for a Site Permit and a Route Permit for the Midwater Energy Storage Project
APLIC	Avian Power Line Interaction Committee
AQI	Air Quality Index
ARMER	Allied Radio Matrix for Emergency Response
BCC	Birds of Conservation Concern
BESS	Battery Energy Storage System
BESS Facility	The proposed up to 150 MW AC BESS and associated facilities planned to be constructed in Shell Rock Township, Freeborn County, Minnesota
BGEPA	Bald and Golden Eagle Protection Act
BMPs	Best Management Practices
BOP	Balance of Plant
BWSR	Board of Water and Soil Resources
CAA	Clean Air Act
CN	Certificate of Need
CO	Carbon monoxide
CO_2	Carbon dioxide
COD	Commercial Operations Date
Comprehensive Plan	Freeborn County's *Comprehensive Land Use Policy Plan*
Comprehensive Water Plan	Freeborn County 2016-2021 Comprehensive Water Plan
County	Freeborn County
CSAH	County State Aid Highway
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted decibel
DC	Direct Current
DEED	Minnesota Department of Employment and Economic Development
DOC	Minnesota Department of Commerce
DWSMA	Drinking Water Supply Management Area

Acronym/Term	Definition
ECS	Ecological Classification System
EJ	Environmental Justice
EJScreen	Environmental Justice Screening and Mapping Tool
EMF	Electric and Magnetic Field
EPA	U.S. Environmental Protection Agency
EPC	Engineering, Procurement, and Construction
ERP	Emergency Response Plan
ESS	Energy Storage System, as defined by Minn. Stat. § 216E.01, subd. 3a.
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GHG	Greenhouse Gas
GIA	Generator Interconnection Agreement
GIS	Geographic Information System
GNIS	Geographic Names Information System
HVAC	Heating, ventilation, and air conditioning
HVTL	High Voltage Transmission Line
HVTL Facility	The proposed approximately 2,668-foot long 161 kV HVTL and associated facilities proposed to support the BESS Facility.
Hz	Hertz
IFC	International Fire Code
IPaC	Information for Planning and Consultation
kV	Kilovolt
L_{10}	10 percent of any hour
L_{50}	50 percent of any hour
LFP	Lithium Iron Phosphate
LiDAR	Light Detection and Ranging
MBS	Minnesota Biological Survey
MBTA	Migratory Bird Treaty Act
MDH	Minnesota Department of Health
mG	MilliGauss
Midwater Energy Storage Project	The proposed up to 150 MW AC capacity BESS Facility, aboveground approximately 2,668-foot long 161 kV HVTL Facility,

Acronym/Term	Definition
	and associated facilities in Shell Rock Township, Freeborn County, Minnesota.
Minn. R.	Minnesota Rules
Minn. Stat. §	Minnesota Statutes Section
MISO	Midcontinent Independent System Operator
MLCCS	Minnesota Land Cover Classification System
MnDNR	Minnesota Department of Natural Resources
MnDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
MPUC or Commission	Minnesota Public Utilities Commission
MW	Megawatt
MWh	Megawatt hours
NAC	Noise Area Classification
NESC	National Electric Safety Code
NFPA	National Fire Protection Association
NHD	National Hydrography Dataset
NHIS	Natural Heritage Information System
NLCD	National Land Cover Database
NLEB	Northern Long-eared Bat
NMC	Nickel Manganese Cobalt Oxide
NO_2	Nitrogen Dioxide
NPCs	Native Plant Communities
NPDES	National Pollutant Discharge Elimination System
NPMS	National Pipeline Mapping System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	Noise sensitive receptor/area
NWI	National Wetlands Inventory
O&M	Operations and Maintenance
O_3	Ozone
OPPD	Omaha Public Power District
Ordinance	Freeborn County Code of Ordinances
OSA	Office of the State Archaeologist
PAD-US	Protected Areas Database of the United States

Acronym/Term	Definition
PCS	Power Conversion Systems
PM	Particulate Matter
POI	Point of Interconnection
Project	The Midwater Energy Storage Project, an up to 150 MW AC capacity BESS Facility, aboveground approximately 2,668-foot long 161 kV HVTL Facility, and associated facilities in Shell Rock Township, Freeborn County, Minnesota.
Project Area	Approximately 104.4 acres of privately-owned agricultural land for which Midwater BESS has a lease to allow siting and construction of the Project.
Project Footprint	The area directly impacted by the Project.
Proposed BESS Facility Development Area	The 16.6 acres of land within the Project Area where Midwater BESS proposes to build the BESS Facility, including all areas within the fence line, grading areas, permanent stormwater basins, and site access.
Proposed HVTL Facility Development Area	The 8.2 acres of physical land area with a 150-foot right-of-way (75 feet on both sides of the transmission line centerline) for which Midwater BESS has leases to allow siting, construction, operation and maintenance of the HVTL Facility.
PWI	Public Waters Inventory
RCPs	Representative Concentration Pathways
ROW	Right-of-way
RSEA	Regionally Significant Ecological Areas
SCADA	Supervisory Control and Data Acquisition
SGCN	Species in Greatest Conservation Need
SHPO	Minnesota State Historic Preservation Office
SNAs	State Scientific and Natural Areas
SO_2	Sulfur Dioxide
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
Spearmint Energy	Spearmint Renewable Development Company, LLC
SSA	Sole Source Aquifer
Subd.	Subdivision
SWAP	State Wildlife Action Plan
SWCD	Soil and Water Conservation District
SWPPP	Stormwater Pollution Prevention Plan
Township	Shell Rock Township
UL	Underwriters Laboratory

Acronym/Term	Definition
U.S.	United States
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
VMP	Vegetation Management Plan
WCA	Minnesota Wetland Conservation Act
WHPA	Wellhead Protection Area
WMA	Wildlife Management Area
WQC	Water Quality Certification

1.0 INTRODUCTION

Midwater BESS, LLC (Midwater BESS or Applicant), a wholly owned indirect subsidiary of Spearmint Renewable Development Company, LLC (Spearmint Energy), proposes to construct and operate an up to 150-megawatt (MW) alternating current (AC) battery energy storage system (BESS) and associated facilities (BESS Facility), and an approximately 2,668-foot long 161 kilovolt (kV) high voltage transmission line (HVTL) and associated facilities (HVTL Facility) to interconnect the BESS Facility to the grid.

The proposed BESS Facility and HVTL Facility (together, the Midwater Energy Storage Project or Project) are planned to be constructed in Shell Rock Township (Township), Freeborn County (County), Minnesota (**Figure 1**). The Applicant is anticipating construction to begin in the first quarter of 2027 with commercial operation by the end of 2027.

Construction of the Project requires a Site Permit for the BESS Facility and a Route Permit for the HVTL Facility from the Minnesota Public Utilities Commission (Commission or MPUC). Midwater BESS submits this Joint Application for a Site Permit for the BESS Facility and a Route Permit for the HVTL Facility (Application) to the Commission pursuant to the Minnesota Power Plant Siting Act (Minnesota Statutes [Minn. Stat.] chapter 216E) and Minnesota Administrative Rules (Minn. R.) chapter 7850. The Minnesota Legislature requires that the Commission utilize applicable provisions of Minn. R. chapter 7850 when considering whether to issue a site permit for an energy storage system (ESS), such as the BESS Facility, until ESS specific rules are promulgated, except the Minnesota Legislature specifically exempted energy storage systems, such as the Project, from Minn. R. 7850.4400, subp. 4 (prime farmland exclusion) (Laws of Minnesota 2023, chapter 60, article 12, section 67(b)[1]). Accordingly, the Site Permit and Route Permit are the only land use approvals needed for construction of the Project (Minnesota Statute Section [Minn. Stat. §]216E.10, subd. 1). The Site Permit and Route Permit Completeness Checklist is provided in **Appendix A**. See **Section 1.3.1** and **Section 1.3.2** for additional information.

Pursuant to Minn. Stat. §216E.04, subd. 2(3) and (9), Midwater BESS seeks approval of its Application under the alternative review procedures of Minn. Stat. §216E.04 and Minn. R. 7850.2800 to 7850.3900. The Applicant filed a Notice of Intent to Submit a Joint Application for a Site Permit and Route Permit under the Alternative Permitting Process to the Commission on September 23, 2024.

Project Area, Proposed BESS Facility Development Area, and Proposed HVTL Facility Development Area

[1] [1] Minnesota Session Law 2023, chapter 60, article 12, section 67(b) provides that "Minnesota Rules, Part 7850.4400, subpart 4, does not apply to energy storage systems." Accordingly, the Project is not subject to the Prime Farmland Rule

The Project is proposed on three parcels totaling 104.4 acres currently under lease or purchase option with the underlying landowners (Project Area). Approximately 16.6 acres of the Project Area are proposed to be disturbed and occupied by the BESS Facility within the fenced area and the stormwater management ponds, proposed grading areas, access road connection to U.S. Highway 65, and parking and storage areas outside the fence line (Proposed BESS Facility Development Area) (**Figure 2**). An approximately 150-foot wide, 2,668-foot long area comprising approximately 8.2 acres of the Project Area are proposed for the HVTL Facility (Proposed HVTL Facility Development Area) (**Figure 2**).

Table 1.0-1: Project Area Estimates

Project Area (Inclusive of parcels and BESS and HTVL Facility Development Areas)	104.4 acres
Proposed HVTL Facility Development Area	8.2 acres
Proposed BESS Facility Development Area	16.6 acres

BESS Facility

In addition to battery energy storage enclosures, the BESS Facility will consist of inverters and transformers, electrical feeder lines, a substation, a potential operations and maintenance (O&M) facility, temporary laydown areas, storage and parking areas, access roads, fencing, and other minor equipment and subcomponents as are typical of a BESS (**Figure 2**). The Project will interconnect to the existing ITC Midwest Glenworth Substation via the HVTL Facility. The HVTL Facility will connect the existing ITC Midwest Glenworth Substation to bi-directional transformers located within the BESS Facility, where the power will be stepped down from the 161 kV interconnection voltage to 34.5 kV. Underground 34.5 kV feeder lines will then deliver the energy to the inverters, which will convert the energy from AC to direct current (DC). The DC power can then be stored in the battery systems. When power is delivered from the BESS Facility to the electrical grid it will first be converted from DC to AC and carried via the underground 34.5 kV feeder lines to the Project substation where the 34.5 kV collector system voltage will then be stepped up to the interconnection voltage of 161 kV by the bi-directional transformers located at the Project substation.

The design assumptions in this application accommodate a variety of battery technologies to allow flexibility during equipment selection at the time of construction. The preliminary design is largely based on Tesla battery technology, because this technology currently has the largest size requirements, which drives the development area in terms of spacing, visual impacts, and augmentation (battery upgrades to accommodate degradation over years of operation). However, the specific equipment or technology to be used has not been established and will be dependent upon market conditions, equipment availability, battery efficiency, and site impacts at the time of construction. Therefore, the Project has been designed to accommodate a variety of technologies and has adequate room for placement of necessary equipment and supporting elements.

Section 5.1.1 provides a detailed description of the BESS Facility, and **Figures 2** and **3** show the Proposed BESS Facility Development Area. The BESS Facility will be permitted, constructed, and owned by Midwater BESS.

HVTL Facility

The Project will interconnect to the existing ITC Midwest Glenworth Substation via the bi-directional, approximately 2,668-foot long, 161 kV HVTL Facility. This HVTL Facility is a dedicated tap line for the BESS Facility and requires a Route Permit based on its length and voltage. **Section 5.1.2** provides a detailed description of the HVTL Facility, and **Figures 2** and **3** show the Proposed HVTL Facility Development Area. The HVTL Facility will be permitted, constructed, and owned by Midwater BESS.

1.1 Purpose and Need

The Project will provide up to 150 MW of charging (consuming power from the grid) and discharging (contributing power onto the grid) capacity for up to four hours of reliable, deliverable on-peak energy. By way of example, the Project has the potential to store enough energy to provide electricity for approximately 100,000 households for up to four hours based on the average household's annual electricity consumption. The Project is being developed, designed, and permitted to meet or, to the extent practicable, exceed applicable state and local design and operating requirements and be consistent with current industry best practices.

Battery storage is essential for an efficient, low-cost, and reliable electric grid.[2] Battery storage facilities such as the Project allow for storage of excess electricity generated by other power producers during periods of low electricity demand, with the ability to send the electricity back to the grid when demand increases.

The proposed Project is expected to contribute to Minnesota's transition to a carbon-free electricity supply by allowing wind and solar projects to continue to produce clean energy when they would otherwise be curtailed due to low demand. For example, often in the overnight hours high winds allow for significant generation from wind turbines across Minnesota and, at times, this generation potential exceeds the load and some wind generation is curtailed by the grid operator to maintain the stability of the grid; the Project could, by charging its BESS, reduce the need for curtailment by storing this energy when it is available to be generated and then, during the daytime or evening hours when demand is higher, discharge this stored energy back to the grid supplementing existing generation and, potentially reducing the need for the use of traditional thermal (e.g. natural gas) generation. This shifting of energy from periods of low demand to higher demand not only increases the availability of renewable energy to ratepayers but also, for renewable projects located in Minnesota, could also increase the production tax benefits of such facilities.

[2] American Clean Power Association. 2024. Clean Energy Storage Facts (available at https://cleanpower.org/facts/clean-energy-storage/)

In addition to the Project's energy shifting capabilities the Project will provide valuable ancillary and reliability services required to safely and reliably operate the grid. The Project will use state-of-the-art battery, inverter, and other technologies which will allow it to provide critical services to assist the grid operator with maintaining the voltage and frequency of the transmission system. As load and generation change moment to moment (e.g., an air conditioner switching on, increasing load, or a cloud passes over a solar project, decreasing generation) the grid operator must increase or decrease the production from other generators to maintain the grid frequency as close to 60.00 hertz (Hz) as possible since, if the frequency deviates significantly from 60 Hz, more drastic actions, such as load-shedding (the intentional temporary disconnection of significant numbers of customers) may be required to maintain overall system reliability and prevent damage to grid infrastructure. Currently the majority of this moment-to-moment frequency management is provided by "throttling" up and down the output of certain natural gas generators (similar to pushing down or letting up on the gas pedal of a gasoline car); BESS will not only provide this same service more efficiently (by responding instantly) but do so at an expected lower cost and could also reduce the need to burn natural gas or other fossil fuels.

The impact to the grid from the integration of a BESS will be positive, including:

- **Supports integration of renewable energy:** The integration of BESS enables higher and more efficient use of existing and new renewable energy sources, which are the lowest cost sources of energy**.**
- **Frequency response and regulation:** Strong BESS infrastructure provides moment-to-moment stability of the electrical system more efficiently than existing natural gas resources.
- **Reduces energy waste:** BESS stores energy when there is excess supply and discharges that energy back onto the grid when supply is low.
- **Grid Resiliency:** BESS can support recovery from storms and other grid emergencies by more efficiently using the operating portions of the grid and providing the grid operator and utility additional flexibility while they work to restore the system.

The Project will also benefit the local community through investment in construction spending, long-term property and business tax receipts, and landowner lease payments, with minimal operational demand on public service infrastructure.

The Project will provide cost-effective energy storage to Minnesota and regional ratepayers by providing specific energy, capacity, and ancillary services on the wholesale power market on merchant basis. Benefits to rate payers are derived indirectly through enhancement and stabilization of the regional electrical transmission grid without other system enhancements such as new lines or reconductoring existing lines. Storage of energy generated at times of surplus that can then be released at times of high demand also off-sets the need for additional peak generating capacity.

Unlike many renewable projects, which typically sell all generated energy to one or more offtaker(s) in the form of a long-term Power Purchase Agreement, the complex and dispatchable nature of a BESS project is often better suited for the merchant market and other contracting structures. Midwater BESS anticipates entering into a Tolling Agreement with its affiliated merchant energy business or similar third-party market participant. Under a toll structure, the power stored by the Project and its other services will be offered to wholesale customers, including Minnesota utilities and cooperatives that have identified a need for additional energy and capacity, and corporate and industrial customers that have set clean energy goals. For example, a data center that wishes to use 100 percent clean energy may purchase wind energy from the Project that has been previously stored in the BESS to supplement the supply of renewable energy directly from wind and solar projects; M-RETs, a renewable resource tracking platform that tracks and manages the activity of a diverse variety of environmental attributes and other energy commodities, including renewable energy certificates in Minnesota, is developing additional tracking capabilities to allow for the tracking of renewable energy from its source (wind or solar project), into a BESS such as the Project for storage, and then the subsequent supply of that energy from the BESS to the ultimate consumer to provide the same renewable energy verification.

It is also possible the Project could operate under a different revenue structure including fully or partially contracting with a utility for capacity, energy, and/or ancillary services. For example, the Project or Midwater BESS could be sold to a utility, in which event the utility could use the Project to manage its own electrical load, and an enforceable mechanism for the sale of the power stored by the facility may not be applicable for the Project to operate or sell its stored power.

The Applicant proposes to interconnect the Project at the existing ITC Midwest Glenworth Substation in Freeborn County, Minnesota. This interconnection will provide sufficient outlet to accommodate all the energy stored at the Project BESS Facility and is described in more detail in **Section 5.1.2**.

1.1.1 Permittee and Contact Information

The Permittee for the Site Permit and Route Permit will be:

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The contact persons regarding this Application are:

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1.1.2 Ownership at Time of Filing

Midwater BESS is a limited liability company authorized to do business in Minnesota. Midwater BESS is a wholly owned indirect subsidiary of Spearmint Energy.

Spearmint Energy is a next-generation renewable energy company enabling the clean energy revolution through developing and installing battery storage facilities. Spearmint Energy currently operates a 150 MW/300 MWh BESS project located in West Texas, and is also developing over 20 projects, totaling over 10 gigawatt hours of capacity, across 10+ states in four regions of the United States. Headquartered in Miami, Florida with an additional office in Minneapolis, Minnesota, Spearmint Energy is comprised of over 50 seasoned industry professionals across development and corporate functions and aims to be the preeminent green merchant energy company.

Spearmint Energy develops, owns, operates, and optimizes BESSs with the aim of reducing grid volatility, increasing system resiliency, and helping minimize carbon emissions in a responsible and efficient way.

Midwater BESS is the owner of the Project at the time of filing of this Application and has secured all necessary land rights for construction and operation of the proposed Project through an option agreement to purchase the land for the BESS Facility and lease agreements for the HVTL Facility necessary to connect the BESS Facility to the ITC Midwest Glenworth Substation. Under the leases, land used for the Project would be returned to the underlying landowners upon completion of the operational life of the HVTL Facility. The land is currently enrolled in a Conservation Reserve Program (CRP) for a period of 10 years and has been removed from agricultural production by the underlying landowners. The land on which the Project will be constructed will be withdrawn from CRP following permit issuance and ahead of any site construction activities, as allowed in the CRP contract. Landowners within the Project Area are Michael Bjorklund and Jacqueline Bjorklund. Landowners of parcels adjacent to the Project Area include Valerie Cipra, Travis Jacobsen, Daniel Minear, ITC Midwest LLC, and the Lowell & Marcella Nelson Trust.

1.1.3 Proposed Ownership after Commercial Operations

Midwater BESS plans to own, operate, and maintain the Project following the start of the commercial operations date (COD), which is anticipated to be in the fourth quarter of 2027. While not planned at this time, Midwater BESS reserves the right to sell or assign the Project to another

qualified entity at any time before, during, or after the Project is constructed. Any sale or assignment of the Site and/or Route Permit would require approval by the Commission. Any future buyer or assignee will be required to meet Site Permit and Route Permit conditions.

1.2 Project Schedule

Midwater BESS anticipates receiving Commission approval of the Site Permit and Route Permit for the Project in the third quarter of 2025. Construction is currently anticipated to begin in the first quarter of 2027, with COD currently anticipated by the fourth quarter of 2027. To meet the anticipated COD, the following schedules are anticipated for the various phases of Project development. The schedule provided assumes Midcontinent Independent System Operator (MISO) interconnection study completion according to dates posted by MISO. Delays to the MISO schedule will result in delays to the overall Project schedule.

- **Land Rights:** Midwater BESS has secured land rights and acquired the necessary lease and purchase option agreements for development of the entire Project. Land required for the HTVL Facility will be leased. Midwater BESS has secured an option to purchase the southern-most parcel that will host the BESS Facility and the majority of the overall Project infrastructure.
- **Site and Route Permits:** Midwater BESS anticipates the Site Permit and Route Permit for the Project will be issued by the Commission in the third quarter of 2025.
- **Other Permits:** Midwater BESS is responsible for obtaining permits and approvals necessary for construction and operation of the Project. Midwater BESS is working with applicable regulatory staff and anticipates other pertinent permits/approvals to be issued by the fourth quarter of 2026, prior to the start of construction.
- **Equipment Purchase:** Midwater BESS anticipates procuring Project equipment starting in 2025 and continuing through 2027. Final equipment and contractor selections will be made contingent on the Site Permit and Route Permit issued by the Commission. All equipment will be owned by Midwater BESS.
- **Financing:** Midwater BESS will secure financing for all necessary Project stages. Once all regulatory approvals have been secured and prior to the start of construction, Midwater BESS will obtain construction financing. The decommissioning financing schedule will be built around the required Project escrow payments along with other relevant information as set forth in the Project's decommissioning plan (see **Section 5.4**).
- **Construction:** Midwater BESS will oversee the primary contractors performing construction of the Project. These construction activities will include site preparation; grading; and access road, energy storage and associated equipment modules, electrical cabling, transmission, and communications equipment installation work. Construction is anticipated to occur between the first quarter of 2027 to the third quarter of 2027. Midwater BESS anticipates beginning construction of the Project after obtaining the Site Permit and Route Permit from the Commission, fulfilling necessary Site Permit and Route Permit pre-

construction compliance requirements, securing other required approvals, and securing an interconnection agreement for the Project.

- **Testing and Commissioning:** Testing and commissioning will occur at the end of construction and prior to the COD. This is currently anticipated to occur in the fourth quarter of 2027.
- **Operation:** As indicated above, the COD of the Project is anticipated to occur in the fourth quarter of 2027, after construction and testing/commissioning activities are completed.
- **Decommissioning**: Midwater BESS will determine at the end of the Project's operational life if it will either take necessary steps to continue the operation of the Project (such as re-permitting or retrofitting) or will decommission the Project and remove facilities. Should Midwater BESS choose to decommission, the anticipated start of the decommissioning process will be the fourth quarter of 2055.

1.3 Required Project Permits

Development of the proposed Project will likely require several federal, state, and local permit approvals prior to starting construction. Potential permits, with respect to their prospective applicability and expected timing, are detailed in **Section 1.3.3** below (**Table 1.3-1**).

1.3.1 Minnesota Public Utilities Commission Site Permit

The BESS Facility will be considered an ESS by the Commission. As defined by Minn. Stat. §216E.01, subd. 3a, an ESS 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."

A Site Permit is required for an ESS. As noted in **Section 1.0**, the Minnesota Legislature requires that the Commission utilize applicable provisions of Minn. R. chapter 7850 when considering whether to issue a site permit for an ESS until ESS-specific rules are promulgated.

As such, the BESS Facility will require a Site Permit from the Commission prior to construction. Pursuant to Minn. Stat. §216E.04, subd. 2(9), Midwater BESS seeks approval of a Site Permit for the BESS Facility under the alternative review process provided under Minn. Stat. § 216E.04 and Minn. R. 7850.2800 to 7850.3900. Midwater BESS filed a Notice of Intent to Submit a Joint Application for a Site Permit and a Route Permit under the Alternative Permitting Process to the Commission on September 23, 2024.

1.3.2 Route Permit

Minn. Stat. §216E.03, subd. 2, provides that "[n]o person may construct a[n HVTL] without a route permit from the [C]ommission. A high-voltage transmission line may be constructed only along a route approved by the [C]ommission." An HVTL is defined as "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" (Minn. Stat. §216E.01, subd. 4).

Accordingly, the HVTL Facility will require a Route Permit from the Commission prior to construction (Minn. Stat. §216E.03, subd. 2).

Pursuant to Minn. Stat. §216E.04, subd. 2(3), Midwater BESS seeks approval of a Route Permit for the proposed HVTL Facility under the alternative review process provided under Minn. Stat. §216E.04 and Minn. R. 7850.2800 to 7850.3900. Midwater BESS filed a Notice of Intent to Submit a Joint Application for a Site Permit and a Route Permit under the Alternative Permitting Process to the Commission on September 23, 2024.

1.3.3 Potential Permits and Approvals

Development and construction of the Project will require several federal, state, and local permit approvals prior to construction. Midwater BESS will obtain all permits, licenses, and approvals that are required for the Project concurrent with or following issuance of the Site Permit and Route Permit. Potential permits and approvals, with respect to their prospective applicability and expected timing, are included in **Table 1.3-1** below.

Table 1.3-1: Potential Permits/Approvals

Agency	Permit / Approval	Applicability / Purpose	Permit Status and Timing
Federal			
U.S. Environmental Protection Agency (EPA)	Spill Prevention, Control, and Countermeasure (SPCC) Plan	An SPCC Plan will be required for Project facilities with above ground oil storage exceeding 1,320 gallons.	To be written prior to construction, as needed
U.S. Army Corps of Engineers (USACE)	Section 404 Permit	A Section 404 Permit will be required for any dredging or filling in jurisdictional Waters of the United States.	To be obtained prior to construction in jurisdictional waters (wetlands/waterways), as needed
State			
MPUC	Site Permit	A Site Permit is required for construction and operation of an ESS.	To be obtained prior to construction
MPUC	Route Permit	A Route Permit is required for HVTL of 100 kV or more and greater than 1,500 feet in length.	To be obtained prior to construction
Minnesota Pollution Control Agency (MPCA)	National Pollutant Discharge Elimination System General Permit (NPDES) and Stormwater Pollution Prevention Plan (SWPPP)	An NPDES permit will be required for construction activity that disturbs one or more acres of land.	To be obtained/prepared prior to construction

Agency	Permit / Approval	Applicability / Purpose	Permit Status and Timing
Minnesota Department of Labor and Industry	Request for electrical inspection	An electrical inspection is necessary to comply with state electrical codes.	Inspection to be conducted during construction and prior to operation
Minnesota State Historic Preservation Office (SHPO)	Cultural and Historic Resources Review; State and National Register of Historic Sites Review	This review is required for projects that require state permits or affect state registered properties, or that require Section 106 compliance.	Obtain concurrence on Phase I inventory prior to construction
Minnesota Department of Transportation (MnDOT)	Application for Utility Accommodation on Trunk Highway Right-of-Way (ROW)	This permit is required for installation of utilities along, across, or within trunk highway ROW.	To be obtained prior to installation of utilities within MnDOT ROW, if needed
	Access (Driveway) Permit	An Access Permit is required for construction of a driveway/access road utilizing MnDOT ROW.	To be obtained prior to construction of driveway on MnDOT ROW, as needed
	Oversize/Overweight Permit	An Oversize/Overweight Permit is required for vehicles delivering equipment, materials, and supplies that exceed applicable MnDOT height, length, and weight limits.	To be obtained prior to equipment deliveries, as needed
County/Local			
Freeborn County	Minnesota Wetland Conservation Act (WCA) Approval (in conjunction with Freeborn County Soil and Water Conservation District)	WCA approval is required for activities affecting water resources.	To be obtained prior to construction in jurisdictional waters, as needed
	Septic Permit Application	A Septic Permit is required prior to installation of any septic system in Freeborn County.	To be obtained prior to construction of septic system, as needed
	ROW Permit	A ROW Permit is required to work within public road ROW.	To be obtained prior to work within ROW, as needed
	Utility Permit	A Utility Permit is required for installation of utility infrastructure in a county road ROW.	To be obtained prior to installation, as needed
	Oversize/Overweight Permit	An Oversize/Overweight Permit is required for use of overweight or oversized vehicles on county roadways.	To be obtained prior to equipment deliveries, as needed

1.4 Permits Not Required

1.4.1 Certificate of Need

Under Minn. Stat. §216B.243, subd. 8(9)–(10), a Certificate of Need (CN) is not required for an ESS or HVTL that directly interconnects an ESS to the transmission system (Laws of Minnesota 2024, chapter 126, article 8, section 5). Therefore, a CN is not required for the proposed Project.

1.4.2 Local Discretionary Approvals

Pursuant to Minn. Stat. §216E.10, subd. 1, the issuance of a Site Permit and Route Permit are the sole-land use approvals required to be obtained for the Project. The Site Permit and Route Permit supersede and preempt all zoning, building, and/or land use rules, regulations, or ordinances promulgated by regional, county, local, and special purpose government.

Midwater BESS consulted with local officials early in the development process and will continue to strive to incorporate feedback and reasonable recommendations of local stakeholders into the final design of the Project. A summary of agency and public outreach is described in **Section 7.0** of this Application.

2.0 PROJECT INFORMATION

The following provides a description of the proposed Project Area and Project, including land control, preliminary Project design, interconnection, equipment selections, prohibited areas, alternatives, costs, and potential future expansions.

2.1 Overall Project Description

The Project is an up to 150 MW AC capacity BESS Facility, aboveground approximately 2,668-foot long 161 kV HVTL Facility, and associated facilities in Shell Rock Township, Freeborn County, Minnesota. Combined, the BESS Facility and HVTL Facility are expected to occupy approximately 17 acres of privately-owned, predominantly agricultural land which has been removed from agricultural production and enrolled in the CRP. Land not used for the Project will remain in its current condition, or, if disturbed during Project construction, will be re-seeded with a beneficial habitat seed mix as prescribed by the Vegetation Management Plan (VMP).

As a storage facility, the BESS Facility does not produce electricity but serves as an adjacent facility to the existing electrical grid. BESS contributes to balancing energy demand and optimizing grid conditions by taking in surplus electrical energy from the grid during times of excess production and releasing this energy during times of peak demand. This process optimizes grid stability through load leveling and frequency stabilization.

The Project will also have the capability to provide critical ancillary services to the local grid, including voltage regulation (helping the local grid maintain its design voltage of 161 kV) and frequency regulation (helping to maintain a steady 60 Hz).

Midwater BESS plans to construct the Project on a schedule with COD by the fourth quarter of 2027. To allow for optimization in the final design, equipment selection, and unanticipated discoveries through the permitting process, Project impacts described in this Application are representative of the largest potential Proposed BESS Facility Development Area and Proposed HVTL Facility Development Area and are therefore greater than what is expected to occur from the actual construction and operation of the Project. The Proposed BESS Facility Development Area and Proposed HVTL Facility Development Area are included in **Figure 2.**

2.2 BESS Facility and HVTL Description

2.2.1 Project Location

The Project is located approximately 0.4 mile southeast of the city of Glenville, approximately 4.5 miles west of the city of Myrtle, and adjacent to U.S. Highway 65 in Freeborn County. The Project location is provided in **Table 2.2-1** and shown in **Figure 1**.

Table 2.2-1: Project Location

Township Name	Township	Range	Section(s)
Shell Rock Township	101N	20W	7, 8, and 17

The Applicant believes that the selected Project location in Freeborn County is feasible and prudent for BESS development based upon the proximity to existing electric transmission infrastructure, minimal impact to natural resources, and consistency with existing land uses.

2.2.2 BESS Facility Size and Description

The Project is proposed within a 104.4-acre Project Area, over three land parcels. The applicant has secured an option to purchase the southern-most parcel that will host the majority of the BESS Facility infrastructure. A lease has been secured across the two additional parcels hosting the majority of the HVTL Facility. Midwater BESS estimates that approximately 17 acres of the Project Area are necessary to accommodate the final design and engineering of the proposed BESS Facility (i.e., the Proposed BESS Facility Development Area), but the full 104.4 acres may be utilized in the final design for a combination of permanent and temporary construction facilities, with a portion of these temporary areas remaining or being returned to the underlying landowners following the completion of construction. The Proposed BESS Facility Development Area includes the gravel pad containing Project infrastructure in addition to the stormwater management ponds, proposed grading areas, access road connection to U.S. Highway 65, and parking and storage areas external to the fence line. Additional information on the proposed BESS Facility design and layout can be found in **Section 5.0** (Engineering and Operational Design).

To demonstrate Project viability, this Application provides typical assumptions about Project facilities and associated equipment. Details of Project facilities and equipment specifications will be finalized during procurement. As further detailed in **Section 5.0** (Engineering and Operational Design) below, Project facilities and equipment are expected to include:

- Lithium-Ion battery cells permanently enclosed in modules which are then installed in racking within a custom storage equipment enclosed in custom designed enclosures;
- Integrated battery management systems and telemetry devices;
- Power Conversion Systems (PCS), which consist of inverters and transformers, or inverters integrated into the enclosures and standalone transformers;
- Switchgear and/or switchboards;
- Electrical and communications wiring;
- Electrical feeder lines;
- Security fencing and gates;
- Access roads;
- Stormwater collection basins;
- Heat, smoke, and gas detection and mitigation systems;
- Supervisory Control and Data Acquisition (SCADA) system;
- Project substation, including power transformer(s), switching, and overcurrent protection;

- Metering equipment; and
- Ancillary equipment or O&M buildings, as necessary.

The BESS Facility and related equipment are shown in **Figure 2**.

The transfer of electrical energy to and from the grid and the batteries includes several steps. The BESS Facility will be connected to the existing ITC Midwest Glenworth Substation via an approximately 2,668-foot, single span HVTL Facility. The HVTL Facility is connected to switches and protection devices to a high-voltage power transformer that transforms the voltage from 161 kV to 34.5 kV and from 34.5 kV to 161 kV, depending on the travel direction of the flow of electricity. Additional breakers, switches, and cables connect the high-voltage power transformers to the PCS, which may include medium-voltage transformers and pad mount inverters, depending on final equipment selection, unless the battery technology chosen includes string inverters within the battery BESS enclosures and standalone transformers. The 34.5 kV feeder lines connect the PCS to convert the power from medium-voltage AC to DC electricity. The energy is then stored in battery modules on racking systems within the BESS enclosures.

As an example, when power is collected from the grid and stored in the BESS Facility batteries, electricity will flow from the ITC Midwest Glenworth Substation, through the HVTL Facility to the Project substation where the power is stepped down from 161 kV to 34.5 kV, and then to the PCS within the BESS facilities. The stepped-down power is then transformed from AC to DC energy via the inverters and stored in the batteries until released back to the grid. When grid energy demand occurs, the Project will dispense the stored energy in a reverse manner. Electricity flows from the battery modules in the BESS enclosure and is changed from DC to AC energy via the same inverters. The AC energy will flow from the inverters through the medium-voltage transformers, then through 34.5 kV feeder lines and back to the bi-directional 34.5 kV to 161 kV transformers at the Project substation. The transformers step up the energy to 161 kV to be delivered to the ITC Midwest Glenworth Substation through the HVTL Facility. At that point, energy flows on the grid to electricity users' loads.

The anticipated connection and layout of the described Project infrastructure is shown in **Figure 2**. The typical flow of a BESS facility is shown below in **Image 1**.

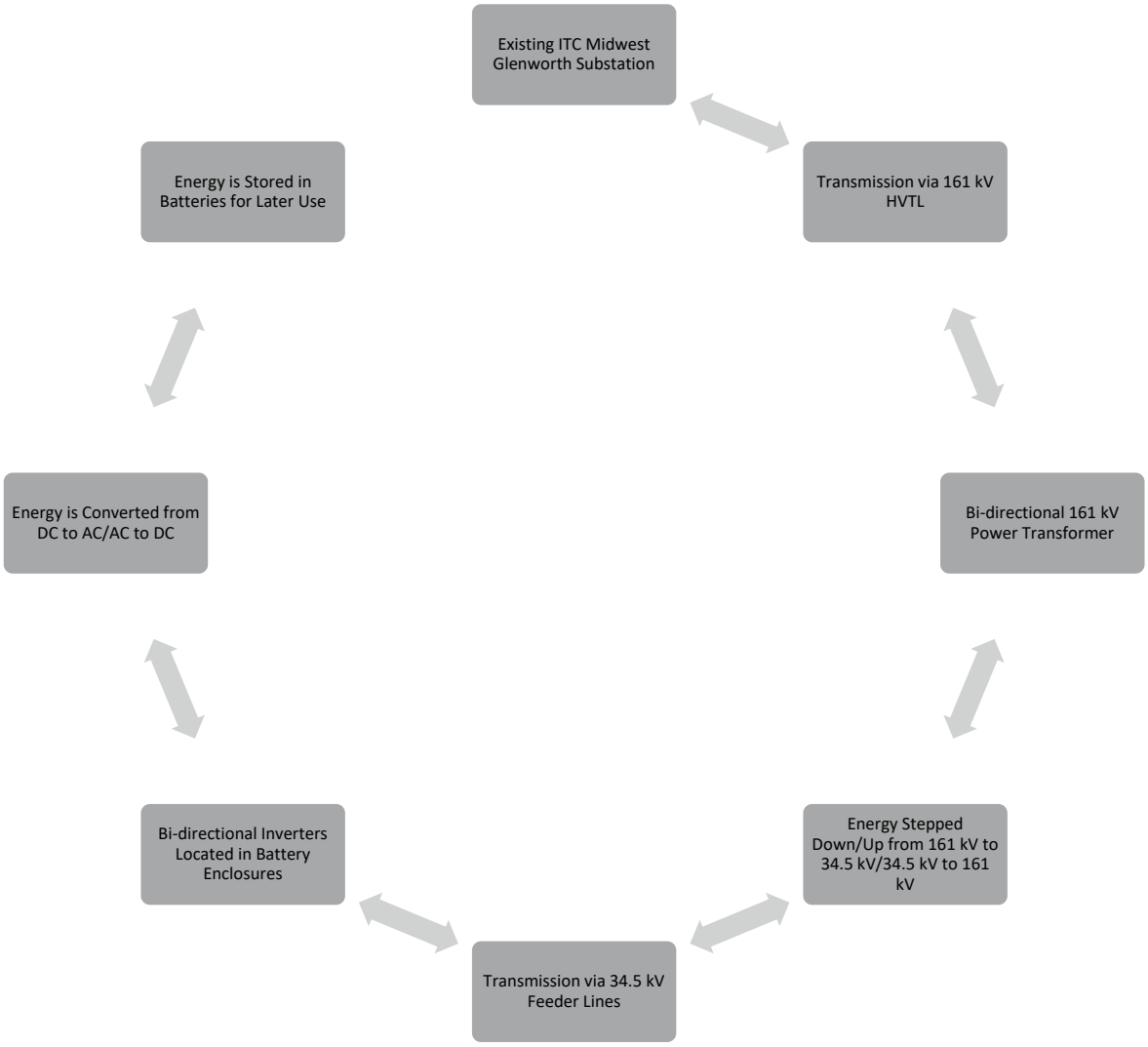


Image 1: Bi-directional Flow of a Typical BESS Facility

The Applicant filed a Generator Interconnection Agreement (GIA) application with MISO for 150 MW. MISO is an independent, not-for-profit organization that delivers electric power across 15 states. Approval from MISO through a GIA is required to connect the Project to the electrical transmission system. The Applicant entered the interconnect request into the MISO Definitive Planning Phase study process in 2022. The Applicant expects to sign a GIA in the fourth quarter of 2025.

2.2.3 HVTL Size and Description

The 161 kV HVTL Facility will be approximately 2,668 feet long and will connect the Project substation to the existing ITC Midwest Glenworth Substation. The Applicant has secured 100 percent of the total necessary leases for the Proposed HVTL Facility Development Area.

The anticipated HVTL Facility design consists of four to six steel monopoles with a typical height range from 60 to 90 feet above the ground with spans of approximately 164 to 863 feet. The entire Proposed HVTL Facility Development Area will include a 150-foot-wide right-of-way (75 feet on each side of the proposed HVTL Facility centerline), supporting the HVTL Facility path. The route will begin at the Project substation and end at the ITC Midwest Glenworth Substation. Midwater BESS has strategically designed the Proposed HVTL Facility Development Area to minimize tree clearing and wetland impacts as much as possible. The layout also carefully navigates existing transmission and distribution infrastructure while ensuring connection to the ITC Midwest Glenworth Substation (see **Figure 2**). Pole heights will vary along the HVTL Facility based on topography, type of pole used and location, and the crossing of roads, railroad tracks, and existing electrical infrastructure. See **Sections 4.0 and 5.0** for details on the HVTL Facility.

The HVTL Facility will be designed to meet the minimum requirements as set forth by the National Electric Safety Code (NESC), satisfying NESC Heavy District requirements for Grade B construction.

2.3 Cost Analysis

BESS Facility

Midwater BESS estimates the total installed capital cost for the BESS Facility will be approximately $457 million, as broken down in **Table 2.3-1** below. Actual capital costs depend on various factors, such as construction labor, BESS Facility equipment and materials, electrical and communication systems, taxes/tariffs, and final design considerations (e.g., Project substation, etc.). Refer to **Section 1.2** of this Application for the proposed Project schedule.

Operating costs are estimated at approximately $246 million over the life of the Project, which includes labor and materials for the BESS Facility. The primary O&M costs for the Project are associated with maintenance of the BESS Facility and Balance of Plant (BOP) components and applicable inspections.

HVTL Facility

The HVTL Facility is estimated to cost approximately $812,000. Final HVTL Facility costs are dependent on a variety of factors, including the approved route, timing of construction, cost of materials, and labor. O&M costs after construction of the HVTL Facility will be nominal for several years because the line will be new and minimal initial vegetation management should be required. The cost associated with O&M is estimated at approximately $60,000 per year.

As stated above, if the Commission grants the necessary approvals, the Applicant will construct, operate, and maintain the proposed BESS Facility and HVTL Facility. The principal O&M costs include inspections, which are typically ground-based, and generally on a yearly basis.

Table 2.3-1: Estimated Project Costs

Task	BESS Facility Cost	HVTL Facility Cost
Planning and State Permitting	$550,000	N/A*
Acquisition and "Downstream" Permits	$7,000,000	N/A*
Design	$1,300,000	$125,000
Procurement	$130,000,000	$250,000
Construction	$71,000,000	$250,000
Operation	$246,000,000	$60,000
Decommissioning	$1,215,643	$127,184
Project Total	$457,065,643	$812,184
*Included in the cost estimates for the BESS Facility.		

3.0 BESS FACILITY SITE SELECTION AND CONSTRAINTS ANALYSIS

Midwater BESS conducted a detailed analysis of several areas to identify the proposed Point of Interconnection (POI) location and site location for development. Site selection for the Project was the result of an iterative process that considered many factors, as described in further detail in the following sections. For the BESS Facility, finding open space where substations and transmission lines have capacity for the Project to connect and supply energy narrowed down feasible sites.

Midwater BESS identified the ITC Midwest Glenworth Substation as having available capacity and low interconnection costs. Midwater BESS then screened available land within the area of the proposed POI to reduce the financial burden of constructing a longer transmission line (i.e., construction cost, easement acquisition cost, and electrical losses). Lands within the area of the POI were determined potentially suitable if they were: cleared and otherwise undeveloped; not currently encumbered by other easements (e.g., wind farms, pipelines); and, contained minimal transmission lines, pipelines, roads, and few wetland or other obstacles that would limit the buildable land or lead to irregularly shaped development areas. Midwater BESS also screened the areas for geotechnical risks, habitat for endangered species, proximity to culturally sensitive areas, other potential environmental risks such as pollutants, steep slopes, flood zones, current land use conflicts, and a clear and uncontested title. Following the screening, Midwater BESS approached landowners to negotiate voluntary lease and purchase option agreements.

The Project Area was chosen for its proximity to the POI, supportive landowners, and limited competition with other potential renewable energy storage projects.

3.1 Prohibited and Exclusion Sites

Minn. R. 7850.4400, subp. 1, prohibits energy facility siting in certain locations, including: national parks; national historic sites and landmarks; national historic districts; national wildlife refuges; national monuments; national wild, scenic, and recreational riverways; state wild, scenic, and recreational rivers and their land use districts; state parks; nature conservancy preserves; state scientific and natural areas (SNAs); and state and national wilderness areas. Accordingly, none of these prohibited sites are located within or near the Project Area as discussed below.

In addition, Minn. R. 7850.4400, subp. 3, prohibits energy facility siting in certain exclusion areas unless there is no feasible and prudent alternative. These exclusion areas include: state registered historic sites; state historic districts; state Wildlife Management Areas (WMAs); county parks; metropolitan parks; designated state and federal recreational trails; designated trout streams; and, state water trails. None of these exclusion sites are located within or near the Project Area as further discussed below.

Although pursuant to Laws of Minnesota 2023, chapter 60, article 12, section 67, the Project is not subject to Minn. R. 7850.4400, subp. 4 (prime farmland exclusion), the 24.8-acre site (HTVL

Development Area plus BESS Development Area) proposed for the 150 MW Project does not exceed the 0.5 acre per MW use of prime farmland identified the Rule.

3.2 Factors Driving Choice of Region

The Project site was selected following an extensive search for regions in Minnesota suitable for an energy storage facility and transmission line. This location was chosen to support state and national goals of enhancing grid reliability and supplying consistent energy. Based on several factors—including renewable energy projects in the region, environmental constraints, land availability, and costs—Midwater BESS identified the southeast region of the state for further exploration to develop an energy storage project.

Existing transmission interconnection feasibility was also a factor in determining the Project's location. Four existing transmission lines ranging from 69 kV to 161 kV are located in the Project vicinity—all of which are associated with the ITC Midwest Glenworth Substation adjoining the western boundary of the Project Area. Midwater BESS is proposing to construct a new Project substation in the central portion of the Project Area. This substation will be constructed, owned, and operated by Midwater BESS and will connect to the POI at the ITC Midwest Glenworth Substation.

The Project requires sufficient acreage to host facilities that is conducive to development with respect to the energy resources, topography, interconnection, and environmental constraints. The Project will be located on land that is not expected to limit or constrain ESS development and related infrastructure. These factors are described below and are specific to the Project.

3.3 Alternative BESS Facility Sites Considered but Rejected

Pursuant to Minn. Stat. §216E.04, subd2(9), and as specified in Minn. R. 7850.2800 to 7850.3900, the BESS Facility qualifies for the alternative review process, which eliminates the obligation for an applicant to propose alternative sites within the Application. As discussed further in **Section 3.1.1**, Midwater BESS selected the proposed Project Area based on a variety of factors, including minimal environmental impacts, proximity to the electrical grid and existing transmission infrastructure, willing landowner participation, and available capacity on the grid to which the Project will interconnect. The proposed Project Area was identified based on these factors, with no alternative sites considered.

3.4 Future Project Expansion

The Applicant has no plans to expand the proposed Project Footprint (the area directly impacted by the Project) beyond the current Proposed BESS Facility Development Area. As noted above, the Proposed BESS Facility Development Area encompasses 16.6 acres of privately-owned land for which Midwater BESS has secured an option to purchase the land hosting the BESS Facility. Additionally, Midwater BESS has made an interconnection request from MISO for up to 150 MW AC, which is the planned Project energy output at the POI. The Project has been designed to

specifically address current and predicted future electricity needs for its service area. Therefore, no Project expansion is anticipated.

Should Midwater BESS seek to expand the Project in the future, Midwater BESS may upgrade the BESS technology to increase nameplate capacity or may expand the Project Area outside of the fenced area. Midwater BESS would seek necessary permits, and if necessary, additional leases required for any expansion of the Project.

4.0 HVTL ROUTE SELECTION PROCESS

Pursuant to Minn. Stat. §216E.04, subd. 2(3), and as specified in Minn. R. 7850.2800 to 7850.3900, the HVTL Facility qualifies for the alternative review process, which eliminates the obligation for an applicant to propose alternative routes within the Application unless an alternate route was previously considered but rejected. This section describes the Applicant's development of the Proposed HVTL Facility Development Area. A previous route segment that was considered and rejected is described in **Section 4.4**.

4.1 Route Width

The Power Plant Siting Act directs the Commission to locate transmission lines in a manner that "minimize[s] adverse human and environmental impact while ensuring continuing electric power system reliability and integrity and ensuring their electric needs are met and fulfilled in an orderly and timely fashion" (Minn. Stat. §216E.02, subd. 1; see also Laws of Minnesota 2024, chapter 127, article 3, section 86). The Power Plant Siting Act also authorizes the Commission to meet its routing responsibility by designating a "route" for a new transmission line when it issues a Route Permit. The route may have "a variable width of up to 1.25 miles" within which ROW for the facilities can be located (Minn. Stat. §216E.01, subd. 8).

The Applicant proposes a Proposed HVTL Facility Development Area width of 150 feet (75 feet on each side of the proposed HVTL Facility centerline) for the entire route in **Figures 2** and **3**.

4.2 Route Selection Process

This section describes the Applicant's development of the proposed HVTL Facility. In selecting the Proposed HVTL Facility Development Area, Midwater BESS considered the same factors described in **Section 3.0** that were evaluated for the BESS Facility in an iterative process to arrive at a Project design that minimized impacts to the environment and landowners while maximizing the efficiency of the Project. The HVTL Facility purpose is to facilitate the interconnection of the Project to the grid at ITC Midwest Glenworth Substation. Given the existing environmental and electrical infrastructure constraints present in and around the Project Area, the selected route provides the shortest route possible to accomplish this purpose.

Midwater BESS was guided by the routing criteria set forth in Minn. Stat. ch. 216E and Minn. R. 7850.4100. These criteria were analyzed to select a route that minimize overall impacts. The criteria include, but are not limited to:

- Sharing existing ROW, such as transmission lines;
- Using property lines and hay/pasture field boundaries to minimize impacts if existing ROW were not available or practicable;
- Maximizing distance between the HVTL Facility and homes; and

- Minimizing potential impacts to the natural environment, including wetlands, waterways, trees, and rare and unique natural resources.

As described further in **Section 4.4**, an alternative route was considered but is not feasible due to existing environmental constraints, such as wetlands and the network of existing electrical transmission and distribution lines crossing the Project Area. Given the existing land constraints, the Applicant identified the current routing for the HVTL Facility. The current route area takes advantage of parcels that are available east of U.S. Highway 65, surrounding the ITC Midwest Glenworth Substation, and landowners willing to enter lease agreements to route the HVTL Facility through this area.

4.3 Proposed Route Description and Right-of-Way

The HVTL Facility includes construction of a new 161 kV, approximately 2,668-feet long HVTL that will connect the proposed BESS Facility to the existing ITC Midwest Glenworth Substation. The proposed HVTL Facility and Proposed HVTL Facility Development Area are displayed on **Figures 2, 3, 7, and 11**.

One end of the new HVTL Facility will originate from the proposed Project substation located on the northern edge of the BESS Facility east of U.S. Highway 65 in Freeborn County. From the proposed BESS Facility and Project substation, the Proposed HVTL Facility Development Area travels north, then continues generally north and west until it turns south into the ITC Midwest Glenworth Substation. The bi-directional HVTL Facility will supply and distribute energy between the BESS Facility and the ITC Midwest Glenworth Substation. Along the route, the HVTL Facility crosses two existing Northern States Power Company electrical transmission lines that connect to the ITC Midwest Glenworth Substation. The HVTL Facility will avoid interference with these existing lines with design incorporating industry standard support and vertical separation in accordance with NESC safety factors, as further discussed in section 5.1.2.

The Proposed HVTL Facility Development Area is designed to avoid or minimize impacts on residences, the environment, and other sensitive resources. The Proposed HVTL Facility Development Area is adjacent to, or transects, existing transmission lines in the vicinity of the Project that connect to the ITC Midwest Glenworth Substation. The Applicant anticipates using a nominal 150-foot ROW for the entire length of the HVTL Facility to allow for access to maintain, repair, and protect HVTL Facility infrastructure. HVTL Facility structures would be placed roughly in the center of the ROW, with 75 feet of ROW on each side of the centerline. The total Proposed HVTL Facility Development Area ROW is 8.2 acres. Midwater BESS will ensure construction along the Proposed HVTL Facility Development Area will comply with the applicable standards and criteria set out in Minn. Stat. §216E.03, subd. 7, and Minn. R. 7850.4100. The Project, as proposed, will support the State's goals to conserve resources, minimize environmental, human settlement, and land use impacts, and supports the State's electric energy security through the construction of efficient, cost-effective electric transmission infrastructure.

More detailed information on the Project's mitigation to the environment, land use, and human settlement may be found in **Section 6.0**.

The Applicant respectfully requests the Commission approve the Proposed HVTL Facility Development Area and authorize a route width of 75 feet on each side of the proposed HVTL Facility centerline (150 feet total width) for the length of the HVTL Facility. Midwater BESS has secured 100 percent of the total necessary lease agreements for the Proposed HVTL Facility Development Area.

4.4 Alternative HVTL Routes Considered but Rejected

Minn. Stat. §216E.04, subd. 3 and Minn. R. 7850.3100 require the Applicant to identify any alternative routes that were considered and rejected for the HVTL Facility. One alternative was considered but ultimately rejected. The alternative route is described below, along with the reasons it was rejected.

4.4.1 Rejected Route

The Applicant evaluated an HVTL route segment that was parallel to the Project BESS enclosures and O&M facility, which was farther east than the currently proposed HVTL. This route segment traveled north and followed the edge of the CRP land between the Proposed HVTL Facility Development Area and tree line for the CRP land. To reduce the potential impact to wetlands, tree coverage, nearby residences, and other sensitive environmental features, the Proposed HVTL Facility Development Area was relocated closer to U.S. Highway 65. No other routes were considered for the Proposed HVTL Facility Development Area.

4.5 Future HVTL Facility Footprint Expansion

The Applicant has no anticipated plans to expand the proposed HVTL Facility footprint beyond what is currently planned. The Proposed HVTL Facility Development Area encompasses approximately 8.2 acres of privately-owned land for which Midwater BESS has secured lease agreements from the landowners. The HVTL Facility is primarily designed to meet current and future Project needs by reducing line losses and interconnecting 150 MWac measured at the POI. The Applicant does not anticipate the need to connect the Project substation at a higher voltage than 161 kV within the foreseeable future and is, therefore, not proposing to build the HVTL Facility to accommodate greater voltage or transfer capacity than proposed. Land used for development of the Project will be leased from the landowners for up to 35 years. Should Midwater BESS find a need to expand beyond the planned route area, portions of the Project Area not utilized for the arrangement may become part of an expansion effort if upgraded transmission technology cannot fulfill additional MW capacity within the same development area. New permits, leases, and additional land would be required to accommodate growth of new facilities and infrastructure if the remaining unoccupied portion of the current Project Area is unavailable.

5.0 ENGINEERING AND OPERATIONAL DESIGN

The following describes current assumptions on viable preliminary Project design, facility equipment, BOP components, security fencing, and access to the Project. Facility layout and equipment will be finalized prior to construction. The preliminary Project design is shown in **Figure 2**.

5.1 Design

The Project's primary components include BESS enclosures, inverters and transformers, a Project substation, a potential O&M facility, an HVTL Facility, switching and protection for interconnection to the ITC Midwest Glenworth Substation, fencing, and access roads. All Project primary components are bi-directional and utilized based on directional flow of energy to and from the BESS Facility. The specific equipment or technology to be used has not been established at the time of filing of this Application and will be dependent upon market conditions and equipment availability at the time of construction. The assumptions in this Application are largely based on Tesla battery technology and standard industry battery technology to reflect a likely development scenario. The preliminary facility design accommodates a variety of technologies and has adequate room for placement of necessary equipment and supporting elements, such as equipment storage, stormwater management, and parking. However, final technology selection will be made at the time of final Project engineering prior to construction.

5.1.1 BESS Facility

5.1.1.1 BESS

A BESS can help balance the delivery of power generated by electric generation sources by charging from the electrical grid when demand is low and distributing electricity back into the grid during outages or when demand is high. A BESS can help maximize regional network function by dispatching stored power during times when less energy is being produced, as described more fully in **Section 2.0**.

Battery storage technology is advancing at a rapid pace. Similar to other infrastructure components, the options available for the BESS when Midwater BESS begins procuring infrastructure could be significantly more advanced or offered in a wider selection than those currently available. Midwater BESS will evaluate current market options during the final engineering phase to select the most suitable battery system model. The Project is being designed with flexibility to accommodate a variety of Lithium Iron Phosphate (LFP) battery technologies. For the purposes of this Application, several battery storage systems were reviewed by Midwater BESS to determine feasible infrastructure options. Of the systems available to the market, Tesla Megapack 2 XL units were modeled as this technology has a larger potential impact (i.e., the Project Footprint). The actual footprint of the BESS enclosures may be smaller depending on technology options available during final engineering.

The BESS preliminary design incorporates a modular layout of enclosures based on currently available technology of the Tesla Megapack 2 XL. The BESS enclosure area locations are currently planned within the 5.6-acre main fenced area, at the center of the Project Area. Each BESS enclosure will be comprised of battery cells, integrated with battery management systems into battery modules placed in racks, and installed within a weather-proof enclosure (**Image 2**). These enclosures do not allow internal ingress for safety reasons as described in **Section 5.1.1.2** below.

The BESS will include inverters and medium voltage transformers to transfer the energy to and from the batteries. Each BESS enclosure will be connected to pad-mounted switchgear, step up/down transformer(s), and a power distribution system via 34.5 kV underground cables. Stabilized gravel will cover the entire surface area within and up to five feet beyond the perimeter fencing.

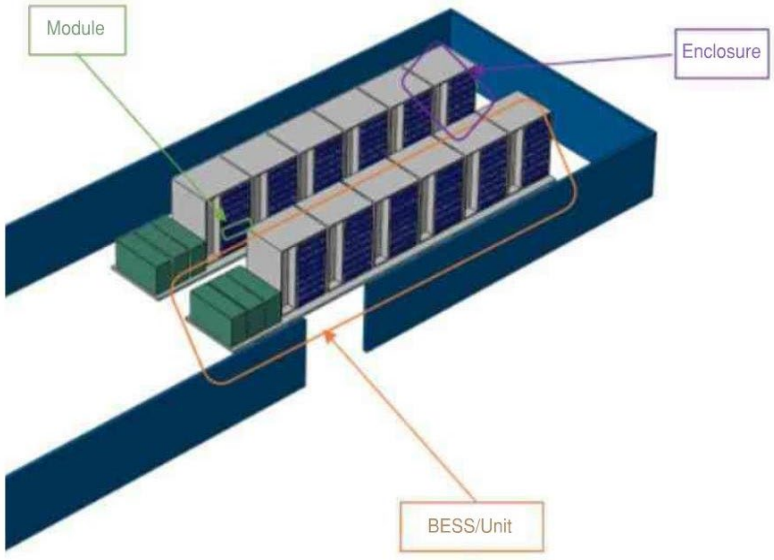


Image 2: Representative BESS Enclosure

The BESS industry is currently deploying two main types of lithium-ion battery cell chemistries: Nickel Manganese Cobalt Oxide (NMC) and LFP. Midwater BESS intends to use LFP due partially to its improved safety profile when compared to NMC. LFP batteries are more stable than NMC and have a lower risk of thermal runaway. Thermal runaway occurs when a battery cell's internal temperature rises to a temperature above the design temperature to maintain a controlled reaction. This can result in a cascading chemical reaction that produces additional heat. This typically leads to the breakdown of internal separators within the battery cell, which results in additional reactions. Due to the high temperatures involved, this can also result in fire in nearby

combustible components.[3] In the unlikely event of a battery cell thermal runaway event, the likelihood of both thermal runaway occurring and spreading is reduced using less reactive substances in LFP cells in comparison to other lithium-ion chemistries including NMC. Potential hazards and safety considerations are discussed in more detail in **Sections 6.2.5.1** through **6.2.5.3**.

Over the life of the Project, the batteries will lose some of their capacity. Under current MISO market rules, a BESS is accredited capacity based in part on its ability to provide the energy equivalent of its claimed capacity for a minimum of at least four continuous hours each day. To maintain the BESS Facility's rated capacity, the BESS will undergo augmentation either through the addition of battery modules within the existing enclosures or the addition of supplemental battery enclosures. An augmentation schedule, used to maintain overall Project functionality, will be determined during the design process after final equipment selection and will be based on the projected battery degradation. Midwater BESS has designed the site to accommodate future augmentation units within the fenced area. Specific installation timing will vary based on capacity monitoring during operations. The physical installation process for additional or refreshed battery modules will vary depending on the final equipment provider but may involve the installation of additional cabinets. This would involve construction activity on the site to place footings, cabinet equipment and electrical connections. Midwater BESS has included the planned augmentation units in the design of the Project as displayed in **Figure 2**. Accordingly, the initial construction of the BESS Facility will not include all battery enclosures displayed in **Figure 2**, with augmentation units added during the life of the Project. Midwater BESS respectfully requests the Site Permit expressly allow the addition of augmentation units, as depicted in the final site plan, without a need for a Site Permit Amendment or minor alteration approval from the Commission.

The BESS Facility location will be graded and the ground surface dressed with crushed rock. The BESS Facility will be fenced with a six-foot-tall chain link fence topped with one to two feet of barbed wire in accordance with applicable NFPA National Electrical Code 70[4] requirements for security and safety purposes. As noted above, the land within the fenced area will be brought to finished grade using crushed rock to provide step-and-touch protection, which also minimizes vegetation growth and reduces fire risk. The BESS Facility will be secured with a lockable gate and will only be accessible to qualified, trained Project operational personnel, or those escorted by such personnel at all times.

Visually, the BESS impact would not be out of character with the existing ITC Midwest Glenworth Substation. The modeled enclosures are neutral in color, relatively low in height (approximately ten feet, including foundations), and approximately 22.9 feet long.

[3] Ovrom, Andrew. 2023. Comparing NMC and LFP Lithium-Ion Batteries for C&I Applications. Mayfield Renewables (available at https://www.mayfield.energy/technical-articles/comparing-nmc-and-lfp-lithium-ion-batteries-for-ci-applications/#:~:text=Nickel%20Manganese%20Cobalt%20(NMC)%20and%20Lithium%20Iron%20Phosphate%20(LFP,long%2Dterm%20reliability%20are%20paramount) Accessed September 2024.

[4] NFPA 70, 2023. National Electrical Code. Quincy: National Fire Protection Association.

5.1.1.2 Project Substation and Interconnection

The Project substation location is proposed in the central part of the Project Area (**Figure 2**). The Project substation is estimated to occupy approximately one acre of land and have a footprint of approximately 45,000 square feet (150 feet by 300 feet). The Project substation will consist of high voltage electrical structures (i.e., pole structures), breakers, a three phase, three-winding 161 kV step-up/step-down bi-directional transformer, metering, and related equipment for connecting to the existing ITC Midwest Glenworth Substation immediately west of the Project Area, lightning protection, and control equipment. These elements will be designed according to the specifications of the GIA to be executed between MISO and Midwater BESS.

Midwater BESS will connect the Project to the grid via the HVTL Facility between the Project substation and the existing, adjacent ITC Midwest Glenworth Substation. Electricity from the grid will be stepped down from the 161 kV interconnection voltage at bi-directional transformers located within the Project substation. It will then be delivered through underground 34.5 kV feeder lines to the BESS system inverters, which will convert the electricity for storage in the battery system. When stored energy from the batteries is required, the same inverters will convert the energy to DC, then transmit it via the underground 34.5 kV feeder lines to the Project substation. The 34.5 kV collector system voltage will then be stepped up to the interconnection voltage of 161 kV by the bi-directional transformers located at the Project substation and transmitted to the ITC Midwest Glenworth Substation via the overhead HVTL Facility.

The Project substation location will be graded, with the ground surface dressed using crushed rock. Secondary containment for the transformer will be installed as necessary. The Project substation will be fenced with a six-foot-tall chain link fence topped with one to two feet of barbed wire in accordance with applicable electrical code requirements for security and safety purposes. As noted above, the land within the fenced area will be brought to finished grade using crushed rock to provide step-and-touch protection, which also minimizes vegetation growth and reduces fire risk. The Project substation will be secured with a lockable gate, access restricted to qualified, trained Project operational personnel, or those escorted by authorized personnel at all times.

5.1.1.3 Operations and Maintenance Building

The Project may include the construction and use of an O&M facility consisting of a building, gravel parking area, and a perimeter security fence (**Figure 2**). The O&M facility, if utilized, will be located near the southern portion of the BESS Facility. The building will be used to conduct maintenance and repair of Project equipment, store parts and other equipment, and store other operation and maintenance supplies (e.g., fuses, jumper wires, etc.), excluding large quantities of batteries. The O&M facility will be locked when not in use by Project staff. A parking area will be located adjacent to the O&M facility for staff use. The location of the O&M facility is currently planned on a 0.1-acre parcel in the southwestern portion of the Proposed BESS Facility Development Area, southeast of the Project substation (**Figure 2**).

An alternative to the Project Area O&M facility is to rent an existing space. Under this scenario, a suitable warehouse or commercial space will be identified in reasonable proximity to the Project. Necessary equipment or tools would be stored there, and the space will serve as a base of operation for the on-site technicians.

During Project construction, one temporary laydown yard will be located in the southeastern portion of the Proposed BESS Facility Development Area. Upon Project construction completion, the laydown yard will be regraded and seeded with a perennial mixture for slope stabilization (see **Appendix C**).

5.1.1.4 Fencing

Permanent security fencing will be installed along the BESS Facility and Project Substation perimeter (**Figure 2**) to comply with applicable electrical codes, including the National Electrical Code in NFPA 70. Fencing will consist of a six-foot-tall chain link fence, with one to two feet of barbed wire. High voltage warning signs and lockable gates will also be installed on the fencing.

5.1.1.5 Project Layout

The Project's final layout will be optimized to maximize electrical storage and efficiency while minimizing human settlement, environmental, cultural resources, and infrastructure impacts. The Project's facilities will be sited with consideration of Township and County setback requirements (as described in **Section 5.2.1**), as well as other local, state, and federal regulatory standards. The preliminary site plan can be found in **Figure 2**.

5.1.1.6 Setbacks

As described above, the Project is considered an ESS, defined by Minn. Stat. § 216E.01, subd. 3a and permitted by the Commission under Minn. Stat. § 216E.04 and Minn. R. 7850.2800 to 7850.3900. To date, the Commission has not issued a site permit for a standalone ESS. Accordingly, no state-level precedent has been established to address Project setbacks. Midwater BESS reviewed applicable setbacks and related requirements during preliminary project design and layout. Although Project siting is not required to adhere to local ordinances, Midwater BESS has made efforts to comply with Freeborn County setbacks and relevant ordinances, in addition to meeting all applicable state requirements. Freeborn County has adopted a comprehensive plan and a zoning code. Freeborn County's *Comprehensive Land Use Policy Plan* (Comprehensive Plan) is codified at Chapter 24 of the Freeborn County Code of Ordinances (Ordinance). The County's Zoning Ordinance is codified at Chapter 42 of the Ordinance.

The Freeborn County Zoning Ordinance does not have specific BESS requirements. The Project Area consists of predominantly cultivated land zoned "A" Agricultural District. Because ESS are not specifically contemplated in the ordinance, the general setbacks for the Agricultural zoning district were reviewed.

The setback regulations and distances for the Agricultural zoning district in the county are included in **Table 5.1-1** and are also shown on the Preliminary Facility Design in **Figure 2**. Where setbacks differed for the same feature, Midwater BESS used the most stringent setback, when possible.

Table 5.1-1: Setback Requirements

Setback Type	County Setback Distance (feet)	Preliminary Project Design Setback from Fence (feet)
HVTL Facility to Inhabited Dwelling	250	365
Battery to Property Line	100	220
Front yard	40	165
Side yard	15	130
Rear yard	15	720

As indicated in **Table 5.1-1** above, the preliminary Project design setbacks meet or exceed the county's setback requirements as provided in the Zoning Ordinance (Section 42-107).

Additionally, Midwater BESS implemented its own internal Best Management Practices (BMPs) applicable to setbacks and road widths in **Table 5.1-2**. Setbacks are calculated as the distance nearest to the BESS Facility (**Figure 2).**

Table 5.1-2: Project Initiated Requirements

Setbacks and Design Standards	Preliminary Project Design Requirement (feet)
Main Access Road Width	24
Minimum Intersection Turning Radius	40
Distance from Fence to Equipment	44
Equipment to Property Boundary	54
100-year High-Water Level	Avoid 100-year Flood Zone

5.1.1.7 Proposed BESS Facility Development Area

Table 5.1-3 describes the BESS Facility estimated acreages within the approximately 17-acre Proposed BESS Facility Development Area based on the preliminary Project design (**Figure 2**).

Table 5.1-3: Estimated BESS Facility Acreages in Proposed BESS Facility Development Area

Proposed BESS Facility Development Area*	Acres
Access Roads	0.37
Basin Areas	2.01
BESS Pads	1.62
Laydown Yard	3.42
O&M facility	0.11
Project Substation Area	1.03

Proposed BESS Facility Development Area*	Acres
BESS Area (Fenced Area) Gravel Pad	3.98
Area Inside Proposed BESS Facility Development Area not Housing Infrastructure	4.05
Proposed BESS Facility Development Area Total	**16.59**

* The Proposed BESS Facility Development Area includes the permanent development area that is hosting BESS equipment, as well as the access road within the lease area. This area, based on the Project's preliminary design, includes access roads, buried electrical feeder lines, O&M facility, Project substation, BESS, stormwater basins, and a temporary laydown yard. *Note: some addends may not sum due to rounding.*

5.1.1.8 Access Roads/Transportation System

Access to the Project is planned to a point on the western Project Area boundary from U.S. Highway 65 (**Figures 2** and **3**). The final access road length will depend on the equipment selected and final engineering. The surface space between BESS enclosures and the fence will be completely covered by gravel, providing for drivable access to the enclosures around the perimeters and between rows, as well as access to the Project substation. The entry road apron from U.S. Highway 65 will be approximately 100 feet wide during construction and operation to allow safe turning radii for trucks. The road will narrow to 24 feet as it enters the BESS Facility. See **Image 3** for typical access roads profiles. During the construction phase, the access road may be wider; however, this is temporary, with a smaller finished width once construction is completed. All entrances will have locked gates.

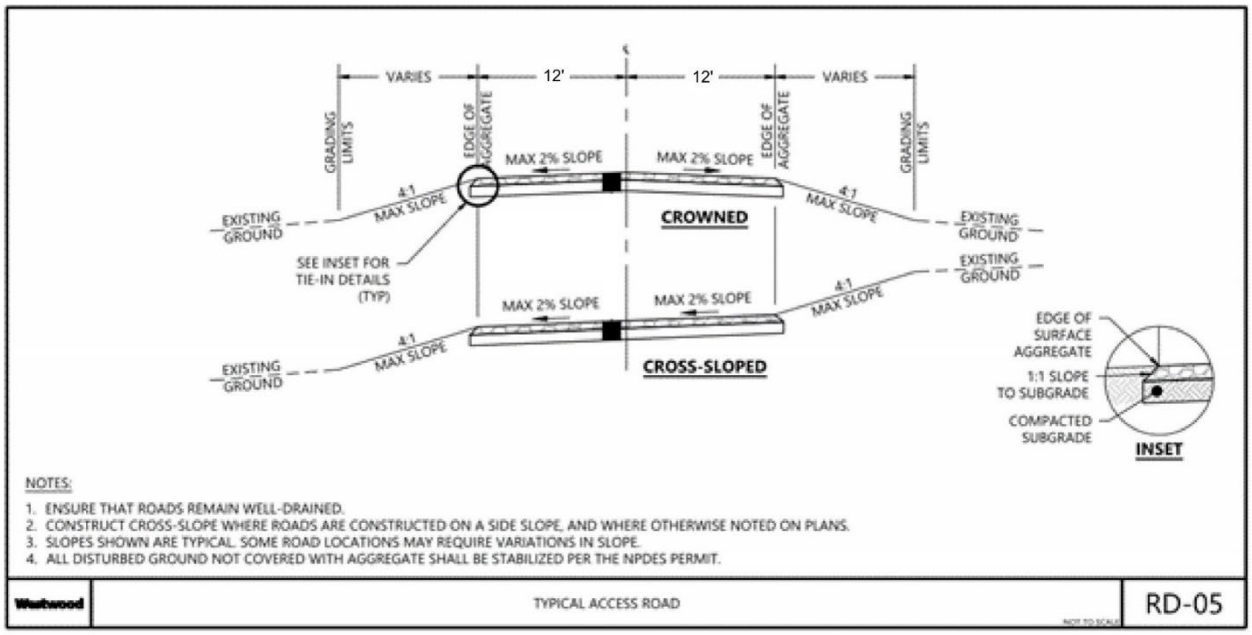


Image 3: Typical BESS Access Road Profile

Because the BESS equipment is similar to the existing ITC Midwest Glenworth Substation, it is unlikely that public road upgrades or other modifications will be required for Project construction or operation; however, Midwater BESS will engage with MnDOT staff to clearly establish an understanding of their required road standards. Should conditions along chosen delivery routes

require upgrades or changes, those could include, but are not limited to, road improvements (lane widths, road profile depths, intersection radii), additional aggregate, and driveway changes. The Applicant will obtain any required access permits. Midwater BESS will continue to coordinate with MnDOT as the Project develops.

Midwater BESS will obtain relevant permits from road authorities to accommodate construction related activities.

5.1.2 HVTL Facility

5.1.2.1 Transmission Structure Design

The Applicant proposes the construction of a single circuit 161 kV (AC) HVTL using weathering steel monopoles (poles or structures) that generally range in height from 70 feet to 130 feet. Approximately ten structures will be installed to facilitate the connection between the Project substation and the ITC Midwest Glenworth Substation. **Image 4** shows the two types of structures that will be used between the Project substation and the ITC Midwest Glenworth Substation. These structures include:

- Tangent: for in-line (straight) segments.
- Deadend: used within the Project substation, at 90 degree turns, and as the HVTL Facility approaches and enters the ITC Midwest Glenworth Substation.

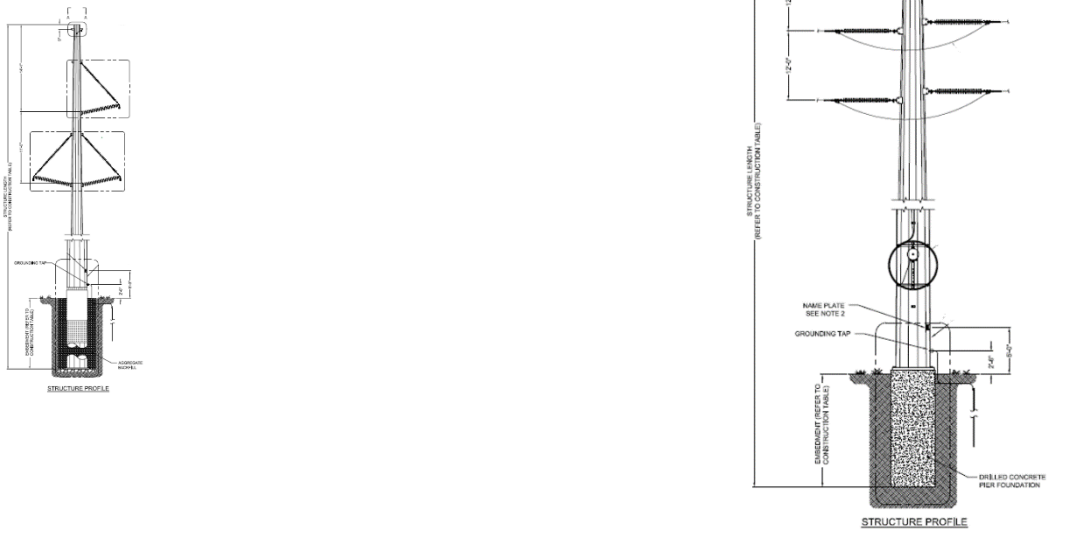
Structures will be spaced approximately 164 to 337 feet apart. Structure foundations will be directed embedments and drilled piers. The tangent structures or non-containment structures will be backfilled with concrete slurry and the deadends will utilize drilled piers. Drilled pier foundations will be approximately six feet in diameter and 20 to 30 feet or more in depth, depending on soil conditions. The maximum operating temperature for the HVTL Facility is 212°F (100°C).

The line insulators will be polymer and designed to operate at 161 kV phase-to-phase. The insulated section length will also meet Avian Power Line Interaction Committee (APLIC) recommendations for avian protection.[5] See S**ection 6.5.7.2** for further details on avian protection measures.

The proposed HVTL Facility will be designed to meet or surpass all relevant local and state codes, and other recognized standards such as the Rural Utilities Service Bulletin 1724E-200, Design Manual for High Voltage Transmission Lines, National Electrical Safety Code C2-2017, American Society of Civil Engineers, American Concrete Institute and the American Institute of Steel Construction Manual, North American Electric Reliability Corporation standards, and the NESC.

[5] Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C., and Sacramento, CA (available at https://www.nrc.gov/docs/ML1224/ML12243A391.pdf"https://www.nrc.gov/docs/ML1224/ML12243A391.pdf) Accessed August 2024.

Appropriate standards will be met for construction and installation, and applicable safety procedures will be followed during and after installation.



Single Circuit Tangent Single Circuit Deadend

Image 4: Typical Overhead Transmission Line Structures

5.1.2.2 Transmission Line Right-of-Way

The Applicant anticipates constructing the new single-circuit 161 kV HVTL Facility with an approximate 150-foot ROW, 75 feet on either side of the centerline, for the entire 2,668-foot Proposed HVTL Facility Development Area. Five existing transmission lines are adjacent to, or transect, the HVTL Facility. These include the Glenworth to Hayward 161 kV line, the Glenworth to TAP162862 69 kV line, the Glenworth to TAP170811 69 kV line, the Glenworth to Worth County 161 kV line and the Freeborn Wind Gen-Tie 161 kV HVTL line (see **Figure 2**). ROW clearances will comply with NESC 2017 at maximum line operating condition. Conductor and all structure components will remain within the Project's ROW. The conductor is a one-bundle 795 kcmil 26/7 aluminum conductor steel-reinforced "Drake" with a single 48 fiber optical ground wire (DNO-12483) and an additional 1/2 inch extra high strength seven-strand steel overhead ground wire for additional shielding.

The Applicant will construct, own, and operate the 161 kV HVTL Facility between the ITC Midwest Glenworth Substation and the Project substation. The Project substation includes a 161 kV circuit breaker, 34.5 kV/345 kV generator step-up transformer, relay and protective equipment, SCADA equipment, telecommunication equipment, and metering equipment. There will be a single collector pole structure within the Project substation and at least one deadend pole structure used to enter the ITC Midwest Glenworth Substation. The exact length and position of the line and

poles will be determined by on-going engineering. The final placement and design of the HVTL Facility will incorporate feedback from the owners of several transmission lines that currently enter the ITC Midwest Glenworth Substation from the north and south that the HVTL Facility may need to cross before entering the ITC Midwest Glenworth Substation. An approximate location for the HVTL Facility is provided in **Figures 2** and **3**.

5.2 Construction, Commissioning, Restoration, Operation, and Maintenance of the BESS Facility and HVTL Facility

A variety of activities must be completed to carry the Project through construction and into operation. Below is a preliminary list of activities required to develop the Project. Pre-construction tasks will be completed between the submission of this Application and the start of construction. The Project's pre-construction, construction, and post-construction phases will follow best current practices which typically include:

- Pre-construction
    - Geotechnical investigation;
    - Underground utility identification and location;
    - Initiate soil/vegetation stabilization in areas with no disturbance;
    - Design Project substation;
    - Design BESS Facility;
    - Design access roads and electrical systems; and
    - Procure necessary facility components (inverters, BESS, and transformers).
- Construction
    - Site preparation, grubbing, and grading;
    - Maintain perennial vegetation established during preconstruction activities;
    - Establish temporary or permanent (seasonally dependent) vegetation in disturbed areas, as practical;
    - Construct laydown area and set up temporary job site trailers;
    - Construct stormwater basins;
    - Civil construction of access roads;
    - Construct fencing;
    - Install below-ground electrical systems including conduit, electrical feeder cables, other electrical cables, and communications cabling;
    - Install electrical enclosure/inverter;
    - Install BESS enclosures and batteries;
    - Construct Project substation;
    - Construct HVTL Facility; and

    - Construct O&M facility (if utilized).
- Post-construction
    - Restore disturbed areas not intended for permanent above-ground facilities;
    - Maintain and restore established vegetation;
    - Replace temporary vegetation with perennial vegetation as applicable;
    - Conduct training as outlined in ERP with local first responders;
    - Energize and test facility; and
    - Begin commercial operation.

5.2.1 BESS Construction

5.2.1.1 BESS Facility Construction and Construction Management

Construction will begin after required permits and approvals are obtained, including finalization of the MISO electrical interconnection process. Project construction will begin with workforce mobilization and the initial site preparation work, establishing a staging/laydown area, grading, and vegetation removal. Preliminary engineering analysis indicated that approximately 16.6 acres of the Proposed BESS Facility Development Area will require grading. Approximately 19,100 cubic yards of cut and 16,300 cubic yards of fill is estimated for the Project. Final cut and fill volume estimates for the access roads, stormwater management ponds, BESS pad, and other Project facilities will be established with the final site design (**Figure 2**).

In this first phase of construction, general site improvements will be made, such as access road improvements and preparation of the staging/laydown area. A temporary staging/laydown area will be located in the southeastern portion of the Proposed BESS Facility Development Area. The staging/laydown area will be used for storage of construction materials and shipped equipment containers, receiving construction deliveries, and temporary parking for Project-related vehicles. Temporary construction offices will also be located on-site during construction.

The BESS Facility (battery enclosures, PCS, and electrical systems) will be installed next in conjunction with internal drive lanes, differentiated from other on-site access roads in that there will not be a separate road within the fenced area. This area will be graveled in its entirety with no specifically designed road profile or area, so traffic will move in lanes between the BESS enclosures. Construction work for the proposed BESS Facility will begin by scraping and segregating topsoil and placing it in a designated location. Additional site preparation will include installation of substructures and electrical equipment. Installation of pile foundations (driven piles or helical piles) and embedment for equipment will require the use of trenching machines, pile drivers, forklifts, boom trucks, and cranes. Below-ground medium voltage (34.5 kV) cables from this equipment will run from the PCS to the Project substation. The Project will include individual BESS enclosures, PCS (skids including inverters and medium voltage transformers), switchboards, cabling, switchgear, junction boxes, and various panelboards and control cabinets. Crushed rock will be placed between and among installed BESS equipment, and adequate lighting will be installed around the BESS site for worker safety during construction and operation.

The Project substation and the BESS construction will take place simultaneously. Grading for the Project substation, foundations, and future internal drive lanes will be completed alongside the grading work for other areas of the BESS Facility. The grounding grid and underground conduit will be installed in conjunction with the foundations for the transformer, control house(s), and high voltage structures. The Project substation equipment will then be delivered to the site and installed on the prepared foundations. Secondary containment areas for the transformer will be constructed as required by the Project-specific SPCC Plan, and final grading will occur around the Project substation. The last Project substation construction activities include stringing the electrical wires, installing the perimeter fence, and placing coarse, clear, crushed rock throughout the interior of the fenced area and extending to approximately five feet outside the fence.

On-site construction personnel will consist of laborers, tradespersons, supervisory personnel, construction management personnel, and administrative and support staff. Midwater BESS will contract with one or more Engineering, Procurement, and Construction (EPC) contractors to construct the Project. Midwater BESS will require the selected EPC contractor(s) to work with subcontractors and other vendors to maximize local hiring and local economic benefits for the Project, while ensuring the Project is built safely, on time, and on budget. If multiple contractors are hired to work on separate portions of the Project (e.g., different contractors for the BESS Facility and Project substation), coordination between the contractors will be required to maintain compliance with all applicable permitting requirements.

Typical on-site construction staff levels will depend on the number of concurrent tasks being performed and the phasing of the Project. The Project will create approximately 75 jobs during the peak construction and installation phases (anticipated between the first and third quarters of 2027), and one to two full-time jobs during the expected 30-year operations phase.

Midwater BESS estimates that there will be between five and 10 semi-trucks used daily for equipment delivery during construction. This volume of traffic will be limited to several weeks during delivery of battery module enclosures and transformer skids; truck traffic will decrease once these components are delivered. Light duty trucks will also be used daily for transportation of construction workers to and from the Project Area. Midwater BESS will coordinate with the appropriate local and state road authorities ahead of construction.

Typical construction equipment, such as scrapers, bulldozers, dump trucks, watering trucks, motor graders, vibratory compactors, and backhoes will be used during construction. Specialty construction equipment that may be used during construction could include:

- Skid steer loader;
- Pile driver;
- Light and medium duty cranes;
- All-terrain forklift;

- Concrete truck and boom truck;
- High reach bucket truck; and
- Truck-mounted auger or drill rig.

Heavy equipment will be removed from the Project Area once construction is completed.

5.2.1.2 Inspections and Commissioning

Equipment inspections will be conducted prior to commercial operations of the proposed Project and in compliance with applicable Site Permit and Route Permit conditions. Inspection and testing will occur for each component of the BESS, as well as the associated communication, feeder lines, and SCADA systems. Testing, inspections, and commissioning will occur at periods during construction and upon completion of the construction phase.

5.2.1.3 Restoration

As portions of the Project near completion, the temporary 3.42-acre laydown area and other temporary disturbance areas will be restored. The Project will be graded to natural contours, where possible, and topsoil stockpiled during construction will be respread over these areas. Disturbed areas outside of the Proposed BESS Facility Development Area and temporary disturbance areas inside the Proposed BESS Facility Development Area will be de-compacted, reseeded, and re-vegetated with specific seed mixes in accordance with BMPs identified in the preliminary VMP (**Appendix C**) and the SWPPP that will be developed at the time of construction. These seed mixes are designed to be used in conjunction with the vegetation management practices of mowing and selective herbicide application. All areas undergoing restoration will be stabilized with erosion control measures such as silt fences, hydro-mulch, and sediment control logs until vegetation is established. Additionally, a temporary cover crop will be planted with the perennial mixes to stabilize the soil and prevent erosion during the time it takes for the seeds to establish. Vegetation is expected to be fully established during the sixth growing season (Year 5) after perennial seed mix is planted. Midwater BESS anticipates that the post-construction clean-up and site restoration activities will take approximately two to four months.

The preliminary VMP provides a guide to site preparation, installation of prescribed seed mixes, management of invasive species and noxious weeds, and control of erosion/sedimentation. The required restoration management is designed to continue for five years. Midwater BESS will use an adaptive management approach for vegetation management. Monitoring vegetation during the active growing season (May–November) is a key aspect of adaptive management and will be useful in identifying issues, tracking progress, and reevaluating management needs.

The Project's preliminary VMP outlines several vegetation maintenance strategies that may be implemented at the site, including manual removal of weeds and herbicide use inside fenced areas, rock covered areas adjacent to the fences, and access roads. Vegetated areas within the Preliminary Development Area will be maintained in a variety of ways to ensure establishment and longevity of the planted species. Areas outside of the Proposed BESS Facility Development Area will be

maintained in a manner consistent with the surrounding land use, which may include continued CRP use.

5.2.1.4 Operations and Maintenance

Following commissioning and commercial operation, the care, custody, and control of the Project facilities transfers from the construction team to the operations staff. The construction manager works with the operations staff, the equipment suppliers, and other construction and maintenance personnel to ensure a smooth transition from the start of construction to the COD of the Project. The operations staff will have full responsibility for the facility to ensure O&M are conducted in compliance with all permit requirements, prudent industry practices, and the equipment manufacturer's recommendations.

The Project will be professionally maintained and operated by Midwater BESS, an affiliate, and/or a qualified contractor. Primary tasks include regularly scheduled inspection(s) of electrical equipment, vegetation management, as well as snow removal on access drives and within the BESS area, as needed.

The expected operational life of the Project is 30 years, after which, Midwater BESS reserves the right to extend operations of the Project consistent with any necessary permits or permit amendments. Should Midwater BESS decide to continue operation, a decision will be made as to whether the Project will continue with the existing equipment or to upgrade the facilities with newer technologies.

Midwater BESS estimates that the Project will result in one to two full-time positions to operate and maintain the Project facilities. A maintenance plan will be created for the Project to ensure the performance of the BESS facilities, including a scheduled check of the main items and a predictive maintenance approach of the devices subjected to derating/degradation. Derating/degradation refers to the known process of components losing some capacity, efficiency, or otherwise degrading over the course of the Project's life cycle. Like all technology and physical components, a certain amount of this is unavoidable, and Midwater BESS will plan for it and maintain the facility as needed. Once construction is complete, the BESS Facility is expected to see one delivery truck on-site monthly, with potentially more personnel on-site at intervals associated with scheduled maintenance, up to daily visits, with passenger vehicles. The main scheduled activities are described in more detail in

Table 5.2-1 in **Section 5.2.1.9** below.

All maintenance activities will be performed by qualified personnel and will be performed during the day to the extent practicable.

5.2.1.5 Supervisory Control and Data Acquisition System

Performance monitoring of the Project will be conducted by Midwater BESS and consist of real-time and continuous assimilation of the data acquired by the energy meter and SCADA, or Supervisory Control and Data Acquisition. The SCADA system provides data on BESS energy storage, availability, meteorology, and communications. The BESS modules will communicate directly with the SCADA system for remote performance monitoring, energy reporting, and troubleshooting. Operators will be notified immediately of any abnormalities allowing for timely corrective action which may be performed remotely or may require personnel to enter the site.

5.2.1.6 Equipment Inspection

Inspection of the main equipment will occur at regular intervals, including:

- **BESS Facility**: Performance verification, check of air filters, heating, ventilation, and air conditioning (HVAC) system, and monitoring;
- **Life Safety Systems:** Testing and certification of smoke, heat, and gas detectors and operation of emergency devices (e.g. active venting);
- **Inverters, transformer, and electrical panels:** Visual check of the devices, including connection equipment and the grounding network; check for presence of water and dust; check fluid levels for oil-filled transformers, if applicable;
- **Electrical check:** Check of the main switches and safety devices (fuses);
- **Noise:** Check of abnormal sounds;
- **Cabling and wiring**: Visual check of electrical lines (where visible) and connection box to verify their status;
- **HVTL Facility, structures, and components**: Routine visual inspection (maintenance of structures may be performed by the on-site personnel or an independent contractor); and
- **Project substation**: Scheduled visual inspections.

5.2.1.7 Performance Monitoring

Performance monitoring of the Project facilities will consist of real-time telemetry of the data acquired by the SCADA system (energy stored, alarms, faults, etc.) and analysis by operators, remote company employees, to identify under performance or other abnormal conditions.

5.2.1.8 Facility Maintenance

Facility housekeeping will include, as required, access road maintenance, snow removal, vegetation maintenance (method dependent on plant type and seasonality; likely traditional herbicides), fence and gate inspection, and lighting system checks.

5.2.1.9 Maintenance Frequency

Table 5.2-1 provides more information on the anticipated O&M task frequency associated with the Project. The table represents the anticipated formal task frequency. The inspection frequency may vary based on facility demands and experience with performance of certain components and Project features and will include regular informal inspections by on-site O&M staff.

Table 5.2-1: Project Operations and Maintenance Tasks and Frequency

Plant Device	Task	Preliminary Frequency
BESS	System Visual Inspection	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
	Data logger memory download	Once Yearly
	Fuses check	Once Yearly
	Grounding check	Once Yearly
	Torque check	Once Yearly
Support Structures	Visual check	Once Yearly
Medium Voltage Transformers	Visual Check	Once Yearly

5.2.2 HVTL Facility Construction

5.2.2.1 HVTL Facility Construction and Construction Management

HVTL Facility construction will not begin until all applicable federal, state, and local approvals are obtained, lease agreements are acquired, soil conditions are determined, and final design has been completed.

Transmission line structures are generally designed for installation at existing grades. No significant grading is anticipated as the existing topography within the ROW is relatively flat and ranges from about 1,220 feet above mean sea level (amsl) near the Project substation about 1,230 feet amsl near the ITC Midwest Glenworth Substation. Typically, structure sites with 10 percent or less slope will not be graded or leveled. Sites with more than 10 percent slope will have working areas graded level or fill brought in for working pads. It is preferred to leave the leveled areas and working pads in place for use in future maintenance activities, if practical. If not, the site will be graded back to its original condition and original drainage maintained to the extent possible and imported fill is removed.

After the structure pads are stabilized, the structure foundations will be installed. Foundations for the pole structures will be direct embedments and drilled piers. The single circuit tangent structures

or non-containment structures will be backfilled with concrete slurry. All other structures will use drilled piers.

As discussed in **Section 5.1.2.1**, two different pole structures will be used along the Proposed HVTL Facility Development Area (Deadend and Tangent). Deadend poles are located within the Project substation, at 90 degree turns, and as the HVTL Facility approaches and enters the ITC Midwest Glenworth Substation. Deadend poles will be installed on drilled piers and drilled pier foundations will be designed and constructed using reinforced concrete. All reinforced piers shall have a minimum projection of one foot of concrete above ground, and the minimum reveal used for design will be 1.5 feet to account for the anchor bolt projection. Drilled pier foundations will be approximately six feet in diameter and 20 to 30 feet or more in depth, depending on soil conditions. Steel reinforcing bars and anchor bolts are installed in the drilled holes prior to concrete placement. After the concrete foundation is set, the pole is bolted to the foundation.

Tangent structures will be direct embedded and backfilled with an approved concrete slurry. All embedments will have appropriate properties to support end bearing and will be designed considering lateral and axial-compression loading. Concrete slurry and reinforced concrete design will be performed in accordance with the national building code requirements for structural concrete. Direct embedding involves digging a hole for each pole, filling it partially with crushed rock, and then setting the pole on top of the rock base. The area around the pole is then backfilled with crushed rock and/or soil once the pole is set. Any excess soil from the excavation will be spread and leveled near the structure or removed from the site, if requested by the property owner or regulatory agency.

Conductor stringing is the process of attaching conductor wires to the insulators suspended from the poles. It generally involves pulling the conductor wire off a truck-mounted spool.[6] Conductor stringing operations require brief access to each structure to secure the conductor wire and shield wire once the final sag is established. Temporary guard or clearance structures are installed, as needed, over existing distribution or communication lines, streets, roads, highways, railways, waterways, or other obstructions after any necessary notifications are made or permits obtained. This ensures that conductors will not obstruct traffic or contact existing energized conductors or other cables. In addition, the conductors are protected from damage.

Environmentally sensitive areas such wetlands and waterway areas may require special construction techniques. Based on the field delineation, one wetland was identified within the Proposed HVTL Facility Development Area (see **Section 6.5.5**). The Applicant will minimize impacts to these features by not placing pole structures within wetlands and spanning waterways. In addition, construction equipment will not be driven across wetlands or waterways unless there

[6] Molburg, J.C., Kavicky, J.A., and Picel, K. C. 2007. The design, construction, and operation of long-distance high-voltage electricity transmission technologies. United States (available at https://publications.anl.gov/anlpubs/2008/03/61117.pdf) Accessed August 2024.

are no other reasonable alternatives for construction and only after discussion with the appropriate resource agency and any necessary permits are obtained.

5.2.2.2 Inspections and Commissioning

5.2.2.3 Site Restoration

The ground will be disturbed during the normal course of work (as is typical of most construction projects), which can take several weeks in any one location. The Applicant will take the steps necessary to lessen the impact of the HVTL Facility on the surrounding environment by restoring areas disturbed by construction in accordance with BMPs and any permit conditions. This will begin with a pre-construction survey that will identify areas requiring special restoration procedures. During construction, crews will also attempt to limit ground disturbance wherever possible. As construction on each parcel of land is completed, disturbed areas will be restored to its original condition to the maximum extent practicable.

The Applicant or its contractor will contact each property owner after construction is completed to identify and address any damage that may have occurred as a result of the HVTL Facility construction. If damage has occurred to fences, drainage tiles, or the property, the Applicant will fairly compensate the landowner for the damages sustained in accordance with the terms and conditions agreed upon in the lease agreements entered into by the landowner and the Applicant.

In some cases, the Applicant may engage an outside contractor to restore the damaged property to its original condition to the extent practicable. Portions of permanent vegetation that are disturbed or removed during HVTL Facility construction will be reestablished to pre-disturbance conditions. Resilient species of common grasses and shrubs typically reestablish naturally with few problems after disturbance. Areas with significant soil compaction and disturbance from construction activities along the approved route will require assistance in reestablishing the vegetation stratum and controlling soil erosion. Commonly used BMPs to control soil erosion and assist in reestablishing vegetation that may be used on the Project include, but are not limited to:

- Erosion control blankets with embedded seeds
- Silt fences
- Hay bales
- Hydro seeding
- Planting individual seeds or seedlings of non-invasive native species

This topic is discussed further in the VMP (**Appendix C**).

5.2.2.4 Equipment Inspection

Visual inspections will be performed from the BESS Facility and periodically along the HVTL route by truck or ATV. Annual inspections will be conducted to ensure that the HVTL remains fully operational and that vegetation does not encroach upon NESC prescribed clearances.

5.2.2.5 Facility Maintenance

HVTLs are designed to operate for decades. Typically, they require only moderate maintenance, particularly in the first few years of operation. The life of the HVTL exceeds the estimated service life of the proposed Project.

Transmission infrastructure is reliable because it includes very few mechanical elements. It is built to withstand weather extremes, with the exception of severe weather such as tornadoes and heavy ice storms. HVTLs are automatically taken out of service by the operation of protective relaying equipment when a fault is sensed on the system. Such interruptions are usually momentary. Scheduled maintenance outages are also infrequent. As a result, the average annual availability of transmission infrastructure is very high, in excess of 99 percent.

Visual inspections are the principal operating and maintenance cost for transmission facilities. Annual operating and maintenance costs for 161 kV HVTL in Minnesota and the surrounding states are expected to be approximately $1,500 per mile per year. Actual line-specific maintenance costs depend on the setting, the amount of vegetation management necessary, storm damage occurrences, structure types, materials used, and the age of the line.

5.2.2.6 Right-of-Way Acquisition

New ROW is required for the HVTL Facility. The Applicant has secured 100 percent of the land necessary through purchase or private leases from landowners for the 8.2 acres of ROW required for the Proposed HVTL Facility Development Area.

5.2.2.7 Equipment, Surveying, Clearing, and Staging

In addition to the equipment listed in **Section 5.2.1.1**, construction equipment typically used on HVTL projects also includes tree removal equipment, mowers, cranes, digger-derrick line trucks, track-mounted drill rigs, front end loaders, bucket trucks, flatbed tractor-trailers, flatbed trucks, and various trailers.

Prior to construction, surveyors will stake the HVTL centerline and pole locations. Vegetation (trees, shrubs, forbs) would be cleared to create a temporary access road approximately 24 feet wide, as well as any vegetation required to construct the poles/footings. Taller vegetation (trees and shrubs) that would interfere with construction would be cleared from the remainder of the construction corridor. Erosion and sediment control devices will be installed as needed.

A temporary laydown yard will be used to store equipment and materials prior to and during construction. The laydown yard will be located around the BESS Facility within the Proposed BESS Facility Development Area.

5.3 Decommissioning and Repowering of the BESS Facility and HVTL Facility

The objective of decommissioning is to restore the site to a condition that will facilitate its pre-construction use at the end of operation. At the end of the Project's operational life, Midwater BESS will either take necessary steps to continue operation of the Project (such as re-permitting and retrofitting) or will decommission the Project and remove facilities. A draft Project Decommissioning Plan is included in **Appendix D**.

5.3.1 Decommissioning

At the end of commercial operations, Midwater BESS will be responsible for removing all BESS Facility and HVTL Facility components and associated infrastructure. At the end of the Site Permit and Route Permit terms, Midwater BESS reserves the right to extend operations of the Project by applying for an extension of the permit, if necessary, and continuing operation. Should Midwater BESS decide to continue operation, a decision will be made as to whether the Project will continue with the existing equipment or to upgrade the facilities with newer technologies.

Decommissioning of the Project at the end of its operational life (BESS are expected to have a useful commercial lifespan of approximately 35 years) would include removing the battery storage enclosures (which include batteries and other auxiliary equipment), steel foundation posts and beams, transformers, underground cables and overhead HVTL Facility lines, equipment pads and foundations, equipment enclosures, ancillary equipment, fencing, and the associated Project substation. Standard decommissioning practices will be used, including dismantling and repurposing, salvaging/recycling, or disposing of the BESS Facility improvements, and restoration. Midwater BESS will provide written notice to the Commission, landowners, and local units of government prior to the start of decommissioning activities. These parties will again be notified once decommissioning activities have been completed. A draft Decommissioning Plan is provided in **Appendix D** and is generally summarized below.

5.3.1.1 Timeline

Decommissioning is estimated to take approximately 12 weeks to complete, and Midwater BESS will ensure that all equipment and materials are recycled or disposed of properly.

5.3.1.2 Financial Resource Plan

Midwater BESS will be responsible for all costs to decommission the Project and associated facilities. Decommissioning of the BESS Facility is expected to cost approximately $1,215,643 with an estimated scrap/salvage value of $596,492. The total estimated decommissioning cost for the HVTL Facility is $127,184 with an estimated scrap/salvage value of $67,862. Consistent with Department of Commerce (DOC) Energy Environmental Review and Analysis, Midwater BESS anticipates posting a bond no earlier than the 10th anniversary of the Project COD.

Midwater BESS will submit a revised Decommissioning Plan every five years, or any time there is a change in ownership or permit amendment. Each revised plan will reflect advancements in construction techniques, reclamation equipment, and decommissioning standards. The amount of

the financial assurance will be adjusted accordingly to offset any increases or decreases in decommissioning costs and salvage values determined during each plan reassessment. At that time, Midwater BESS will either enter into a surety bond agreement and create an escrow account or create a reserve fund for decommissioning purposes. Midwater BESS will abide by the applicable Site Permit and Route Permit condition(s) and ensure the Project is decommissioned in accordance with the Site Permit and Route Permit. Additional information on financial resource plans and assurances can be found in the draft Decommissioning Plan in **Appendix D**.

5.3.1.3 Removal and Disposal of Project Components

Typical construction equipment to be used during decommissioning will include, but is not limited to, truck-mounted cranes, loaders, bulldozers, dump trucks, and decompaction equipment. The following removal and disposal methods are typical for lithium-ion BESS used industry wide; however, the Decommissioning Plan will be updated in the event the technology evolves or changes. Project component removal and disposal details are provided below:

- **Battery and Battery Enclosures:** The BESS enclosures will be discharged to the manufacturer's recommended level for transport, removed from the foundations and disposed of per the Permit requirements. Battery modules disassembly will not be required onsite. The lithium-ion batteries will be shipped to a qualified recycling facility for component dismantling and separation. The HVAC refrigerant/coolant will be collected into separate enclosures on site and can be reused or recycled after processing. All electrical equipment will be disconnected and disassembled to be reconditioned and reused, sold as scrap, recycled, or disposed of appropriately. Foundations and underground cables and duct banks will be removed to a depth of four feet. Topsoil will be reapplied to the disturbed area. Soil and topsoil will be de-compacted, and the site will be restored to the pre-construction condition and re-vegetated.
- **Steel Foundation Posts, Equipment Foundation, and Ancillary Foundations:** All structural foundation steel posts will be pulled out to full depth, removed, processed to appropriate size, and shipped to a metal recycling facility. The posts can be removed using backhoes or similar equipment. During decommissioning, the area around the foundation posts may be compacted by equipment and, if compacted, the area will be de-compacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent to promote plant growth. All materials will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Project Applicant's sole discretion, consistent with applicable regulations and industry standards.
- **Underground Cables and Lines:** All underground cables and conduits will be removed to a depth of four feet. Facilities deeper than four feet may remain in place to limit vegetation and surface disturbance. Prior to any excavation, topsoil will be segregated and stockpiled for later use, and the subsurface soils will be staged next to the excavation. The subgrade will be compacted to a density similar to the surrounding soils to promote plant growth and maintain drainage. Topsoil will be redistributed across the disturbed area.

- **Transformers and Ancillary Equipment:** All electrical equipment within the Project substation will be disconnected and disassembled. Any oil containing devices not designed to be shipped with fluids will be drained into appropriate sealed containers for recycling. All parts will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at Midwater BESS's sole discretion, consistent with applicable regulations and industry standards.
- **Operations and Maintenance Building:** If constructed for the facility operation, the O&M building will be demolished. Building materials and foundation materials will be recycled or disposed at a solid waste facility in accordance with state and local regulations. As an option, the landowner will be contacted to assess the interest in keeping the building on the property for continued use after decommissioning.
- **Fence:** All fence parts and foundations will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at Midwaters BESS's sole discretion, consistent with applicable regulations and industry standards. Fence posts can be pulled out using skid-steer loaders or other light equipment. The surrounding areas will be restored to pre-construction conditions to the extent feasible.
- **Access Roads:** Facility access roads will be used for decommissioning purposes, after which removal of roads will be discussed with the landowner, using one the following processes:

    1. After final clean-up, roads may be left intact through mutual agreement of the landowner and Midwater BESS unless otherwise restricted by federal, state, or local regulations; and
    2. If a road is removed, aggregate will be excavated and loaded in dump trucks using front loaders, backhoes, or other suitable excavation equipment, and shipped from the site to be reused, sold, or disposed of appropriately at Midwater BESS's sole discretion, consistent with applicable regulations and industry standards. Clean aggregate can often be used as "daily cover" at landfills for no disposal cost. Another disposal option is to provide the aggregate to local landowners as clean fill. All internal drive lanes are constructed with geotextile fabric and eight inches of aggregate over compacted subgrade. Any ditch crossing connecting access road to public roads will be removed unless the landowner requests it remain. The subgrade will be de-compacted using a chisel plow or other appropriate subsoiling equipment. All large rocks will be removed.

- **Topsoil:** Topsoil that was stripped during site construction or grading will have been stored in berms or similar stable stockpiles. This material will be excavated and used across the site for final site stabilization.
- **HVTL:** The overhead HVTL, consisting of three-phase conductor (three wires per phase), a ground conductor, and SCADA line, will be destrung in the opposite manner that the conductor was installed, using pull trucks, reel trucks, tensioners, and pullers, in addition to standard equipment. Insulators and insulator gangs will also be removed from each

tower. It is anticipated that one crew will work on removing the conductors while another crew works on the ground conductor and SCADA. Once the wires are removed, the steel transmission towers will be brought to the ground for disassembly. All equipment removed will be disassembled to sizes suitable for hauling, then loaded onto standard hauling trucks for off-site recycling or disposal. The concrete tower foundations will be removed using vibratory extraction to a depth of 48 inches below surface, and the voids will be backfilled and compacted. Disturbed areas, including the temporary compacted access roads, will be decompacted to facilitate revegetation.

5.3.1.4 Restoration/Reclamation of Facility

Midwater BESS will restore and reclaim the site to a pre-construction condition, as practicable, consistent with the requirements of the Project lease agreements. Midwater BESS currently assumes that most of the site will be returned to agricultural or CRP use after decommissioning and will implement appropriate measures to facilitate such uses. However, the landowners may choose to redevelop the land for other uses depending upon the landowners' desires and the development opportunities in the area at the time of decommissioning. If no specific use is identified, Midwater BESS will plant unvegetated portions of the site with a perennial seed mix. In this situation, the restoration goal will be to preserve the site's natural hydrology and existing plant communities throughout Project operations, minimizing new disturbances and the removal of existing vegetation to the greatest extent practicable.

The decommissioning effort will implement BMPs to minimize erosion and to contain sediment on the Project to the extent practicable, through performance of the following reclamation activities:

1. Minimize new disturbance and removal of existing vegetation to the greatest extent practicable.
2. Remove BESS equipment and all access roads up to a minimum depth of four feet, backfill with subgrade material, and cover exposed subgrade material with suitable topsoil as necessary to allow adequate root penetration for plants, and so that subsurface structures do not substantially disrupt groundwater movements.
3. Any topsoil that is removed from the surface for decommissioning will be stockpiled to be reused when restoring plant communities or when restoring agricultural uses. Once decommissioning activity is complete, topsoil will be respread to assist in establishing and maintaining plant communities.
4. Stabilize soils and return them to agricultural use or other beneficial use according to the landowner direction.
5. During and after decommissioning activities, install erosion and sediment control measures, such as silt fences, bio-rolls, and ditch checks, in all disturbance areas where potential for erosion and sediment transport exists, consistent with stormwater management objectives and requirements.

6. Remediate any petroleum product leaks and chemical releases from equipment operation and electrical transformers prior to completion of decommissioning.

Decommissioning and restoration activities will be completed within 12 weeks after the end of commercial operations.

5.3.1.5 Post-Restoration Monitoring

Project decommissioning will comply with NPDES Permit, SPCC Plan, and SWPPP, if grading activities are necessary, and exceed applicable permit thresholds. Decommissioning may include post-restoration monitoring as required by the NPDES Permit and SWPPP and other applicable requirements. In addition, Midwater BESS's Field Representative assigned to decommissioning monitoring will stay in contact with the landowner, including on-site check-ins until the NPDES Permit is closed.

5.3.2 Repowering

As the energy storage market continues to produce less expensive and more efficient BESS modules, repowering the Project may be a viable option as the Project ages. Potential repower triggers may be aging or faulty equipment, maintenance costs, extending the operational life of the Project, or increasing the generation output of the Project. Midwater BESS will continually evaluate the Project's generation output, maintenance costs, and other contributing factors in conjunction with available technology upgrades to determine if repowering the Project is a worthwhile investment. Any proposed Project repowering will abide by all local, state, and federal regulations. A new site permit may be necessary and will be sought out if required.

6.0 ENVIRONMENTAL INFORMATION

For conditions within the land areas controlled by Midwater BESS, area calculations are based on the Project Area. This approach accounts for potential development needs that may extend beyond the Proposed BESS Facility Development Area and/or Proposed HVTL Facility and Development Area. Additionally, when discussing resources located outside of the Project Area (such as parks, trails, and other natural resources), the Project Area boundary serves as a reference point to assess their proximity to the Project.

6.1 Environmental Setting

The Project Area is located on vacant, unfarmed fields currently used for energy infrastructure. The site is conducive to BESS Facility and HVTL Facility development in a rural area south of Glenville, Minnesota, immediately southeast of the ITC Midwest Glenworth Substation, and contains two 69 kV and two 161 kV overhead transmission lines (**Figure 2**). Using the U.S. Geological Survey (USGS) classification system, land use in the area is dominated by agricultural fields (predominately corn, pasture, and soybeans planted in row crops) with scattered rural residences. The Project parcels contain 28.5 acres of wetlands and 3.9 acres of watercourse. The environmental setting is discussed further in **Sections 6.5.1** through **6.5.8.**

There are no other BESS facilities within the immediate Project vicinity and no other standalone, utility scale BESS facilities yet constructed in Minnesota. The nearest MPUC permitted BESS facility is at the Lake Wilson Solar Energy Center[7] located near Lake Wilson, approximately 137 miles west of the Project Area. The MPUC permitted the Lake Wilson Solar Energy Center and accompanying BESS, but that project has not been constructed at the time of this application.

Except for U.S. Highway 65 to the south, roads that surround the Project Area are county, township, or private roads. The Project Area is bordered on its western side by U.S. Highway 65. The Union Pacific Railroad runs along the southwestern border of the Project on the southern side of U.S. Highway 65. The existing Glenworth to Hayward 161 kV HVTL travels generally north to south, Glenworth to Worth County 161 kV HVTL travels generally north to south, Glenworth to Tap 162862 69 kV HVTL travels generally east to west, Glenworth to Tap170811 HVTL travels generally east to west, and the Freeborn Wind Farm to Glenworth HVTL generally travels to the southeast. All these lines terminate at the ITC Midwest Glenworth Substation. The proximity of the substation allows for a short overhead HVTL Facility (approximately 2,668 feet) from the proposed Project substation to the ITC Midwest Glenworth Substation (**Figure 2**).

According to the Natural Resources Conservation Service (NRCS) Land Resource Region and Major Land Resource Area, the proposed Project is located within the northern part of the Central Feed Grains and Livestock Region. This region is in the northern part of the Central Iowa and

[7] MPUC. n.d. Minnesota Wind Farm and Solar Projects. (available at https://minnesota.maps.arcgis.com/apps/webappviewer/index.html?id=af93f569169a435cbe07f741c340fedb) Accessed June 2024.

Minnesota Till Prairies and is characterized by forests, savanna, prairies, and river floodplains.[8] The area is generally level, agricultural land with wooded areas.

The Minnesota Department of Natural Resources (MnDNR) and the U.S. Forest Service have developed an Ecological Classification System (ECS) for ecological mapping and landscape classification in Minnesota that is used to identify, describe, and map progressively smaller areas of land with increasingly uniform ecological features. Through the ECS, the State of Minnesota is split into Ecological Provinces, Sections, and Subsections. The Project Area is located within the Eastern Broadleaf Forest Province (222), Minnesota and NE Iowa Morainal Section (222M), and the Oak Savanna Subsection (222Me).[9]

The Oak Savanna Subsection in southeastern Minnesota consists of a series of end moraines along its western boundary with the eastern boundary being dominated by hardwood forest. Most of the subsection is a rolling plain of loess-mantled ridges over sandstone and carbonate bedrock and till. The land is currently used mainly for agriculture within the subsection. Depth to bedrock in this subsection is generally less than 100 feet but can range up to 200 feet, and soils are made up of a combination of Mollisols and Alfisols, which are organic rich and conducive to agricultural production. Annual precipitation ranges from 28 inches in the north to 31 inches in the south, with 12.5 to 13 inches of typical growing-season precipitation. The growing season lasts approximately 146 to 156 days. Fire was the most common natural disturbance before settlement and was important to the wellbeing of upland prairie and oak savannah communities. Causes of recent disturbances include tornadoes, high wind events, and periodic flooding. Pre-settlement vegetation was primarily tallgrass prairie, maple-basswood forest, and bur oak savanna. Currently, the predominant land use in this subsection is agriculture.[10]

6.2 Human Settlement

6.2.1 Aesthetics

The existing topography of the Project Area and surrounding area is generally flat and allows for long viewsheds broken up mainly by existing vegetation. Existing rows of trees and shrubs provide substantial screening from U.S. Highway 65 to the southwest of the Project Area. View of the Project from the Shell Rock River to the south and east is also partially or substantially screened by existing vegetation.

The Project Area and surrounding land are typical of agriculturally and semi-forested dominated landscapes with minimal recreational opportunities or scenic views in the surrounding area. Viewsheds in this area are generally defined by trees and topography. The area is also shaped by the built environment. The settlements in the vicinity are residences and farm buildings scattered along rural county roads. Horizontal elements in the vicinity include U.S. Highway 65, county and

[8] USDA NRCS. 2022. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin (available at https://www.nrcs.usda.gov/sites/default/files/2022-10/AgHandbook296_text_low-res.pdf).

[9] MnDNR. n.d. Ecological Classification System (https://www.dnr.state.mn.us/ecs/index.html). Accessed July 2024.

[10] MnDNR. Oak Savanna Subsection (available at: Oak Savanna Subsection | Minnesota DNR (state.mn.us)). Accessed August 2024.

township roads, and the Union Pacific Railroad. Vertical elements, such as the two 69 kV overhead transmission lines and two 161 kV overhead transmission lines, can be visible from considerable distances and are the tallest and the most dominant visual features on the landscape. Additionally, the existing ITC Midwest Glenworth Substation, as well as numerous electrical transmission and distribution lines that parallel state, county and township roads, contribute to the existing visual elements (**Section 6.2.8**).

Farmsteads are sparsely scattered outside of the Project Area and generally situated near public roads. Based on review of available aerial photography, there are four residences located on parcels adjacent to the Project Area, with the closest residence located approximately 980 feet to the north of the Proposed BESS Facility Development Area and 260 feet north of the Proposed HVTL Facility Development Area. There are no farmsteads or buildings within the Project Area.

There are no designated Minnesota Scenic Byways in Freeborn County.[11] There is an existing row of trees and shrubs along the north side of the U.S. Highway 65 that will provide partial screening of the Project.

There are 13 locations within a quarter-mile buffer of the Project Area that were considered to have potential visual impacts, including seven residences, two roads, one railroad, one water trail, and two public lands.

Table 6.2-1 provides approximate distances from the 13 locations to the Proposed BESS Facility Development Area, the edge of BESS enclosures, and the HVTL Facility based upon the current preliminary design. None of the residences, public lands, or water trail receptors were determined to have a significant line of sight to the Project.

Table 6.2-1: Proximity of Locations to the Project

Location	General Location	Distance to Proposed BESS Facility Development Area (feet)	Distance to BESS Facility (feet) [1]	Distance to HVTL Facility (feet)
1	Residence: Located to the east along River Road. This residence is surrounded by vegetation and has several outbuildings screening the view of the Project.	1,441.0	1,840.3	2,919.5
2	Residence: Located to the east along River Road. This residence has vegetation on its west side screening the view of the Project.	982.0	1,347.7	2,348.2
3	Residence: Located to the east along River Road. This residence has vegetation on its west side screening the view of the Project.	1,364.2	1,678.7	2,555.7
4	Residence: Located to the north along U.S. Highway 65. This residence has vegetation on its south side screening the view of the Project.	1,865.6	2,631.2	364.8

[11] MnDOT. n.d.-a Minnesota Scenic Byways (available at https://www.dot.state.mn.us/scenicbyways/) Accessed July 2024.

Location	General Location	Distance to Proposed BESS Facility Development Area (feet)	Distance to BESS Facility (feet) [1]	Distance to HVTL Facility (feet)
5	Residence: Located to the north along River Road. This residence has substantial vegetation on its south side screening the view of the Project.	2,384.9	2,618.2	1,742.0
6	Residence: Located to the north along River Road. This residence has substantial vegetation on its south side screening the view of the Project.	2,080.9	2,379.4	1,447.2
7	Residence: Located to the northeast along River Road. This residence has substantial vegetation on its south side screening the view of the Project.	1,510.6	1,623.9	1,921.4
8	Road: Located along the southwestern border of the Project Area. This road is partially screened from the BESS Facility by vegetation.	323.8	459.4	877.3
9	Railroad: Located along the southwestern border of the Project Area. This railroad is partially screened from the BESS Facility by vegetation.	397.1	560.8	913.6
10	Road: Located northeast of the Project Area. This road is substantially screened from viewing the Project by existing vegetation.	1,138.1	1,406.3	2,227.0
11	Water Trail: Located to the south and east of the Project Area. The Shell Rock River is screened partially or substantially from viewing the Project by vegetation.	149.3	228.7	898.2
12	Protected Areas Database of the United States (PAD-US)/Public Land: Located to the southwest of the Project Area. The Shell Rock State Wildlife Management Area is substantially screened from viewing the Project by vegetation.	411.6	580.1	922.3
13	PAD-US/Public Land: Located to the south of the Project Area. This Marginal Cropland – Limited is substantially screened from viewing the Project by vegetation.	627.3	784.7	1,913.9
[1] Based on Project preliminary design.				

6.2.1.1 Impacts and Mitigative Measures

BESS Facility

Midwater BESS anticipates minimal adverse visual impacts from the BESS Facility to the nearby residential properties and, while the BESS Facility will create additional infrastructure when compared to the current agricultural uses in the area, the visual impact from other existing public areas is expected to be limited.

BESS enclosures will occupy approximately 17 acres of the Project Area. The majority of the remaining Proposed BESS Facility Development Area will be gravel for access roads or buffer areas between the BESS enclosures. Most of the BESS Facility will be a non-descript neutral color, with the majority of components being less than ten feet in height. The Project substation is anticipated to be less than 50 feet in height. The BESS Facility is situated adjacent to the existing ITC Midwest Glenworth Substation. BESS enclosures will be approximately ten feet tall with limited visibility at surrounding locations due to the existing vegetative screening.

Exterior security lighting will be installed at the Project substation. Lights will be used if work or maintenance is required after dark and as needed by maintenance personnel. Switch-activated lights will be placed near each BESS enclosure for repair purposes. There are seven residences within a quarter mile of the Project Area, which are at least partially screened from the BESS Facility by vegetation. Impacts to light-sensitive land uses are not anticipated given the rural setting coupled with minimal required lighting for operation of the BESS Facility.

Some BESS Facility infrastructure will be visible from U.S. Highway 65 to the south; however, since there are existing trees and vegetation along U.S. Highway 65 to the south, the visual impact of the BESS Facility is expected to be limited (**Image 5**).

Image 5: Aerial View of Proposed Conditions


VIEW 1: EYE-LEVEL FROM HIGHWAY PERSPECTIVE TO NORTH
KEY MAP
Existing Overhead Power
Existing Vegetation
Proposed Substation
Proposed Battery Storage
Existing Vegetation
Westwood
09-17-2024
0046089.00
MIDWATER ENERGY STORAGE PROJECT
FREEBORN COUNTY, MN
spearmint energy

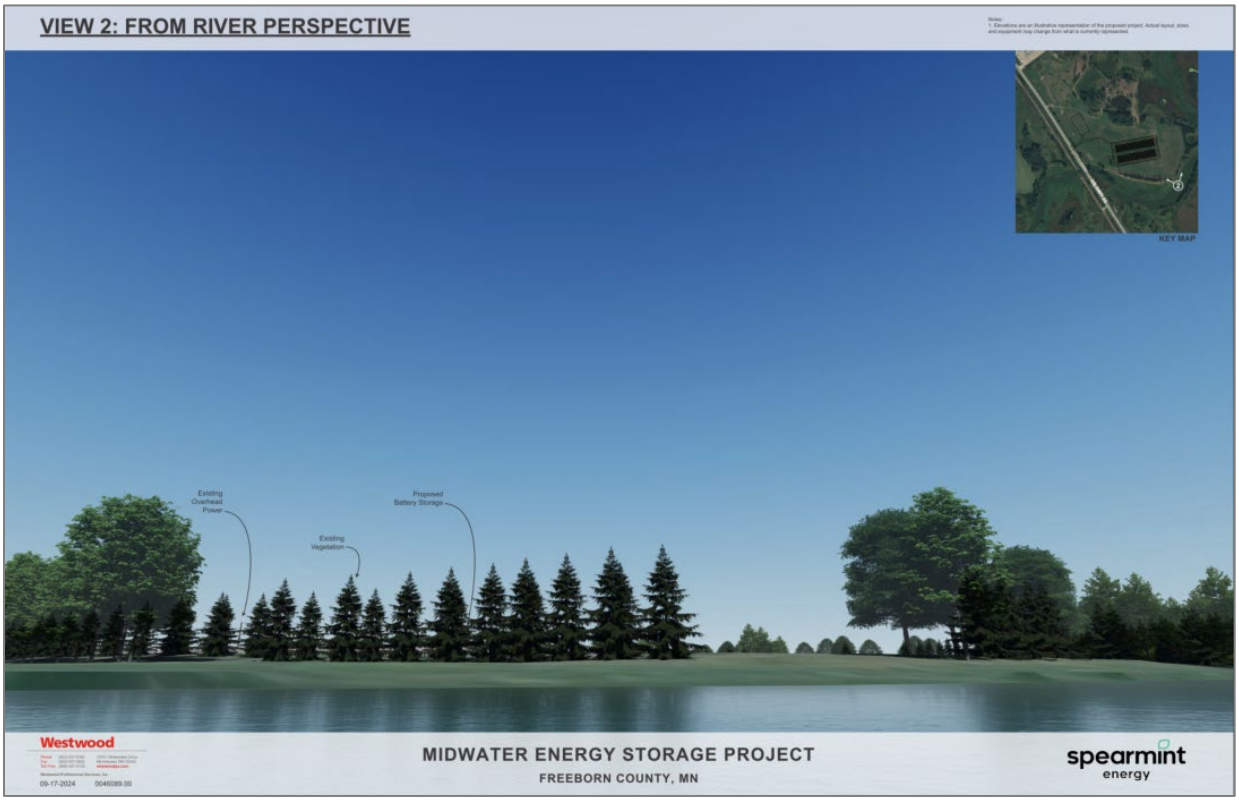

VIEW 2: FROM RIVER PERSPECTIVE
KEY MAP
Existing Overhead Power
Existing Vegetation
Proposed Battery Storage
Westwood
09-17-2024
0046089.00
MIDWATER ENERGY STORAGE PROJECT
FREEBORN COUNTY, MN
spearmint energy

Image 6: Project Visualizations

HVTL Facility

The proposed HVTL Facility structures are anticipated to create minimal aesthetic impacts. Several existing power poles with heights of approximately 75 feet are located in the vicinity of the Proposed HVTL Facility Development Area, nearby roadways, and near the rail line. The tallest portion of the HVTL Facility is anticipated to be a 60- to 90-foot-tall pole for construction of the HVTL Facility. Midwater BESS has minimized aesthetic impacts by proposing a route where the HVTL Facility is most harmonious with the landscape, such as adjacent to existing transmission infrastructure. Therefore, the addition of the HVTL Facility is not expected to significantly alter the viewshed or increase visual impacts.

6.2.2 Cultural Values

Cultural values include perceived community beliefs or attitudes in a given area which provide a framework for community. According to the U.S. Census Bureau, the majority of the population in Freeborn County identifies as White with an ethnic background of European origin.[12] The population is comprised of 81.1 percent White, followed by 10.3 percent Hispanic or Latino, 3.7 percent Asian, 1.5 percent Black or African American, with the remaining 3.4 percent consisting of American Indian, Native Hawaiian/Other Pacific Islander, and other origins. The region surrounding the Project Area has cultural values tied to the area's German, Norwegian, Irish, and Native American heritage, as well as the agricultural economy.

There are several organizations dedicated to collecting and preserving the history and heritage of Freeborn County, including Freeborn County Historical Museum, Library & Village, and other local historical societies, libraries, and museums.[13] Cultural representation in community events is reflected in the arts, cuisine, agricultural produce, and holidays. Annual local and regional events, festivals, and fairs typically do not have a primary focus of ethnic heritage.[14] These events generally take place within municipalities; no events were identified in the unincorporated areas surrounding the Project. Construction of the proposed Project is not expected to conflict with the cultural values or ethnic heritage of the area.

Initiatives and plans spearheaded by Freeborn County that address environmental sustainability and sustainable practices have not been identified. Freeborn County's Renewable Energy Systems Ordinance, codified at Chapter 26 of the Ordinance, regulates the installation and operation of renewable energy systems.[15] The Comprehensive Plan does not address renewable energy

[12] U.S. Census Bureau. 2020a. Profile of General Population and Housing Characteristics: *DP1 Table* (available at https://data.census.gov/profile/Freeborn_County,_Minnesota?g=010XX00US). Accessed August 2024.

[13] Freeborn County Historical Museum, Library & Village. 2024 (available at https://www.fchmmn.org/) Accessed August2024.

[14] Freeborn County Fair. 2024. (available at https://www.co.freeborn.mn.us/506/About) Accessed August 2024.

[15] Freeborn County. 2017. Code of Ordinances (available at https://library.municode.com/mn/freeborn_county/codes/code_of_ordinances?nodeId=COCO_CH26REENSY) Accessed October 2024. (Ord. No. 2015-01, § 6, 12-1-2015)

systems.[16] Documentation regarding energy farm siting in Freeborn County has not been established. The County does not have a climate action plan or other initiatives that may address mitigation and adaptation strategies associated with climate change. In July 2024, the County Board of Commissioners approved a feasibility study to assess the installation of solar arrays on the County's four main buildings.[17]

Project construction is in keeping with the ordinances and regulations for renewable energy systems as described in the Freeborn County Code of Ordinances.

6.2.2.1 Impacts and Mitigative Measures

The Project Area is located on private land, adjacent to similar existing land uses, and sufficiently setback from public ROWs, Project construction and operation would not impact public participation in regional community cultural events. No impacts to cultural values or community events are anticipated, and therefore, no mitigation measures are proposed. Project construction is in keeping with the ordinances and regulations for renewable energy systems as described in the Freeborn County Code of Ordinances.

6.2.3 Displacement

As previously indicated, the Project is in a predominantly agricultural area, adjacent to the existing ITC Midwest Glenworth Substation, with relatively few residences and widely dispersed farmsteads among row crop farm fields (**Figure 2**). The nearest structure is a residence located approximately 982 feet north of the Proposed BESS Facility Development Area and 365 feet from the HVTL Facility (**Figure 4**).

6.2.3.1 Impacts and Mitigative Measures

BESS Facility

There are no residences or structures located within the Proposed BESS Facility Development Area. While there are several residences within 0.25 mile of the Project Area, the minimum anticipated setback of the BESS Facility from these residences is over 900 feet.[18] No residences or structures will be removed or displaced; therefore, no mitigation measures are proposed.

HVTL Facility

There are no residences or buildings located within the Proposed HVTL Facility Development Area ROW. The closest residence to the Proposed HVTL Facility Development Area is

[16] Freeborn County. Comprehensive Land Use Plan. 2017 (available at https://library.municode.com/mn/freeborn_county/codes/code_of_ordinances?nodeId=COCO_CH24PLDE_ARTIICOLAUSPOPL) Accessed October 2024. (Ord. No. 14, § 1, 4-20-1982)

[17] Sara Stultz. "County board votes to move ahead with study regarding solar panels on county buildings." Albert Lea Tribune (available at https://www.albertleatribune.com/2024/04/county-board-votes-to-move-ahead-with-study-regarding-solar-panels-on-county-buildings/) Accessed October 2024

[18] This distance represents the nearest residence to the BESS Facility. The nearest distance to the HTVL Facility is 350 feet.

approximately 365 feet away. Because none of the structures associated with nearby residences will be removed, there will be no displacement, and no mitigation is proposed.

NESC standards require certain clearances between HVTL and the ground, and between HVTL and buildings for safe operation of the HVTL Facility. To comply with NESC standards and allow sufficient space for HVTL Facility maintenance, HVTLs are generally routed to avoid residences or other buildings within the ROW.

The Proposed HVTL Facility Development Area crosses sparsely populated rural areas that consist primarily of agricultural or grazing uses. To limit proximity to residences and other buildings, Midwater BESS designed a route corridor that is located adjacent to existing transmission infrastructure where residences are typically not present. Midwater BESS has made every effort to site the HVTL Facility away from buildings and residences.

6.2.4 Environmental Justice

The MPCA Environmental Justice (EJ) policy and purpose refers to the fair treatment and meaningful involvement of communities of color, Indigenous communities, and low-income communities, to the enjoyment of a healthy environment, and to fair treatment with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.[19] Minority and/or low-income communities are often concentrated in small geographical areas within the larger geographically and/or economically defined population. Minority communities and low-income communities may constitute a very small percentage of the total population and/or geographical area.[20]

Minnesota Statute defines an environmental justice area as an area in Minnesota that, based on the most recent census data meets one or more of the following criteria:

> (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.[21]

These criteria are required for the Commission's identification and review of environmental justice areas in relation to the Project. Midwater BESS LLC has reviewed these criteria for the Project and are described below.

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[19] MPCA. n.d.-a Environmental Justice (available at https://www.pca.state.mn.us/about-mpca/environmental-justice) Accessed July 2024.

[20] Environmental Protection Agency (EPA). 1998. Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses (available at https://www.epa.gov/sites/default/files/2015-04/documents/ej-guidance-nepa-compliance-analyses.pdf) Accessed July 2024.

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

The MPCA maintains the Minnesota Areas of Environmental Justice Concern interactive map, which identifies areas of EJ concern within the state of Minnesota.[22] The MPCA uses U.S. Census Bureau's 2023 Cartographic Boundary File, the five-year (2017–2021) American Community Survey data, and MnDOT's Tribal Government data in preparing the map. A census tract is considered an area of concern if it has higher concentrations of low-income residents, people of color, or limited English proficiency.

The MPCA refers to the U.S. Census Bureau and U.S. Department of Health and Human Services to define poverty, a threshold which is calculated using a family's household size and composition. Because the MPCA is using data from 2017 through 2021, the poverty threshold is calculated based on the 2021 data for census tract 27047181000, in which the Project is located. In 2021, an individual in the U.S. was considered to be in poverty with an income of $13,788 or less, according to the 2021 Poverty Threshold Data Table,[23] therefore, 200 percent of the poverty level would be calculated at $27,576 per person.

Based on the MPCA EJ criteria, the Project is not within any MPCA-identified area of concern for EJ as shown in **Table 6.2-2**.

Table 6.2-2: Environmental Justice Areas of Concern Criteria in relation to the Project Area

MPCA EJ Area of Concern Criteria	Project Area (census tract 27047181000)
At least 35 percent of people reported income less than 200 percent of the federal poverty level	26.89 percent (+/- 7.69 percent margin of error) reported income less than the 200 percent federal poverty level.
40 percent or more people of color	6.19 percent (+/- 2.64 percent margin of error) are people of color.
Federally recognized Indian Tribes	No
At least 40 percent of people have limited English proficiency	0.10 percent (+/- 0.14 percent margin of error) are reported as residents with limited English proficiency
Note: The margin of error is accounted for in determining environmental justice areas of concern. For example, if a census tract has an estimated population of 36 percent people of color with a 5 percent margin of error, then the MPCA would count that census tract as an environmental justice area of concern. Note: Environmental Justice area criteria listed in Minn. Stat. § 216B.1691, subd. 1(e) uses Indian Country, as defined in United State Code, title 18, section 1151. However, the MPCA EJ Area of Concern Criteria uses Federally recognized Indian Tribes defined and listed by the U.S Department of the Interior, Office of Indian Affairs Trust. The MPCA EJ Area of Concern Criteria is not required by statute for a Site Permit Application but have been included in Midwater BESS LLC's siting analysis for the Project.	

Areas outside of the Project Area with one or more of the MPCA defined EJ criteria are located around the city of Albert Lea located 5.3 miles east of the Project. Listed criteria in the city are at least 35 percent of people reported income less than 200 percent of the federal poverty level. The

[22] MPCA. 2021a. Understanding Environmental Justice in Minnesota Story Map (available at https://mpca.maps.arcgis.com/apps/MapSeries/index.html?appid=f5bf57c8dac24404b7f8ef1717f57d00) Accessed July 2024.

[23] U.S. Census Bureau. 2021. Poverty Thresholds for 2021 by Size of Family and Number of Related Children Under 18 Years (available at https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html)

Albert Lea communities that are considered an EJ area are not located near the Project Area and no disproportionate or adverse impacts to low income or minority population are anticipated.

In addition to the screening criteria by the MPCA, Midwater BESS used the EPA's Environmental Justice Screening and Mapping Tool (EJScreen) to review the demographic socioeconomic and environmental information for the Project Area and a two-mile buffer around the Project Area, Freeborn County, and state. EJScreen uses publicly available data to combine environmental and demographic indicators into EJ indexes, including 13 environmental indicators, seven socioeconomic indicators, 13 EJ indexes, and 13 supplemental indexes. Results for a two-mile buffer around the Project Area indicate that overall, 27 percent report low income, 4 percent are people of color, there are no federally recognized tribes, and zero percent of households have limited English proficiency.[24] Freeborn County reported 30 percent report low income, 17 percent are people of color, there are no federally recognized tribes, and one percent of households have limited English proficiency. Compared to the state, most environmental and socioeconomic indicators at the Project Area and county levels are similar with a few exceptions—one being county levels were slightly higher in some pollution and source categories and another being state values are considerably higher, such as toxic releases to air and traffic proximity.

Combined, the EJ screening criteria used by the MPCA and the data embedded in the EJScreen report indicate there are no EJ communities within or adjacent to the Project Area.

Section 6.2.10 (Socioeconomics) summarizes population, race, housing, income, and poverty for the township, county, and state levels.

6.2.4.1 Impacts and Mitigative Measures

Because the Project is not within or adjacent to an EJ area of concern, no mitigation is proposed.

6.2.5 Public Health and Safety

Public health and safety are a priority for the Project, and the Applicant intends to proactively address potential issues relating to construction activities, electrocution, and environmental hazards.

6.2.5.1 Environmental Contamination

The Applicant conducted a preliminary review of the EPA "MyEnvironment" database and map to identify federally listed sites that may have previously documented environmental impacts. A review of this information indicates that three hazardous waste designated sites associated with the Resource Conservation and Recovery Act are in a one-mile buffer of the Project Area. No sites were identified within the Project Area.[25] The closest identified site is located approximately 0.3 mile west from the Project Area.

[24] EPA. 2024a. EJScreen EPA's Environmental Justice Screening and Mapping Tool, V. 2.3 (available at https://ejscreen.epa.gov/mapper/) Accessed July 2024.

[25] EPA. 2022. MyEnvironment (available at https://enviro.epa.gov/myenvironment/) Accessed June 2024.

Data from the MPCA "What's in My Neighborhood" website was accessed on July 10, 2024. This online application offers a way to access a wide variety of environmental information about a given site and location. The website provided data on:

- **Potentially contaminated sites**: A searchable inventory dating back to the 1980s of contaminated properties, sites that have already been cleaned up, and those currently being investigated or cleaned up; and
- **Environmental permits and registrations**: A searchable inventory of businesses that have applied for and received different types of environmental permits and registrations from the MPCA.

Review of the database indicated there are 21 mapped records within one mile of the Project Area.[26] While there are no mapped records within the Project Area, the records occurring on sites found in a one-mile buffer of the Project Area are listed below:

5 Construction stormwater sites;
4 Feedlot sites;
3 Petroleum remediation, leak sites;
3 Underground storage tank sites;
2 Site assessment sites;
1 Aboveground storage tank site;
1 Hazardous waste site;
1 Aboveground storage tank site; and
1 Wastewater, municipal NPDES/ State Disposal System (SDS) permit.

The records listed above are located outside of the Project Area and will not be impacted by the Project. A Phase I Environmental Site Assessment was conducted for the Project Area. No recognized environmental conditions were identified.

6.2.5.1.1 Impacts and Mitigative Measures

Project construction and operation will have minimal impacts on the health and safety of the general public. As described in **Section 5.1.1.4** (Fencing), permanent security fencing with lockable gates will be installed along the BESS Facility perimeter to comply with applicable electrical codes. Only authorized personnel, or those escorted by authorized personnel, will be allowed entry, and signs will be posted to warn unauthorized persons not to enter fenced areas. The HVTL Facility will not have fencing surrounding the structures; however, the structures will be designed to prevent access to unauthorized personnel. Additionally, signage at the Project

[26] MPCA. 2024a. What's in My Neighborhood (available at https://mpca.maps.arcgis.com/apps/webappviewer/index.html?id=9d45793c75644e05bac197525f633f87) Accessed June 2024.

substation and HVTL structures will warn of high voltage equipment due to the potential dangers associated with unauthorized entry. These precautions should prevent accidental electrocution from happening to someone who may have otherwise unintentionally wandered onto the site. All equipment, tools, and substances that will be used for the Project will be properly stored, maintained, and monitored in the O&M Building or the nearby O&M rented space.

Grounding of electrical equipment, lines, and other applicable infrastructure will be completed in adherence to federal and state standards to prevent injury and ensure proper infrastructure functionality. Inspection of grounding will be done prior to operation. Any changes or failures in grounding electrical infrastructure will be identified through the Project's active monitoring system.

Health and safety concerns during BESS facility and associated transmission infrastructure construction are typical to any electrical substation and include injuries due to falls, equipment malfunction and/or misuse, and electrocution. To prevent health and safety incidents, Midwater BESS requires all parties involved with the Project to create comprehensive health and safety plans and protocols. During construction, an emergency incident or accident may occur and would be addressed as needed by Project personnel and local responders as further discussed in **Section 6.2.7.2** (Emergency Services). Workers will have, or be provided, proper training to successfully complete required construction activities while reducing risks associated with it.

During operations, the Project will not require the use or storage of large quantities of hazardous materials that might otherwise have the potential to spill or leak into area groundwater. To avoid potential impacts to water and soil resources, all hazardous materials stored outdoors will be stored within secondary containment. Secondary containment will prevent impacts and will contain leaks if they occur.

An SPCC Plan will be required for the main power transformers located in the Project substation, as well as for oil-filled operational equipment (e.g., inverter/transformer) or bulk oil storage at the O&M facility. The SPCC Plan will detail the appropriate storage, cleanup, and disposal of oil products associated with the Project. The transformers will be properly contained per U.S. EPA requirements. Any monitoring, transportation, or handling of materials will be conducted by trained and qualified personnel utilizing established procedures and proper equipment and in accordance with applicable laws. The SPCC Plan will be completed prior to construction and kept on-site during construction and will meet all EPA requirements. The SPCC Plan, because of its specificity, will be completed prior to construction. If needed for the operational phase of the Project, a separate SPCC Plan will be completed prior to Project operations.

Midwater BESS will coordinate with all emergency and non-emergency response teams for the Project, as needed. Emergency services for responding to public health and safety emergencies are further described in **Section 6.2.7.2** (Emergency Services).

6.2.5.2 Electromagnetic Field

Any electrical device will have electric and magnetic fields (EMF) present. Electric fields arise from the voltage or electrical charges, while magnetic fields arise from the flow of electricity or current that travels along transmission lines, power feeder lines, substation transformers, house wiring, and electrical appliances. The electric field intensity is related to the line voltage, while magnetic field intensity is related to the current flow through the conductors (wire). EMF can occur both indoors and outdoors.

According to the U.S. National Cancer Institute, there is no consistent evidence demonstrating an association between any source of non-ionizing EMF and cancer.[27] Further, the Minnesota State Interagency Working Group on EMF Issues conducted literature reviews and research on EMF, concluding that "the current body of evidence is insufficient to establish a cause and effect relationship between EMF and adverse health effects."[28] Considering the available evidence on EMF exposures to date, the Commission has found that "there is no demonstrated impact on human health and safety that is not adequately addressed by the existing State standards for exposure."[29]

BESS Facility

The sources of EMF related to the BESS Facility include electrical feeder lines within the facility, the transformers installed at each inverter, and the Project substation. EMF from electrical feeder/collection lines and transformers dissipates rapidly with distance from the source. Generally, higher voltage electrical lines produce higher levels of EMF at the source before dissipating with distance. Presently, there are no Minnesota regulations pertaining to magnetic field exposure. The internationally accepted guideline for the general public exposed magnetic fields is 833 milligauss (mG).[30] The Commission, however, has imposed a maximum electric field limit of 8 kV per meter measured at one meter (3.28 feet) above the ground. The standard was designed to prevent serious hazards from shocks when touching large objects parked under AC transmission lines of 500 kV or greater.

HVTL Facility

The HVTL Facility EMF sources operate within the extremely low frequency range of the electromagnetic spectrum at approximately 60 hertz. HVTL electric fields are solely dependent

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27 National Cancer Institute. 2019. Electromagnetic Fields and Cancer (available at https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet) Accessed August 2024.

28 The Minnesota State Interagency Working Group on EMF Issues. 2002. A White Paper on Electric and Magnetic Field (EMF) Policy and Mitigation Options (available at https://apps.commerce.state.mn.us/eera/web/project-file?legacyPath=/opt/documents/EMF%20White%20Paper%20-%20MN%20Workgroup%20Sep%202002.pdf) Accessed August 2024.

29 OAH Docket No. 7-2500-20283-2, ALJ Findings of Fact, Conclusions and Recommendations at Finding 216 (April 22, 2010 and amended April 30, 2010)

30 National Institute of Environmental Health Sciences. 2002. Electric and Magnetic Fields Associated with the Use of Electric Power (available at https://www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf) Accessed June 2024.

upon line voltage, not the current. The electric field strength decreases rapidly as the distance from the source increases. Electric fields are also easily shielded or weakened by most objects and materials, such as trees or buildings. Further, there is no federal standard for transmission line electric fields; only the Commission's imposed maximum electric field limit of 8 kV/m measured one meter above ground.[31]

6.2.5.2.1 Impacts and Mitigative Measures

BESS Facility

BESS Facility-specific EMF levels were not modeled for the proposed electrical feeder lines or inverters; however, studies have documented EMF levels for similar equipment. A Canadian study of electrical lines at a wind facility with a project substation measured the magnetic fields of the wind farm's 27.5 kV buried electrical lines—slightly lower voltage than the electrical feeder lines proposed for the BESS Facility. The study found magnetic fields associated with buried electrical collection lines to be within background levels at one meter above ground and up to 16.5 mG directly beneath overhead 27.5 kV lines.[32] As demonstrated by the study, magnetic fields will be well below the Minnesota guidelines for electric fields (8 kV/m) and international guidelines of 833 mG for magnetic fields. Additionally, since the transformers are enclosed in a grounded metal case (i.e., shielded), the transformers typically emit small, if any at all, EMF. The battery side of the system operates in DC, with the cells operating at approximately 50v, depending on the technology chosen. DC electricity does not emit a changing electric field because its frequency is zero Hz, meaning there is no oscillation. Rather, DC electricity creates a stationary magnetic field that degrades at an exponential rate. Based on the system voltage, no measurable magnetic field will be created beyond the BESS Facility perimeter.

Stray voltage is often a concern in agricultural areas—particularly for dairy farms. Stray voltage is an unintended transfer of electricity between two grounded objects and is typically caused by improperly grounded electrical equipment in farm buildings or by a faulty utility connection at the distribution level. All Project electrical components, including inverters and transformers, are incorporated into the regional transmission grid and will be grounded in accordance with NESC. As such, BESS Facility stray voltage potential will be negligible. Should a fault occur during Project operation, it would be identified by BESS Facility monitoring systems and corrected.

The nearest occupied residence is approximately 365 feet from the proposed electrical equipment (i.e., nearest feeder line). At this distance, both electric and magnetic fields would have dissipated

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31 In the Matter of the Route Permit Application for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota, Docket No. ET-2/TL-08-1474, Order Granting Route Permit (adopting Administrative Law Judge Findings in Fact, Conclusions and Recommendations at Finding 194 [April 22, 2010 and amended April 30, 2010]) (September 14, 2010).

32 McCallum L.C., Whitfield Aslund M.L., Knopper L.D., Ferguson G.M., Ollson C.A. 2014. Measuring electromagnetic fields (EMF) around wind turbines in Canada: is there a human health concern? Environ Health. 2014 Feb 15;13(1):9 doi: 10.1186/1476-069X-13-9. PMID: 24529028; PMCID: PMC3943383 (available at https://pubmed.ncbi.nlm.nih.gov/24529028/) Accessed June 2024.

to background levels. As such, impacts will be negligible, and no mitigation measures are proposed.

HVTL Facility

The National Institute of Environmental Health Sciences provides typical EMF levels for 230 kV transmission lines. Typical EMF levels for a 230 kV transmission line electric field directly below the transmission line were reported at 2.0 kV/m before dissipating to 1.5 kV/m at 50 feet (approximate edge of ROW). Similarly, average magnetic fields directly below the transmission line were reported at 57.5 mG before dissipating to 7.1 mG at 100 feet.[33] The proposed 161 kV HVTL Facility operates at a lower voltage and will have lower EMF and magnetic field density levels, therefore it will have equal or lesser impacts than the reference safety guidelines. In addition, the HVTL Facility is not located near any residences or known occupied structures, thereby reducing any potential exposure to EMF.

Additionally, an evaluation of electric field measurements from the Omaha Public Power District (OPPD) were conducted on the District's 345 kV 60-Hz transmission lines. OPPD measured electric fields from a variety of potential transmission line structures, including a lattice tower, tubular H-frame, wooden H-frame, and single steel pole. For the purposes of the analyses, OPPD used a standard conductor design height of 31 feet. Structures planned for HVTL Facility use are steel monopoles, discussed in **Section 5.1.2.1**. The electric field at five feet on either side of a 345 kV single steel pole was measured to be 4.4 kV/m before dissipating to 1.0 kV/m at a distance of 40 feet. Midwater BESS is implementing a 150-foot ROW (75 feet on either side) for the HVTL Route. The OPPD study indicated an electric field of 0.1 to 0.2 kV/m at a distance of 70 feet on either side of a 345 kV single steel pole.[34]

6.2.5.3 BESS Construction and Operational Safety

Safety will be Midwater BESS's foremost principle during Project construction and operation. Safe design and operation of the BESS begins with selecting safe equipment and compliance with safety codes, regulations, and industry recommendations. Continued advances in technology, applicable codes/standards, and emergency response procedures have reduced the likelihood of fire for all electrical generation projects and specifically for battery thermal runaway induced events for BESS. These advances also lessen the impact of events when they do occur. Key safety issues include contact with medium or high voltage circuitry, overheating of equipment, and fires.

6.2.5.4 Impacts and Mitigative Measures

Mitigation measures to minimize the likelihood and potential impacts of these events include:

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[33] National Institute of Environmental Health Sciences. 2002. Electric and Magnetic Fields Associated with the Use of Electric Power (available at https://www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf) Accessed June 2024.

[34] Bruening, D. K. 1987. Electric Field Measurements for 345-kV Transmission Lines (available at https://eweb.irwaonline.org/eweb/upload/web_1087_Electric_Field.pdf).

- Physical spacing of equipment from fences and other equipment;
- State-wide 24/7 remote monitoring;
- Heating, ventilation, and air conditioning for thermal management;
- Heat and smoke detection;
- Automatic stop and response personnel alerts;
- Gas detection and ventilation systems;
- Deflagration venting; and,
- System-specific training for local fire departments and emergency response teams.

Midwater BESS has proactively incorporated safety precautions into the preliminary design protocols of the proposed Project. The lithium-ion batteries modeled for the Project will be stored in weather-proof enclosures, similar in size to shipping containers. Each enclosure includes a fully integrated system of air-cooled or liquid-cooled HVAC for temperature control, sensors, and controls for remote monitoring, and built-in fire, smoke, and gas detection. No off-gassing or air emissions are produced in day-to-day operations. In addition, Midwater BESS's equipment layout and installation will consider appropriate spacing to minimize risk of fire propagation between equipment, and between the equipment and surrounding landscape. Transformers and other electrical equipment on site will comply with industry standards to reduce the chance of fire and spill events.

Testing and Certification

The BESS equipment will be designed and tested to industry standards. At present, industry standards include certifications for Underwriters Laboratory (UL) UL1973, UL9540, and Institute of Electrical and Electronics Engineers 1547. The BESS equipment will also be either certified or compliant with relevant safety standards in place at the time of final design, including National Fire Protection Association (NFPA) 68, NFPA 69, and NFPA 855. The Project shall also comply with the applicable version of the International Fire Code (IFC), the National Electric Code (NFPA 70), and the practices recommended in NFPA 850 for Electric Generating plants and High Voltage Direct Current Converter Stations and IEEE 979 Guide for Substation Fire Protection.

Any Project BESS equipment proposed will be required to perform the UL 9540A "Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems," which determines the BESS enclosure's behavior during an initiated thermal runaway event and ensures minimal risk of fire propagation. The evaluation is performed by a third-party recognized by the Occupational Safety and Health Administration's Nationally Recognized Testing Laboratory. The performance test data outlines the thermal runaway behavior observed and quantified, including gas generation/composition. These tests and reports provide an industry standard baseline and provides confidence that the potential hazards posed by the specific batteries to ensure that the appropriate safety features are incorporated based upon the results, as required by NFPA 855 and the IFC.

Midwater BESS will stay abreast of new codes and standards to ensure its equipment vendors and designs comply with industry standards and best practices.

BESS Monitoring and Reporting Systems

The BESS Facility will include a complex monitoring system that will surveil many different system aspects. Each battery system is equipped with cell level, module level, rack level, and system level monitoring points. These points produce real-time data that feed into automatic control logic housed in the battery management system and the site controller, an off-site person charged with site monitoring. The battery management system and site controller ensure that BESS Project components are operating within the original equipment manufacturer's operating parameters and warranty requirements. If any operating limit is exceeded or an alarm is triggered, either a fault signal is sent to the whole battery string to disconnect from the inverter, or the rack contacts will open to disconnect individual racks. This real-time, automated system is designed to identify operational malfunctions or other safety hazards immediately and prevent incidents. Detected faults, abnormal conditions, and gas detection will also be transmitted to remote operators and/or on-site status indicators.

Midwater BESS plans to house the energy storage system in multiple, separate enclosures instead of a single building. Utilizing separate enclosures provides natural segmentation and spatial separation of the BESS components, easing heat management and greatly reducing the risk of fire propagation at the Project. Although this design requires a larger overall footprint than a single building, it is an appropriate consideration for safety because it allows the components to be farther apart, allowing for isolation and containment of any unlikely incident. The enclosures will be non-walk-in with only external access and will include auxiliary equipment for fully autonomous thermal management systems. Typical enclosures, such as those anticipated for the Project, consist of component battery cells that are sealed within the enclosures, which cannot be accessed from the exterior and are not accessible to non-authorized personnel. A key safety design consideration is the enclosure design, which allows for installation and servicing from the exterior without human entry. This ensures safe access to the batteries during emergencies and prevents the risk of human entrapment inside a building.

Midwater BESS is committed to providing training resources for local responders, as well as the collaborative development of an emergency response program (ERP) specific to this Project. Midwater BESS will coordinate development of a site-specific ERP with local responders prior to Project energization. The Project's ERP will require quarterly safety drills for the Project team and will make annual safety training available to local first responders. The Project ERP would cover a wide breadth of possible incidents at the site and would include emergency procedures to be followed in case of fire, medical emergencies, and other potential situations. Midwater BESS will initiate this process with an in-person meeting with local responders prior to Project energization.

6.2.6 Noise

Noise is defined as any sound not occurring in the natural environment.[35] It may be made up of a variety of sounds of different intensities, across the entire frequency spectrum. Noise is measured in the unit of decibels (dB) on a logarithmic scale to match human perception of noise. Additionally, human hearing is not equally sensitive to all frequencies of sound from low to high. To account for this, A-weighting (dBA) is used to reflect the typical sensitivity of human hearing. Common sound sources in an agricultural or rural environment include, but are not limited to, sound from farm equipment, traffic noise from nearby roads and highways, various noise from wildlife, and wind rustling through vegetation. A graphic showing common indoor and outdoor noise levels is provided in **Image 7** below.

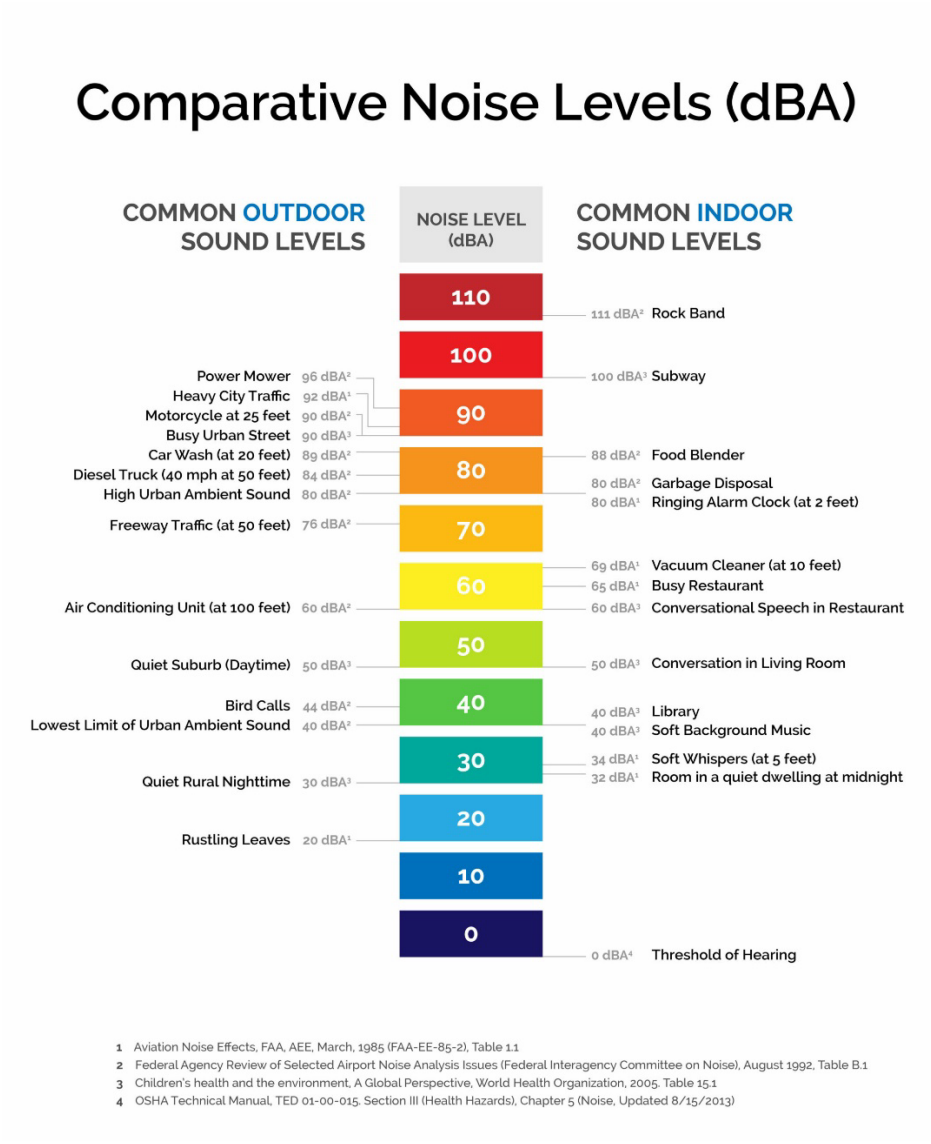


Image 7: Common Indoor and Outdoor Noise Levels

[35] Minn. Stat. §116.06, subd. 15 https://www.revisor.mn.gov/statutes/cite/116.05

6.2.6.1 Description of Existing Noise Sources

According to the American National Standards Institute/Acoustical Society of America S12.9-2013/Part 3, rural residential areas have a typical day/night average sound level of less than 45 dB.[36] Existing sources of background noise in the Project vicinity include U.S. Highway 65, the Union Pacific Railroad, local road traffic, the existing ITC Midwest Glenworth Substation, agricultural activity, and birdsong. The ITC Midwest Glenworth Substation is surrounded by the Project on three sides. U.S. Highway 65 and the Union Pacific Railroad are mapped immediately south of the Project Area, and there are local roads near the Project Area to the north, with average daily traffic as described in **Section 6.2.7.1**.

In Minnesota, noise standards are based on noise area classifications (NACs) 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; industrial, agricultural and related activities are assigned to NAC 3. A complete list is available at Minn. R. 7030.0050.

Noise standards are expressed as a range of permissible dBA over a one-hour period. L_{10} may be exceeded ten 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 6.2-3** provides current Minnesota noise standards.

Table 6.2-3: Minnesota Noise Standards

NACs	**Daytime Limit (dBA) (7:00 a.m. to 10:00 p.m.)**		**Nighttime Limit (dBA) (10:00 p.m. to 7:00 a.m.)**	
	L_{10}	L_{50}	L_{10}	L_{50}
NAC -1 Residential	65	60	55	50
NAC -2 Recreational and Parks	70	65	70	65
NAC -3 Industrial and Agricultural and Forestry	80	75	80	75
Note: There are no noise standards set for NAC 4 – Undeveloped and unused land.[37]				

Noise modeling is most accurate predicting L_{eq} levels, which is the overall average of a measurement period. L_{10} levels are, on average, three dBA above L_{eq}, while L_{50} values are lower than L_{eq}. Thus, modeled L_{eq} can be compared to the L_{50} limits to ensure full compliance and

[36] American National Standards Institute/Acoustical Society of America. 2013. S12.9-2013/Part 3 (available at https://dis.puc.state.oh.us/ViewDocument.aspx?DocID=cf574aa4-a15a-4cf1-b329-09b771c8d810&No=3)

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

conservatism. The use of L_{50} limits is appropriate for a BESS Facility based on the continuous operation of the facility when active. The visual relationship between the L_{eq}, L_{10}, and L_{50} metrics is shown on **Image 8**.[38]

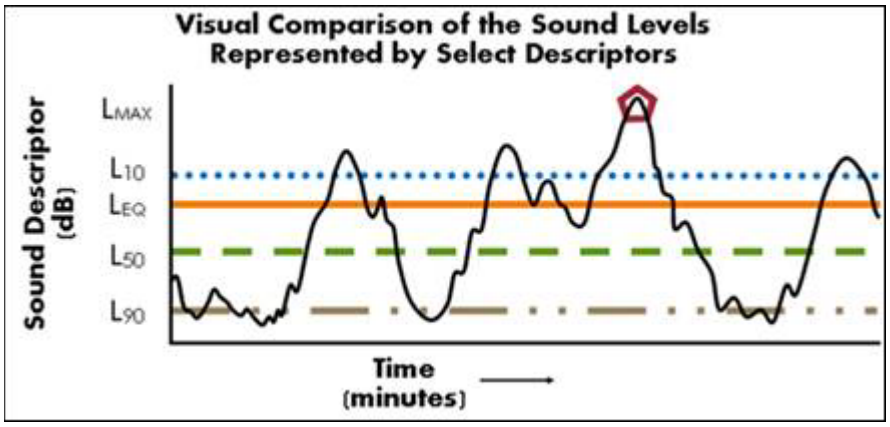


Image 8: Comparison of Sound Level Metrics[39]

6.2.6.2 Projected Operational Sound Levels

Potential noise sensitive receptors/areas (NSAs) near the Project Area (i.e., within 3,200 feet) consist of rural residential homes. Households are classified under NAC-1 per Minn. R. 7030.0050, subp. 2 (**Appendix E**).

There were 68 NSAs identified from recent aerial photography within 3,200 feet of the Project Area, which were categorized by distance from the Project Area, shown in **Table 6.2-4** below.

Table 6.2-4: NSA Distance Distribution

Distance from Project Area (feet)	# of NSAs
<50	0
50–100	0
100–200	1
200–400	0
400–800	4
800–1600	3
1600–3200	60

[38] Federal Highway Administration. 2017. Sound Level Descriptors (available at https://www.fhwa.dot.gov/environment/noise/resources/fhwahep17053.pdf)

[39] Federal Highway Administration. 2017. Sound Level Descriptors (available at https://www.fhwa.dot.gov/environment/noise/resources/fhwahep17053.pdf).

The primary noise sources with the Project include the power transformer in the substation, inverters, and the cooling system in the cabinets. These systems generate noise during active system operation or power transfer into and out of the BESS. Project noise levels were predicted using CADNA-A, a noise modeling software in conformance with International Organization for Standardization 9613-2, Attenuation of Sound During Propagation Outdoors – Part 2: General method of calculation. Continuous operation was assumed to represent the variable timing of BESS operation. As Minn. R. ch. 7030 refers to total noise (ambient plus Project-generated noise), an ambient level of 45 dBA was assumed for conservatism and added to Project noise within the model. For modeling purposes, the BESS enclosures were modeled with an 87 dBA sound power level integrated BESS unit.

Since BESS facilities potentially operate at all hours of the day, the modelling was done against the nighttime noise level limits as those are the most restrictive. Results of the modeling are shown in **Appendix E** and predict compliance with the nighttime limit set forth for in Minn. R. ch. 7030 for BESS enclosures having a sound power level at or less than 87 dBA. See **Appendix E** for detailed noise study results.

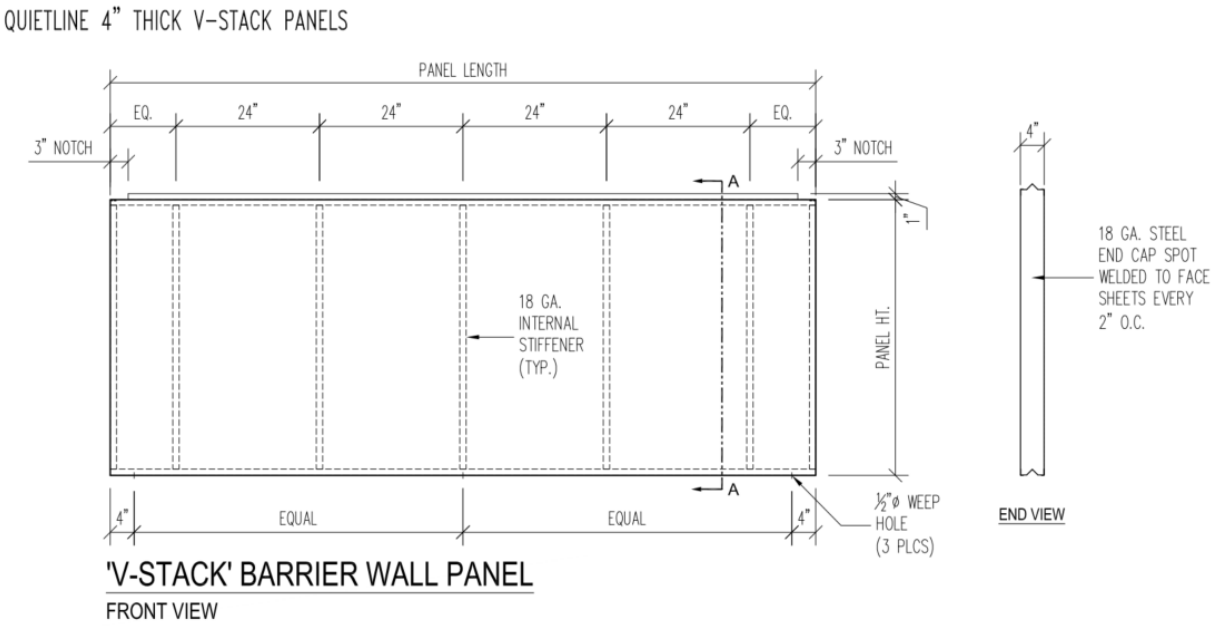
6.2.6.3 Impacts and Mitigation

Project Construction

The Project will create intermittent noise during construction, and the resulting noise impacts will be temporary. Additionally, Project construction noise will likely be similar to noise emitted from existing farm operations in the area and vary from day to day. Midwater BESS will mitigate noise impacts by limiting construction to daytime hours to the extent practicable and ensuring that equipment/vehicles are operated with properly functioning mufflers and noise-control devices.

BESS Facility

As designed and as modeled with the 87 dBA sound power level integrated BESS container unit, predicted nighttime noise levels associated with the BESS Facility do not exceed the nighttime limits of 50 dBA for NAC-1. Should final equipment selection produce sound levels exceeding 87 dBA, mitigation may be required. Such mitigation options for the BESS Facility could include a noise wall, equipment silencers, noise barriers, equipment operational capacity limitations, or a combination of these methods. A schematic diagram of a typical sound wall that could be employed at the site is shown as **Image** 9. Midwater BESS will review the noise constraints and conduct an additional noise study once final BESS container equipment is determined if it emits more than the modelled 87 dBA sound power level integrated BESS containers. If the final equipment configuration emits more than 87 dBA sound power levels, Midwater BESS will ensure compliance with Minn. Stat. § 116.07, subd. 2, using one or more of the mitigation measures previously listed.



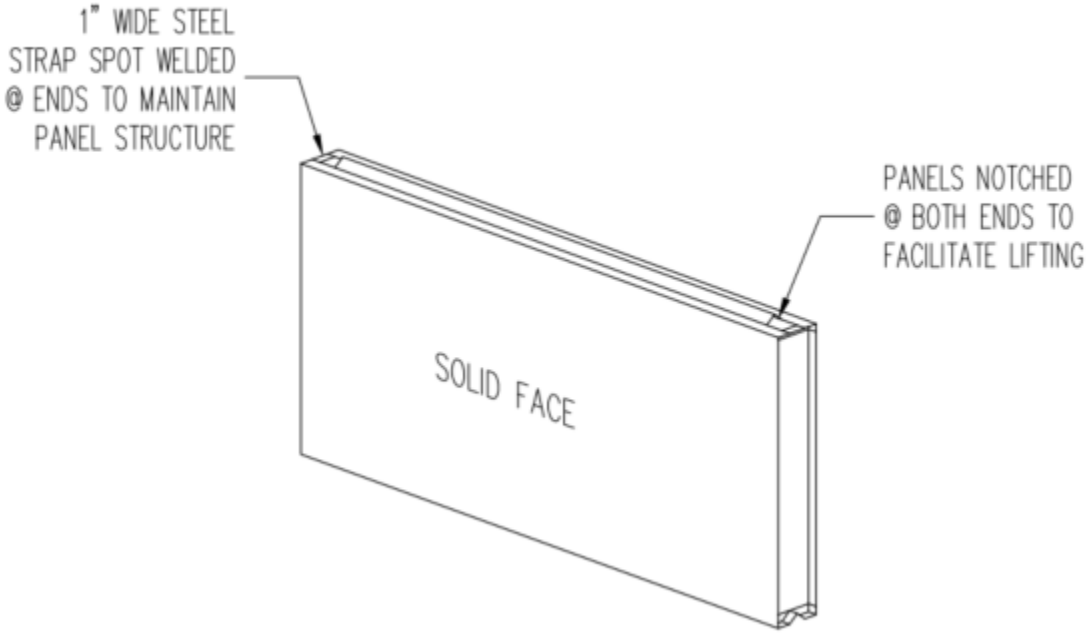


Image 9: Typical Sound Wall

HVTL Facility

While the HVTL Facility may produce noise during operation, it is anticipated to be inaudible under normal conditions. During rainy weather, the noise generated by falling rain is expected to exceed any noise increase from the corona effect caused by the HVTL Facility. The nearest residence, located over 350 feet away[40] and shielded by trees, is not expected to experience significant noise impacts from the minor corona effects. Noise impacts to this residence and other nearby residences would be minimal at worst and likely would not exceed the average ambient noise levels. Since the operation of the HVTL Facility is not expected to increase noise impacts, no additional mitigation measures are proposed.

6.2.7 Public Services and Infrastructure

This section describes the public services and infrastructure in the vicinity and impacts the Project may have on public services. Public services are those typically provided by a government entity to its citizens and that are used to benefit public health and safety.

6.2.7.1 Transportation

The Project's southwestern boundary includes U.S. Highway 65. Other roads that surround the Project Area are county or township roads. The nearest local road is River Road, which is located approximately 0.1 mile to the northeast of the Project Area.

MnDOT conducts traffic counts on roads in Minnesota.[41] The functional capacity of a two-lane paved rural highway is in excess of 5,000 vehicles per day, or Annual Average Daily Traffic (AADT). Based on 2023 data, the highest existing AADT for roads near the Project is 7,013 vehicles per day along U.S. Highway 65; traffic volume along the nearby County State Aid Highway (CSAH) 26 to the east of the Project averages 463 vehicles per day. No traffic volume data was available for River Road. Traffic volume data for roads near the Project are provided in **Table 6.2-5**.

Table 6.2-5: Annual Average Daily Traffic in the Project Vicinity

Roadway	Year	AADT Traffic Volume Total
CSAH 26 *South of CSAH 7*	2023	463
U.S. Highway 65 *0.8 MI S OF JCT CSAH1, N OF STATE LINE*	2022	7,013
River Road	No Data Available	No Data Available

[40] This distance represents the nearest residence to the HVTL Facility. The nearest distance to the BESS Facility is 900 feet.
[41] MnDOT. 2023 Traffic Mapping Application (available at https://mndot.maps.arcgis.com/apps/webappviewer/index.html?id=7b3be07daed84e7fa170a91059ce63bb).

The anticipated access point to the Project will be off U.S. Highway 65. There are no alternate access routes proposed for the Project at this time (**Figure 2**).

No railroads are located in the Project Area. The Union Pacific Railroad is located adjacent to the Project's southern boundary, generally running southeast to northwest.[42] No Project infrastructure is designed to enter, occupy, or restrict railroad property or ROWs.

6.2.7.2 Emergency Services

The Project is in rural Freeborn County which, according to the U.S. Census Bureau's QuickFacts website, has a population density of 43.7 persons per square mile of land area.[43] If emergency personnel were needed at the Project, multiple agencies would likely respond, depending on the situation. These include the Freeborn County Sheriff and the volunteer fire department in Glenville.

Ambulance response is provided by regional and local ambulance services. The primary ambulance service for the Project Area is the Mayo Clinic Ambulance in Albert Lea.[44] Hospitals near the Project Area include the Mayo Clinic Hospital Albert Lea, which is located in Albert Lea and within ten miles of the Project.[45]

6.2.7.3 Local Utilities

Most rural residences in Freeborn County are supplied water by wells (**Section 6.2.7.4**).[46] Sewage is serviced by residential septic tanks and/or drain fields. No wells or septic fields are present within the Project Area based on Minnesota Department of Health records and landowner information.

6.2.7.4 Regional Utilities

The National Pipeline Mapping System (NPMS) was searched to assess whether pipelines are present in the Project Area and nearby vicinity.[47] NPMS pipeline data consists of gas transmission pipelines and hazardous liquid pipelines jurisdictional to the Pipeline and Hazardous Materials Safety Administration. There are no pipelines within the Project Area or one-mile buffer.

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42 MnDOT. 2022. Minnesota Rail Viewer Application (available at https://www.arcgis.com/apps/webappviewer/index.html?id=5640f575a86148039704660c29126f24&extent=-11690507.5359%2C5234420.4958%2C-9081864.6346%2C6507555.6389%2C102100) Accessed July 2024.

43 U.S. Census Bureau. 2020. Freeborn County (available at https://www.census.gov/quickfacts/fact/table/freeborncountyminnesota,frederickcitymaryland,freeborncountyminnesota,US/PST04522).

44 Minnesota Emergency Medical Services Regulatory Board. 2024. Ambulance Primary Service Areas for Minnesota (available at https://experience.arcgis.com/experience/a222fe7ceaf44f868ec3c0f5dafe8446#data_s=id%3AdataSource_2-187fc07a297-layer-2%3A1620).

45 MN Geospatial Commons. 2020. Hospitals Serving Minnesota (available at https://gisdata.mn.gov/dataset/health-facility-hospitals). Accessed July 2024.

46 Minnesota Department of Health (MDH). 2023. Source Water Protection Web Map Viewer (available at https://mdh.maps.arcgis.com/apps/View/index.html?appid=8b0db73d3c95452fb45231900e977be4) Accessed July 2024.

47 NPMS. 2024. Public Viewer (available at https://pvnpms.phmsa.dot.gov/PublicViewer/) Accessed June 2024.

There are four overhead transmission lines located within the Project Area. Two of these lines are 161 kV and run generally north to south, and the other two lines are 69 kV and run generally east to west. All four lines terminate at the ITC Midwest Glenworth Substation that is surrounded by the Project Area[48]. No additional overhead transmission lines are mapped within one mile of the Project. (**Figure 2**).

6.2.7.5 Public Communications

Landline telephone service in the area is provided to farmsteads, rural residences, and businesses by Qwest Corporation.[49] Mobile service in the area is provided by many carriers, including AT&T, T-Mobile, and Verizon. Cable service providers include Midcontinent Communications and Spectrum. Other services that are operating in Freeborn County—such as fixed wireless, satellite, and DSL—include BEVCOMM, CenturyLink, Consolidated Communications, Frontier, HughesNet, LTD Broadband, Manchester-Hartland Telephone Company, Mediacom, MetroNet, Minnesota WiFi, Radio Link Internet, Route12 Networks, Starlink, Tekstar Communications, Winnebago Cooperative Telecom Association, and Viasat.[50] Neither the Project construction nor operation will impact public communications.

6.2.7.6 Emergency Communications

Five towers are part of the Allied Radio Matrix for Emergency Response (ARMER) in Freeborn County. [51] These ARMER towers are a part of Minnesota's Statewide Communication Interoperability Plan, which aims to improve communication for emergency responders. The ARMER radio system operates by line of sight, talking to other ARMER towers. In order for the system to operate effectively, multiple towers are needed to produce a solid blanket of coverage. The system can be interrupted if tall objects are proposed within the line-of-sight, typically at or near the top of a tower over 150 feet tall. According to the most recent publicly available map, the nearest ARMER tower to the Project is located near Glenville. The exact location of the ARMER tower is unknown, but according to recent aerial imagery, no towers are located within a quarter mile of the Project.

6.2.7.7 Regional Landfill

The Albert Lea Transfer Station and Demolition Landfill serves Freeborn County as a location for construction and demolition debris. The landfill is located approximately ten miles northwest of

[48] Homeland Infrastructure Foundation Level Data. 2023. Transmission Lines (available at https://atlas.eia.gov/datasets/bd24d1a282c54428b024988d32578e59_0/explore?location=36.607804%2C-99.339062%2C12.36).

[49] Minnesota Department of Commerce. 2023. Minnesota Telephone Exchange Boundaries (available at https://minnesota.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=a61fe43236994d43b097d439befb8e70).

[50] Minnesota Department of Employment and Economic Development (DEED). 2023. Minnesota Broadband Providers by County (available at https://mn.gov/deed/assets/providers-county_tcm1045-190762.pdf).

[51] MnDOT. 2018. ARMER Sites. Map dated January 1, 2018 (available at https://dps.mn.gov/divisions/ecn/programs/armer/Documents/Armer%20Site%20Map/ARMER%20Site%20Map%202018-01-01.pdf).

the Project Area at 2506 Richway Drive, Albert Lea, MN 56007.[52] Details of landfill services and capacity are addressed in the Decommissioning Plan (**Appendix D**).

6.2.7.8 Impacts and Mitigative Measures

Transportation

Regional access to the Project will be via existing U.S. Highway 65. Although the final Project design is not complete, with the possible exception of minor field access or driveway modifications, no existing roadway changes are anticipated. The Project access roads are illustrated in **Figure 2**. During the construction phase, temporary impacts are anticipated on some public roads within the vicinity of Project facilities, primarily through additional traffic and slow-moving construction vehicles. These impacts are expected to be short-term and minor.

Construction traffic will use the existing roadway system to access the Project facilities and deliver construction materials and personnel. Truck traffic during construction is estimated to be approximately five truck trips/day during site preparation, 15 truck trips/day during the BESS installation, and three truck trips/day during the mechanical/electrical/commissioning stage. Semi-truck delivery will vary per day depending on time of construction and delivery timeline of equipment. Overweight or oversized loads are unlikely. If they are required, Midwater BESS will obtain the appropriate approvals from state and local agencies prior to construction. For purposes of comparison, the functional capacity of a two-lane paved rural highway is in excess of 5,000 AADT. The increased traffic may be perceptible to area residents, but the slight increase in volume is not expected to affect traffic function. Slow-moving construction vehicles may also cause delays on smaller roads, similar to the impact of farm equipment during planting or harvest. However, these delays should be minimal for the relatively short construction delivery period. It is anticipated that there will be an average of 30-50 workers on site during the construction period, with a maximum of 75 workers for limited periods. These workers will generate an average of 20-40 pickup or car trips/day based on limited ride share or carpooling.

After construction is complete, traffic impacts during the Project operations phase will be negligible. A small maintenance crew driving through the area in pickup trucks on a regular basis will monitor and maintain the facilities as needed, but traffic function will not be impacted as a result.

No railroads are located within the Project Area and therefore will not be impacted. The Project is designed to avoid the Union Pacific Railroad located along the southern boundary which will mitigate any potential impact.

[52] Albert Lea Transfer Station and Demolition Landfill. n.d. Available at https://cityofalbertlea.org/transfer-station/. Accessed July 2024.

Emergency Services

Project construction and operation will have minimal impacts on the security and safety of the local populace. The Applicant will engage with local fire departments to address any concerns they may have about fire risks and to confirm mitigation measures for the same (see **Section 6.2.7.2**).

In general, BESS facilities are comprised of equipment that pose limited dangers under normal operating conditions and used by trained personnel. Industry best practices for safety will be implemented during Project construction and operation through site safety plans developed by the operator and by each contractor entering the Facility.

Midwater BESS will work with local emergency responders including the Freeborn County Sherrif's Office and the Glenville volunteer fire department to make sure they know how to respond to emergencies at the BESS Facility and HVTL Facility. An Emergency Response Plan will be prepared, in coordination with local emergency responders, prior to construction.

Additionally, construction will comply with local, state, and federal regulations regarding installation of the BESS Facility and HVTL Facility infrastructure and standard construction practices. Established industry safety procedures will be followed during and after Project construction; these include clear signage during all construction activities and fencing of all Project facilities to prevent public access.

Local and Regional Utilities

Midwater BESS will coordinate with Gopher State One Call before and during construction to fully understand infrastructure locations and safety concerns and to avoid possible structural conflicts. Midwater BESS will also conduct an American Land Title Association survey to identify the locations of underground utilities. Final Project design will minimize and avoid impacts to underground utilities; if conflicts are unavoidable, Midwater BESS will coordinate with the utility to develop an approach to reroute or otherwise protect the utility. Underground utilities will be marked prior to construction start. The Project will not impact existing utilities, such as transmission lines and substations; as such, no mitigation is proposed for these utilities. The construction process will not involve groundwater withdrawal or construction within the regional aquifer so no impacts to regional water wells will occur. Should an on-site well be installed, its use will be consistent with or less than typical residential pumping rates, which have not been shown to create any regional impacts.

Public Communications

The Project will not impact existing utilities, such as public communications; as such, no mitigation is proposed.

Emergency Communications

The nearest ARMER tower in the Project vicinity is located near Glenville. The Project will not impact this communication system as Project facilities are proposed well below the typical height of a tower and line-of-sight near the top of these towers (i.e., greater than 150 feet above ground).

Midwater BESS, LLC anticipates the tallest BESS facilities to be up to ten feet above ground. The tallest portion of the Project is anticipated to be an up to 90-foot-tall pole for construction of the HVTL Facility. All facilities are anticipated to be less than 150 feet in height; as such, no mitigation is necessary.

Regional Landfill

Construction and equipment packaging waste will be managed by the general contractor. It is expected that this material will be disposed or recycled at the Albert Lea Transfer Station and Demolition Landfill located approximately ten miles northwest of the Project Area. The waste volume typical equipment designed for this Project can easily be accommodated by this facility as part of its daily operation through use of roll-off containers or on-site receptacles.

Details on the decommissioning and recycling of the Project are addressed in the Decommissioning Plan (**Appendix D**).

6.2.8 Land Use and Zoning

The Project is sited within Shell Rock Township in Freeborn County. Per Minn. Stat. §216E.10, subd. 1, the Site Permit and Route Permit supersedes and preempts "all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local, and special purpose government." Thus, no zoning or land use permits are required for Project construction from Freeborn County or Shell Rock Township, although the review by the Commission will take local land use ordinances and zoning into consideration. See **Section 1.4.2** (Local Discretionary Approvals) regarding the Site Permit and Route Permit and preemption of local permits and zoning.

6.2.8.1 Land Use and Land Cover

The Project is located within a rural area approximately 0.4 mile southeast of the city of Glenville. The U.S. Geological Survey classifies current Project Area land use as generally agricultural.

As shown in **Table 6.5-9** and on **Figure 5**, the predominant Project Area land uses are designated by the U.S. Geological Survey as hay/pasture (41.3 percent), herbaceous (19.2 percent), and emergent herbaceous wetlands (19.4 percent). Smaller percentages of developed land, open water, crops, and wooded areas cover the majority of the rest of the Project Area. The Proposed BESS Facility Development Area is primarily hay/pasture (89.5 percent).[53] The hay/pasture and herbaceous coverage make up the majority of the Project and Proposed BESS Facility Development Areas, featuring predominantly open spaces surrounded by trees and wooded groves. The emergent herbaceous wetlands are generally associated with the areas near the Shell Rock River. The Minnesota Land Cover Classification System (MLCCS) incorporates more detailed land cover information, including human-modified cover classifications; however, the Project Area is not covered by the MLCCS. Land cover acreages and percentages are instead taken from

[53] Dewitz, J. 2021. National Land Cover Database (NLCD) 2019 Products (ver. 3.0, February 2024) [Data set]. U.S. Geological Survey (available at https://doi.org/10.5066/P9KZCM54).

the National Land Cover Database (NLCD)[54] and are listed in **Table 6.5-9** in **Section 6.5.6** (Vegetation).

Midwater BESS reviewed the Comprehensive Plan, during Project design preparation. The Comprehensive Plan is meant to guide Freeborn County land use decisions.[55] The Comprehensive Plan is tied closely to zoning and subdivision within Freeborn County and provides descriptions and purposes for various land uses or types. The Project Area is located within the Agricultural District, which is designated for the preservation and conservation of land for agricultural purposes.[56] As feasible, the Midwater BESS has designed the Project to be consistent with the goals and policies of the Comprehensive Plan.

Freeborn County also has adopted the 2016–2021 Comprehensive Water Plan (Comprehensive Water Plan) (**Table 6.2-6**).[57] The Comprehensive Water Plan establishes priorities in actions related to water quality, water quantity, and special land uses and conditions that influence land and water resources. Resources and concerns include aquifers, surface waters (lakes, shoreland, aquatic invasive species, and wetlands), soil and erosion, waste disposal and management (subsurface sewage treatment systems, feedlots, and solid waste), drainage, and municipal wastewater and stormwater. The Comprehensive Water Plan focuses on agricultural land uses since approximately 81 percent of productive land in Freeborn County is farmed or used for rotational animal pastures.

These plans and their years adopted can be found in **Table 6.2-6** below.

Table 6.2-6: Comprehensive Plans Covering the Project Area and Surrounding Region

Comprehensive Plan	Governing Body Responsible for Plan	Year Adopted
Freeborn County Comprehensive Water Plan	Freeborn County	2016
Freeborn County Comprehensive Land Use Policy Plan	Freeborn County	2017

6.2.8.2 Zoning

Freeborn County's Zoning Ordinance governs the unincorporated areas of the County.[58] By its terms in Chapter 26, the Ordinance applies to systems that are not otherwise subject to siting and oversight by the MPUC (see Sec. 26-20); thus, it does not apply to the Project. The Ordinance does not contain any regulations specific to BESS. The Project Area is zoned "A" Agricultural in its

54 USGS. 2021. National Land Cover Database. https://www.usgs.gov/centers/eros/science/national-land-cover-database

55 Freeborn County. 2017. Comprehensive Land Use Policy Plan (available at https://library.municode.com/mn/freeborn_county/codes/code_of_ordinances?nodeId=COCO_CH24PLDE_ARTIICOLAUSPOPL_S24-19PU)

56 Freeborn County. n.d. Land Use and Cover Map. (available at https://mngeo.mn.gov/maps/LandUse/lu_free.pdf).

57 Freeborn County. 2016. Comprehensive Water Use Plan (available at https://www.co.freeborn.mn.us/DocumentCenter/View/2177/Freeborn-County-Comprehensive-Water-Plan-2016-2021-PDF)

58 Freeborn County. 2017. Code of Ordinances (available at https://library.municode.com/mn/freeborn_county/codes/code_of_ordinances?nodeId=COCO_CH42ZO)

entirety, and no zoning district information or mapping is publicly available for the Project Area beyond the on-line viewer.

Major Essential Services are defined within the Ordinance as "any essential service line or structure providing transmission services" and includes utility services that are of high voltage (greater than 35 kV) electrical power. These major essential services are allowed in any zoning district within the county alongside a conditional use permit. This Major Essential Service definition encompasses the proposed HVTL Facility and potentially the BESS Facility.

Midwater BESS has designed the BESS Facility and HVTL Facility comply with the standards outlined in the Ordinance (**Table 5.2-1**).

6.2.8.3 Impacts and Mitigation

BESS Facility

Because the Project is considered an ESS and is permitted by the Commission, no zoning or land use permits are required from Freeborn County. Midwater BESS sited and designed the BESS Facility, taking into account the county's land use goals and setbacks, in addition to state requirements as discussed in **Section 5.2.1**. Midwater BESS plans to continue coordinating with the local jurisdictions to ensure compliance with other potential permits necessary for the Project, such as road use or driveway permits. The Project's impacts to lands in Freeborn County are minimal and will have limited impact on the rural nature of the region.

The project will change land use at the site for the operating life of the Project (anticipated to be 30 years). No permanent land use impacts are anticipated. Land within the Proposed BESS Facility Development Area will be owned by Midwater BESS. Because no permanent land use impacts are anticipated, no additional mitigation measures are proposed.

HVTL Facility

Because the Project's HVTL Facility falls under the siting and oversight of the state of Minnesota, the Commission's Route Permit approval serves as the HVTL Facility approval. Midwater BESS plans to continue to coordinate with the local jurisdictions to ensure compliance with other potential permits necessary for the Project such as road use, driveway, or utility crossings permits. The Proposed HVTL Facility Development Area will adhere to all setback requirements as discussed in **Section 5.1.1.6**.

Major Essential Services (utility services that are of high voltage [greater than 35 kV] electrical power) are permitted within all zoning districts in Freeborn County. Additionally, the Proposed HVTL Facility Development Area is not anticipated to preclude current or planned land use on adjacent parcels. Because no permanent impacts to zoning are anticipated, no additional mitigation measures are proposed beyond those described above.

The HVTL Facility construction will have minimal impacts to lands within the Project Area. The impact on croplands in Freeborn County is minimal and will have a limited effect on the region's rural character. Land within the Proposed HVTL Facility Development Area will be leased from the existing landowners and returned to pastureland or any other appropriate land use as determined by the landowner upon decommissioning of the HVTL Facility. Because no permanent land use impacts are anticipated, no additional mitigation measures are proposed.

6.2.9 Recreation

Regional outdoor recreation includes hiking, snowmobiling, biking, and hunting. These activities predominantly occur on public roadways, private lands, or informal private trails. Regional camping is limited near the site with nearby public campgrounds being 4.5 miles from the Project Area. There are no MnDNR SNAs, state trails, walk-in access program sites, Aquatic Management Areas, Fishery Management Areas, state parks, state forests, or migratory waterfowl feeding and resting areas within or adjacent to the Project Area (**Figure 6**).

One WMAs, the Shell Rock WMA, is adjacent to the southwest of the Project Area (**Figure 6**).[59] is located within 0.25 mile of the Project Area.

The closest U.S. Fish and Wildlife Service (USFWS) waterfowl production area to the Project Area is the Goose Creek WPA approximately 6.5 miles to the west.[60]

State water trails are river routes that were developed for recreational activities and are designated by legislation and managed by the MnDNR and local partners. State water trails provide recreation opportunities on rivers that have historic, recreational, and scenic values. The Shell Rock River State Water Trail is located within the Project Area, but there will not be any Project infrastructure located within it. Approximately 0.6 mile of the water trail is located within the Project Area. This water trail travels 20 miles through central Freeborn County to the Iowa border.[61] The Shell Rock River is also used for recreational tubing on a limited basis. No Project infrastructure will intrude into the river or near its banks.

Using available maps, the Freeborn County Trails snowmobile trail is present within the northwest corner of the Project Area. Project infrastructure near the snowmobile trail is the existing substation and new transmission power line poles. **Figure 6** depicts recreational opportunities near the Project Area.

[59] MnDNR. n.d.-c Recreation Compass (available https://www.dnr.state.mn.us/maps/compass.html) Accessed July 2024.
[60] MnDNR. n.d.-d. Map Viewer: USFWS Waterfowl Production Areas (available at https://arcgis.dnr.state.mn.us/portal/home/item.html?id=6de3eb66e7e2494ebe3669a29f22ad42) Accessed July 2024.
[61] MnDNR. 2022. Map of Minnesota State Water Trails. (available at https://www.dnr.state.mn.us/watertrails/location_map.html) Accessed July 2024.

The nearest parks are Glenville-Emmons Secondary School Grounds, located 0.4-mile northwest of the Project, Glenville-Emmons Elementary School Grounds, located 0.9-mile northwest of the Project, and the St. Nicholas Park, located 4.4 miles northwest of the Project.[62]

6.2.9.1 Impacts and Mitigative Measures

BESS Facility

Although the Shell Rock River Water Trail is situated within the proposed Project Area, no Project infrastructure will obstruct or restrict access to the water trail. Individuals using the small section of the water trail near the Project Area may notice a slight increase in noise from the construction and operation of the BESS Facility. These affects will be temporary and localized to the small section of trail near the BESS Facility. To prevent unauthorized access from river users (e.g., tubing), signs and fencing will be constructed as needed to inform and protect the public from entering the Project grounds. The construction phase may be a temporary visual, auditory, and aesthetic impact to some visitors and local residents. Once complete, the BESS Facility operation will not disturb and impact local recreation experiences or the amount of people.

Signs and fencing will be constructed as needed to inform and protect the public from entering the BESS Facility. The construction phase may be a temporary visual, auditory, and aesthetic impact to some visitors and residents. Once complete, the BESS Facility operation will not disturb and impact local recreation experiences. Because no public recreational lands or opportunities are located within the Proposed BESS Facility Development Area, no impacts are anticipated; and as such, no mitigation is proposed.

HVTL Facility

Snowmobilers will notice the different aesthetic along the portion of the snowmobile trail near the Project Area. The current snowmobile trail alignment travels through the northwest corner of the Project Area underneath the HVTL Facility. Generally, snowmobile trails form a network between cities. While sections of the Freeborn County Trails pass through more rural areas, other sections pass through municipalities and various developments. The introduction of the HVTL Facility is not expected to affect the snowmobile trail's use. Poles or structures holding the HVTL going from the BESS facilities to the ITC Midwest Glenworth Substation will be setback from the trail under state guidelines and to ensure the public's safety when using the trail. Furthermore, trail markers will be installed to ensure riders do not deviate off the designated trail and warn of the potential electrical hazards of unauthorized access to the HVTL Facility or ITC Midwest Glenworth Substation.

No other public or private recreation opportunities exist in or near the HVTL Facility and therefore, no impact or mitigation measures are proposed.

[62] Freeborn County. n.d.-a. Government Website (available at https://www.co.freeborn.mn.us/319/Parks-System) Accessed July 2024.

6.2.10 Socioeconomics

6.2.10.1 Description of Resources

Socioeconomic information for the Project Area is based on data from the U.S. Census Bureau's Explore Census Data website. The U.S. Census website provides a wide variety of data points. The discussion herein does not address every socioeconomic measure, but instead addresses the most applicable statistics related to the Project. Key socioeconomic indicators that define the demographic and economic context of the Project Area—and may be influenced by the Project's construction and operation—include total population, vacant housing units, per capita income, poverty rate, and unemployment rate (**Table 6.2-7**).

Table 6.2-7: Socioeconomic Characteristics

State/County	Total Population	Total Vacant Housing Units	Median Household Income ($)	Persons Living Below the Poverty Level (%)	Unemployment Rate (%)
Minnesota	5,706,494	231,568	82,338	9.6	3.2
Freeborn County	30,895	1,038	65,679	9.5	2.7
Shell Rock Twp	389	18	56,484	3.5	1.1

The Project is located in a rural, unincorporated area within Shell Rock Township in Glenville. The nearest city is less than one mile to the northwest of the Project site. The nearest larger city is Albert Lea, which is approximately 5.5 miles northwest of the Project.

The median household income of Shell Rock Township is $56,484, which is lower than that of Freeborn County ($65,679) or Minnesota ($82,338).

The County's percentage of individuals classified as living below the poverty level is 9.5, and the state percentage is 9.6. Shell Rock Township has a lower portion of its population living in poverty (1.1%) than either Freeborn County (9.5%) or Minnesota (9.6%).[63]

The unemployment rate in Freeborn County (2.7 percent) is slightly higher than the state average of 3.2 percent, with Shell Rock Township having a significantly lower unemployment rate at 1.1 percent. The primary industries in Freeborn County are classified as:

1. Educational services, healthcare, and social assistance (22.1 percent),
2. Manufacturing (21.4 percent), and
3. Retail trade (11.9 percent).[64]

[63] U.S. Census Bureau. 2020c. Explore Census Data (available at https://data.census.gov/) Accessed August 2024.

[64] U.S. Census Bureau. 2022. Selected Economic Characteristics. 2022: ACS 5-Year Estimates Data Profiles, Table DP03 (available at https://data.census.gov/table/ACSDP5Y2022.DP03?q=selected%20economic%20characteristics&g=050XX00US27047). Accessed August 2024.

Approximately 1,038 vacant housing units exist in Freeborn County and 18 vacant housing units exist in Shell Rock Township. In the nearest metropolitan area, Albert Lea, there are approximately 623 vacant housing units.[65] According to the Explore Albert Lea Visitors Guide, ten hotels and motels are located in the city or near the Albert Lea area.[66]

6.2.10.2 Impacts and Mitigative Measures

The Project will provide socioeconomic benefits to the landowner, local governments, and communities. Landowner compensation is established by voluntary lease agreements between the landowner and Midwater BESS.

Project construction would provide temporary revenue increases of the surrounding region through increased demand for lodging, food services, fuel, transportation, and general supplies. Midwater BESS will use local contractors and suppliers for portions of the construction process, as available. Midwater BESS will issue a contract to a qualified EPC contractor to oversee and manage the construction of the BESS Facility. Midwater BESS will work with the selected EPC contractor to develop a workforce and hiring plan that provides employment opportunities for the local workforce. In addition, the Project should provide subcontracting opportunity to local contractors for construction support services, gravel supply, clean fill, and other civil works. Additional personal income will also be generated by circulation and recirculation of dollars paid out by Midwater BESS as business expenditures and state and local taxes.

Specialized labor will be required for certain aspects of the Project. It may be necessary to bring specialized labor from other areas of Minnesota or neighboring states because the relatively short construction duration often precludes special training of local or regional labor. The workforce needed to construct a BESS Facility be comprised of Minnesota licensed electricians because most of the assembly and wiring work for BESS installations is considered electrical work under the Minnesota State Electrical Code.

Effects on temporary or permanent housing are anticipated to be negligible. During construction, out-of-town laborers will likely utilize some of the previously mentioned lodging facilities in the surrounding area. More permanent housing will be required for the one to two long-term personnel that will manage the Project on a regular basis. The residence and temporary housing statistics suggest the local area has ample lodgings to accommodate the influx of construction workers, if needed. Midwater BESS anticipates that sufficient temporary lodging and permanent housing will be available within Freeborn County to accommodate construction laborers and long-term personnel.

Midwater BESS will pay wages, and purchase goods and services from local businesses and landowners during the Project's construction and operation. While the project does not create tax

[65] U.S. Census Bureau. 2020c. Explore Census Data (available at https://data.census.gov/) Accessed August 2024.
[66] Explore Albert Lea. n.d. Visitors Guide (available at https://www.explorealbertlea.com/visitors-guide) Accessed July 2024.

revenue through a production tax, the Project is estimated to provide property tax payments to Freeborn County of approximately $19,700 annually over the 30-year lease term for a total of approximately $788,000. Additionally, Shell Rock Township is estimated to receive approximately $2,400 annually over the 30-year lease term for a total of approximately $95,000. In addition, lease payments paid to the landowners will offset potential financial losses associated with removing a portion of their land from agricultural production.

The socioeconomic impacts associated with the Project will be positive; therefore, no mitigative measures are proposed.

6.3 Land-Based Economies

6.3.1 Agriculture

According to the U.S. Department of Agriculture's (USDA) 2022 Census of Agriculture, approximately 351,174 acres of land in Freeborn County is comprised of farms, including 332,702 acres of cropland (94.7 percent), 4,332 acres of woodland (1.2 percent), and 2,754 acres of pastureland (0.8 percent). A total of 908 individual farms operate in Freeborn County, with the average farm size at 387 acres.

Freeborn County ranks 24th in the state for total agricultural production and 19th in crop production. In 2022, the top three crops (in acres) in Freeborn County included corn (for grain), soybeans (for beans), and vegetables harvested. Swine production topped the list of livestock inventory, followed by turkeys, and cattle. The total 2022 market value of agricultural products sold in Freeborn County was approximately $475.6 million, including $319.7 million for crops and $155.9 million for livestock, poultry, and products.[67]

No drain tile was identified from public data or landowner interviews, making it unlikely that any drain tile exists in the Project Area or within the HVTL Route. Any drain tile that is discovered by Midwater BESS will be evaluated and recorded accordingly. When drained, up to 33.4 acres of prime farmland exists within the Project Area.

[67] USDA. 2022. Census of Agriculture. Freeborn County Profile (available at https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Minnesota/cp27047.pdf).

6.3.1.1 Impacts and Mitigative Measures

BESS Facility

The BESS Facility will impact approximately 17 acres of agricultural land currently enrolled in a CRP within the Proposed BESS Facility Development Area (**Figure 2**) during its operating life and will not result in a significant impact to land-based economies in the BESS Facility vicinity as the Proposed BESS Facility Development Area occupies less than 0.1 percent of the cropland in Freeborn County (332,702 acres). Agricultural production would continue in the area surrounding the BESS Facility during construction and operation and will not impact livestock operations.

Payments will be made by Midwater BESS to landowners of the land used for the BESS Facility as provided in the purchase option agreement.

No drain tile or drainage infrastructure is located within the vicinity. Midwater BESS is committed to preserving existing soil drainage conditions as much as possible to minimize impacts or damage to unidentified drain tile lines and/or drain tile systems. A contingency protocol will be included in the construction plans to address damage to any such lines or systems.

Land disturbed during construction will be repaired and restored to pre-construction contours and characteristics to the extent practicable. Restoration will allow the land surfaces surrounding the BESS Facility to drain properly, blend with the natural terrain, re-vegetate, and minimize erosion.

Measures to mitigate topsoil removal include limiting removal to areas designated for spot grading and construction of roads and permanent structures. Impacts to soils will be mitigated by incorporating sediment and erosion control measures during and following construction. Construction activities will incorporate erosion and sediment control BMPs outlined in the SWPPP, which will be specifically prepared for the BESS Facility. The SWPPP will include a discussion on topsoil and compaction management. During the BESS Facility operating life, erosion control will be primarily accomplished through establishment of a perennial vegetative cover in non-gravel areas of the Project Development Area not returned to agricultural use, installation of gravel roads with culverts (as necessary) to redirect concentrated surface water and management of surface water runoff in on-site ponds. These actions will preserve the soils in place and will likely result in less soil erosion than is typical with row crop agricultural activities. Midwater BESS will implement BMPs during construction and operation to reduce and mitigate any potential impacts from soil disturbances. Midwater BESS will implement vegetation management during construction and post-construction operations in accordance with BMPs and measures listed in the VMP (**Appendix C**).

HVTL Facility

No impacts to agriculture or livestock are expected. Minimal land will be disturbed and used for the HVTL Facility and equipment will be grounded to electrical code standards to prevent stray voltage (**Section 6.2.5.3**). Leases required for the HVTL Facility will be limited in size and restrictions to offer the landowner the option to continue current or similar land management practices.

Drain tile and drain infrastructure are not located along the Proposed HVTL Facility Development Area or within close proximity. Measures taken by Midwater BESS to curtail any potential impacts for the HVTL Facility to prevent runoff from the construction will be implemented as a part of the SWPPP.

6.3.2 Forestry

Economically important forestry resources are not found in this region of Minnesota. The Proposed BESS Facility Development Area is located solely on hay/pasture land as designated by the U.S. Geological Survey (**Figure 5**). There are no resources within the Project Area that are considered to be forestry resources for commercial use. The primary tree cover along the boundaries of the Project Area is comprised of buffers and wind breaks surrounding the Shell Rock River and wetlands. The primary tree cover will not be disturbed as part of Project construction or operations. The scattered trees bordering U.S. Highway 65 along the western boundary of the Project Area will also remain to provide additional visual screening.

6.3.2.1 Impacts and Mitigative Measures

No impacts to economically important forestry resources will occur from construction or operation of the BESS Facility or HVTL Facility; therefore, no mitigation measures are proposed.

6.3.3 Mining

Regional mining is minimal, with only a few small mines or pits associated with aggregate extraction or storage. There are no quarries or gravel pits located within or adjacent to the Project Area. The closest facility mapped is 0.2 miles northwest of the Project Area and designated as a Commercial Aggregate Source by MnDOT. [68]

6.3.3.1 Impacts and Mitigative Measures

According to the MnDOT Aggregate Source Information System Map, there are no quarries or gravel pits located within the Project Area. No impacts to mining operations are anticipated; therefore, no mitigation measures are proposed.

[68] MnDOT. 2023. Aggregate Source Information System Map (available at https://www.dot.state.mn.us/materials/asis_GE.html) Accessed June 2024.

6.3.4 Tourism

Tourism in the vicinity of the Project centers around various festivals and activities hosted by the county and cities near the Project, such as Glenville and Albert Lea, and outdoor recreational opportunities described in **Section 6.2.9**.

The city of Glenville local school has playgrounds and hosts a variety of activities such as baseball and volleyball. The city of Glenville also hosts Glenville Days, which is a multi-day event providing entertainment, live music, and food attractions to local residents of Glenville or nearby communities.[69]

In the city of Albert Lea, several parks can be found that host similar activities to Glenville while also including soccer, ice skating, swimming, picnicking, and walking trails. Some of these parks are located near local lakes. Winter and other sport complexes host organized activities throughout certain times of the year, and two municipal golf courses are also a part of the outdoor recreation opportunities available to the public. Albert Lea also hosts many free community events with live music, fireworks, theater performances, and other recreational activities.[70]

Freeborn County has four parks that provide opportunities for fishing, swimming, controlled hunting, picnicking, Nordic skiing, nature exploration, exercise, and day camping. St. Nicholas Park is the closest county park to the Project and is located near Albert Lea Lake.[71] In addition to parks, the county also hosts a county fair in the City of Albert Lea from July 30 to August 4 of 2024 hosting live music, petting zoo, dining, and carnival rides and games.[72]

In 2022, Freeborn County generated approximately $68 million in gross sales and employed 1,145 individuals in the leisure and hospitality industry.[73]

6.3.4.1 Impacts and Mitigative Measures

The Project will be located on private land, and with no recreational features within or adjacent to the Project, there will be no direct impacts to existing recreational facilities and tourism activities that typically generate revenue for the local community.

Midwater BESS will construct the BESS Facility and HVTL Facility within the limits of the Project Area, and no road closures are anticipated during active construction. Midwater BESS will closely coordinate construction activities with the cities, the Township, and the County if any closures are determined necessary. Recreation opportunities in the nearby area will be minimally affected by

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69 City of Albert Lea. 2024. Community Calendar: Glenville Days (available at https://www.calendarwiz.com/calendars/popup.php?op=view&id=176313035&crd=albertleacommunity&PHPSESSID=m2b19k4t4sbv9dqmj9dh6eff24) Accessed July 2024.

70 City of Albert Lea. 2024. Recreation (available at https://cityofalbertlea.org/recreation/) Accessed July 2024.

71 Freeborn County. n.d.-b. Parks System (available at https://www.co.freeborn.mn.us/319/Parks-System) Accessed July 2024.

72 Freeborn County. n.d.-c. Freeborn County Fair (available at https://www.co.freeborn.mn.us/490/Freeborn-County-Fair) Accessed July 2024.

73 Explore Minnesota. 2024. 2022 Leisure & Hospitality Industry Data (available at https://mn.gov/tourism-industry/assets/24-suitcase-sheet-couty-data_8.5x11_tcm1135-607260.pdf)

the construction of the Project and will not be impacted by Project operation. The annual events hosted by the county do not occur within the Project Area; most of these events are held within the city limits of Glenville and Albert Lea. No impacts to public access to these events is anticipated during construction or operation of the Project. Noise effects on public events are also not anticipated to result from the proposed Project.

6.4 Archaeological and Historical Resources

Midwater BESS has evaluated potential Project effects on archaeological and historical resources using desktop review, file searches, and field surveys. Field studies of the Project Area were completed between June 6 and 11, 2024. Additionally, Midwater BESS engaged cultural resource regulatory and tribal stakeholders to introduce the Project, request comments, and gain feedback as detailed in **Section 7.0** below (**Appendices B, F,** and **G**). SHPO provided a comment letter dated July 5, 2024, recommending a Phase I archaeological survey. As requested by the DOC, Midwater BESS sent a Project introduction letter and map to the Minnesota Tribal Nations requesting feedback on the Project. See **Section 7.0** for details and responses.

6.4.1 Phase Ia Literature Review

Midwater BESS performed a review of records for cultural resources on July 3, 2024, and this review is provided in the Cultural Resources Literature Review dated August 28, 2024 (*see* **Appendix F**). The records review study area included the Project Area and a one-mile buffer. This review included a request for Minnesota Statewide Historic Inventory Portal data from the Minnesota SHPO, and a review of several online resources, including the Portal maintained by the Office of the State Archaeologist (OSA), the USGS Geographic Names Information System (GNIS) Cemeteries database,[74] the Illustrated Historical Atlas of the State of Minnesota,[75] and 1951 and 1979 historic aerial photographs of the area.[76]

The literature review did not identify any previously recorded archaeological sites in the Project Area.[77] A single previously recorded archaeological site was recorded within one mile of the Project (**Table 6.4-1**). Site 21FE0126 is located approximately ½ mile to the east of the Project. The site was recorded in 2022 and is listed as undetermined for inclusion into the National Register of Historic Places (NRHP).

Table 6.4-1: Archaeological Resources

Site No.	Site Type	NRHP Status	Project / Buffer
21FE0126	Lithic Scatter	Undetermined	Buffer

[74] USGS. 2022. Geographic Names Information System (GNIS) Cemeteries Database (available at https://edits.nationalmap.gov/apps/gaz-domestic/public/search/names) Accessed July 2024.

[75] Andreas, A.T. 1874. An Illustrated Historical Atlas of the State of Minnesota (available at http://www.davidrumsey.com/maps750009-22501.html) Accessed July 2024.

[76] Historicaerials.com. 2024. Historic Aerials Viewer (available at https://www.historicaerials.com/viewer) Accessed July 2024.

[77] Office of the State Archaeologist (OSA). 2022. Cultural History of Minnesota (available at https://mn.gov/admin/archaeologist/educators/mn-archaeology/) Accessed July 2024.

Site No.	Site Type	NRHP Status	Project / Buffer
Key: Site No. = designation applied by SHPO; Site Type = archaeological site type; NRHP Status = eligibility or listing status in the NRHP; Project/Buffer = location within in Project Area or one-mile buffer.			

No historic/architectural resources have been previously inventoried within the Project Area. Two historic/architectural resources were identified adjacent to the Project boundary: Bridge 24004 (FE-SHE-0008) and Trunk Highway 65 (XX-ROD-00178). Neither resource will be impacted by the Project. Nine additional resources were found within the one-mile buffer of the Project Area (**Table 6.4-2**). None of the historic resources have been evaluated for listing in the NRHP.

Table 6.4-2: Historic/Architectural Resources

Inventory No.	Historic Name	Address	NRHP Status	Project / Buffer
FE-SHE-00012	Culvert 24J01	CSAH 13 over East Branch Shell Rock River	Unevaluated	Buffer
FE-SHE-00011	Bridge 24524	TWP 26 over Shell Rock River	Unevaluated	Buffer
FE-SHE-00007	Bridge 89149	1.0 mi S of JCT TH 65 (carries CSAH 5 over Co Ditch # 16)	Unevaluated	Buffer
FE-SHE-00010	Bridge 24519	140th St over Shell Rock River	Unevaluated	Buffer
FE-GLE-00006	Bridge L5606	Railroad over STR 22	Unevaluated	Buffer
FE-GLE-00005	Bridge 24528	CSAH 13 over Shell Rock River	Unevaluated	Buffer
FE-GLE-00004	Glenville Methodist Episcopal Church	Glenville Methodist Episcopal Church	Unevaluated	Buffer
FE-GLE-00001	Glenville Creamery	1st St SE & River Rd	Unevaluated	Buffer
FE-SHE-00008	Bridge 24004	U.S. 65 over Shell Rock River	Unevaluated	Buffer/Adjacent
XX-ROD-044	Trunk Highway 165	Trunk/U.S. Highway 65	Unevaluated	Buffer/Adjacent
GNIS System	Greenwood Cemetery	Main St/150th St/CSAH 13	Unevaluated	Buffer
Key: Inventory No. = designation applied by SHPO; Name = unofficial name or resource type as listed on inventory form; Address = location as listed on inventory form, verified in GIS if possible; NRHP Status = eligibility or listing status in the NRHP; Project/Buffer = location within in Project Area or one-mile buffer.				

The Project Area is situated in Minnesota Archaeological Region 2e (Prairie Lake [East]). Archaeological village sites of earlier prehistoric periods are typically located on islands, lake peninsulas, and major rivers. Woodland period camps follow a similar pattern across the landscape but are limited to temporary or special use activities. Ceramic, lithic, and ground stone technologies are typical material markers of these periods. Euro-American settlements start along riverine areas and later expand to follow surveyed divisions in subsequent townships. Freeborn County marks the most southeastern county within the region.

6.4.2 Phase I Field Survey

Project Area archaeological field surveys were conducted on June 6, 11, 25, and 26, 2024, and are detailed in the August 28, 2024 *Phase I Archaeological Reconnaissance Survey* (**Appendix F**).

No new or previously recorded archaeological, architectural, or historic sites were identified/reviewed during the survey. The Phase I Archaeological Reconnaissance Survey report was submitted to the SHPO for review on August 28, 2024. SHPO provided a letter dated October 22, 2024, indicating that based on the results of the survey, they agree that there are no properties listed in the National or State Registers of Historic Places, or within the Historic Sites Network, that will be affected by this project. They also agree that there are no known or suspected archaeological resources that will be affected by the project (**Appendix B-2**).

6.4.2.1 Impacts and Mitigative Measures

No previously recorded archaeological, architectural, or historic sites will be directly impacted by either the proposed BESS or HVTL Facilities, and there are no known properties listed in the National or State Registers of Historic Places in the Project Area. Before Project construction begins, the Applicant will prepare an Unanticipated Discoveries Plan that will outline the steps to be taken if previously unrecorded cultural resources or human remains are encountered during construction. Should previously unknown archaeological resources be inadvertently encountered during Project construction and/or operation, work will stop, and the discovery will be examined by an archaeologist. If the discovery is determined to be a significant cultural resource, SHPO and OSA will be notified. Should human remains be inadvertently discovered, Midwater BESS will cease all work, law enforcement will be immediately contacted, and the OSA will be notified.

6.5 Natural Environment

6.5.1 Air Quality

Minnesota has a good record of complying with federal air quality standards, and the state's air quality has been improving for most pollutants. Currently all areas of Minnesota are attainment areas except for an area in Dakota County.[78] Much of this decline in pollution is attributed to lowered emissions from major facility or "point sources" from enforcement of the Clean Air Act (CAA) and subsequent amendments. The CAA requires that the U.S. EPA establish National Ambient Air Quality Standards for various pollutants, including carbon monoxide (CO), lead, nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), and sulfur dioxide (SO_2). The Project Area presently meets federal air quality standards.[79]

In recent years, because of an increased understanding of the health effects of certain pollutants, air quality standards have become stricter, and acceptable thresholds for some pollutants have been lowered, including the daily fine particle standard, the ozone standard, and lead standards. According to the MPCA Air Quality in Minnesota: 2023 Report to the Legislature, a majority of sources that contribute the most to air pollution are transportation (e.g., traffic, airplanes, trains,

[78] EPA. 2024b. Minnesota Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants (available at https://www3.epa.gov/airquality/greenbook/anayo_mn.html)

[79] MPCA. 2024b. Minnesota Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants (available at https://www3.epa.gov/airquality/greenbook/anayo_mn.html)

and boats), permitted facilities (e.g., feedlots, solid waste, and hazardous waste facilities), and burning wood for home heating.[80]

In Minnesota, air quality is tracked using air quality monitoring stations across the state. The MPCA uses data from these monitors to calculate the Air Quality Index (AQI), on an hourly basis, for O_3, $PM_{2.5}$, SO_2, NO_2, and CO. The pollutant with the highest AQI value for a particular hour sets the overall AQI for that hour. The AQI is used to categorize the air quality of a region as one of five levels of quality: good, moderate, unhealthy for sensitive groups and unhealthy, or very unhealthy.[81]

The nearest air quality monitoring station is in Rochester, Minnesota, approximately 46 miles northeast of the Project. This station monitors for O_3 and $PM_{2.5}$. The five most recent annual AQI Days in each category at the Rochester monitoring station are provided in **Table 6.5-1**.[82]

Table 6.5-1: Days in Each Air Quality Index Category (Rochester, Minnesota)

Year	Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy	Very Unhealthy
2022	314	44	1	0	0
2021	301	58	2	0	0
2020	325	40	1	0	0
2019	313	51	0	0	0
2018	292	69	0	0	0

Air quality has been considered good for the majority of the past five reported years in Rochester. Since 2018, the largest number of days classified as moderate occurred in 2018, with a day or two in 2020, 2021, and 2022 where air quality was considered Unhealthy for Sensitive Groups. No days have been classified as unhealthy or very unhealthy in the past five years (2018–2022) of monitoring at the Rochester station.

6.5.1.1 Impacts and Mitigative Measures

Impacts on air quality from construction and operation of the BESS Facility and HVTL Facility would be low and primarily limited to the period of construction. Minor temporary effects on air quality are anticipated during construction of the proposed Project as a result of exhaust emissions from construction equipment and other vehicles, and from fugitive dust from wind erosion of temporarily exposed soils that becomes airborne during dry periods of construction activity (e.g., grading activities).

[80] MPCA. 2023a. The air we breathe. The state of Minnesota's air quality in 2021. Report to the Legislature, January 2023 (available at https://www.lrl.mn.gov/docs/2022/mandated/221697.pdf)

[81] MPCA. 2023b. 2024 Air Monitoring Network Plan for Minnesota, Appendix A: 2023 Air Monitoring Site Descriptions. June 2023 (available at https://www.pca.state.mn.us/air-water-land-climate/air-quality-monitoring)

[82] MPCA. 2023c. Annual count of days in each AQI category (available at https://public.tableau.com/app/profile/mpca.data.services/viz/MinnesotaAirQualityIndex_0/AQIExternal)

Applicable BMPs will be used during construction and operation of the Project to minimize dust emissions. Additional BMPs will be implemented as part of the SWPPP (**Section 6.3.1**) which will also address emissions (e.g., reducing vehicle and equipment speed, maintaining equipment and exhaust/mufflers, etc.) Additional practices may include watering or treating haul and access roads and other exposed dust producing areas, containment of excavated material, protection of exposed soil, soil stabilization, and treatment stockpiles to control fugitive dust. The Applicant will obtain an NPDES Permit and prepare the required SWPPP, which will be developed prior to construction and implemented during construction, that will include BMPs to minimize to potential for fugitive dust.

BESS Facility

The magnitude of air emissions during construction is influenced by weather conditions and the type of construction activity. Exhaust emissions, primarily from diesel and other carbon-based fueled equipment, will vary with the phase of construction. Emissions from construction vehicles will be minimized by using modern equipment with lower emissions ratings and properly functioning exhaust systems. Construction of the Project will generate greenhouse gases (GHG), such as carbon dioxide (CO_2), Refer to **Section 6.5.2** and **Appendix H** for more information on construction and operation GHG emissions estimates.

While some dust may be produced from use of planned gravel access roads from O&M vehicles, this emission is expected to be minimal, temporary, and infrequent throughout the year. Emissions generated by vehicles and equipment during operational activities will be further limited in duration and frequency from use of relatively few trucks, cars, and other related vehicles as part of O&M activities associated with the Project. Such impacts are relatively small in comparison to other energy projects with significantly larger footprints (e.g., utility-scale solar). Energy storage sources, such as BESS, produce almost no GHGs during operation except for those related to O&M vehicle traffic.

HVTL Facility

Adverse effects on the surrounding environment are expected to be negligible because of the short and intermittent nature of the emission and dust-producing construction phases. These effects will most likely be less than the historic emissions from farm machinery and fugitive dust produced during normal farming operation that would otherwise typically occur within and near the Project Area. During operation of the HVTL Facility, air emissions would be minimal. An insignificant amount of ozone is created due to corona from the operation of transmission lines.[83, 84] A corona signifies a loss of electricity, and Midwater BESS has engineered the HVTL Facility design so as

[83] Whitmore, F. C. and R. L. Durfee. 1973. Determination of Coronal Ozone by High Voltage Power Transmission Lines. EPA Report EPA-650/4-73-003 (NTIS Order No. PB229994/AS

[84] U.S. Department of Energy, Bonneville Power Administration. 1989. Electrical and Biological Effects of Transmission Lines: A Review (available at https://la-dwh.com/wp-content/uploads/2018/02/8.2.4.6.1.5.4_BPA-1989breton.pdf) Accessed August 2024.

to limit the corona. The production rate of ozone due to corona discharge decreases with humidity and less significantly with temperature. Rain causes an increase in ozone production, but also accelerates the decay of ozone. Ozone production by HVTL is not detectable during fair weather above ambient conditions. Ozone production under wet weather conditions is detectable with special efforts but is still considered insignificant.

Design of the HVTL Facility also influences its ozone production rate. The production rate decreases significantly as the conductor diameter increases and is greatly reduced for bundled conductors over single conductors. The production rate of ozone increases with applied voltage. The emission of ozone from the operation of a 161 kV HVTL is not anticipated to have a significant impact on air quality, and no mitigation is proposed.

6.5.2 Climate Change

6.5.2.1 GHG Emissions

GHGs are gases that warm the atmosphere and surface of the planet. The primary GHGs are CO_2, nitrous oxide, methane, sulfur hexafluoride, and hydrofluorocarbons and perfluorocarbons. GHGs come from a variety of sources, with fossil fuel combustion being responsible for most CO_2 emissions in Minnesota. The majority of fossil fuels used today generate electricity and fuel vehicles.[85]

Construction of the Project will result in short-term increases in GHGs from the combustion of fossil fuels utilized in construction equipment and vehicles. The Applicant prepared an emissions estimate for the Project during construction and operations based on data from projects in Minnesota, and Midwater BESS's experience developing BESS projects nationwide (**Appendix H**).[86] This estimate is based on the number and type of equipment, the days and duration, and the estimated fuel consumption to determine the total amount of gas and diesel fuel used during construction and operation of the Project. The calculations also include the annual emissions of the Project during operations, including on-site vehicle traffic and Project staff commuter traffic to and from the Project.

6.5.2.2 Existing and Projected Future Climate Conditions

Data on historic and projected future temperature and precipitation were obtained from the MnDNR Climate Explorer tool[87] for Freeborn County. Climate variables reviewed included average annual temperature and annual precipitation indices using data from 1895 to 2024. Some of the climate projections summarized below use Representative Concentration Pathways (RCPs), which are GHG scenarios used by the Intergovernmental Panel on Climate Change. RCP 4.5 is an

[85] MPCA and DOC. 2023. Greenhouse Gas Emissions in Minnesota, 2005-2020. Report to the Legislature. January 2023 (available at https://www.pca.state.mn.us/sites/default/files/lraq-2sy23.pdf)

[86] EPA. 2024c. Simplified GHG Emissions Calculator (available at https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator) Accessed July 2024.

[87] MnDNR. 2024a. Minnesota Climate Trends (available at https://arcgis.dnr.state.mn.us/ewr/climatetrends/) Accessed June 2024.

intermediate scenario in which emissions decline after peaking around 2040, and RCP 8.5 is a worst-case scenario in which emissions continue to rise through the 21st century.[88]

[88] MnDNR. 2021a. Minnesota Climate Explorer Metadata (available at https://www.dnr.state.mn.us/climate/climate-explorer-metadata.html)

Temperature

The mean temperature in the county between 1895 and 2024 was approximately 44.98°F, with the lowest average temperature in 1917 (39.5°F) and the highest average temperatures in 1931 (49.66°F) and 2012 (49.3°F). The model estimated the average annual temperature increased by 0.14°F per decade.[89]

The average annual temperature in Freeborn County is projected to continue to rise in the foreseeable future. In 2040 to 2059, average annual temperature under the intermediate scenario (RCP 4.5) is projected to be 48.38°F.[90]

Lithium-ion BESS batteries and systems operate in an optimal temperature range, which varies slightly by model. External environmental and climatic conditions are accounted for by including temperature moderation systems, such as liquid and/or air cooling or natural convection, that regulate heat within the BESS enclosure.[91] Given the temperature ranges in the Project Area, an appropriate temperature moderation system will be installed in the enclosures to ensure consistent and efficient operation of the batteries. Similarly, the exterior and foundation components of the BESS enclosures will be selected to withstand the current and anticipated environmental conditions of the region where the Project is located.

The HVTL design accommodates line sag requirements and potential ambient temperature increased. NECS standards regulate design and line sag to ensure appropriate vertical separation of conductors from the ground surface or crossing utilities. These national standards will be used in the HVTL Facility design.

Precipitation

The mean precipitation over this same 129-year period was 34.09 inches annually, with the lowest precipitation in 1910 (16.07 inches) and the highest precipitation in 1993 (47.81 inches) and 2016 (47.43 inches). On average, precipitation has increased by 0.48 inch per decade.[92]

The average annual precipitation in Freeborn County is projected to continue to rise in the foreseeable future. In 2040 to 2059, the mean precipitation under RCP 4.5 is projected to be 32.77 inches.

The models generally predict that the Project Area will see more precipitation and warmer average, maximum and minimum temperatures (**Table 6.5-2**). The mid-century (2040–2059) calculation is

89 MnDNR. 2024b. Minnesota Climate Explorer (available at https://arcgis.dnr.state.mn.us/climateexplorer/main/historical) Accessed July 2024.

90 MnDNR. 2024b. Minnesota Climate Explorer (available at https://arcgis.dnr.state.mn.us/climateexplorer/main/historical) Accessed July 2024.

91 Mdachi, N.K. and C. Choong-Koo. 2024. Comparative review of Thermal Management Systems for BESS. *Batteries* 10(7), 224 (available at https://doi.org/10.3390/batteries10070224)

92 MnDNR. n.d.-x

more relevant to the Project, given the 30-year life of the Project. The late-century (2080–2099) calculations are more relevant to the Project if repowered after the 30-year expected life.

Table 6.5-2: Historic and Projected Future Temperature and Precipitation Levels for Freeborn County, Minnesota

Modeled Timeframes for Freeborn County*	Average Temperature Mean (°F)	Minimum Temperature Mean (°F)	Maximum Temperature Mean (°F)	Precipitation Mean (in)
1895–2024	44.98	47.98	42.11	34.09
2040–2059 Mid-Century (RCP 4.5)	48.38	52.10	45.07	32.77
2080–2099 Late-Century (RCP 4.5)	50.73	54.25	47.12	34.39
2080–2099 Late-Century (RCP 8.5)	54.35	57.21	51.31	36.38
* The projected future temperatures and precipitation are based on January–December, Mean Model.				

Flooding

Midwater BESS used First Street Enterprise's "The Risk Factor: Flood Factor" tool (flood tool) to identify potential flooding risks in the Project Area over the next 30 years. The flood tool is based on a model that determines risk from all major types of flooding, including high-intensity rainfall, overflowing rivers, and streams. According to the model, the cities of Glenville and Albert Lea have a minor risk of flooding.[93, 94] Hydraulic modeling of the Project Area is also conducted as part of the engineering design. Preliminary modeling confirms the Project can be designed with low risk of flooding.

Other Climate Conditions

The BESS enclosures selected for the Project will be designed to withstand wind, flood, blizzard, and hail events. BESS systems can help offset power loss during extreme weather by dispersing stored power while energy producing facilities are down. BESS demonstrated this important function in Texas from 2020 through 2023 during extreme winter storms when BESS facilities withstood the extreme conditions and continued to provide power into the grid.[95]

The EPA Climate Resilience Evaluation and Awareness Tool Climate Scenarios Projection anticipates an increase in 100-year storm intensity of 3.5 percent to 14.2 percent in 2035 and 6.8 percent to 27.7 percent in 2060 for the Project Area.[96] This indicates that the Project Area may see more intense storms in the future.

93 First Street Foundation. 2024. Risk Factor: Flood Factor Map – Glenville, MN (available at https://firststreet.org/city/glenville-mn/2724056_fsid/flood?from=riskfactor.com) Accessed July 2024.

94 First Street Foundation. 2024. Risk Factor: Flood Factor Map - Albert Lea, MN (available at https://riskfactor.com/city/albertlea-mn/2709154_fsid/flood/maps#community-risk) Accessed July 2024.

95 Aurora Energy research. 2024. Role of Battery Energy Storage Systems (BESS) in the ERCOT Market (available at https://auroraer.com/media/new-report-from-aurora-energy-research-finds-that-battery-storage-facilities-saved-texas-grid-over-750-million-during-peak-demand-days-in-winter-2024/)

96 EPA. 2016. Climate Resilience Evaluation and Awareness Tool. V. 3.0 (Available at https://www.epa.gov/crwu/climate-resilience-evaluation-and-awareness-tool) Accessed July 2024.

6.5.2.2.1 Impact of Climate Change on Project

According to the MnDNR, Minnesota's climate is already changing rapidly and will continue to do so for the foreseeable future. Temperatures are increasing, and larger, more frequent, extreme precipitation events are occurring. Future decades will bring even warmer winters and nights, and even larger rainfalls, along with the likelihood of increased summer heat and the potential for longer dry spells.[97]

The preliminary Project design has accounted for current and expected future climate conditions in the Project Area. The BESS Facility will be able to withstand potential weather events that would reasonably be expected to occur at the Project Area. Midwater BESS will purchase equipment designed to ensure the highest level of operability reliability across the range of anticipated environmental conditions for the lifetime of the Project such as temperature, precipitation, wind, mechanical loading, etc.

The Project stormwater collection basins will be sized appropriately and will meet state and county requirements for reducing runoff rates and providing the required treatment. Moderate grading and the use of swales and diversion berms may also be used to prevent flooding of infrastructure and route water to the proposed basins.

The structural, civil, and electrical works will comply with all applicable local and state building codes, in addition to codes and standards set by national standards-developing organizations. The preliminary design safety factor used on snow and wind loads (to de-risk extreme weather events) will be based on recommendations from these standards. Similarly, the final system components and pad sizes and depths will meet building codes for wind and snow loads.

The HVTL design will comply with most recent NECS standards in place at the time of construction. These national standards are regularly updated to accommodate evolving climate classifications for different regions in the US. Factors such as extreme wind event, conductor icing, and heat are accommodated in these updates.

6.5.2.2.2 Impact of Project on Climate Change

Minnesota has been taking more action against climate change. Executive Order 19-37 (Climate Change Executive Order), signed in December 2019, created the Governor's Advisory Council and the Climate Change Subcabinet to coordinate climate change mitigation and resilience strategies in the state of Minnesota. The subcabinet's 2020 Annual Report to the Governor describes climate change as an existential threat that impacts all Minnesotans and our ability to thrive. It also encourages state leaders and policy makers to consider equity in our state's response to climate change.[98]

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97 MnDNR. 2024c. Minnesota Climate Trends (available at https://www.dnr.state.mn.us/climate/climate_change_info/climate-trends.html) Accessed July 2024.

98 MPCA. 2020. Annual Report to the Governor on the Climate Change Executive Order (available at https://climate.state.mn.us/sites/climate-action/files/2021-01/ClimateChangeSubcabinetReport_2020_cc-mn3-01.pdf)

The Next Generation Energy Act set statutory goals to reduce GHG emissions in the state by 80 percent between 2005 and 2025, while supporting clean energy, energy efficiency, and supplementing other renewable energy standards in Minnesota. Interim goals were also set: a 15 percent reduction by 2015 and a 30 percent reduction by 2025. Minnesota's GHG emissions declined 23 percent between 2005 and 2020. If current trends continue, the state is on track to meet the goal of reducing emissions 30 percent by 2025. Since 2005, emissions from the electricity generation sector have declined by 54 percent, mainly because of production of energy from renewable sources like wind and solar.[99]

BESS is critical infrastructure to support renewable energy utilization. Renewable energy sources, such as wind and solar reduce emissions by replacing emission producing energy sources. However, the full energy generation capacity of renewable energy production is not currently utilized because they produce more energy than is needed at times of the day when demand for energy is low, resulting in curtailment, the reduction of energy production of a wind or solar generating facility from what it could be producing.

BESS infrastructure can reduce curtailment of renewable generation resources and maximize renewable contributions to the grid. BESS allows for greater utilization of renewable energy sources by storing excess energy during peak production by wind and solar and releasing it back on to the grid during peak demand periods. This process reduces reliance on lower-efficiency, high-cost generation energy resources. The Project will have other benefits as well, including reducing the need for and minimizing the proliferation of additional transmission infrastructure that would otherwise be required if new generating facilities would be needed to provide the demand and frequency benefits the Project is providing.

6.5.3 Geology and Groundwater Resources

Soils, underlying geologic bedrock formations, groundwater, and other hydrogeologic resource features of the Project Area were identified during desktop evaluations and included use of:

- Applicable Geographic Information System (GIS) layers (NRCS Soils of Freeborn County,[100] Minnesota County Well Index,[101] Karst Feature Mapping of Minnesota,[102] and U.S. Geologic Survey [USGS] Topographic Mapping);

[99] DOC and MPCA. 2023. Greenhouse Gas Emissions in Minnesota 2005- 2020. Report to the Legislature. January 2023. (available at https://www.pca.state.mn.us/sites/default/files/lraq-2sy23.pdf)

[100] Soil Survey Staff, USDA NRCS. 2019. Web Soil Survey, Freeborn County, Minnesota (available at https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx) Accessed June 2024.

[101] MDH. 2024. Minnesota Well Index. Version 2.1.2 (available at https://mnwellindex.web.health.state.mn.us/) Accessed June 2024.

[102] MnDNR. 2022a (updated April 14, 2024). Karst Feature Inventory: Karst Features in Minnesota (available at https://arcgis.dnr.state.mn.us/portal/apps/webappviewer/index.html?id=9df792d8f86546f2aafc98b3e31adb62) Accessed June 2024.

- Public data sources including the Freeborn County Soil Survey[103] and the Freeborn County Geologic Atlas;[104] and
- Observations made during field studies conducted within the Project Area during 2024.

The following summarizes this information.

6.5.3.1 Geology

According to the County Geologic Atlas for Freeborn County, Minnesota,[105] Freeborn County's present surficial geology consists of materials that are the result of the action of glacial ice and flowing water. The surficial materials are mainly glacial deposits (drift), composed of glacial till that is characterized by a matrix of sand, silt, and clay with scattered pebbles, cobbles, and some boulders. The drift material over the bedrock surface ranges from less than 50 feet to over 200 feet.

Bedrock within the region of the Project is comprised of Upper Cretaceous, Middle Devonian, Upper Ordovician, and Middle Ordovician rocks.[106] Most of the Project is in the upper region of Freeborn County, which is primarily underlined by the Maquoketa and Galena bedrock. The Maquoketa bedrock is comprised of carbonate rock, fine-grained limestone, shaly-limestone, and shale, with a gradational base. The Galena bedrock is comprised of carbonate rock, fine-grained white, yellow, and yellow-gray limestone, dolomitic limestone, and sandy, shaly, and silty beds. The northern portions of the site are underlined by Dubuque, Windrow, Spillville, Glenwood, and Platteville bedrock, and are composed of a mixture of fossiliferous limestone, shale, and clay.[107] County Well Index well logs indicate that depths to bedrock range from about 120 feet to 240 feet with depths increasing towards the eastern and southeastern portions of the Project Area.[108]

A desktop Geotechnical study was completed for the Project Area in January 2024. That report reviewed USGS information on Karst Hazard Potential in the United States. The risk for karst in the project vicinity is considered low. According to the University of Minnesota, Department of Geology and Geophysics and the MnDNR Ecological and Water Resources Division's Karst

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103 Soil Survey Staff, USDA NRCS. 2019. Web Soil Survey, Freeborn County, Minnesota (available at https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx) Accessed June 2024.

104 Mankato State University. 1991 Geologic Atlas of Freeborn County, MN (available at https://mrbdc.mnsu.edu/sites/mrbdc.mnsu.edu/files/public/gis/minnesota_geologic_atlas/freeborn_county_geologic_atlas.pdf).

105 Mankato State University. 1991 Geologic Atlas of Freeborn County, MN (available at https://mrbdc.mnsu.edu/sites/mrbdc.mnsu.edu/files/public/gis/minnesota_geologic_atlas/freeborn_county_geologic_atlas.pdf).

106 Lusardi, Barbara A; Gowan, Angela S; McDonald, Jennifer M; Marshall, Katherine J; Meyer, Gary N; Wagner, Kaleb G. 2019. Minnesota Geological Survey (available at https://conservancy.umn.edu/handle/11299/208552) Accessed March 2024.

107 Mankato State University. 1991 Geologic Atlas of Freeborn County, MN (available at https://mrbdc.mnsu.edu/sites/mrbdc.mnsu.edu/files/public/gis/minnesota_geologic_atlas/freeborn_county_geologic_atlas.pdf).

108 MDH. 2024. Minnesota Well Index. Version 2.1.2 (available at https://mnwellindex.web.health.state.mn.us/) Accessed June 2024.

Mapping,[109] susceptible geologic features, including sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions are not present within or near the Project Area. The mapping tool indicates the nearest karst feature is located approximately thirteen miles southeast of the Project Area, near the intersection of Highway 105 and the Iowa border.

6.5.3.1.1 Impacts and Mitigative Measures

BESS Facility

Due to the thickness of surficial materials of approximately 120 to 240 feet at the Project Area, excavation or blasting of bedrock is unlikely for the BESS Facility. Karst features have not been identified within the Project Area and are not anticipated to be a concern for the Project. Geotechnical soil borings will be completed by Midwater BESS as preliminary Project design and engineering advances; this information will be assessed for potential impacts to geologic resources. If any, impacts of the proposed Project to available geologic resources are likely to be limited; potential impacts on the integrity of Project facilities due to geology in and near the Project Area are low; and risk of groundwater contamination resulting from Project construction or karst is low. therefore, no mitigative measures are proposed.

HVTL Facility

Along the Proposed HVTL Facility Development Area there is low potential for bedrock to be encountered as public data shows bedrock in the range of 120 to 240 feet below ground. Additional geotechnical investigations will be performed for the Proposed HVTL Facility Development Area ROW prior to construction to determine areas of shallow bedrock. If shallow bedrock is encountered during the geotechnical evaluations, appropriate actions will be taken to minimize disturbance and properly engineer pole foundations.

6.5.3.2 Groundwater

Minnesota is divided into six groundwater provinces based on bedrock and glacial geology. The aquifers within these provinces occur in two general geologic settings: (1) bedrock; and (2) unconsolidated sediments deposited by glaciers, streams, and lakes. According to the USGS Ground Water Atlas,[110] aquifers within the Project Area are the Upper Carbonate aquifer, Cambrian-Ordovician aquifer system, Mount Simon aquifer, St. Peter-Prairie du Chien-Jordan aquifer, and Mount Simon aquifer. The Project is within the South-Central Minnesota Groundwater Province, which is characterized by thick loam and clay loam glacial sediment overlying sandstone and carbonate Paleozoic aquifers.[111] These Paleozoic aquifers have high water-bearing potential due to the sandstone and fractured limestone beds, which make them a

[109] MnDNR. 2022a (updated April 14, 2024). Karst Feature Inventory: Karst Features in Minnesota (available at https://arcgis.dnr.state.mn.us/portal/apps/webappviewer/index.html?id=9df792d8f86546f2aafc98b3e31adb62) Accessed June 2024.

[110] USGS. 2000. Ground Water Atlas of the United States. Series # 730. (available at DOI: https://doi.org/10.3133/ha730).

[111] MnDNR. 2021. Minnesota Groundwater Provinces 2021 (available at https://files.dnr.state.mn.us/waters/groundwater_section/mapping/provinces/2021-provinces.pdf) Accessed July 2024.

valuable water resource in southeastern Minnesota. In this province, regionally extensive sedimentary bedrock is usually buried beneath clayey, unconsolidated sediments with limited extent surficial and buried sand aquifers.

The Project Area was reviewed for EPA designated sole source aquifers (SSA), wells listed on the Minnesota Well Index[112], and the University of Minnesota Duluth's Natural Resources Research Institute Wellhead Protection Areas (WHPAs) Map.[113] The EPA defines a SSA as one that supplies at least 50 percent of the drinking water for its service area, where contamination of the aquifer could create a significant hazard to public health, and where there are no alternative water sources that could reasonably be expected to replace the water supplied by the aquifer. There are no SSAs in the Project Area.[114]

Homes and farms in the Project Area typically use private wells and septic systems for their household needs. According to the Minnesota Department of Health's (MDH) Minnesota Well Index online database, there are no wells within the Project Area. There are 18 domestic wells, one sealed environmental bore hole, one test well within one mile of the Project Area. The wells were drilled to depths ranging from about 15 to 160 feet. The MnDNR depth to water table map indicates most of the Project Area has a depth to water table of 0–10 feet with isolated areas of 10–20 feet.[115]

Under the federal 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. The act was updated in 1986 with an amendment requiring the development of a broader-based Source Water Assessment Program, which includes the assessment of potential contamination to both groundwater and surface water through a watershed approach. A WHPA encompasses the area around a drinking water well where contaminants could enter and pollute the well.

Public and non-public community water supply source-water protection in Minnesota is administered by the MDH through the Wellhead Protection Program. WHPAs for public and community water-supply wells are delineated based on a zone of capture for ten-year groundwater time-of-travel to the well and are available through a database and mapping layer maintained by MDH. A search for WHPAs in the MDH Source Water Protection Web Map Viewer[116] indicated that the Project Area is not located within any WHPAs. The Glenville Drinking Water Supply Management Area (DWSMA) within the north part of the Project Area.[117] BESS Facility

[112] MDH. 2024. Minnesota Well Index. Version 2.1.2 (available at https://mnwellindex.web.health.state.mn.us/) Accessed June 2024.

[113] MDH. 2023. Wellhead Protection Area Map. Natural Resources Research Institute – Minnesota Natural Resource Atlas (available at https://mnatlas.org/gis-tool/?id=k_0282) Accessed July 2024.

[114] EPA. 2024. Sole Source Aquifers Interactive Map (available at https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b) Accessed July 2024.

[115] MnDNR. 2016a. Water-Table Elevation and Depth to Water Table, Minnesota Hydrogeology Atlas Series HG-03 (available at https://gisdata.mn.gov/dataset/geos-hydrogeology-atlas-hg03)

[116] MDH. 2023. Source Water Protection Web Map Viewer (available at https://mdh.maps.arcgis.com/apps/View/index.html?appid=8b0db73d3c95452fb45231900e977be4) Accessed July 2024.

[117] MDH. 2023. Wellhead Protection Area Map. Natural Resources Research Institute – Minnesota Natural Resource Atlas (available at https://mnatlas.org/gis-tool/?id=k_0282) Accessed July 2024.

infrastructure is outside this DWSMA and the HVTL Facility leading up to the substation is within it. The nearest WHPA is just north of the Project Area from Glenville to 810th Avenue.

The MDH uses a vulnerability rating method in which points are assigned for conditions that represent a perceived risk to a well.[118] The evaluation includes each of the criteria noted below, where such information is available. Vulnerability assessments consider the following: geologic sensitivity, well construction, maintenance, and use. Higher point totals suggest relatively greater well vulnerability and vice versa. A numeric cutoff is used to categorize "vulnerable" from "nonvulnerable" wells. The Glenville DWSMA is classified as high to moderate vulnerability by the MDH.

The MDH Well Index identified 18 wells within one mile of Project Area, with average depth to bedrock of 84 feet below ground surface. There are no wells within the Project Area.[119] Within the one-mile buffer, there are 16 active domestic wells, one active test well, and one sealed environmental bore hole. **Table 6.5-3** summarizes all the wells within one mile of the Project Area.

Table 6.5-3: MDH Well Index within One Mile of Project Area

Unique Well ID	Well Name	Well Elevation (feet/msl)	Well Depth (feet)	Depth to Bedrock (feet)	Well Installation Date	Casing Depth (feet)	Well Use/Status
152763	Kral, Charles	1240	156	106	08/17/1978	126	Domestic/Active
152795	Lenz, Theo	1235	111	76	04/17/1979	91	Domestic/Active
226721	Pensinger, Lynn	1227	138	110	03/81/1969	121	Domestic/Active
132514	Nelson, Harland	1236	125	70	05/18/1976	95	Domestic/Active
103524	Waalkens, John	1220	100	70	19760320	78	Domestic/Active
226437	Hauge, Duane	1230	144	Unknown	01/1968	Unknown	Domestic/Active
191940	Soil Exploration	1235	32	Unknown	04/18/1985	19	Test Well/Active
781805	Flatness, Donald	1221	160	Unknown	05/07/2012	107	Domestic/Active
103531	Nelson, Harland	1236.3	125	70	05/08/1976	95	Domestic/Active
342328	Rayman Enterprises	1230	15	Unknown	05/24/2017	15	Environmental Bore Hole/Sealed
523121	ITT Financial Services	Unknown	125	Unknown	01/26/1993	84	Domestic/Active
653883	Knutson, Ben	Unknown	118	Unknown	07/14/2001	111	Domestic/Active
685011	Flatness, Tom	Unknown	90	Unknown	05/15/2003	80	Domestic/Active
720967	Knaack, Mrs. Richard	Unknown	155	Unknown	12/14/2005	130	Domestic/Active
793555	Madsen, Ryan	Unknown	136	Unknown	01/04/2013	86	Domestic/Active
806984	Kluender, Todd	Unknown	110	Unknown	10/20/2015	86	Domestic/Active
806955	Mayers, Rayan	Unknown	150	Unknown	04/07/2016	89	Domestic/Active
838311	Fredrickson, Dennis	Unknown	110	unknown	12/26/2018	87	Domestic/Active

[118] MDH. 2018. Wellhead Protection Vulnerability Fact Sheet (available at https://www.health.state.mn.us/communities/environment/water/docs/swp/vulnerability.pdf)

[119] MDH. 2024. Minnesota Well Index. Version 2.1.2 (available at https://mnwellindex.web.health.state.mn.us/) Accessed June 2024.

6.5.3.2.1 Impacts and Mitigative Measures

Project grading and construction work will involve soils in the upper ten to 20 feet of the surface. Therefore, impacts to groundwater resources—both within the Project Area and surrounding areas—are not anticipated. Midwater BESS will be completing additional geotechnical studies closer to the construction date to further inform the Project's design, engineering, and construction techniques. There are no designated SSAs[120] or WHPAs within the Project Area.[121]
Construction of Project facilities is not likely to require subsurface blasting; therefore, disturbances to groundwater flow from newly fractured bedrock are not anticipated. Any dewatering required during construction will be managed in accordance with the SWPPP and discharged to the surrounding surface, thereby allowing it to infiltrate back into the ground to minimize potential impacts. If, during construction, dewatering exceeds withdrawal of more than 10,000 gallons of water per day or one million gallons per year, Midwater BESS will obtain a Water Appropriation Permit from MnDNR.

Project facilities are not likely to affect the use of existing water wells. Preliminary design indicates that Project facilities will be located at about 1,000 to 2,000 feet from the nearest identified drinking wells. No impacts to this well are expected. If an unknown or undocumented well is discovered, Midwater BESS will assess whether the well is open, coordinate with the underlying landowner, and facilitate capping, if necessary and approved by the underlying landowner, in accordance with MDH requirements.

If a water supply well is needed at the O&M facility as part of the Project, it will be installed following MDH guidelines and will be for potable water in the building.

Impacts to groundwater resources (including aquifers) are not anticipated during facility operation as water supply needs will be quite limited. If the Project requires potable water for facility personnel and O&M uses, this need would be satisfied with a single domestic-sized water well. A domestic water well license would be acquired by an approved well drilling contractor prior to installation, construction, and use of the water well.

The BESS Facility will require concrete foundations. The foundation depth will be installed at an estimated range of one to three feet below ground surface (depending on soil conditions) and would, therefore, not impact aquifer resources.

Project operation will not require the use or storage of large quantities of hazardous materials that might otherwise have the potential to spill or leak into area groundwater. No chemicals are planned to be used for BESS enclosure washing activities. The BESS enclosures are cleaned annually using a wet cloth and rubbing alcohol, if needed. Herbicides may be used for vegetation management, which will follow applicable regulatory use and management requirements or as required by

[120] EPA. 2020. Sole Surface Aquifers Viewer (available at https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b) Accessed July 2024.
[121] MDH. 2023. Source Water Protection Web Map Viewer (available at https://mdh.maps.arcgis.com/apps/View/index.html?appid=8b0db73d3c95452fb45231900e977be4) Accessed July 2024.

applicable permit(s). Pesticides may be used around BESS enclosures to control insects, and any use would also follow applicable requirements, including application in weather conditions to minimize drift beyond the targeted application area.

An SPCC Plan will be required for the Project substation main power transformer. The transformer will be properly designed, constructed, and operated per the SPCC Plan and in accordance with EPA and MPCA requirements; it will be equipped with required secondary containment to contain any potential spills or leaks of transformer oil or other fluids to prevent impacting the groundwater.

6.5.4 Soils

The Soil Survey of Freeborn County indicates that the soils of Freeborn County are primarily deep, well-drained soils formed from loamy alluvium and sandy outwash, characterized by loamy sediments over sandy and gravelly outwash.[122]

The Project Area soils are typically sandy loam soils with a small amount of clay loam soils that are suited for the existing agricultural production when drained, as indicated in **Table 6.5-4.** The Project Area has rolling topography, ranging from 1,204 to 1,230 feet in elevation, which is consistent with the former row-crop agricultural production. There are small areas of hydric soil present throughout the Project Area (**Figure 7**).[123]

Table 6.5-4: Project Area Soils

Map Unit Symbol	Map unit name	Hydric Classification	Hydric Rating1	Acres
1030	Pits, sand and gravel	Non-hydric	24.61	1030
W	Water	Non-hydric	10.14	W
41B	Estherville sandy loam, 2 to 6 percent slopes	Predominantly non-hydric	7.80	41B
27	Dickinson fine sandy loam, 0 to 2 percent slopes	Predominantly non-hydric	6.26	27
156	Fairhaven loam, 0 to 2 percent slopes	Predominantly non-hydric	0.57	156
41C	Estherville sandy loam, 6 to 12 percent slopes	Predominantly non-hydric	14.38	41C
5B	Dakota loam, 2 to 6 percent slopes	Predominantly non-hydric	3.49	5B
5C	Dakota loam, 6 to 14 percent slopes	Predominantly non-hydric	4.39	5C
41	Estherville sandy loam, 0 to 2 percent slopes	Predominantly non-hydric	0.43	41
5	Dakota loam, 0 to 2 percent slopes	Predominantly non-hydric	19.09	5
465	Kalmarville loam, frequently flooded	Predominantly hydric	6.72	465
1055	Aquents and Histosols, ponded	All hydric	0.84	1055
392	Biscay clay loam, 0 to 2 percent slopes	All hydric	2.50	392
517	Shandep loam	All hydric	1.40	517
525	Muskego soils, 0 to 1 percent slopes	All hydric	1.75	525
TOTAL				104.39

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

[122] Soil Survey Staff, USDA NRCS. 2019. Web Soil Survey, Freeborn County, Minnesota (available at https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx) Accessed July 2024.

[123] Natural Resources Research Institute. 2024. Minnesota Natural Resources Atlas, Water Table – Depth (available at https://mnatlas.org/gis-tool/?id=k_0279) Accessed July 2024.

Most of the Project Area soil types are classified as predominantly non-hydric (56.51 acres). The remaining soils are classified as non-hydric, predominantly hydric, and all hydric (47.87 acres).

6.5.4.1 Impacts and Mitigative Measures

Soil impacts will occur during both the construction and, to a much lesser degree, operational stages of the Project. Grading impacts will primarily be from the construction of foundations for the Project substation, BESS, O&M facility, laydown yard, basin areas, and access roads.

Because the Project is located on rolling topography within an existing agricultural setting, some amount of grading will be necessary. Some soil compaction may result in the undeveloped areas of the Project Area through the installation of the BESS module foundations. Soil compaction will be mitigated by use of low-impact equipment and methods, regrading, and tilling these areas following construction.

During Project operation, ongoing soil compaction could occur from the use of access roads. This impact is expected to be negligible, confined to the roadbed, and mainly from relatively light duty maintenance vehicles. Overall, the Project is expected to reduce the potential for erosion by establishing permanent, uniform vegetation. Potential erosion will be further minimized by dressing access roads with gravel and installing culverts under access roads where necessary to redirect concentrated surface water runoff.

The Project will disturb over one acre and will therefore require coverage under the MPCA's Construction Stormwater General Permit. Preparation of a Project SWPPP will be required prior to submittal of the Notice of Intent to receive coverage under the Construction Stormwater General Permit. The 104.4-acre Project Area is within one mile of an impaired water which, according to Minnesota Rules, will necessitate the submittal of the Project SWPPP with the requisite Notice of Intent (**Table 6.5-7**).[124, 125] The SWPPP will include BMPs, such as silt fencing (or other erosion control devices), revegetation plans, and management of exposed soils to prevent erosion. BMPs will be used during Project construction and operation to protect topsoil and adjacent resources and to minimize soil erosion from water or wind. Practices may include containment of excavated material, protection of exposed soil, stabilization of restored material, and treatment of stockpiles to control fugitive dust. Finally, the Project design will include installation of stormwater ponds in accordance with MPCA regulations to collect and treat runoff during Project operation (**Figure 2**).

6.5.5 Surface Waters (Including Stormwater, Floodplains, and Wetlands)

Surface water features and floodplains within the Project Area are shown on **Figures 8**, **9** and **10**.

[124] *See* Minn. R. 7090 Sec. 3.3

[125] MPCA. 2024c. Impaired Waters: 2024 Viewer (available at https://mpca.maps.arcgis.com/apps/webappviewer/index.html?id=fcfc5a12d2fd4b16bc95bb535d09ae82) Accessed July 2024.

The Project is being designed in a manner to avoid impacts to wetlands and water resources as shown in the Preliminary Facility Design (**Figure 2**). Wetlands and ditches are otherwise potentially regulated under:

- **The Minnesota WCA of 1991**, as amended, administered in this area by the Freeborn County Soil and Water Conservation District (SWCD);
- **Section 404 and 401 of the Federal Clean Water Act** (CWA) administered by the USACE and the MPCA; and
- **Minn. Stat. §103G.245**, administered by the MnDNR.

The preliminary Project design avoids permanent impacts to wetlands and all impacts to other waters.

The Project will comply with the NPDES Permit, SPCC Plan, and SWPPP, if grading activities are necessary and exceed applicable permit thresholds.

6.5.5.1 Rivers, Streams, and Lakes

According to the National Hydrography Dataset (NHD), two watercourses and three waterbodies are within the Project Area. No waterbodies were identified within the Proposed BESS Facility Development Area or HVTL (**Figure 8**). One MnDNR Public Waters Inventory (PWI) watercourse was identified within the Project Area, the Shell Rock River (24024a). The Project is located in the County Ditch Number Sixteen-Shell Rock River (HUC 070802020105) watershed. There are no lakes in the Project Area. No waterbodies within the Project Area are identified as Outstanding Resource Value Waters under Minn. R. 7050.0335, subpart 3.[126] No designated trout streams, MnDNR PWI basins, or MnDNR-designated shallow lakes or calcareous fens were identified within the Project Area.[127]

One impaired waterbody was identified within the Project Area. One additional impaired waterbody was mapped within a one-mile buffer of the Project Area. Additional details on impaired waterbodies are presented in **Section 6.5.5.4**.

6.5.5.1.1 Impacts and Mitigative Measures

No surface water impacts are currently anticipated from the construction of the BESS Facility and HVTL Facility. All pole structures and BESS Facility components have been sited outside of and at an adequate distance to avoid impacts to the only identified watercourse, the Shell Rock River. The Shell Rock River is buffered by at least 50 feet from any Project facilities.

[126] MPCA. 2022. Outstanding Resource Value Waters. ArcGIS Hub (available at https://hub.arcgis.com/maps/mpca::outstanding-resource-value-waters/about?layer=5) Accessed August 2024.

[127] MnDNR. 2024b. Public Waters Inventory Lists (available at https://www.dnr.state.mn.us/waters/watermgmt_section/pwi/download_lists.html) Accessed July 2024.

To minimize potential erosion and sedimentation impacts from construction, a SWPPP, including erosion and sediment control BMPs, will be prepared. No permits will be needed for crossing MnDNR administered lands or waters as there are no MnDNR lands or public waters within the Project Area (**Figure 6**).

6.5.5.2 Wetlands

Wetlands are valuable for surface and subsurface water storage, nutrient cycling, retention of sedimentation, and plant and animal habitats. The potential for wetlands within the Project Area was initially determined by reviewing desktop resources (i.e., National Wetlands Inventory (NWI) data, aerial photography, hydric soils map unites, Light Detection and Ranging (LiDAR), and digital elevation models) followed by a formal wetland delineation of the Project Area in April 2024 (**Appendix I**).

Twenty-six suspect wetlands, two watercourses, and three waterbodies were desktop delineated within the Project Area. The desktop analysis was used to support field delineation efforts (**Figure 8**; **Section 6.5.5.2**). According to the NWI, 26 wetlands are within the Project Area. Seven field-delineated wetlands are present within the Project Area.

A desktop historical aerial photo review was conducted to identify wetlands and watercourses within the Project Area in accordance with the July 1, 2016 Minnesota Board of Water and Soil Resources (BWSR)/USACE-accepted protocol for conducting off-site wetland determinations, *Guidance for Offsite Hydrology/Wetland Determinations*.[128] The potential for wetlands within the Project Area was further evaluated by reviewing other desktop resources (i.e., recent aerial photography, hydric soils map units, LiDAR, and digital elevation models). Desktop delineation found the following: NWI data mapped 26 wetlands within the Project Area; NHD data mapped two watercourses and three waterbodies within the Project Area; Minnesota PWI mapped one watercourse (Shell Rock River) and no PWI water basins within the Project Area.

Wetland delineation fieldwork within the Project Area was conducted on April 29 and 30, 2024, as described in **Appendix I** (Westwood Wetland Delineation Report dated May 29, 2024). During wetland delineations, Westwood delineated seven wetlands and one pond totaling 28.48 acres. Most of these consist of wetlands classified as freshwater emergent or riverine. Summaries of the delineated wetlands and pond are included in **Table 6.5-5** below. Three suspect wetland areas identified during the desktop mapping exercise were determined to not exhibit all three wetland parameters. The delineation also confirmed in the initial desktop assessment of NWI-mapped wetlands in the Project Area[129] (see **Figure 10**, **Table 6.5-5**, and **Appendix I**).

[128] U.S. Army Corps of Engineers, St. Paul District and Minnesota Board of Water and Soils Resources. 2016. Guidance for Offsite Hydrology/Wetland Determinations (available at https://bwsr.state.mn.us/sites/default/files/2018-12/WETLANDS_Delin_Guidance_for_Offsite_Hydrology_and_Wetland_Determinations.pdf)

[129] USFWS. 2024a. National Wetlands Inventory Mapper (available at https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper) Accessed July 2024.

Table 6.5-5: Delineated Wetland Summary Table

Wetland Name	Area (Acres)	Mapped on NWI	Cowardin Wetland Type	Circular 39 Type	Eggers & Reed Type	Latitude	Longitude
WB-01	2.48	PUBFx, PFO1Cx	PEM1E, PFO1C, PUBFx	Type 2/5/7	Fresh Wet Meadow, Floodplain Forest, Shallow Open Water	43.56033	-93.26708
WB-03	3.35	PEM1A, PEM1C, PEM1Fx, PUBFx	PEM1A, PEM1E, PUBF	Type 2/3/5	Fresh Wet Meadow, Shallow Marsh, Shallow Open Water	43.55921	-93.26495
WB-04	4.80	PEM1A, PEM1C, PUBFx	PEM1A, PEM1E, PUBF	Type 2/3/5	Fresh Wet Meadow, Shallow Marsh, Shallow Open Water	43.55810	-93.26574
WB-05	0.26	No	PEM1A	Type 1	Seasonally Flooded Basin	43.55671	-93.26539
WB-06	0.56	No	PEM1A	Type 1	Seasonally Flooded Basin	43.55644	-93.26429
WB-07	0.02	PEM1A	PEM1C	Type 2	Fresh Wet Meadow	43.56044	-93.26420
WB-08	15.85	PEM1A, PEM1C, PEM1F, PEM1Fx, PUBF	PEM1A, PEM1C, PEM1F, PFO1C, PUBF	Type 2/3/5/7	Fresh Wet Meadow, Shallow Marsh, Floodplain Forest, Shallow Open Water	43.55419	-93.26179
PO-01	1.16	PUBFx	PUBFx	Type 5	Shallow Open Water	43.55761	-93.26403
Total	**28.48**						

The wetland delineation identified no ephemeral streams or intermittent streams within the Project Area. One perennial watercourse (WC-01) was identified within the Project Area, the Shell Rock River. Delineated watercourses within the Project Area are summarized in **Table** below.

Table 6.5-6: Delineated Watercourse Summary Table

Stream ID	Flow Regime	Watercourse Name	Surveyed Length (ft)	Surveyed Area (acres)
WC-01	southwest	Shell Rock River	3407	3.9

A Joint Application Form for Activities Affecting Water Resources in Minnesota requesting a delineation concurrence and wetland type confirmation was submitted for the Project; the Joint Application is the accepted means for initiating review of proposals that may affect a water resource (wetland, tributary, lake, etc.) in the state of Minnesota under state and federal regulatory programs. A Notice of Decision was received on August 12, 2024, which made minor adjustments to the delineated wetland boundaries but overall concurred with the delineation results within the Project Area (**Appendix I**)

6.5.5.2.1 Impacts and Mitigative Measures

BESS Facility

There are several NWI and delineated wetlands identified within the Proposed BESS Facility Development Area; however, no surface water impacts are currently proposed for the construction of the BESS Facility. There will be no unavoidable wetland impacts from BESS Facility components that may be subject to MDNR, USFWS, USACE, or local government permitting.

Midwater BESS does not anticipate a loss of wetlands under the WCA due to construction of the BESS Facility. The BESS Facility will not alter any wetland's cross-section or hydrological characteristics, obstruct flow patterns, change the wetland boundary, or convert the wetland to non-wetland.[130]

HVTL Facility

The HVTL Facility has been designed in a manner to avoid and minimize impacts to identified water resources and existing infrastructure to the extent practicable. All pole structures have been sited outside of delineated wetlands. A small portion of the overhead line will pass over the western edge of wetland WB-01 (**Figure 10**). While no permanent impacts from the installed facilities are anticipated, there will likely be temporary, reversable impacts from construction and installation of the HVTL Facility. All impacts related to construction are expected to be minor.

The Proposed HVTL Facility Development Area is designed to reduce permanent impacts to wetlands and existing infrastructure to the greatest extent possible. Due to the proximity of the overhead line and associated poles, a Nationwide Permit 33: Temporary Construction, Access, and Dewatering will be needed for HVTL Facility construction.[131] Furthermore, temporary construction impacts will be minimized by using BMPs that include erosion control measures identified in the MPCA Storm Water BMPs Manual, such as using silt fencing to control sediment runoff to adjacent water resources. Disturbed surface soils will be stabilized at the completion of the construction process to minimize the potential for subsequent effects on surface water quality. Construction operations will be designed and controlled to minimize and prevent material discharge to wetlands outside the Proposed HVTL Facility Development Area. All potential temporary impacts to wetlands would be fully restored to existing grades and vegetated with an appropriate seed mix. Potential permanent impacts to wetlands exceeding de minimis thresholds would be replaced in accordance with state and federal regulations.

6.5.5.3 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) was consulted regarding existing floodplains and flood risk in the Project Area. The FEMA map for Freeborn County at the site of the Project (FIRM Panel 27047C0395C; effective November 19, 2014) indicates there are 100- and 500-year floodplains (i.e., Flood Hazard Zone AE) and a floodway within the Project Area. These are associated with Shell Rock River along the southeast

[130] *See* Minn. R. 8420.0111, subp. 26 and 32

[131] USACE. 2024. Nationwide Permits available for use in Minnesota and Wisconsin (available at https://www.mvp.usace.army.mil/missions/regulatory/nwp) Accessed September 2024.

perimeter of the Project Area.[132] Field delineation confirmed 100- or 500-year floodplains were mapped within the Project Area.

6.5.5.3.1 Impacts and Mitigative Measures

The proposed BESS Facility and HVTL Facility are designed to avoid impacts to flood zones with all Project infrastructure sited completely outside of mapped FEMA flood zones. The Project will therefore not impact FEMA-mapped floodplains (**Figure 9**).[133]

Because there will be no impacts to mapped floodplains within the Project Area, no mitigation measures are proposed.

6.5.5.4 Impaired Waters

The proposed BESS Facility and HVTL Facility do not cross any MPCA identified impaired waters. The only waterway within the Project Area, the Shell Rock River, is listed by the MPCA as an impaired water.[134] **Table 6.5-7** identifies the impaired water segments within and nearest to the Project and lists their impairments.[135]

Table 6.5-7: MPCA Impaired Waters

Water Body Name	AUID	Affected Designated Use	Pollutant or Stressor	Distance from Project Area (miles)
Shell Rock River	07080202-501	Aquatic Consumption	Mercury in fish tissue	Within Project Area
		Aquatic Life	Nutrients, Dissolved oxygen, Benthic macroinvertebrates bioassessments, Fish bioassessments, Turbidity	
Salem Creek	07040004-503	Aquatic Recreation	Fecal coliform	3.69
		Aquatic Life	Benthic macroinvertebrates bioassessments, Fish bioassessments	

6.5.5.4.1 Impacts and Mitigative Measures

All pole structures and BESS Facility components have been sited outside of the impaired watercourse to avoid permanent impacts to the river. There is a potential for construction-related erosion and sedimentation as the impaired segment of the Shell Rock River is approximately 26 feet from the Proposed BESS Facility Development Area.

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132 FEMA. 2017. National Flood Hazard Layer (NFHL) Viewer (available at https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd).

133 FEMA. 2017. National Flood Hazard Layer (NFHL) Viewer (available at https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd) Accessed July 2024.

134 MPCA. 2024. Impaired Waters: 2024 Viewer (available at https://mpca.maps.arcgis.com/apps/webappviewer/index.html?id=fcfc5a12d2fd4b16bc95bb535d09ae82).

135 MPCA. 2024. Minnesota's Impaired Waters List (available at https://www.pca.state.mn.us/air-water-land-climate/minnesotas-impaired-waters-list).

The Project will comply with the NPDES Permit, SPCC Plan, and SWPPP, if grading activities are necessary and exceed applicable permit thresholds. Two stormwater basins will be used to collect and treat/discharge runoff following MPCA regulations. Midwater BESS has met with Shell Rock Watershed District to address any concerns and discuss stormwater management needs.

Table 6.5-8: Water Permitting and Regulation

Measure	Detail	Applicability
Federal		
Section 404 of the Federal CWA	Under Section 404 of the federal CWA, the USACE regulates the discharge of dredged and fill material into waters of the U.S.	As the BESS Facility is currently designed to avoid all wetlands and waters, coverage under Section of 404 of the CWA is unlikely to be required. If impacts are proposed at a later date through a revised design or construction actions, authorization from the USACE would likely fall under one of the categories of activities of the Minnesota RGP-003. The HVTL Facility will likely require a NWP 33 for temporary impacts occurring during construction.
State		
Minnesota Wetland Conservation Act	If a permit is required, any proposed wetland impact would require full sequencing under the WCA and address wetland avoidance, impact minimization, rectification, and replacement (if applicable).	The need for this will be determined as final Project design is completed. Depending on if there are final wetland impacts associated with the Project and final Project design, construction activities may qualify for a No Loss or exemption, since potential impacts are temporary. If permanent impacts are identified, a permit under the WCA may be required.
Section 401 Water Quality Certification (WQC)	Projects required to obtain an Individual Section 404 Permit are also required to obtain an MPCA Section 401 WQC to ensure they comply with the State water quality standards in Minn. R. Chapter 7050, as amended. If the Project secures approval under a Minnesota Regional General Permit-003, Section 401 WQC is automatic, provided the Project follows the specific pre-determined certification requirements.	Because the Projects are designed to avoid permanent wetland impacts, is unlikely to require an Individual Section 404 Permit from the USACE. A project specific MPCA Section 401 WQC is therefore unlikely to be required as part of the wetland permitting process.
Minnesota Public Waters Act and MnDNR Public Waters Permits	The MnDNR requires a Public Waters Work Permit for any alteration of the course, current, or cross section below the Ordinary High-Water level of MnDNR public waters, wetlands, and watercourses.	Because no MnDNR public watercourses or waterbodies are mapped or have been identified within the Project Area, no impacts to the MnDNR public watercourses are expected from the Project. Therefore, a Public Waters Work Permit will not be required for the Project.
County		
Freeborn County, MN	A county-level permit or variance may be needed for BESS Facility structures within 100 feet of a wetland or watercourse, or a power line within 50 feet of a wetland or watercourse.	There is no code relating to BESS facilities specifically. However, the Project has two points where facilities fall within designated setback distances, which may prompt a requirement for a county-level permit or setback variance.

Should the Project result in permanent, unavoidable impacts to wetlands or water resources, impacts will be replaced in accordance with the WCA and Section 404 of the federal CWA. The

nearest feature that requires a 50-foot buffer by MnDNR is the Shell Rock River which runs along the southeast Project boundary.[136] The Project will comply with MnDNR and BWSR buffer rules.

6.5.6 Vegetation

As noted in **Section 6.1** (Environmental Setting), the Project is located in the Oak Savanna Subsection. Historically, the area consisted of hardwood forest, tallgrass prairie, and bur oak savanna with some lakes. Agriculture is the most prominent land use in this subsection, with urban development accelerating in the northern part of the subsection.[137] Agricultural land includes cultivated cropland and hay/pasture. As discussed in **Section 6.3.1**, the top three crops in Freeborn County are corn, soybeans for beans, and vegetables harvested.[138] No native prairies were identified within the Proposed BESS Facility Development Area or Proposed HVTL Facility Development Area during routine field surveys. For more details on the native prairie assessment, see **Section 6.5.8.5**.

Land cover within the Project Area according to the NLCD is detailed in **Table 6.5-9** and shown in **Figure 5**.[139] MLCCS data is not available for this Project Area. The Project Area is primarily covered in hay/pasture (41.10 percent), herbaceous (20.04 percent), and emergent herbaceous wetlands (20.23 percent). Smaller percentages of developed land, open water, crops, and wooded areas cover the rest of the Project Area. The Proposed BESS Facility Development Area is primarily hay/pasture (89.47 percent).[140]

Table 6.5-9: NLCD Land Cover Within the Project Area and Proposed BESS Facility Development Area

Land Cover Category	Project Area		Proposed BESS Facility Development Area	
	Acres	Percent of Total	Acres	Percent of Total
Hay/Pasture	43.10	41.28	14.78	89.47
Herbaceous	20.04	19.19	1.53	9.55
Developed, Low Intensity	4.60	4.40	0.07	0.60
Emergent Herbaceous Wetlands	20.23	19.38	0.13	0.38
Open Water	4.89	4.68	0	0
Developed, Open Space	1.64	1.57	0.07	0
Developed, Medium Intensity	0.41	0.39	0	0
Developed, High Intensity	0.02	0.02	0	0

136 MnDNR. 2017. DNR Buffer Map (available at https://arcgis.dnr.state.mn.us/gis/buffersviewer/) Accessed June 2024.
137 MnDNR. n.d. Oak Savanna Subsection (available at https://www.dnr.state.mn.us/ecs/222Me/index.html)
138 USDA. 2022. Census of Agriculture. Freeborn County Profile (available at https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Minnesota/)
139 Dewitz, J. 2021. National Land Cover Database (NLCD) 2019 Products (ver. 3.0, February 2024) [Data set]. U.S. Geological Survey (available at https://doi.org/10.5066/P9KZCM54)
140 Dewitz, J. 2021. National Land Cover Database (NLCD) 2019 Products (ver. 3.0, February 2024) [Data set]. U.S. Geological Survey (available at https://doi.org/10.5066/P9KZCM54)

Land Cover Category	Project Area		Proposed BESS Facility Development Area	
	Acres	Percent of Total	Acres	Percent of Total
Barren Land	0.06	0.06	0	0
Cultivated Crops	7.63	7.31	0	0
Woody Wetlands	1.78	1.70	0	0
Total	**104.39**	**100.0%**	**16.59**	**100.00%**
Note: Addends may not sum due to rounding.				

6.5.6.1 Impacts and Mitigative Measures

Approximately 27.67 acres of planted or cultivated vegetation currently exist within the Project Area as classified by the U.S. Geological Survey. The land is currently enrolled in CRP and will be withdrawn prior to site development. Although the design has not been finalized, Midwater BESS anticipates 16.59 acres will be converted from agricultural or CRP use to energy storage use for the life of the Project. Any additional acres of cultivated vegetation temporarily impacted during construction grading will be returned to vegetative cover following facility startup. Preliminary design of the Project avoids any tree clearing; therefore, the Project will not impact forested land.

Midwater BESS's vegetation goals for operating the BESS Facility include establishing stable ground cover, reducing erosion and runoff, and improving infiltration. The vegetation mix is described in the VMP found in **Appendix C**. The existing trees within the Project Area will be retained.

6.5.7 Wildlife and their Habitats

6.5.7.1 Wildlife in the Project Area

Wildlife species that are likely to be present in the Project Area include common species that are adapted to an agricultural setting—primarily hay/pasture lands. As mentioned in **Section 6.5.6** (Vegetation), smooth brome and Kentucky bluegrass are the primary vegetation within the Project Area. These are annual temporary cover types that will be utilized by a small number of common wildlife species on a limited seasonal basis. Mammals that may utilize these areas include, but are not limited to, the raccoon (*Procyon lotor*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), striped skunk (*Mephitis mephitis*), thirteen-lined squirrel (*Spermophilus tridecemlineatus*), and white-tailed deer (*Odocoileus virginianus*).

Bird species that may utilize the agricultural areas include the American crow (*Corvus brachyrhynchos*), eastern bluebird (*Sialia sialis*), mourning dove (*Zenaida macroura*), ring-necked pheasant (*Phasianus colchicus*), wild turkey (*Meleagris gallopavo*), various small perching birds, and common raptors such as red-tailed hawks (*Buteo jamaicensis*). After harvest, the fields may offer short-term foraging areas for common waterfowl, including Canada geese (*Branta canadensis*) and mallards (*Anas platyrhynchos*). The conversion of CRP grassland within the

Proposed BESS Facility Development Area to the recommended perennial mix will help maintain habitat and foraging opportunities and encourage use of the area by a variety of grassland/herbaceous and ground nesting birds. Creation of surface water features in the stormwater ponds will also add a water source for the immediate vicinity.

Reptiles and amphibians accustomed to agriculture habitats such as the American toad (*Anaxyrus americanus*), common garter snake (*Thamnophis sirtalis*), and northern leopard frog (*Lithobates pipiens*), may also be present in the Project Area.[141]

A greater diversity of wildlife habitat for migratory birds or other wildlife is present outside of the Project Area. Although agricultural land and the aquatic resources of the Shell Rock River are the dominant land cover types in the area surrounding the Project Area, the extensive forested and aquatic areas around Myre-Big Island State Park and WMAs provide higher quality habitat for wildlife.

6.5.7.1.1 Impacts and Mitigative Measures

Midwater BESS has designed the Project's infrastructure to avoid areas with the potential for quality habitat. BMPs outlined in **Section 6.5.6** on the vegetative practices will serve to stabilize, protect, and mitigate potential impacts within the Project Area. BMPs will be implemented during construction, post-construction, and operational phases of the Project. Through establishing perennial plants species during the life of the Project, the natural landscape will experience a long-term reduction of soil erosion and runoff, improved nutrient cycling, and new beneficial habitat for many insect species and ground nesting species during the life of the Project.

6.5.7.2 Avian Species

The Project is located within the Mississippi Flyway, one of four migration flyways in North America for millions of birds and hundreds of species that migrate between South and Central America. Avian species utilize the Mississippi Flyway and travel north along the Gulf of Mexico before following the Mississippi River.[142] An abundance of rivers and lakes makes the Mississippi Flyway an ideal route for waterfowl, shorebirds, and other waterbirds.[143]

The Project Area is also located within the Eastern Tallgrass Prairie Bird Conservation Region (BCR 22).[144] The USFWS identified 39 species of birds within BCR 22 as Birds of Conservation

[141] MnDNR. n.d.-f. Animals: Reptiles and Amphibians (available at https://www.dnr.state.mn.us/animals/index.html) Accessed June 2024.

[142] USFWS. 2017. USFWS Administrative Waterfowl Flyway Boundaries. [Shapefile] (available at https://ecos.fws.gov/ServCat/Reference/Profile/42276) Accessed July 2024.

[143] Fritts, R. 2022. Avian Superhighways: The Four Flyways of North America. American Bird Conservancy. Bird Call Blog. May 16, 2022 (available at https://abcbirds.org/blog/north-american-bird-flyways/).

[144] Bird Studies Canada and NABCI. 2014 (Updated 2020.). Bird Conservation Regions (BCRs). Published by Bird Studies Canada on behalf of the North American Bird Conservation Initiative (available at https://birdscanada.org/bird-science/nabci-bird-conservation-regions. Accessed June 2024.

Concern (BCC);[145] BCC are avian species that represent the agency's highest conservation priorities. Based on the August 1, 2024, USFWS Information for Planning and Consultation (IPaC) report, birds of particular concern are described in **Appendix J** because they occur on the BCC list or could potentially occur in the Project vicinity.[146]

The Migratory Bird Treaty Act (MBTA) of 1918 regulates the taking, selling, transporting, and importing of migratory birds, their nests, eggs, parts, or products.[147] The MBTA protects more than 1,000 species of birds that occur within the United States. Most birds within the Project Area would be afforded protection under the MBTA. The Bald and Golden Eagle Protection Act (BGEPA) protects and conserves bald eagles and golden eagles from intentional take of an individual bird, chick, egg, or nest, including alternate and inactive nests. Unlike the MBTA, BGEPA prohibits disturbance that may lead to biologically significant impacts, such as interference with feeding, sheltering, roosting, and breeding or abandonment of a nest.[148]

Midwater BESS conducted a site reconnaissance during the spring of 2024, to identify and evaluate the available habitat in the Project Area and vicinity that may be used by threatened or endangered species listed in the IPaC or MnDNR Minnesota Conservation Explorer tool. The site reconnaissance revealed minimal nesting habitat within the Project Area for listed avian species. More detailed and specific information on habitat and wildlife can be found in **Appendix J**.

Land cover within the Project Area is currently in the CRP, (89.10 percent) with small amounts of deciduous shrublands (9.22 percent) as shown on **Figure 5**. The forested/shrubland areas are limited to shelterbelts and field edges. As a result, few migratory bird species that use trees or forested areas to roost or forage (such as bald eagle and red-headed woodpecker) are present within the Project Area. With either minimal or no tree-clearing taking place, nesting habitat will remain intact, and impacts to birds using these areas will be limited. The Project Area has some open water or wetlands but will not utilize wetlands for the BESS Facility or HVTL Facility (**Section 6.5.5**). Since no wetlands will hold Project infrastructure and either minimal or no tree clearing will take place in potential nesting locations, wetland- or water-dependent birds will be unlikely to occur within the Project Area. Overall, few if any BCC are likely to use the area within the Project Area as habitat.

6.5.7.2.1 Impacts and Mitigative Measures

Midwater BESS has designed the Project's infrastructure to avoid portions of the Project Area with the potential for quality habitat for avian species. **Section 6.5.6** describes the vegetative practices that will serve to stabilize, protect, and mitigate potential impacts within the Project Area. Throughout all stages of the Project, avian species will be minimally impacted though the use of

[145] USFWS. 2008. Birds of Conservation Concern 2008. U.S. Fish and Wildlife Service Division of Migratory Bird Management, Arlington, Virginia. 85 pp. (available at https://ecos.fws.gov/ServCat/DownloadFile/134745) Accessed June 2024.

[146] USFWS. 2024b. Information for Planning and Consultation: Midwater Energy Storage Project Report.

[147] *See* 16 U.S.C. 703-712.

[148] USFWS. 2007. National Bald Eagle Management Guidelines. Arlington, VA (available at https://www.fws.gov/sites/default/files/documents/national-bald-eagle-management-guidelines_0.pdf) Accessed June 2024.

BMPs. Due to the continued presence of perennial grasses on the steeper slopes of the Proposed BESS Facility Development Area and the Proposed HVTL Facility, impacts on potential avian species nesting or using the Project Area will be neutral. Through establishing a wider variety of perennial plants species, the natural landscape will experience a reduction of soil erosion and runoff, improved nutrient cycling, and new beneficial habitat for ground nesting species during the life of the Project.

6.5.7.3 Waterfowl Feeding and Resting Areas

No waterfowl feeding and resting areas are located within one mile of the Project Area. [149]

6.5.7.3.1 Impacts and Mitigative Measures

Because there are no waterfowl feeding and resting areas in, adjacent to, or within one mile of the proposed Project Area, no impacts are anticipated, and no mitigation measures are proposed.

6.5.7.4 Important Bird Areas

Audubon Important Bird Areas are voluntary, non-regulatory, and part of an international conservation effort. The program relies on participation of private landowners, public land managers, and community members: to identify the most essential habitats for birds and designates Important Bird Areas in Minnesota; monitor these areas for changes to birds and their habitats; and conserve these areas for long-term protection of birds.[150] The closest is the Elk Creek Marsh Important Bird Area, portions of which are located in northern Iowa over ten miles away from the Project Area.[151]

6.5.7.4.1 Impacts and Mitigative Measures

No Important Bird Areas are located in or near the Project Area and therefore, no impacts or mitigative measures are proposed.

6.5.8 Rare and Unique Natural Resources

6.5.8.1 Federally Listed Species

The USFWS IPaC portal was most recently reviewed on April 4, 2024 (**Appendix J**) for federally endangered and threatened species, candidate species, and designated critical habitat that may occur in the Project vicinity. The IPaC results identified one federally endangered species (the northern long-eared bat [NLEB; *Myotis septentrionalis*]); and one federally proposed endangered species (the tricolored bat [*Perimytis subflavus*]) within or near the Project Area. Suitable NLEB and tri-colored bat habitat consists of a variety of forested habitat near water sources.[152] According

[149] MnDNR. 2016 (Updated 2023). Migratory Waterfowl Feeding and Resting Areas (available at https://gisdata.mn.gov/dataset/env-migratory-waterfowl-areas) Accessed June 2024.
[150] MnDNR. n.d. Important Bird Areas (available at https://www.dnr.state.mn.us/iba/index.html) Accessed June 2024.
[151] Audubon. 2020. Minnesota Important Bird Areas Interactive Map (available at https://www.arcgis.com/home/webmap/viewer.html?webmap=3b3d225539f8449daf84be6aa89eab50) Accessed June 2024.
[152] MnDNR. 2018. Rare Species Guide: Myotis septentrionalis (available at https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=AMACC01150) Accessed June 2024.

to MnDNR and USFWS, there are no known NLEB or tri-colored bat maternity roost trees or hibernaculum in Freeborn County; however, the species may still occur within or near the Project Area.[153] The IPaC report also identified the candidate species for listing, monarch butterfly (*Danaus plexippus*), which is not afforded any protections at this time. Although not identified by the IPaC, the bald eagle (*Haliaeetus leucocephalus*) is federally protected under the BGEPA and was reviewed for potential occurrence within or near the Project Area.[154]

The USFWS adopted National Bald Eagle Management Guidelines to help protect eagle nests and avoid "disturbance" of eagles as required by the BGEPA. Guidance has also been developed to help determine if a project needs an incidental take permit for bald eagles if disturbance cannot be avoided. Land uses in the Project Area are primarily hay/pasture (41.28 percent), herbaceous (19.19 percent), and emergent herbaceous wetlands (19.38 percent), with small areas of cultivated crops (7.31 percent), open water (4.68 percent), woody wetlands (1.70 percent), and barren land (0.06 percent), with the remaining land cover being developed land (6.38 percent; **Section 6.5.6**). As a result, few migratory bird species that use trees or forested areas as habitat will be present, such as the bald eagle.

6.5.8.2 Impacts and Mitigative Measures

No impacts to any federally listed species are anticipated throughout construction and operation of the Project. The NLEB Rangewide Determination Key was completed in the IPaC (**Appendix J**). If no changes occur with the Project, no further consultation/coordination would be required for the NLEB. Impacts to bald eagles are not anticipated from the Project as there is no suitable nesting habitat within the Project Area.

6.5.8.3 State Listed Species

Westwood submitted a formal MnDNR Natural Heritage Information System (NHIS) Data request for the Project Area. In a letter dated June 4, 2024, the Natural Heritage Review Team identified two state-listed species in T101N, R20W, Section 7, 8, and 17—the edible valerian (*Valeriana edulis var. ciliata*) and suckermouth minnow (*Phenacobius mirabilis*; **Figure 11**, **Appendix J**). Habitat use and species information was obtained from the MnDNR Rare Species Guide.

Edible valerian (*Valeriana edulis var. ciliata*)

Edible valerian, a state-listed threatened plant species, has been documented within the vicinity of the proposed Project. Edible valerian favors a moist, sunny, calcareous habitat, including calcareous fens, wet meadows, and moist prairies. Many of these habitats are found along highway and railroad ROW. Minnesota's Endangered Species Statute (Minn. Stat. §84.0895) and associated

[153] MnDNR and USFWS. 2016. Townships Containing Documented Northern Long-eared Bat (NLEB) Maternity Roost Trees and/or Hibernacula Entrances in Minnesota (available at https://efotg.sc.egov.usda.gov/references/public/MN/MN_NLEB_Township_List_and_Map_4-1-16.pdf)

[154] USFWS. 2007. National Bald Eagle Management Guidelines. Arlington, VA. May 2007 (available at http://www.fws.gov/midwest/eagle/pdf/NationalBaldEagleManagementGuidelines.pdf)

Rules (Minn. R. 6212.1800–.2300, and ch. 6134) prohibit the take of endangered or threatened plants or animals, including their parts or seeds, without a permit.

Because Project activities are limited to previously tilled areas and exclude wetlands, wet meadows, and railroad ROW, impacts are not anticipated. There is one area of new construction across the highway ROW for the site access. This area can be assessed for the presence of this species at the time of construction, if required.

Suckermouth minnow (*Phenacobius mirabilis*)
Suckermouth minnow, a state-listed species of special concern was recently documented in the Shell Rock River within the vicinity of the proposed Project. This species' reproductive history isn't well known, but it is thought to spawn multiple times from late May through August. No work will be conducted within the Shell Rock River and erosion control measures in the SWPPP will ensure the stream is not adversely impacted.

6.5.8.3.1 Impacts and Mitigative Measures

No impacts to any Minnesota State endangered, threatened, or special concern species are anticipated throughout construction or operation of the BESS Facility or HVTL Facility. The Proposed BESS Facility Development Area's current condition is undisturbed by agricultural activities (89.1 percent hay/pasture lands). No native prairies currently exist within the Project Area. The MnDNR formal response to the NHIS request for the Project was received on June 4, 2024 (**Appendix J**). Edible valerian and Suckermouth minnow as a state-listed threatened plant species and species of special concern, respectively, were not reported in the vicinity of the Project. Because no viable habitat exists in the Project Area, no foreseen impacts or mitigation measures are identified or proposed.

6.5.8.4 MnDNR High Value Areas

The MnDNR recommends identifying high value resources during Project development. High value resources include:[155]

- Rare species and native plant communities;
- Minnesota Biological Survey (MBS) sites of biodiversity significance and MnDNR native plant communities (NPCs);
- Species and habitats included in the Wildlife Action Network and Minnesota Wildlife Action Plan;
- Lakes, wetlands, streams, and rivers;
- Large block habitats;
- Public conservation and recreation lands; and

[155] MnDNR. 2023. Commercial Solar Siting Guidance (available at https://files.dnr.state.mn.us/publications/ewr/commercial_solar_siting_guidance.pdf)

- Properties in government programs or with conservation easements.

These high value resources have been evaluated by the Project during the development and are described in the following sections.

Rare Species and Native Plant Communities

Rare species, including federal and state listed species, are discussed above in **Sections 6.5.8.1** and **6.5.8.3**. The MnDNR MBS assigns ecologists to map and classify NPCs throughout the state using plant species, soils, and other site-specific data from vegetation plots. Biodiversity significance ranks are used to prioritize and guide conservation and management of MBS sites. To assign biodiversity significance ranks, MBS sites are grouped and rated for each of Minnesota's ECS subsections. Ranking sites by subsection helps to highlight the best examples of Minnesota's rare species and native plant communities in all of the state's diverse landscapes. There are four biodiversity significance ranks: Outstanding; High; Moderate; and Below.[156]

The MBS has identified Shell Rock U.S. Highway 65 ROW as a Site of *Moderate* Biodiversity Significance in the vicinity of the proposed Project Area. Sites ranked as *Moderate* contain occurrences of rare species and/or moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery. This MBS Site contains Mesic Prairie (Southern) (UPs23a) native plant community which is considered imperiled (S2) within Minnesota.

The MnDNR recommends that the Project be designed to avoid impacts to these ecologically significant areas. Actions to avoid or minimize disturbance include, but are not limited to, the following recommendations: As much as possible, operate within already-disturbed areas, avoid MBS Sites and native plant communities ranked S1, S2, or S3, retain a buffer between proposed activities and the MBS Site, prevent herbicide drift into ecologically sensitive areas, use effective erosion prevention and sediment control measures, and revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible.

The MBS considered the area across from the proposed Project for a Site of Biodiversity Significance. Shell Rock 17 was determined to be *Below* the minimum biodiversity threshold for statewide significance. This area, however, may have conservation value at the local level as habitat for native plants and animals, corridors for animal movements, buffers surrounding higher quality natural areas, or as areas with high potential for restoration of native habitat. As such, indirect impacts from surface runoff or the spread of invasive species should be considered during Project design and implementation.[157]

Based on review of the MnDNR NPC data, no NPCs have been identified in the Project Area. The nearest NPC is located 0.45 miles south of the Project Area along U.S. Highway 65.

[156] MnDNR. 2009. Guidelines for Assigning Statewide Biodiversity Significance Ranks to Minnesota County Biological Survey Sites (available at https://files.dnr.state.mn.us/eco/mcbs/biodiversity_significance_ranking.pdf)

[157] MnDNR. 2024. Minnesota Conservation Explorer, V. 1.3 (available at https://mce.dnr.state.mn.us/)

A native prairie assessment was conducted for the Project to determine whether any native prairie areas were present in the Project Area that would restrict development of the Project (**Appendix K**). The native prairie assessment completed by the Applicant, and four native prairie areas were identified but were dismissed after being found previously enrolled in the USDA CRP and dominated by smooth brome and Kentucky bluegrass. MBS Sites of Biodiversity Significance and MnDNR Regionally Significant Ecological Areas (RSEA) were found south of the Project. For more details on the native prairie assessment, see **Section 6.5.8.5**.

Wildlife Action Network and Minnesota Wildlife Action Plan

Minnesota's State Wildlife Action Plan (SWAP; 2015–2025) proactively addresses the state's conservation needs and defines actions to prevent species from becoming listed under the state endangered species program or the Endangered Species Act. The SWAP also entailed revisions to the state's list of Species in Greatest Conservation Need (SGCN). SGCN are native animals with rare, declining, or vulnerable populations. All state and federally listed species that occur in Minnesota are automatically SGCN.[158]

The Wildlife Action Network was developed as part of the 2015–2025 SWAP revision to assist users in focusing conservation efforts. The Wildlife Action Network is comprised of ten GIS data layers that represent quality terrestrial and aquatic habitats, buffers, and corridors across the state that support SGCN. The closest mapped area is located approximately 1.8 miles southeast of the Project Area. [159]

Lakes, Wetlands, Streams, and Rivers

Lakes, wetlands, streams, and rivers are discussed in **Section 6.5.5** (Surface Waters). Two NHD watercourses and three NHD waterbodies are mapped within the Project Area, but none are within the Proposed BESS Facility Development Area or Proposed HVTL Facility Development Area. The Proposed BESS Facility and HVTL Facility do not affect any NHD flowlines. One MnDNR PWI feature was identified within the Project Area but is not affected by the BESS Facility or HVTL Facility (**Figure 8**).

Large Block Habitats

Large blocks of habitat, such as forests or grasslands, can provide increased diversity of species, higher species populations, and more resilient and complex ecological communities. Construction of projects within large block habitats may cause habitat loss and fragmentation, which is counterproductive to area-sensitive species for nesting, food, and population success.

158 MnDNR. 2022b. Minnesota's Wildlife Action Plan, 5-Year Report (available at https://files.dnr.state.mn.us/assistance/nrplanning/bigpicture/mnwap/wap-5-yr-report.pdf)

159 MnDNR. 2015 (Updated 2024). MNWAP Wildlife Action Network [Shapefile] (available at https://gisdata.mn.gov/dataset/env-mnwap-wildlife-action-netwrk) Accessed June 2024.

The Project is sited on CRP lands and is not adjacent to any potential large block habitats. Adjacent property use is agricultural or small woodlots not conducive to provide habitat for any large number of species or area-sensitive species.

Public Conservation and Recreation Lands

A review of publicly available information including, but not limited to, the Minnesota Recreation Compass, MnDNR USFWS WPA maps, snowmobile clubs, city and county parks, and public and private golf courses was completed to identify any public conservation or recreation lands. No public conservation or recreation lands are present within the Project Area or quarter-mile buffer (**Figure 6**). Refer to **Section 6.2.9** for additional discussion of recreational lands.

Properties in Government Programs or Conservation Easements

The Project Area encompasses 104.4 acres of privately-owned, predominantly current or former agricultural land. CRP land is mapped in the Project Area along the north, west, and south portions of the Project Area. Approximately 53.4 acres of CRP land is located within the Project Area. Refer to **Appendix K** for additional discussion of CRP land. Within a quarter-mile buffer of the Project Area, there is one county conservation easement for marginal cropland and the Shell Rock State Wildlife Management Area.

6.5.8.4.1 Impacts and Mitigative Measures

Two NHD watercourses, three NHD waterbodies, and one MnDNR PWI are located in the Project Area and will be avoided by the BESS Facility and HVTL Facility. Additionally, BMPs outlined in **Sections 6.5.4** and **6.5.6** concerning erosion control and vegetation will serve to protect, prevent, and mitigate negative impacts to the natural landscape surrounding the Project Area. The SWPPP will also be implemented during construction of the Project.

Other high value areas surrounding the Project Area will not be affected by the BESS Facility or HVTL Facility through setbacks, erosion control, and other practices to eliminate potential impacts.

6.5.8.5 Native Prairie

Minn. Stat. §84.02, subd. 5, defines native prairie as land that has never been plowed where native prairie vegetation originating from the site currently predominates or, if disturbed, is predominantly covered with native prairie vegetation that originated from the site.

Midwater BESS conducted a native prairie assessment on June 21, 2024, to evaluate the Project Area for native prairie. Midwater BESS utilized and reviewed historical aerial imagery, geospatial information on native prairies and plant communities, historic USDA CRP information, and USFWS NWI. Areas that were excluded from consideration included: row crops or tilled fields, bare or developed ground, forests, wet meadows with clear signature of reed canary grass, and open water or inundated wetlands.

Based on the assessment completed by the Project, four native prairies were identified but were dismissed after being found previously enrolled in the USDA CRP and dominated by smooth brome and Kentucky bluegrass. MBS Sites of Biodiversity Significance and MnDNR RSEA were found south of the Project. For more details on the native prairie assessment, see **Appendix K**.

6.5.8.5.1 Impacts and Mitigative Measures

Because no native prairies are located in the Project Area, no impacts are anticipated, and no mitigative measures are proposed. The MBS Sites of Biodiversity Significance and MnDNR RSEA on the southwest border of the Project Area will not be impacted by the BESS Facility or HVTL Facility through setbacks, separation by the Shell Rock River, and BMPs for construction and operation of the Project.

6.6 Unavoidable Impacts

Preliminary design of the Project avoids impacts to environmental resources whenever possible. In some cases, impacts to environmental resources could not be entirely avoided but will be minimized by implementation of mitigation measures. A detailed discussion of the environmental impacts of the proposed Project, as well as the mitigation measures that would be used to minimize impacts, is presented in **Sections 6.1** through **6.8** of the Application. Environmental impacts that will be minimized by the use of mitigation measures, but not entirely avoided, are provided below. Most of these unavoidable impacts will occur during construction of the Project and will resolve with the completion of construction.

Unavoidable impacts related to the Project that will last only as long as the construction period include:

- Noise emitted from vehicles and equipment during construction that will be audible to neighboring landowners;
- Increased traffic on roads within the Project Area;
- Minor air quality impacts due to fugitive dust;
- Potential for soil erosion; and
- Potential disturbance to, and displacement of, some species of wildlife.

Unavoidable impacts related to the Project that will last as long as the life of the Project will include:

- Aesthetic changes to the landscape (hay/pasture fields to BESS Facility and HVTL Facility), which will be visible from local roadways and parcels; and
- Changes in land cover and vegetation from CRP land to a BESS Facility (16.6 acres) and HVTL Facility (8.2 acres), with perennial vegetation in areas of the Proposed BESS Facility Development Area and HVTL Route not housing Project infrastructure. As

discussed in **Section 6.5.7**, this is likely to be a positive impact for the Project wildlife and the environment.

- Creation of new impermeable surface for the BESS enclosure area, parking area, substation and access roads. Surface water will be managed as described in Section 6.5.5.

6.7 Irreversible and Irretrievable Impacts

Irreversible, irretrievable, and unavoidable impacts or commitment of resources refers to impacts on, or losses to, resources that cannot be avoided, recovered, or reversed. Examples could include the permanent conversion of wetlands and loss of cultural resources, soils, wildlife, or agricultural production.

"Irreversible" is a term that describes the loss of future options. It applies primarily to the impacts of use of nonrenewable resources, such as minerals or cultural resources, or to those factors, such as soil productivity, that are renewable only over long periods of time.

"Irretrievable" is a term that applies to the loss of production, harvest, or use of natural resources. For example, if farmland is used for a non-agricultural development, some or all of the agricultural production from an area of farmland is lost irretrievably while the area is temporarily used for another purpose. The production lost is irretrievable, but the action is not irreversible.

Land required for the Project would be committed to hosting BESS enclosures and associated facilities for the life of the Project, which is expected to be up to 30 years. Although the entire 104.4-acre Project Area would not be developed, the 16.6 acres of land within the Proposed BESS Facility Development Area would be developed for Project infrastructure. This land would be unavailable for other uses during that time. However, after the Project reaches the end of its operational life, and if the decision is made to decommission it and restore the site, the land would again be available for other uses. The HVTL Facility will require minimal occupation of land for infrastructure with some restrictions on the land leased to access the HVTL Facility.

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 the Project would be an irretrievable commitment of resources, excluding those materials that may be recycled at the end of the Project's operational life. The commitment of labor and fiscal resources to develop, construct, and operate the Project is considered irretrievable.

No permanent wetland or other sensitive land conversion or alteration will be made during any stage of the Projects; therefore, no foreseen irreversible impacts are addressed.

6.8 Cumulative Potential Effects

Cumulative impacts are combined, incremental effects of human activity. While an individual activity may be insignificant by itself, minor impacts in combination with other actions may cause a larger issue in a region or to an important resource.

A review of the Freeborn County website[160] and Minnesota Environmental Quality Board website[161] did not reveal any projects proposed with similar timing or within close proximity to the Project Area that would be expected to interact negatively or create significant cumulative impacts with the proposed Project.

According to the MISO Generator Interconnection Queue, there are four active projects in Freeborn County—including one solar facility, one battery storage facility (i.e., the BESS Facility), and two wind energy generation facilities.[162] The wind energy generation facilities have planned in-service dates of June 2024 and June 2026. The standalone battery storage and solar projects have planned in-service dates of July 2025 and October 2025, respectively. Until the projects receive an interconnection agreement, their construction and implementation are tentative.

State and county level construction projects listed pertain to road or other infrastructure repairs and general maintenance.[163] During the construction phase of the Project, an increased amount of traffic is to be expected with worker and equipment transports traveling similar routes. Should the timing of construction be similar between projects, coordination with appropriate parties on haul route traffic volumes will be conducted to reduce significant impacts on travel in the area (see **Table 6.8-1**). Minimal long term cumulative impacts are anticipated.

Table 6.8-1: Other Projects in Close Proximity and Timeframe

No.	Project Sponsor/Title	General Project Location	Timeframe/In-Service Date	Project Type
1	ITC Midwest (J2054)	Freeborn County	2024	Wind
2	ITC Midwest (J2728)	Freeborn County	2025	Battery Storage
3	ITC Midwest (J2845)	Freeborn County	2025	Solar
4	ITC Midwest (J3029)	Freeborn County	2026	Wind
5	U.S. Highway 65	U.S. Highway 65 at Front Street and Margaretha Avenue in Albert Lea	2024–2025	Signal Replacements and ADA Improvements
6	150th Street	150th Street from 810th Avenue to 850th Avenue	2024	Road Detour
7	CSAH 17	CSAH 17 from 680th Avenue to 750th Avenue	2024	Chip Seal/Scrub Seal

160 Freeborn County. 2024. Public Works – Construction Management (available at https://www.co.freeborn.mn.us/569/Construction-Updates) Accessed August 2024

161 MPCA. 2024e. Environmental Review Projects (available at https://pca-gis02.pca.state.mn.us/EQB/) Accessed August 2024

162 MISO. 2024. Interactive Queue (available at https://www.misoenergy.org/planning/resource-utilization/GI_Queue/gi-interactive-queue/) Accessed August 2024

163 MnDOT. 2024. Southeast Minnesota State Highway and Bridge Projects. (available at https://www.dot.state.mn.us/construction/2024/d6.html) Accessed August 2024

No.	Project Sponsor/Title	General Project Location	Timeframe/In-Service Date	Project Type
8	CSAH 26	CSAH 26 between 160th Street and 150th Street	2024	Bridge Replacement

7.0 AGENCY AND PUBLIC OUTREACH

As part of pre-Application efforts, Midwater BESS engaged with local, state, and federal regulatory stakeholders to introduce the Project, request comments, and solicit feedback. Additionally, Midwater BESS contacted the 11 recognized Minnesota Tribal Nations for comments. Midwater BESS will continue to engage with interested stakeholders throughout the Application process.

7.1 Correspondence

In letters dated April 18, 2024 and June 6, 2024, Midwater BESS sent a Project introduction letter and map to federal, state, and local agencies, and other stakeholders with jurisdiction or interest in the Project Area through the United States Postal Service. This letter sent via the United States Postal Service was supplemented by sending an email containing the same information where specific agency personnel could be identified, or a general agency email was available. Midwater BESS requested comments and input on permits or approvals that may be required. The agency list to whom the Project introduction letter was sent is included in **Table 7.1-1** below, and the representative email, letter, and project map is included in **Appendix B**.

In a letter dated April 18, 2024, Midwater BESS provided Project information and a map to Tribal Representatives in Minnesota (e.g., Tribal Historic Preservation Officers) that may have an interest in the Project Area and requested input on the proposed Project. The Tribal list to whom the Project letter and map were sent is included in **Table 7.1-1** below, and the representative letter and email are included in **Appendix G**.

A summary of all agency and tribal coordination and correspondence as of October 22, 2024, is provided in **Table 7.1-1** along with dates of correspondence. Responses received to date are included in **Appendices B** and **G**.

Table 7.1-1 : Summary of Agency and Tribal Coordination

Agency	Date Letter Sent	Response Summary Receipt
Federal		
USACE, St. Paul District	April 18, 2024	Email response received on April 25, 2024.
USFWS, Minnesota Wisconsin Field Office	April 18, 2024	Email response received on April 24, 2024.
EPA	April 18, 2024	No response received to date.
Federal Aviation Administration (FAA)	April 18, 2024	Email and phone call response received on April 19, 2024.
State		
Minnesota SHPO	April 18, 2024	Email response with attached letter received on July 5, 2024. Field survey concurrence letter received October 22, 2024.
Minnesota BWSR	April 18, 2024	No response received to date.
MnDNR	April 18, 2024	Email response received on April 22, 23, and 29, 2024.
MPCA	April 18, 2024	No response received to date.
Minnesota Department of Agriculture	April 18, 2024	No response received to date.
MnDOT	April 18, 2024	Email responses received to date on July 17, 30, and 31, 2024 and August 13, 2024.
MN DEED	April 18, 2024	No response received to date.
MDH	April 18, 2024	No response received to date.
Tribal Nations		
Lower Sioux Indian Community	April 18, 2024	No response received to date.
Upper Sioux Community	April 18, 2024	No response received to date.
Prairie Island Indian Community	April 18, 2024	No response received to date.
Shakopee Mdewakanton Sioux Community	April 18, 2024	Email responses received on April 19 and 25, 2024.
Bois Forte Band of Chippewa	April 18, 2024	No response received to date.
Fond du Lac Band of Lake Superior Chippewa Indians	April 18, 2024	No response received to date.
Grand Portage Band of Lake Superior Chippewa Indians	April 18, 2024	No response received to date.
Leech Lake Band of Ojibwe	April 18, 2024	No response received to date.
Mille Lacs Band of Ojibwe Indians	April 18, 2024	No response received to date.
Red Lake Nation	April 18, 2024	No response received to date.
White Earth Nation	April 18, 2024	No response received to date.
Minnesota Indian Affairs Council Cultural Resources	April 18, 2024	No response received to date.
Local		
Freeborn County Administrator	June 6, 2024	No response received to date.
Freeborn County Economic Development Director	June 6, 2024	No response received to date.
Shell Rock River Watershed District Administrator	June 6, 2024	No response received to date.
Freeborn County SWCD Manager	June 6, 2024	No response received to date.
Freeborn County Attorney	June 6, 2024	No response received to date.
Freeborn County Environmental Health Coordinator	June 6, 2024	No response received to date.

7.2 Federal Agencies

On April 18, 2024, Midwater BESS sent a Project introduction letter and map to the USACE, USFWS, EPA, and the FAA. Federal written and verbal correspondence includes responses from the USACE, USFWS, and FAA as detailed in **Table 7.1-1**. See **Section 6.5.8** for additional USFWS coordination, including information on the most recent IPaC report. USACE was contacted and responded with a request for eventual permit application submittal and pre-application meeting, if applicable. The FAA responded to initial outreach via email and phone call requesting that the Project be screened using the online FAA Notice Criteria Tool. Results from the FAA Notice Criteria Tool showed that the Project does not exceed notice criteria. No written response or correspondence has been received from the EPA.

7.3 State Agencies

On April 18, 2024, Midwater BESS sent a Project introduction letter and map to eight state of Minnesota agencies. Responses to date have been limited to those from the MnDNR requesting additional contacts be included in correspondence, as well as a SHPO comment letter, as detailed in **Table 7.1-1**. On July 30, 2024, the Applicant held an introductory meeting with MnDOT to discuss the proposed Project and any potential impacts to MnDOT ROW, if any. On August 13, 2024, MnDOT requested that the Applicant prepare an Early Notification Memo, which will be prepared and reviewed concurrent with this Application. Once the Applicant has secured Site and Route Permit approvals from the MPUC, the Project design will be finalized and coordination with MnDOT regarding necessary access permits will commence. See **Section 6.5.8** for additional MnDNR coordination information, including results from the most recent NHIS Review. See **Section 6.4** for additional SHPO coordination information, including SHPO review and recommendations.

7.4 Tribal Nations

In a letter dated April 18, 2024, Midwater BESS provided Project information to 11 Tribal Nations in Minnesota, as well as the Minnesota Indian Affairs Council. Responses from Tribal Nations have been limited to those from the Shakopee Mdewakanton Sioux Community requesting desktop cultural resources information as detailed in **Table 7.1-1**.

7.5 Local Agencies and Other Stakeholders

In a letter dated June 6, 2024, Midwater BESS sent a Project introduction letter and map to the Freeborn County Administrator, Freeborn County Economic Development Director, Shell Rock River Watershed District Administrator, Freeborn County SWCD Manager, Freeborn County Attorney, and Freeborn County Environmental Health Coordinator. To date, no responses have been received as noted in **Table 7.1-1**.

7.6 Meetings

In addition to the above outreach and responses, Midwater BESS held various meetings with state and local representatives to introduce the Project, provide information, receive feedback, and

design a Project that respects feedback and has the support of the community. As applicable, Midwater BESS has made a point of completing outstanding action items soon after these meetings were held. The general feedback has been positive, and Midwater BESS has provided fact sheets, articles, and other resources, specifically to state and local agencies, to maximize the understanding of the Project. Midwater BESS plans to continue community outreach through meetings, advertisements, and traditional public engagement activities. A summary of the completed meetings to date is included in **Table 7.6-1** below.

Table 7.6-1: Summary of Agency Meetings

Date	Agency	Meeting Summary
April 30, 2024	Freeborn County	Midwater BESS met with Ryan Rasmusson, Freeborn County Administrator, John Forman, Freeborn County Commissioner, and Trevor Bordelon, Freeborn County Planning and Zoning Administrator.
April 30, 2024	Freeborn County	Midwater BESS met with Phillip Johnson, Freeborn County Economic Development Director.
May 21, 2024	Shell Rock River Watershed District	Midwater BESS met with Andy Henschel, Shell Rock River Watershed District Administrator, and plans to continue collaborating with the agency to find ways in which to partner with the Project.
July 10, 2024	MPUC and DOC	Project introduction meeting with Ray Kirsch, Bret Eknes, and Craig Janezich
July 30, 2024	MnDOT	Midwater BESS met with Stacy Egstad, Brian McCoy, Ann Driver, Kurt Wayne, and Paul Hartzheim, and David Evans to introduce the Project.